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INUWS

ESSAY ON WATER STRATEGY

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ESSAY ON WATER STRATEGY

INTRODUCTION

Among other planets, planet earth is characterized by a huge presence of water which makes it appear like "Blue Planet". The hydrological cycle involving water and energy is the central feature of the whole environment.

For individual human beings, water amounts for three fourth of human body's entire weight. It is the absolutely essential nutrient we need for production of tissue. Children won't grow without enough water. It acts as a solvent in the body, which temperature it regulates. It also carries nutrients to cells and wastes away. Water is the principle component of blood. It helps us to digest goods and our body requires it for a variety of chemical reactions necessary for life. One could live a long while without any food; but without water, death would be quick.

Last but not least, most of human activities: economic, social, cultural, even religious activities use water.

For the World Bank itself, water is at the crossroads of all its main goals: development, poverty, environment, ...

The Two Key Problems: Water Supply and Water Resources Management

A lot has been already said and written about issues related to water: these issues are many, diversified and interrelated ones.

Time has come to make a judgement on which issues take the lead and thus should be considered as the priorities. What is most necessary now is to elaborate and implement a sound new strategy that will be more effective as soon as possible.

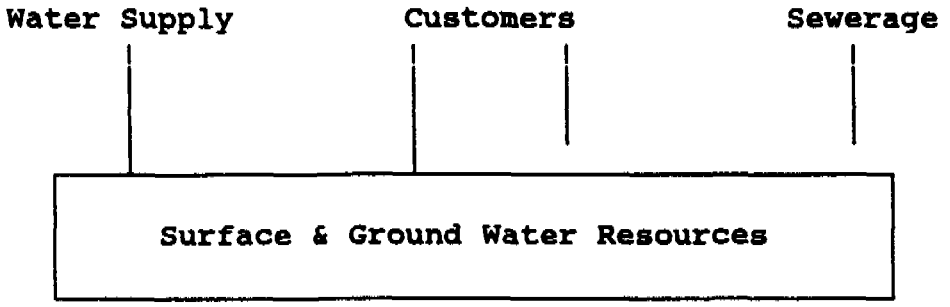
No doubt all water uses (that are listed in Figure 1 - page 10) are important and raise specific issues. But among them, water supply, i.e. safe drinking water supply, is a unique one: it is essential for everyone, everyday, everywhere. Safe and sustainable water supply will be our first key problem in chapter I.

But, in addition, it is obvious that one cannot supply safe potable water without tapping in appropriate surface or ground water resources. As a consequence, effective water resources management (W.R.M.) will be our second key problem in chapter II.

Finally, Chapter III will provide general recommendations for action that may be of interest for both water supply and W.R.M.

CHAPTER I

SAFE AND SUSTAINABLE WATER SUPPLY



Water supply delivery requires huge infrastructure and equipments: dams, bore holes, tanks, treatment plants, networks and pumping stations. It is a capital intensive activity that need large amounts of long term cheap funding, as Table 1. below shows:

Table 1. Developing Country needs for sector services, 1990-2000.

	Population Not Served in 1990	Expected Population Increase 1990-2000	Total Additional Population Requiring Service by 2000
Water Supply			
Urban	243	570	813
Rural	989	312	1,301
Total	1,232	882	2,114
Sanitation			
Urban	377	570	947
Rural	1,364	312	1,676
Total	1,741	882	2,623

Source: Report A/45/327 of the Secretary General of the Economic and Social Council to the UN General Assembly, July 1990

Despite progress made in the past, roughly one person in three in developing countries go not have a reliable supply of safe drinking water today. Still more lack access to sanitation. UN estimates, shown in Table 1, indicate that population in these countries will increase by almost 900 million in the 1990s with two thirds of this increase occurring in urban areas. In consequence, more than two billion additional people will need water facilities by the year 2000.

Added to this formidable task is the challenge of sustaining existing facilities, many of which are currently providing unreliability service.

Water investments do not only require money, they also require good engineering and planning as well as sound skills for construction and operation of the water works. In addition, water investments require time and a long term perspective.

1.1 The private option for management of urban water supply facilities

Experience shows, specially after the 1980's International Drinking Water Supply and Sanitation Decade, that operation of water supply facilities is the weakest function which should be urgently improved.

As water facilities operation starts where engineering and construction are terminated, it is too often underscore. Effective operation of water supply facilities is indispensable to achieve service performance, specially cost recovery for investment and operation. Water supply delivery must be considered as a local facility because water is a good easy to stock but difficult to move cheaply. In that respect, it is the opposite of electricity with which it is often compared.

From the early beginning, water supply facilities were, and often remain directly run under the responsibility of local governments, communities or municipalities that sometimes have set a union among them to ensure this basic need.

With respect to local conditions, it is necessary to make a difference in any country, between urban and rural water supply. Because urbanization is increasing much faster than population growth in developing countries, let us focus on urban water supply.

Operation of urban water supply facilities has become a professional responsibility that requires high skills in many diversified areas. As a matter of fact it is difficult to attract or keep such high skilled personnel as civil servant, working for either local or national governments.

This is a basic reason why contracting out to the private sector on a significant scale has to be strongly developed. But since water supply is a typical natural monopoly, the private management option must draw on a regulatory framework that defines clearly and steadily the rules of the game for the public and private counterparts.

1.2 Timing

The private management option is never an easy challenge, particularly in water supply. The process phases and procedures have to be carefully studied with national and foreign experts and decision-makers before any implementation. The political, psychological and social concerns have to be specially taken into account from the early beginning throughout the privatization process. There is an obvious relationship between all public utilities privatization. The first issue is to determine what kind of service the private sector can provide:

- Finance for investments,
- Management skills,
- Technical expertise.

Generally, other public facilities like energy, transportation, or telecommunication are also under a privatization program. Sometimes, the early first step is to contract out solid waste collection. The solutions and schedule of these parallel processes have to be taken into consideration for water supply that will never be the first public facility to adopt the private option.

Even though there are the same kind of equipments: networks and pipes, water treatment plants, and pumping stations, it is also indispensable to make a complete distinction between water supply and sewerage.

Because water is a capital intensive industry that requires long-term and cheap funding it may be difficult for the private sector to get involved in financing such huge investments. People generally want to pay for safe and sustainable water supply, often more often and more than expected. But no one wants to pay for sewerage. For example it is usual to deal with drinking water treatment plants whether to build and operate new ones, or even to upgrade and operate old ones, through a B.O.T. procedure. B.O.T. projects which are also psychologically and politically easier to explain and implement can provide a good experience in many places starting up a progressive privatization process.

The last phase should always be to privatize sewerage facilities which are much more difficult and risky for the private sector to be involved in financing and operating cheaply.

1.3 Conditions for Developing Private Management of Water Supply Facilities

1.3.1 First of all, the true commitment of political decision makers to such an approach is fundamental. This commitment, which is necessary in any privatization process, is even more indispensable for a socially and politically sensitive facility such as water supply.

1.3.2 For both psychological and practical reasons, private operations have to associate local industrial and financial partners with foreign ones. The selected private operators must have proven competence and experience, as well as technical, financial, and managerial sound expertise. National and foreign private partners must have a long term commitment in the success of the operation.

1.3.3 A sound legal, institutional and contractual framework has to cover the entire project duration. In particular it should provide for:

- Ownership of the assets facilities in the hands of public authorities,
- Management and operation of the system under the private operator's responsibility,
- Clear set-up and definition of tariffs and payment terms through contractual agreements,
- Conditions for foreign currency exchange and transfer risks,
- Appropriate mechanisms and counter-guarantees in case of default.

1.3.4 Financing institutions and, if necessary, bilateral or multilateral financial agencies specifically the IBRD, IFC, EBRD and the like have to give previously their back-up.

1.3.5 In any case whatever be the specifics, the flexibility and adaptability of the private option must be preserved. The private option for the management of water supply facilities will not only improve the technical and financial performances but it will also provide several other positive consequences on the economic and social local potential:

- Many frontier technologies will progressively be transferred,
- Taking into account the dynamism of the private entrepreneurs, new activities related to water or to the

environment will be developed, since, in developing countries as everywhere, the private sector has shown great capacity to move into new businesses, thus creating employment opportunities, most of the times high skilled ones.

CHAPTER II

EFFECTIVE WATER RESOURCES MANAGEMENT

Much has been written about water availability and use in the 21st century, both on global and regional scale. While it is clear that water requirements will continue to increase on global basis during the next several decades due to both increasing population and higher per capital demand, it has to be admitted that we cannot make realistic projections of the water situation of the future, beyond the year 2000, at our present state of knowledge, except in a somewhat general fashion.

Scarcity and misuse of fresh water pose a serious and growing threat to sustainable development. Human health, good security, industrial development are all at risk, unless water resources are managed more effectively than they have been so far.

Most of human economic and social require water. For health and life itself, water is a vital need for everyone, everywhere, everyday. That is the reason why early human settlements began and can anytime develop where surface or ground water is more or less regularly available.

Since the end of the 17th century, the natural circulation of water has been interpreted in scientific terms by the British and the French as the hydrological cycle within river basins bounded by watersheds. Through its own territory, water may restlessly change its volume of flow and its quality substantially. These features have two main consequences:

- First, the availability of water is subject to uncertainty through variations of both quantity and quality, which can be natural or man-made.

- Secondly, through these variations, the different uses of water intervene in the natural river basin regime and have direct or indirect effects--called externalities--on each other over long distances and sometimes during a long period of time specially for ground water.

Where effects are strongly local and short term, they are like other problems that have to be dealt within a community. Through their legislation and institutions which reflects their own identity communities try to come to terms with what they perceive as their water issues and feel as their responsibility. But the long distance and/or the long-term quantity or quality effects are often difficult to handle because they cross various institutional boundaries and different periods of time.

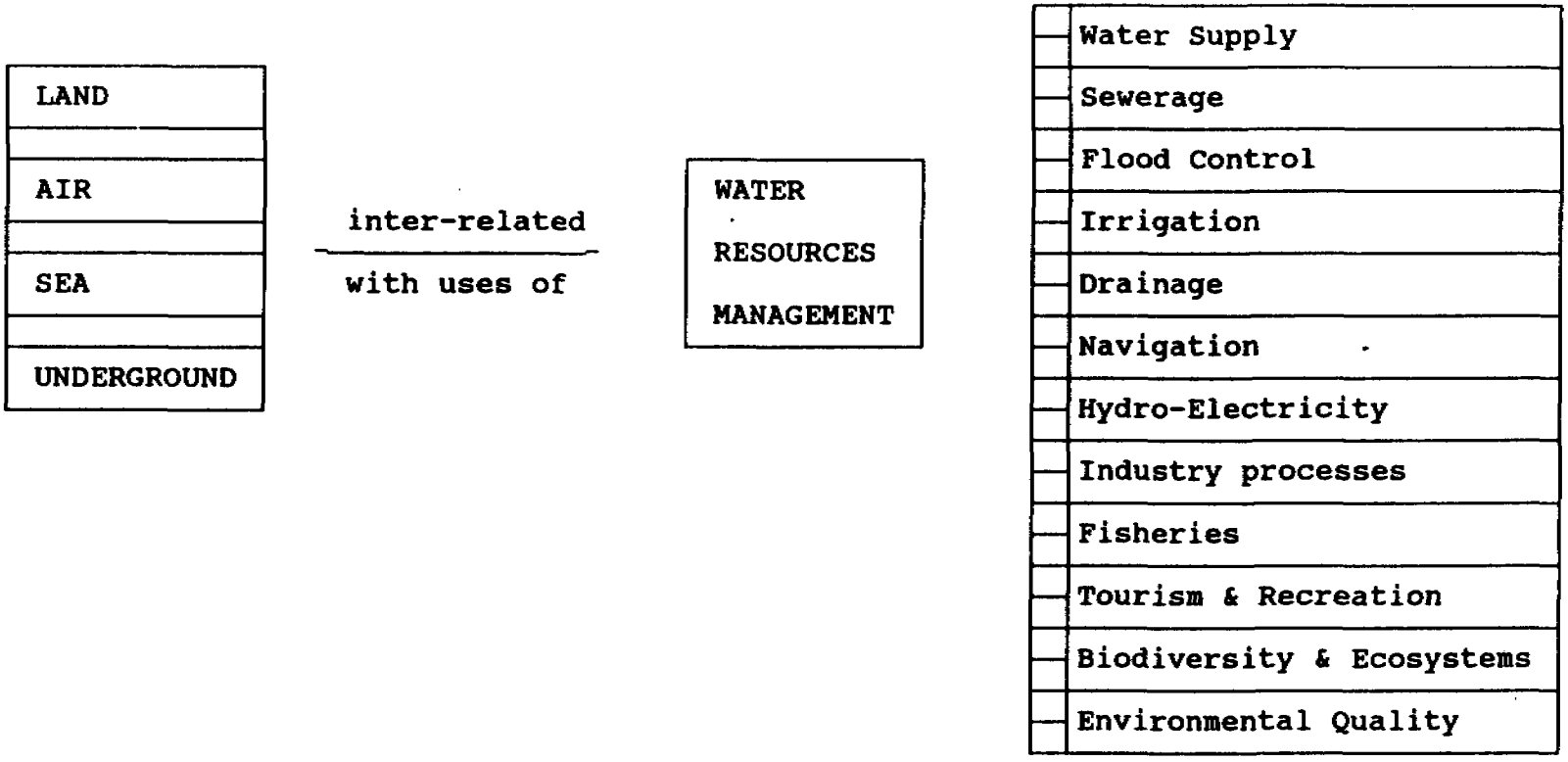


FIGURE 1: **W A T E R U S E S**

in stream and out stream

Because in the hydrological cycle water resources regimes are forever moving and varying under the influence of interrelated natural and human actions, there can be no ownership of flowing surface or ground water: water has to be managed as a genuinely common asset. Public institutions necessarily have a role in the management of water resources which cannot be avoided or abandoned, that of the custodian, organizer, and referee of limited rights for particular purposes by legislature and administrative processes, often subject still to restraints in the courts of justice. The quantity and quality management of water resources has long been and will continue to be, in all communities, a matter of public governance.

In all countries, water legislation draws an old standing traditions, local customs and rules of conduct. Water legislation is not an end in itself: it is one of the various instruments of giving effect to the water policies which it should reflect. Accordingly, legislation which is not preceded by, or does not explicitly involve, the adoption of clear policies, is unlikely to be effective. The policies may be adopted before the legislation and may even originate with another governmental body. To these two factors, namely, "policies" and "legislation," there should be added a third one: a water resources protection and development plan for each country including, if necessary, specific planning for some river basins or ground water aquifers.

Meeting all competing water users' demand that is the ultimate goal of effective water resources management (W.R.M.) is a tough economic, social and political challenge:

° W.R.M. is an economic challenge because surface and ground water resources are limited and water quality improvement acceptable for each use is more and more expansive. In terms of both quantity and quality, water has become an economic good.

° W.R.M. is also a social challenge because it is a basic human need. In developing countries particularly, social policies must take care of safe and sustainable water supply to the poor through specific tariff arrangements.

° Finally, W.R.M. is a political challenge, because it is impossible to establish prices for health quality of life or biodiversity and ecosystems protection.

W.R.M. at local, national and international levels have to be on three general principles:

- Effective W.R.M. demands a holistic approach, linking economic and social development with protection of the environment. This effective management must link land and water uses across the whole of a river basin area or groundwater aquifer.

- W.R.M. must be based on a participatory approach, involving policy makers and users at all levels. This participatory approach involves raising awareness of the importance of water resources protection and development among policy-makers as well as the general public.

- Water has an economic value in all its competing uses and must be recognized as an economic good. Failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resources. Within this principle, it is indispensable to recognize the basic right of all human beings to have access to safe water.

To be effective, W.R.M. requires the following set of institutional instruments that cannot be handled separately:

- Data collection and processing,
- Command and control,
- Economic incentives.

1. Data collection and processing

An up to date information system is vital for effective W.R.M. The current state of water quantity and water quality information is generally poor in developing countries. Even maps may not exist or be outdated.

Two basic reasons explain the current situation:

- First, information about water resources involves many public and private organizations in every country: Cooperation and even coordination among them all is always a tough challenge!
- Secondly, data collection and processing is expensive. It requires hardware and software investments in comprehensive network including a lot of equipments and computers. It also requires human resources and skills to operate the data collection and processing.

More and more often satellites systems will be used. Anyway, information is indispensable for effective W.R.M. at local, national and international levels in order to monitor the current situation and its evolution in order to make sound studies and decisions.

2. Command and Control

Command and Control (CAC) instruments are indispensable to achieve effective W.R.M.:

(a) Technical, service and performance standards and norms have to be set at national level,

(b) Individual water intakes and used water outlets must obtain a license or, for the smallest ones, have to both declare their specifics.

CAC is both an administrative and technical function that in general will be best in charge of national governments:

(a) Must remain at central level,
(b) Can be decentralized to local representatives.

3. Economic Incentives

Economic incentives are the third set of instruments that have to be implemented to achieve effective set of W.R.M. Practical experience all over the world shows that data collection and processing and C.A.C. cannot be efficient without economic incentives help. In order to develop environmentally sound behavior, specific fees for W.R.M. must be collected on water users and the funds that have been raised must be allocated to them as subsidies.

- To prevent and abate pollution, fees must be collected on pollution emission according to the "Pollution pays" principle. Subsidies may also be allocated to polluters in order to prevent or abate water pollution. These polluters maybe either industry or local governments for urban pollution. This is one more reason why local governments cannot be in charge of CAC: They are too much involved!

- To improve the water quantity issues, fees must also be collected on water intakes or water consumption and subsidies can be allocated to public or private water investment that will reduce water consumption. The rate of the fees has to be set for each water use and can be modulated in various geographical areas.

During the recent years many countries have passed legislation that provides for economic incentives, fees and subsidies as we discussed above. But in most of them, this new legislation has not yet been implemented.

The establishment of the fees on water quality and water consumption and the criteria to allocate the subsidies to water users are key political decisions, the responsibility of which must be very carefully set according to the national context.

In order to be accepted and effectively implemented institutional arrangements dealing with economic incentives in W.R.M. must involve representatives of all water users, specially local governments, industry and agriculture, ecologists, etc... Women have everywhere a specific contribution to provide in the water related activities.

4. Conclusion

Water is vital for everyone, everywhere, everyday for almost all human economic, social or cultural activities.

In that respect may be only money looks like water for human kind. Sound water resources management must implement a linkage between the hydrological cycle and the "money cycle".

To be effective W.R.M. must draw on water supply that will provide the political and the financial base which is indispensable.

To be realistic W.R.M. requires a participatory approach where the institutional arrangements involve the representatives of all water users.

The issues raised by W.R.M. are the same at any level: river basin, national, federal states and international water courses. The same set of instrumentS has to be implemented and operated in a cooperative way.

CHAPTER III

GENERAL RECOMMENDATIONS FOR ACTION

Safe and sustainable water supply, and effective water resources management are the priorities that have to be tackled with two different parallel approaches discussed in Chapters I and II.

Some very general recommendations apply to these two approaches:

1. Improvement of Water Legislation

2. Human Resources Development

3. Professional Associations Involvement

4. Conversion of official bilateral debt for the water sector.

1. Improvement of Water Legislation

In all countries water legislation has been passed on a piece meal basis to deal with certain hazards, community conflicts or specific uses through the following stages:

a) legislation oriented towards certain hazards deriving from the existence or use of water or water run-off (regulations on flood control, natural run-off of rain-water, construction of wells in urban areas,....);

b) legislation oriented towards particular uses of water (laws on the supply of potable water, irrigation, river navigation, energy, fish breeding,....);

c) legislation oriented towards multiple uses of water and conservation of water as a resource, such legislation being concerned primarily with water and the coordination of its uses and secondarily with the particular uses themselves;

d) legislation oriented towards the joint management of various natural resources, which takes into account and regulates the interdependence of water and other natural resources (soils, forest, etc...);

e) legislation oriented towards the environment and dealing with water and other natural resources;

Most countries are at stage (b) moving towards stage (c).

As far as functional or intersectoral integration is concerned, stress must be laid on the need to harmonize water legislation with the legislation in other closely related or overlapping sectors of activity and with a country's overall policy.

The wide range of branches of knowledge that are involved as regards the topics dealt with, is attributable to the very nature of water legislation and institutions and to the effectiveness of their role as instruments in the implementation of water policy. While the drafting of laws is a task for legal experts, the drafting of water laws is a task for experts with a specialized knowledge in various subjects working with the aid of specialists in related disciplines, for example, hydrologists, hydro-geologists, meteorologists, engineers, economists, administrators, sociologists and the like. This inter-disciplinary character of water legislation and institutions is widely recognized. Therefore, there is a world shortage of not only legal experts but also economists and administrators possessing the kind of education, training and experience referred to.

2. Human Resources Development

Efficiency of any institution depends on the skills, motivation and behavior of each member, beginning from the top which has responsibility over the lower ranks. To build new institutional arrangements or to improve existing institution's performance, it is indispensable to take care of human resources that will be involved, particularly for skilled jobs, as technical or managerial ones. Special attention must be paid to leaders and managers positions whose action is highly sensitive.

In water supply delivery that is close to political, social, and cultural matters, any reform must be prepared with a strong participation of the key individuals who will be personally involved in its adoption and in its implementation. Foreign experts must work in close relationship with nationals to take into account the local traditions which are deeply rooted in each country. It would be a practical and psychological mistake not to pay enough attention to these very sensitive aspects from the early beginning on to the end of any reform related to water. Further on, to ensure the success of the implementation of any reform, it is necessary to commit outstanding managers to provide the dynamic leadership which is necessary to handle difficult problems and move forward inertia's power always faced in such challenge.

Fundamental to raising productivity, innovation and modernization is the development of human resources which require investment in education and training.

3. Professional Associations Involvement

Professional associations of sector practioners have made significant contributions in the improvements of water supply and sanitation facilities in many countries. Practical collaboration in well established national associations usually includes:

- professional publications and technical conferences.
- setting of standards for equipment, testing procedures, and training;

- promoting applied research on outstanding issues;

- encouraging coordination with related professional associations both within the country and internationally, and

- lobbying the government to achieve policies, programs, and regulations to benefit the sector.

Professional associations also facilitate collaboration at the international and regional levels. For example the International Water Resources Association (IWRA) deals with all aspects of water management, whereas the International Water Supply Association (IWSA) concentrates on water supply and IAWRPC concentrates on research development.

It has also been established regional sectoral organizations like the Inter-American Association of Sanitary and Environmental Engineering (AIDIS), which organizes a major technical conference every three years. A similar association is the Union Africaine des Distributeurs d'Eau (UAD), which currently includes representation from roughly half the countries in Africa. Regional water supply associations also exist in the Asia/Pacific region and in the South-Central and West Asia regions.

International collaboration are also effective at the subregional level. For example, organizations providing services in Central America, Panama and the Dominican Republic coordinate their activities in a regional association CAPRE. The creation of such a professional association should be very up to date and effective in central Europe specially to help the reform transition process.

It is extremely useful that national and international initiatives involving professional associations, brought sector/practioners together to share their experience and ideas. Generally a huge degree of consensus emerge on the fundamental issues retarding progress in the water sector.

4. Conversion of official bilateral debt for the water sector

Many of the severely indebted lower - and middle-income countries and lower-income countries are struggling with large debt overhangs, that are major obstacles to their growth and development prospects. As many of the countries in these two latter categories owe a large proportion of their external debt to official bi-lateral creditors, mechanisms such as debt conversion, can be one very useful tool for development in a way that could boost the water sector.

4.1 The Paris Club "10 Percent Clause":

As regards severely indebted lower and middle income countries, the Paris Club agreed in September 1990 that: "creditor countries can, on a voluntary and bilateral basis, swap part of the claims for debt-equity swaps, debt-for-nature swaps and debt-for-development swaps for up to 10 percent of bilateral official or officially guaranteed non-concessional loans, and (where relevant)

for up to 100 percent of ODA loans; there is also a value limit ($10 million or $20 million, depending on the case), which can be used if it is higher than the 10 percent of non-concessional debt." In December 1991, the same clause was extended to the severely in-debt lower income countries.

Initially, debt conversion efforts focussed on commercial debt, with swaps of official bilateral debt practically non-existent; indeed, there were limitations on creditor governments selling their debts. However, the balance of emphasis is rapidly shifting towards bilateral official debt conversion, both for equity and development. Such operations potentially open debt conversions for other categories of countries (low-income and low-middle-income), for deals whose scale could be large, and which could be negotiated more easily and quickly with creditor governments.

Among the countries that had already had this clause approved by the Paris Club are: Benine, Congo, Cote d'Ivoire, Ecuador, Egypt, El Salvador, Honduras, Jamaica, Morocco, Nicaragua, Nigeria, Peru, Philippines, Poland and Senegal. A number of transactions are reportedly being considered or about to be implemented in the framework of the "10 percent clause".

4.2 The U.S. "Enterprise for the Americas" Initiative

In June 1990, President Bush proposed a U.S. Initiative for the Americas with three pillars; trade, investment, and debt reduction. As regards debt, the U.S. Initiative proposes for Latin American and Caribbean eligible countries that stocks of concessional debt be significantly reduced; interest on the remaining debt in this category can be paid not in U.S. Dollars but in local currency into an environmental fund, if an eligible country has entered into an Environmental Framework Agreement. Thus, in exchange for debt reduction this program encourages a commitment to allocate domestic resources to the environment and, why not, to the water sector.

4.3 Debt-for-Development Swaps

The resurgence of debt-equity programs has been accompanied by increased interest in other forms of conversions, which can be broadly called debt-for-development swaps as debt-for-nature swaps. Some pioneering operations in broader debt-for-development swaps have been carried out; for example, six banks, from three industrialized countries, have donated to UNICEF their outstanding debt obligations in the Sudan valued at more than $20 million. These operations allowed for funding of water projects in the Kordofan region, with positive effects both on health and the natural environment. UNICEF is currently negotiating further donations.

Commercial debt-for-development swaps can be classified, depending on whether they originate in purchases or donations. Most frequently, international charitable organizations, or developed-country government purchase commercial debt on the secondary market, which are then converted into local currency. In other cases, banks have donated debt to an international charity or

NGO, with the condition that the debt be "paid" in local currency, in a previously agreed program, for conservation or social purposes, why not for water supply and sanitation that are key issues for environment and development?

4. 4 Suggestions for Action

Official debt conversions, though not a panacea, can become an important tool both for debtor and creditor governments, for contributing to reduce debt burdens and achieving sustainable development in the debtor economies. Though debt for equity transactions have absorbed the bulk of swaps involving commercial debt, hopefully conversions involving official debt will direct a greater proportion of funding into development or/and environment programs. This can be clearly justified, as spending in water projects have rates of return. Official debt for development conversion seems well suited for funding such basic public utilities. Additional local currency resources could be accommodated relatively easily within existing programs or through replication and expansion of on-going programs. To encourage bilateral debt conversation programs on a significant scale, it is desirable to develop specific proposals to attract and accommodate additional resources.

In case of official equity conversions there are a number of technical problems to be overcome, including a need to facilitate/create market operations. International institutions like the World Bank have an important role, in studying these issues and in providing support for developing well structured market mechanisms, both in creditor and debtor countries.

The potential for official debt-equity conversion may be very large. If linked to privatization of state enterprises that are numerous in the Water Sector, it would have the advantage of being broadly non-inflationary official debt equity conversions and would be well suited for heavily indebted countries with large bilateral debts. Official debt-equity conversion could be suitable for helping fund water investments. Official debt equity conversion could also be attractive to lower and middle-income countries that have made great efforts at stabilization and structural adjustment but have not as yet been able to attract significant foreign development investment.

5. Regional Action Plans For Water

Following the general framework and principles discussed previously in chapters I, II and III, it would be very useful to study more specific Regional Action Plans for Water, on a regional basis, related to group of countries that share common issues ... and often common water resources systems.

These Regional Action Plans for Water would mainly include the basic following components:

- Institutions (W.R.M. and privatization);
- Funding of water works and cost recovery for both investments and operation and maintenance;

- Human Resources Development

- Debt Conversion

This approach is already underway in some cases, for example, the Mediterranean countries, the Baltic countries, the Danube countries, ... It could be strengthened and developed in other regions of the world:

- Africa that faces tremendous problems where water is always a key factor, should deserve a specific Action Plan for the continent as a whole;

- In Asia, several Regional Action Plans could be studied for different sub regions, river basins and groups of countries;

- In Latin American also one or several Regional Action Plans for Water would be very useful;

- Last but not least, in the C.I.S. a specific Action Plan for Water should provide a good approach to frame and precise the strategies related to W.R.M. and water uses, specially for the early implementation of modern institutional systems in quite unusual conditions.

Professional and Professional Associations could play an important role in preparing and implementing all these Regional Action Plans for Water.