



Recommendation of the Council on Water Management Policies and Instruments

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Date(s)

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THE COUNCIL,

HAVING REGARD to Article 5 b) of the Convention on the Organisation for Economic Co-operation and Development of 14 December 1960;

HAVING REGARD to the Recommendations of the Council of 14 November 1974 on Strategies for Specific Water Pollutants Control [C(74)221] and on Principles concerning Transfrontier Pollution [C(74)224];

HAVING REGARD to the Recommendation of the Council of 26 May 1972 on Guiding Principles concerning International Economic Aspects of Environmental Policies [C(72)128];

HAVING REGARD to the principles of the Stockholm Declaration on Human Environment, and notably principles 21 and 22;

CONSIDERING that:

- In Member countries, the total expenditure allocated for water management is considerable in absolute terms and can be of the order of 1 per cent of GNP;
- Regional and national development schemes are often limited by water resources availability;
- Planning is an essential tool of water management and must be harmonized with plans and developments in other sectors;
- In Member countries, waste water treatment facilities are a major step in water pollution control, requiring a high capital investment and significant operating cost, and yet many of these facilities frequently operate much below design efficiency;
- The main objectives of water management are: to protect water resources against pollution and excessive use; to preserve the water environment and ecology; to safeguard and improve the hydrological cycle in general; and to provide adequate water supply, in quality and quantity, for domestic, industrial and agricultural purposes, account being taken of long-term demands.

RECOMMENDS that,

Member countries in their national and, where possible, their international water management policies take into account the following principles:

1. Water resources, both surface (lakes, rivers, estuaries and coastal waters) and underground, should be managed on the basis of long-term water management plans, so as to follow an integrated approach regarding all relevant aspects of water quantity and quality, abstraction and discharge, supply and protection.
2. Authorities should promote the rational and equitable allocation of water resources among all users by applying appropriate regulatory and economic instruments including licensing systems, and taking into account a hierarchy of real requirements in terms of quality and quantity as well as any potential effects on the environment.
3. Highest priority should be given to reserving and protecting high quality waters for potable use where there is either present or potential demand for this purpose. There is a basic need to try to preserve an acceptable level of aquatic life.
4. River basin oriented management should be encouraged as providing an effective solution to water problems beyond the scope of local management, and where advisable this should be considered in an international framework. Adequate co-ordination of the regional approach is required at a state and national level within the framework of a national water management policy.
5. An appropriate combination of regulatory and economic instruments (for example standards and charges) should be applied so as to provide continuing incentive for water users to control both

pollution and wastage of water resources. Charges for water abstraction and waste water discharge should thus be set at a sufficient level to have a significant incentive effect, and their proceeds should be allocated to water resources development and pollution control.

6. Pollution control measures should be applied as close to the source as possible. Particularly strict regulatory, economic and technical controls should be enforced for certain categories of hazardous pollutants, on the basis of their ecologically significant characteristics, especially toxicity, persistence and bio-accumulation, with a view to preventing their dispersion into the environment.

7. Authorities should ensure that the water pollution control measures they implement do not lead to uncontrolled pollution transfers to other water resources or to soil or air systems.

8. Assessment of water and effluent quality should not be limited to a few classical measurements such as BOD, COD and suspended solids, but should also include the relevant physical, chemical, biological and toxicity parameters. Effluent components should be expressed not only in terms of concentrations, but also in terms of total amounts of pollutants discharged. Monitoring is an essential tool of pollution control and should be developed adequately.

9. All the required financial, managerial and technical measurements to ensure that waste water treatment plants are always operated in an efficient manner, should be urgently adopted.

10. Authorities should facilitate public information and participation to promote more informed decision-making and to enlist public support for proposed activities.

APPENDIX

EXPLANATORY NOTES TO THE RECOMMENDATION ON WATER MANAGEMENT POLICIES AND INSTRUMENTS

1. Underground and surface waters constitute a closely inter-related hydrologic system which should be managed as a single entity in order to prevent uncontrolled pollution and depletion of these resources. In particular, all quantitative and qualitative aspects and activities of abstraction and discharge are so interdependent that they should be managed in an integrated manner and should not be dissociated; thus they should whenever possible be under the same authority and fully co-ordinated. In certain countries, traditional practices and structures such as water rights and similar privileges have built up attitudes and customs which are generally incompatible with a modern and rational water policy, and should be progressively amended.

2. When demand on resources is high, an order of priority should be established, and especially a hierarchy of the different quality requirements. Such a rational allocation of water entails good knowledge of the qualitative and quantitative requirements of the various uses as well as the environmental role of the resource. Existing water allocation procedures still frequently lack a competent rational basis. Pre-existing settlements and different forms of water rights commonly confer to certain users the right or possibility to abstract and use at will the water resources, at the expense of the other users. Furthermore, high quality waters, such as underground waters, are frequently abstracted in large quantities for purposes which do not require this quality, whilst very demanding requirements, such as potable water, increasingly have to utilise low quality raw waters. Such an irrational use of limited water resources is clearly unacceptable. The solution of these problems is mainly a legal one and many countries are adopting compulsory licensing systems under the control of water authorities.

3. In large urban and industrial areas, polluted waters are increasingly being used for potable water supply purposes; water treatment is then becoming more and more costly, whilst final quality after treatment is frequently unsatisfactory from the taste, odour and health viewpoints. These problems are generally due to large numbers of trace pollutants which pass in solution or fine particulate form through treatment plants, and cannot be removed, or are formed during the treatment itself (halogenated organics formed during chlorination). Under present technological and financial conditions of operation of the treatment plants, the situation is not likely to be substantially improved unless special efforts are made to greatly enhance the quality of the raw waters themselves. As recovery of polluted resources in many cases is likely to take considerable time, particular attention should be given to a reallocation of waters on a regional basis, reserving only the best quality for drinking purposes.

In recent decades, many OECD countries have seen a considerable deterioration in the quality of their water resources and natural environment. At the same time natural waters, including estuaries and coastal waters, have been in increasing demand for recreation and amenity purposes such as bathing, fishing, boating, etc., which represent the most popular outdoor activities in OECD countries. It is important to maintain adequate and varied fish populations in surface waters for their value as a natural resource and their significance in the ecological equilibrium. Further, satisfactory fishlife indicates, and can be used as a monitor for the quality of the aquatic environment.

4. An operational structure, organised on a hydrological river basin system is particularly favourable for water management, because the resource being managed has rationally defined hydrological boundaries; water supply and demand can be more realistically balanced, and pollution controlled more effectively. Such systems have already been adopted successfully in an increasing number of Member countries. The national water management structure should consist of a limited number of sizeable regions which should be large enough to justify the employment of the multi-disciplinary skills necessary for effective modern management. However, certain Member countries, either for geographical, historical or administrative reasons, may find it difficult to change radically to such a system and may develop flexible systems which adapt the pre-existing administrative framework to an overall river basin concept.

In order to co-ordinate the regional basin management authorities and to harmonize their policies, there should be a co-ordinating body responsible for water policy at a state and national level.

Further, in order to balance water policies within the framework of other national priorities and to resolve potential conflicts, this body should be in close liaison with the various Ministries which may have common interests in water matters. This body would also play an effective role in the harmonization of water management policies at an international level. As already practised in various Member countries, the tasks of this body may lie with the Minister in charge of the environment, or the Minister for the Environment if such a ministry exists.

5. There is a permanent conflict between the competing requirements of the various water users, and also between the maximum exploitation of the resource and its conservation for its environmental functions. In general, it is not very likely that on its own a single instrument will solve satisfactorily the complex management problems particularly in densely populated and industrial river basins. A judicious choice of complementary instruments, both regulatory and economic, will generally permit more efficient management by responsible authorities at a minimum cost for society. These instruments should normally be applied simultaneously in order to provide mutual backing. In certain cases, a progressive approach for both economic and regulatory instruments may be appropriate in order to reach the desirable level of control without economic disturbance.

Regulatory and economic instruments should be adapted to have a continuing incentive for more rational utilisation of the resource, by saving on consumption and decreasing pollution; this is a fundamental element of dynamic water management. Such a policy is also likely to constitute a constant stimulus to progress in water technology and research. In principle, instruments based on a flat rate or "lump sum" arrangement should be avoided, for in practice they are an inducement for uncontrolled abstraction and pollution. Effluent standards should be set for discharges from municipal treatment plants and from different industrial sectors. Charges, if fixed at a sufficiently high rate, have a good incentive effect, and can be used as a helpful complement to regulations by reinforcing their efficiency and providing greater flexibility. Charges moreover generate an essential income which may provide water management authorities with useful financial capability to support, for the benefit of the community, pollution control and water resource development projects which are considered most appropriate and urgent.

6. Prevention of pollution at source is by far the most effective and safest means of control. This can be carried out, in relation to each case considered, by different strategies, e.g. by banning of undesirable processes and products and by replacement with less polluting ones; by the use of closed systems including recycling; by the early segregation of industrial effluents with application of specific treatment, etc. Furthermore, early prevention and control procedures can considerably diminish the risk of accidental spills. In effect, the later the stage of control the less effective it is likely to be due to wider dispersion of the contaminants. Experience shows that diffusion of pollutants with dilution and mixing makes their removal in general more costly and uncertain and increases the risk of synergistic effects.

Particularly strict measures of control should be enforced for certain categories of hazardous pollutants with a view to preventing their dispersion into the environment. This applies especially to toxic substances which are very persistent in the environment and/or subject to bioaccumulation in living organisms and concentration through the food chain. Examples include heavy metals (cadmium, mercury, lead, etc.) and their organic compounds; halogenated organic compounds (organochlorines in general, PCBs, DDT); radioactive substances, etc. The strict control of these substances must, in general, take place at their initial stages of occurrence: i.e. their production, importation, sale and use, as control in later stages proves to be practically impossible. Possibilities range from complete banning to restriction to limited uses. Finally, controlled regeneration or disposal such as is often carried out in specialised centres for treatment of toxic wastes should be ensured.

7. Experience shows that the polluter will, in general, attempt to discharge waste where the operation is least costly and the controls less stringent (e.g. direct discharge of effluents through ground waters; incineration with generation of air pollution, etc.). In order to combat uncontrolled discharge and undesirable transfers of pollution, authorities responsible for environmental protection should ensure that economic and regulatory instruments and controls, both for the different types of water resources and for other media (air, soil), are comprehensive and correctly balanced.

8. Water quality parameters have hitherto mainly been limited to measurements of oxidisable matter (BOD, COD) and suspended solids. These measurements, although very useful in the past, are

now recognised as being insufficiently specific to monitor the increasing quantity and variety of pollutants, e.g. toxic and persistent pollutants (including radioactive substances); thermal pollution and microbiological (including viral) pollution. Where this is not already done, these additional pollution parameters should be regularly taken into account in evaluating water quality and effluent discharges, and should be incorporated into the framework of the regulatory and economic instruments. Often the technical capability for measuring and monitoring these additional elements of pollution will have to be considerably improved. The relative importance of these different parameters may also vary in relation to the functions of the receiving waters (drinking water, fishing and recreation, etc.). Strict monitoring of progress towards water policy objectives should be regularly carried out.

In certain countries, parameters for effluent discharge are still specified only in terms of concentrations (e.g. grams of pollutants per litre or cubic metre of effluent). This is useful in preventing a "Shock effect" in rivers where discharges might otherwise exceed toxicity limits. Nevertheless, this is clearly insufficient and encourages easy circumvention of pollution control regulations by diluting the effluent. It is thus fundamental that each parameter be expressed also in terms of (daily or monthly) "total discharge" and that total flows of effluents be indicated. Further, for industrial effluents, the total discharge should not only be expressed as a function of time but also as a function of industrial production. This latter means of expressing the amount of pollution can rather easily be checked in relation to the technology used and also indicates the degree of sophistication of treatment being applied by industry.

9. For a number of reasons waste water treatment plants are frequently operated much below design standards. Common problems include inadequate operating funds, mismanagement, and poorly trained personnel. These treatment plants, which are a fundamental tool of pollution control, require high capital investment. Consequently, poor operation means both very unsatisfactory pollution abatement and the wastage of an important investment. Fundamental guidelines which could help reduce the problems include:

- Recognition that regular and continuous financing is absolutely necessary to ensure proper operation throughout the life of the plant. The necessary provisions should be formally planned at the initial investment stage and guaranteed by a strict financing scheme. For instance, an appropriate charge levied at municipal level from all users proportionally to abstraction and discharge, might guarantee, where necessary, this regular and sufficient financing.
- Adequate management of treatment plants requires operators with suitable technical qualification. So far this has not always been the case. The skill of operators should be improved by the organisation of regular training programmes leading to professional certification; this certification should become compulsory for all operators. Moreover, it would be desirable that the operation and inspection of treatment plants become progressively the responsibility of a specially trained corps of inspectors and operators. As a first step to this permanent arrangement, inspections should be carried out at all plants at frequent intervals.
- A frequent cause of deficiency in municipal plants is their overloading and the poisoning of the biological treatment of domestic sewage by toxic effluents from industrial plants. Industrial sewers likely to contain regularly or accidentally such toxic pollutants capable of affecting treatment should not be directly connected to municipal treatment plants unless they receive rigorous pretreatment.

10. Action needs to be taken to familiarise the public and water users with water management problems. This action ranges from straightforward campaigns for public information to open discussion forums in which the public can actively participate. The categories of people concerned with water problems are the decision-makers, and expert advisers (e.g. hydrologists, engineers, chemists, economists) who constitute "management", and the water "users" comprising the general public, industrial and agricultural consumers. There is a need within water management organisations for some formalised machinery for the exchange of views between all categories.

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