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Water Framework Directive

Determination of cost recovery

Introduction

This position paper is one of Eureau's contributions to the European Commission's Common Implementation Strategy of the Water Framework Directive. Eureau supports the Commission's objective of furthering a consistent implementation of the Water Framework Directive across Europe. As Eureau is the representative organisation for Europe's water and wastewater industry which serves about 400 million people, its members' customers will be making a major financial contribution to the implementation of the WFD.

Eureau, accordingly, takes a special interest in the analyses required by the WFD for each River Basin to assess cost recovery by water services. Another topic of great interest relates to the contribution that each of the other water uses makes to the cost recovery of water services. Both assessments must be included in the economic analysis of water uses which is to be completed by end of 2004 for each river basin and will be further developed as part of the work to prepare River Basin Management Plans in later years. This position paper has been developed by Eureau to help implement the principle of cost recovery used in the WFD.

Eureau is basing its work on the guidance produced by the Wateco working group, which was set up by the EU Water Directors in furtherance of its Common Implementation Strategy. This paper clarifies certain definitions and then outlines the analytical steps which must be followed to produce an estimate of:

- the water service costs which should be recovered from water service users
- the extent to which water users should contribute to the cost recovery of water service operators' costs (see definition below).

Definitions

An assessment of the recovery of water service costs requires that the boundaries separating water services from other water uses are well defined. Eureau has already published a position paper which distinguishes water services and other water uses, in agreement with the work carried out in the Wateco Group.

Water services are provided by water service operators to water service users – often referred to as water consumers or customers. A water service operator usually is an entity distinct from a water service user unless it provides services to itself (through self-service).

An assessment of the recovery of water service costs depends crucially on the distinction between water service users and other water users, even if it is accepted that a water service is a special case of water use. In this paper, the term ‘other water users’ is used to describe entities which enjoy a water use which is not a water service.

The recovery of water service costs is different from the recovery of water service operators’ costs. The costs incurred by water service operators in the provision of water services may not all be caused by water service users; some of the water service operators’ costs may be due to the action of other water users. These other water users include not only current other water users but also past ones – as well past water service users – which have left a legacy of pollution. For instance, there may be polluted groundwater under ancient industrial cities even if they are not now active industrial centres.

The costs of providing water services are those that a water service operator would incur if it was operating sustainably in a water environment which was of ‘good status’, as defined in the WFD. This concept is further explained in Annex 3. The existing costs of providing water services – as distinct from the hypothetical ones incurred in a ‘good status’ environment – include the costs of dealing with a water environment which is polluted by other water users. The costs of cleaning that pollution are not part of water service costs and should not be borne by water service users.

The application of the polluter pays principle requires that the polluter pays for the environmental and/or resource costs it causes. We do not discuss these costs further here but we recognize their importance (Annex 4). The principle that the polluter pays promotes the sustainable use of water as the polluter receives an adequate incentive to reduce or to avoid pollution – balancing the cost of preventing pollution with that of mitigating its impact. The polluter pays principle relies on incentive-based water pricing and on correct economic cost allocation.

As explained above, this paper distinguishes water service operators’ costs from water service costs. Because the water sector is structured in different ways in different countries, this paper assumes that water operators’ costs – financial and economic – include all the costs of managing the water environment for the purpose of providing water services, including managing and augmenting raw water resources at one end of the water supply chain, to releasing treated effluents back into the environment at the other end.

This position paper, like the WFD, explicitly recognizes that there are non-financial costs associated with water services and other water uses. However, for the sake of simplicity, it generally assumes that the market price of other goods and services (energy, for instance) reflects the true opportunity costs of those goods and services.

Assessment of the economic cost of water services

The process of assessing the costs of water services and distinguishing them from those of water service operators – to implement the Water Framework Directive – consists of two main analytical stages (see Annexes 1 and 2 for details).

First, the economic cost of water service operators must be assessed. The financial costs of water service operators are a useful starting point for assessing economic costs because financial

information may be available. It must be complete and, generally, consistent with the International Financial Reporting Standards (IFRS, Annex 1). However, financial costs are likely to need a number of adjustments before economic costs can be identified: typically, adjustments for transfers and taxes but also adjustment for the environmental and resource costs caused by water service operators' activities. In Figure 1, Box A has to be added to operators' financial costs and Box D has to be subtracted. [The calculation of the value of Box D, to adjust both costs and revenues received from customers, is a complex matter which is not discussed further here.]

In a second stage, and given an assessment of the economic cost of water service operators, the economic costs of water services need to be assessed. These are the costs which would be recovered from water service users if the WFD economic principles applied to the pricing of water services (cost recovery, polluter pays principle and incentive pricing).

The difference between the costs of water services and those of water service operators is shown in Box C. These costs are caused by other water users (other than water service users) or are due to the polluting activities carried out by previous generations of water users (for example, past industries or past water service users). Box C reflects the costs which water service operators incur because they operate within a polluted environment or an environment from which raw water resources are currently depleted by other water users. Specifically, these operators' costs arise for three main reasons:

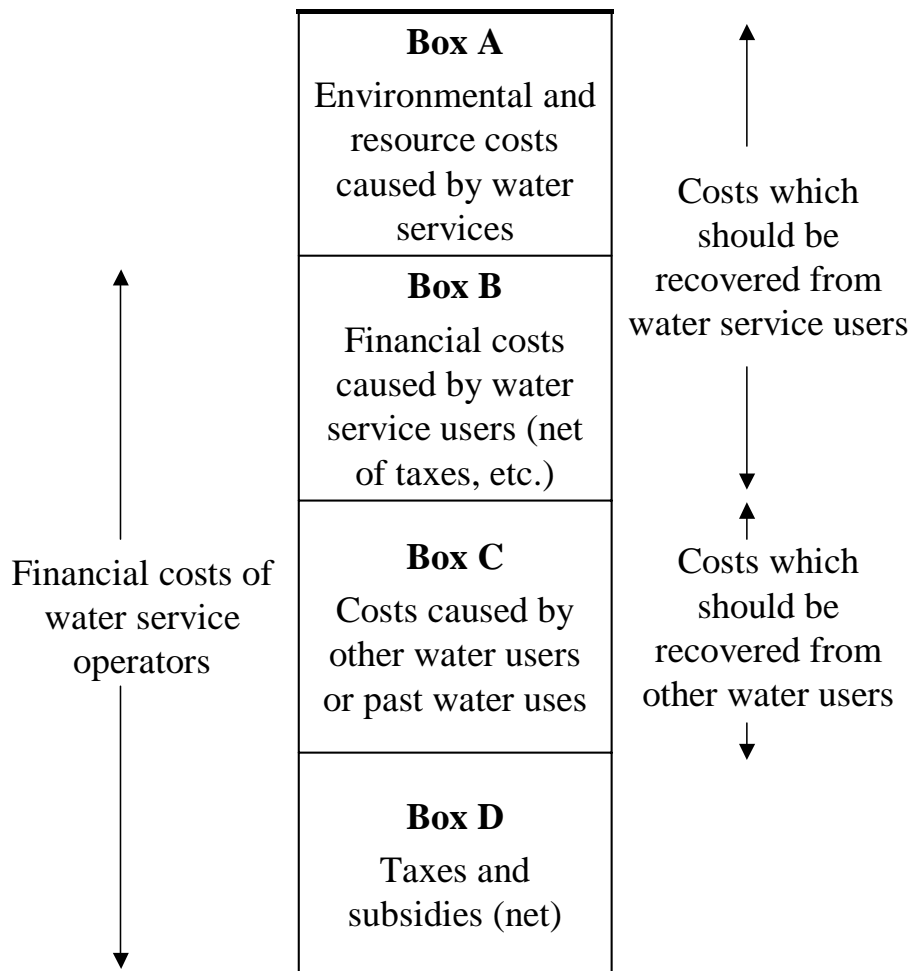
- Sources of raw water used for drinking water are of less than good status
- Sources of raw water are insufficient, not because of environmental reasons, but because they are overused by other water users
- The standards applicable to waste water released in the environment are higher than they would need to be if it was not necessary to compensate for environmental pollution caused by other water users.

In the first two cases, the water service operator may need to obtain water from distant sources; water service costs should not include the additional cost of transportation compared to the transportation costs which would be incurred if local raw water were of 'good status' in quality and quantity terms. In the first case, the water service operator may also incur additional water treatment costs.

The costs of operating within a polluted environment should not be recovered from water service users but from the polluters who caused them. As some of the pollution affecting water service operators is due to previous generations or activities which do not take place anymore, nobody can be easily made responsible for it now. In such cases, these costs should still not be recovered from current water service customers. The methods by which the costs identified in Box C are recovered is a matter for competent authorities in Government and is not discussed further here.

When the costs identified in Box C are subtracted from the economic costs of water service operators the remaining cost (Boxes A and B) is an estimate of the cost of water services. The cost of water services calculated in that way eliminates the impact of other water users on water service costs; there is therefore no reason for other water users to contribute to water service costs assessed in this way.

Figure 1 – Schematic representation of the principles used to assess cost recovery



Note: Diagram not to scale!

The distinction between the different types of costs shown on Figure 1 is important as it reflects the concepts used in the WFD. It requires that environment and resource costs should be considered as well as financial costs and revenues.

The essential point is that financial costs on the one hand, and environment and resource costs on the other, are not necessarily additive. Up to a point, they overlap, meaning that the financial and economic cost of water service operators may include environment and resource costs caused by water users other than water service users

Assessment of the revenues from water services

The revenues from water services consist of the financial payments made by water service users to water service operators in return for the water services which they receive. As the definition of water service operators for this paper is quite broad, revenues from water services include the payments made directly to the organisation providing water services, and also indirect payments to other entities responsible for managing other parts of the water supply chain. Often, it so happens, the organisation which provides water services collects payments on behalf of various other bodies charged with water management.

As long as the payments made by water service users (water customers) are used to finance the provision of water services, including the maintenance and augmentation of raw water resources, these payments are water service revenues. If these payments are used for other purposes they are a form of tax; as they are payments from water service users, they could still be included as water service revenues for the purpose of assessing cost recovery.

A comparison of water service revenues with the economic costs of water services will indicate the extent of cost recovery from water service users.

Conclusion

The WFD cost recovery analysis is a step towards a sustainable water management regime which includes the use of economic principles such as incentive and cost-reflective pricing deriving from cost recovery assessments. This approach may have a profound effect on water service users, namely the water customers of Europe, and could lead in some cases to a significant increase in the price of water services.

It is therefore important to recognize that water service operators' costs include costs which should not be borne by their customers but by other water users. A transfer to other water users of the costs which they cause – and to other bodies of the costs due to past activities – and which are currently borne by water service users should help mitigate some of the price increases for water customers which the WFD is likely to introduce once River Basin Management Plans are developed and implemented.

Annex 1 : Definition and estimation of financial costs –key issues

Annex 2 : Analytical steps to calculate the economic costs of water services

Annex 3 : Distinction between water service costs and water services operation costs

Annex 4 : Environmental and resource costs

Annex 1

Definition and estimation of financial costs - Key issues

The cost of water service operators should be assessed by reference to the International Financial Reporting Standards (IFRS). Financial costs can be divided in at least three broad groups:

Operation costs are the costs of operating water services; they include labour and material input costs (water, energy, materials), and services such as insurance and professional advice. It is important to distinguish between operating costs, which relate to current activities, and the capital costs of new investments, which will benefit future activities.

Maintenance costs are the costs of maintaining existing (or new) assets in good functioning order to the end of their useful life. As many water- and wastewater-related assets are long-lived and buried in the ground, it is difficult to estimate the appropriate level of maintenance costs which is necessary for using assets without leading to their deterioration. This is a key issue since some water operators might be tempted to save on maintenance to reduce prices, at the expense of long-term sustainability.

Note: For both operation and maintenance costs, the Communication on Pricing encourages “the adoption of common definitions of key cost variables (which) would facilitate the comparison between costs and prices and benchmarking for different water services, uses and countries” (Com (2000) 477 final). Benchmarking of costs must be considered with caution: it might be difficult to account for differences in operating environments and drawing inferences for estimating costs might be misleading.

Capital costs are the costs of financing investment in capital assets. Capital costs should be recovered by allowing for depreciation and a return on the capital base: this permits the smoothing of the recovery of capital costs instead of linking it to the disbursement profile, which might be more peaky. To estimate capital costs, it will be necessary to define: the value of existing assets, the rate at which new assets are added to the total, the depreciation method, and the rate of return on investment.

It is not enough to collect money for financing the investments needed this year or next year. Future investments have to be taken into account through pricing over a long period, for example in 5 – 10 years (or 25 years). It is important to finance investment by raising revenue from customers according to a defined financing plan. This ensures that the costs of investments can be recovered through pricing over the long term.

Annex 2

Analytical steps to calculate the economic costs of water services

Phase 1 – Financial costs should be complete; some costs may need to be added to the accounts of a water service operator to take full account of, for instance, administration activities carried out by other bodies (water charge collection by local authorities), depreciation, amortisation, return on capital invested, etc. Financial costs should reflect the IFRS and be broadly comparable in their structure from one country to another (see ‘Estimating Costs’ Information Sheet in Annex 4 of the Wateco guidance and Annex 1 of this paper).

Phase 2 – The economic costs of water service operators should be assessed by adjusting financial costs to eliminate the impact of transfers. These generally take the form of taxes and subsidies. It is important to consider the required adjustments carefully (but those included in Box D of Figure 1 are not discussed further here). The treatment of monies raised from water service users should be consistent between the cost and the revenue side of a cost recovery assessment. Specifically, and for example:

- Subsidies received from general taxation (for investment, for instance) need to be added to financial costs to obtain an estimate of economic costs, but they should not be added to revenue from water service users.
- Subsidies received from regional bodies (unless they are themselves water service operators by the definition on page 2) and who are financed, directly or indirectly, by water service users, should also be added to the financial costs. This adjustment also requires that the water service users’ contribution to these bodies is recognised as a revenue for the purpose of assessing cost recovery.

Similarly, there is a need for consistency in the treatment of taxes paid the water service operators which go outside the water cycle (to government, for instance). However, this paper is not discussing this matter further, which is complex. Possible adjustments for taxes could include the following ones:

- When taxes are a proxy for the environment and resources (E&R) costs caused by the activities of the water service operators, they should stay as part of the economic cost of the operations. If E&R costs are reflected in this way in the financial costs of water service operators, they should not also be added to the operators’ costs later in the process (no double-counting of E&R costs). The E&R costs not reflected in the financial costs of the water service operator are the only ones which should be added to financial costs so as to assess economic costs.
- Specific taxes on water service operations (an abstraction tax, for instance) which are not related to E&R costs and are not returned to benefit the local water cycle should be subtracted from the financial costs of a water service operator to arrive at the economic cost of water service operations.

Phase 3 – The costs identified in Phase 2 should be analysed between those which relate to the provision of water services and those which reflect environmental impacts caused by other water users. Other water users may increase the financial and economic costs of water service operations. For instance, the cost of removing nitrate from drinking water is financial costs

borne by water service providers which reflect – or is related to - the environmental costs of water pollution by nitrate. This pollution is caused by other water users, not water service users.

The assessment of the costs due to other water users should be carried out by reference to a baseline for water quality and quantity. This baseline should be that water bodies are ‘of good status’. Costs incurred in the provision of water services to correct for water not being of that status should be deducted from the costs included in an assessment of cost recovery. These costs should be borne by those who have caused them or, perhaps and as an example, paid through general taxation if they result from activities which took place in the past.

Phase 4 - The results of the work in Phase 3 needs to be combined with other work on E&R costs. The E&R costs which are caused by the provision of water services and which have not been internalised in the water service operators’ financial costs should be added to produce a correct estimate of economic cost. This will identify the costs which need to be compared to revenue to determine the extent to which cost recovery is taking place for water services.

Phase 5 – The economic costs of water services identified in Phase 4 must be compared to the payments made by water service users. These include the payments made directly to water service operators and those made to other bodies which recycle the funding received from customers within the water sector.

Phase 6 – The data collected in the previous phases could also be used to assess the extent to which water users other than water service users contribute to the cost recovery of water service operators’ costs.

Annex 3

Distinction between water service costs and water service operations costs

This Annex expands the description of work in Phase 3, after the water service operators' financial accounts have been modified partly to replace financial measures of cost and revenue by economic ones.

The determination of cost recovery for Phase 3, essentially, requires that robust methods are used to identify the economic costs and revenues which are related to water services and those which are related to other water uses. For instance, the cost of removing nitrate from drinking water is a financial cost borne by water service operators which are, at least in part, related to agricultural water uses and not water services.

The economic costs identified at the end of Phase 2 do not necessarily correspond to the cost of water services which, according to the WFD, need to be recovered through charges paid by water service users. In keeping with the principle that the polluter should pay, the definition of cost recovery of water services is that water service users pay for the costs which they cause, whether these costs are financial, environmental or related to resource scarcity. The Water Framework Directive says – with the polluter pay principle – that costs incurred by water service operators which are caused by polluting activities due to others should not be recovered from charges paid by water service users.

In other words, if the bill to water customers were based on the principle of cost recovery, it would not include items that do not concern the provision of water services.

Eureau does not advocate that cost recovery should be assessed at the level of each individual water service user or for each entity involved in water use. Cost recovery should be assessed for class of users and water service users. The Water Framework Directive identifies three classes in Article 9 as households, industry and agriculture. Other classes might be usefully considered, for instance, the geographical class of water service users in one catchment area. This paper considers the broad classes of water service users – often referred to as water customers - and of water users.

Pollution, including diffuse pollution, causes costs because water has to be treated before being supplied to customers. These costs have to be estimated and should be recovered from those who cause diffuse pollution – this is the polluter pays principle. Another example of costs which may not have to be paid by water customers concerns instances when fluoride is added to drinking water and is paid for by health authorities. When fluoride has to be removed before waste water is released in the environment, this treatment cost needs to be identified and charged to health authorities in the same way as the cost of putting fluoride is paid by health authorities. A third example is the case when the effluents of waste water treatment works have to be cleaner than is required by the WFD requirements because the environment is polluted by other, uncontrolled, causes and the waste water treatment works are used to redress an environmental balance.

The current practice is that costs caused by water source pollution are likely to be included in water bills. Before this situation is rectified, if it is considered desirable, the WFD requires that

an assessment of cost recovery is undertaken whereby it is required that various impacts on costs are identified and attributed, where necessary, to different causes of pollution and, hence, to polluters.

In general terms, the first question is to identify the costs caused by water service users and those caused by other water users (such as bodies responsible for diffuse pollution). This distinction should be made by reference to the concept of causality. For this, we also need to define a **baseline** for the condition of the environment from which water operators draw water and discharge sewage.

The concept of baseline is crucial. It is clear that if water was naturally, everywhere, of drinking quality, there would be less need to transport it over long distances because it could be abstracted where it is needed. And it would not need to be treated, in those countries where it is treated. The consequence would also be that all discharges of sewers to the environment would themselves be of drinking water standard. Clearly, a baseline which would assume that the water in the environment is everywhere of drinking standard is not realistic.

An environmental baseline separates the cost which water services cause from those which have to be incurred because the environment is not as good as the baseline. These costs should not be attributed to water services but to other water uses. The baseline defined by the WFD and which should be used for assessing cost recovery is that of 'good status'.

Annex 4

Environmental and Resource Costs

Note: This Annex has been written independently, and in advance, of the work of the 'Integrated River Basin Management' Working Group in the Common Implementation Strategy, which has the remit of developing the concepts of environmental and resource costs further. It is included here because Eureau recognizes the importance of these concepts for the water sector.

Environmental costs are:

- cost of the waste and harm caused by water use on the ecosystems and environment, for example degradation of productive soils
- cost of damage or harm caused by water use to protected areas and sites
- costs of treatments needed to restore the resource.

Environmental costs are non-priced costs like environmental damages that are often difficult to value. Environmental costs represent the loss of welfare resulting from environmental damage, such as loss of production or consumption, or the loss of “non-use “ values, which are harder to quantify, such as the value derived from recreation activities.

The pollution costs should be paid for by the polluter, but in some cases other's pollution costs are included as part of the cost of water service. This refers to the costs originated by pollution caused by agriculture or traffic, diffuse or specific. Then the costs caused by water treatment and cleaning for consumers belong mainly to operational costs.

For sewerage and waste water treatment the recovery of environmental (and also resource costs) is a different story, as these services mainly generate environmental benefits instead of costs. In fact, sewerage and wastewater treatment can be regarded as environmental mitigation measures to prevent pollution of the surface water; if the direct costs of these water services are fully recorded, polluters pay for the prevention of environmental damage.

How to calculate and value environmental costs

For an estimation of environmental costs, first the effects of the water service on the environment should be distinguished. Then the costs of mitigation and preventive measures taken to compensate and prevent the harmful effects should be calculated. If possible, a valuation of environmental damage should be included as well.

When the external costs of environmental damage are compensated by mitigation measures these investments indirectly reflect a valuation of environmental costs. By investing in mitigation measures the environmental damage is (partly) compensated.

In cases where no mitigation or compensation of damages has been undertaken, the costs of possible preventive and/or mitigation measures can be used to value the environmental costs.

As an example (mentioned in the Wateco documents): the environmental costs of drainage could be estimated by looking at the costs incurred to restore the environmental damage from dehydration. Although, in this way, the environmental damage itself has not been valued, the costs of mitigation and/or preventive action does provide information to help account for the polluter pays principle.

Resource costs

The resource costs are related to resource scarcity. They reflect the value that could have been generated if the resource had been used in an alternative (higher value) use. The resource costs are

- cost of resource depletion leading to the disappearance of certain options for other users.
- costs generated by new users due to resources being exhausted owing to usage far superior to their natural process of renewal or recovery (for example, the overexploitation of ground waters).

Opportunity or resource costs are related to the scarcity of resources, in the sense that they embody the value that could have been generated if the resource had been used in an alternative way. There may be cases when there are no resource costs at all if the groundwater resource is not exceeded by the long term annual average rate of abstraction.

How to calculate and value the resource costs

According to Wateco, the opportunity costs of resources will already be included in the financial costs, if markets function well. Water markets are often distorted due to historical allocations and so resource costs would not always be included in the financial costs. It means that financial prices are not equal to economic prices.

An example of this given by Wateco is irrigation. With irrigation, the distribution of water is often not based on the demand and supply mechanism, but on the basis of historical rights. The price of the water services thus does not reflect the opportunity costs of the resource, making it necessary to value the opportunity costs separately.

This can be done by looking at the value the resource could have generated when used in an alternative way, for example by looking at the alternative value of water use in another sector. For example, if the added value of water use in industry is higher than the added value generated in agriculture, the opportunity costs of using water for agriculture could be derived by looking at the difference in added value between the two sectors.

By comparing costs, polluters and the possible contributions polluters make to prevent and compensate for the environmental damage done, the cost recovery of environmental and resource costs becomes explicit. Possible means for polluters to contribute compensation could be through taxes or charges. Thus, pollution charges, taxes and other compensatory income streams should be included in the analysis.