

Glossary

■ Active population

The part of the population comprising the working labour force (also called the employed population) and unemployed persons.

■ Affordability

Cost of water and sanitation services (drinking water, wastewater treatment) relative to the disposable income. This criterion must be taken into account, for example, when setting up water-pricing policies.

■ Aggregation bias

A type of bias resulting when the numbers of users from several sites are added together in cases where a general improvement in environmental quality will not produce identical benefits on each site.

■ Amenity

Services rendered free of cost by nature or the environment to people. Often associated with the concepts of comfort, convenience, pleasure and/or knowledge, and linked to a given place. For example, living next to a city park or spending time in a rural area provides certain advantages in terms of the landscape, the local weather, tranquillity, etc.

■ Active population

The part of the population comprising the working labour force (also called the employed population) and unemployed persons.

■ Affordability

Cost of water and sanitation services (drinking water, wastewater treatment) relative to the disposable income. This criterion must be taken into account, for example, when setting up water-pricing policies.

■ Aggregation bias

A type of bias resulting when the numbers of users from several sites are added together in cases where a general improvement in environmental quality will not produce identical benefits on each site.

■ Amenity

Services rendered free of cost by nature or the environment to people. Often associated with the concepts of comfort, convenience, pleasure and/or knowledge, and linked to a given place. For example, living next to a city park or spending time in a rural area provides certain advantages in terms of the landscape, the local weather, tranquillity, etc.

■ Analysis

See *Cost-benefit analysis (CBA)*, *Cost-effectiveness analysis (CEA)*, *Cost recovery*, *Economic analysis*, *Sensitivity analysis*.

■ Auction system

The main technique among those used to value a good during a contingent valuation is the auction technique. It consists of successively proposing higher or lower values. For example, a price is proposed to a respondent and according to the answer (acceptance or refusal), a new price (higher or lower respectively) is proposed, followed again by another until the respondent reverses his answer. The main criticism of this technique is that the answers depend heavily on the first price mentioned.

■ Bequest value

Non-use value derived from the capacity to transmit value to future generations.

■ Bias

Approach or procedure that produces errors in study results. Examples are non-representative samples, poorly worded questions or influence exerted by the person conducting the study.

See also *Aggregation bias*, *Hypothetical bias*, *Inclusion bias*, *Information bias*, *Investigator bias*, *Sampling bias*, *Self-selection bias*, *Strategic bias*.

■ Budgetary constraint

Financial imitations confronting individuals or households. The latter are constrained by their revenues, i.e. they may not spend more.

■ Closed and bounded question

A survey technique consisting of asking a first valuation question such as "Would you be willing to pay ten euros for XXX?" and then a second question in which the amount depends on the answer to the first question. The amount in the second question is higher if the answer was "yes" and lower if it was "no". For the contingent-valuation method, closed and bounded questions may be difficult to use if the survey is sent by mail to the respondents. Mail surveys are not impossible for the contingent-valuation method, but they are not generally recommended.

■ Compensatory costs

Excess costs imposed on a water user following degradation of an aquatic environment and/or water resources by another water user.

■ Complementary goods

Two goods are said to be complementary if their joint use serves to satisfy a need. Examples are pen and paper.

■ Contingent-valuation method (CVM)

A method used to measure increases in well-being produced by an improvement in the environment. The method is based on surveys. The respondents are presented a fictive scenario and asked to declare the maximum amount of money they would be ready to pay for the given improvement in the environment.

■ Cost

See *Compensatory costs*, *Cost-benefit analysis (CBA)*, *Cost-effectiveness analysis (CEA)*, *Cost recovery*, *Disproportionate costs*, *Environmental costs*, *External costs*, *Fixed costs*, *Opportunity costs*, *Private costs*, *Resource costs*, *Social costs*, *Total cost of water*, *Transaction costs*, *Variable costs*.

■ Cost-benefit analysis (CBA)

Cost-benefit analysis compares all the benefits to all the costs of a given project and the alternative projects, taking into account the impacts that are not calculated in monetary terms (which is often the case for the environment), among other aspects. CBA is a decision-aid tool in that it provides objective data. Depending on the cost-benefit ratio, it is possible to determine whether the project is profitable or not. For example, it was possible to calculate the costs of restoring the ecological quality of the Alsatian water table and to assess the corresponding benefits.

■ Cost-effectiveness analysis (CEA)

Cost-effectiveness analysis is used to select the various options or measures required to attain a goal at the least possible cost. The analysis ranks measures depending on their effectiveness in reaching an environmental objective, but it does not inform on the relevance or utility of a measure or project.

■ Cost recovery

A general principle stipulating that water users should, to the greatest degree possible, bear the costs incurred by their use of water, namely the investment, operating and depreciation costs, as well as environmental and resource costs. The WFD 2000/60/EC set two cost-recovery objectives for the Member States. By the end of 2004 and in carrying out the characterisation processes, they were to determine the current level of recovery, taking care to distinguish at least three economic sectors (industry, agriculture, households) and, secondly, by 2010, apply the principle, notably via water pricing. The directive stipulates maximum transparency in funding of water policy, but does not require total cost recovery from users.

■ Cross-subsidy

A financial transfer between categories of users of the same water and sanitation services. As per the WFD 2000/60/EC, the main categories of water-service users are households, industry and agriculture.

■ Demand function

This function establishes the link between the optimum selection (the demanded quantities) and the various price and revenue values. For a given good, the demand function will depend on the price of all goods and on the revenue of the consumer.

■ Depreciation

Reduction in the value of fixed capital over a given period of time due to normal wear and foreseeable obsolescence. Note that obsolescence is the loss of value resulting from a drop in the desirability and the utility of a good due to its outdated design and construction.

■ Discounting

Mathematical calculation used to compare economic values over time by discounting the future value of a good or service to its present value. Discounting makes it possible to include future expenses and benefits in the analysis. The decision concerning the discount rate (the coefficient used to calculate the present value of a value occurring in the future) influences the analysis results. In 2005, the General planning commission recommended revising the discount rate for public investment projects.

■ Discrete goods

Goods that are naturally expressed in discrete (whole) units. For example, demand for automobiles is expressed in numbers of vehicles and not in terms of the time they are used (non-discrete units).

■ Disproportionate costs

Disproportionate costs are those sufficient to justify an exemption from the obligations stipulated by the Water framework directive 2000/60/CE. Costs are said to be disproportionate if the impact of measures on the price of water and on economic activities is judged excessive compared to the economic value of the projected environmental benefits and other advantages. The disproportion is analysed on a case-by-case basis taking into account criteria such as the financial resources available in the area affected by the measure and among the user group(s) required to assume the cost (in the case of households, the threshold is set by their capacity to pay significantly higher water bills) and/or the benefits of all types expected to be produced by reaching good status in 2015 (production of drinking water from a water table without additional treatment, restoration of wetlands that contribute to flood control, etc.). If the stakeholders in the river basin can demonstrate that the cost of a measure is disproportionate, they may receive an exemption. Spreading the cost of a measure beyond 2015 to 2021 or even 2027 may be sufficient to make the cost acceptable.

■ Economic analysis

Economic analysis employs analytical methods and economic instruments to assist in formulating water-management policies in compliance with the WFD (Water framework directive). The goal is to ensure that economics plays a role during several major steps in WFD implementation, namely contribute to achieving environmental objectives through incentive pricing, assess the economics of water use in the river-basin district and estimate the levels of cost recovery for services during the preparation of the characterisation reports, justify exemptions to good-status objectives (disproportionate cost of measures), assist in selecting measures for the river-basin district and in setting up the overall programmes of measures (programme optimisation by analysing the cost and effectiveness of each measure).

See *Cost-benefit analysis (CBA)*, *Cost-effectiveness analysis (CEA)*, *Cost recovery*, *Sensitivity analysis*.

■ Economic good

Any object capable of satisfying a need. There is an unlimited number of economic goods. Goods are determined not only by their physical characteristics, but also by their location and date of availability.

■ Economic surplus

The difference between the maximum willingness to pay for a good and the price of the good.

■ Ecosystem service (as per the Millenium Ecosystem Assessment, MEA)

A direct or indirect benefit derived by humans from nature. Services include the self-maintenance services, supply services, regulating services and cultural services.

■ Elasticity of demand with respect to price

Elasticity is calculated as the percentage of variation in water consumption if the price of water is increased by 1%. Generally speaking, the elasticity of household water consumption is low because most uses (drinking water, hygiene, etc.) are not very compressible. On the other hand, external consumption (watering of lawns, washing of cars, etc.) is much more elastic (significant drop following a price increase) because it covers non-essential needs.

■ Environmental assessment method

A method used to determine the environmental impact of environmental damage and benefits. There are a number of methods, including the contingent-valuation method, hedonic-pricing method, travel-cost method and protection-expenditure method.

■ Environmental costs

The cost of damage inflicted on the environment and ecosystems, and indirectly on those using them, e.g. lower quality of water resources and soil, cost of additional treatment required for drinking water assumed by local governments, etc. For the Water framework directive 2000/60/EC, economists look at the damages caused by water uses (abstractions, discharges, development work, etc.).

■ Environmental damage (as per an EU agreement on 18 September 2003)

A measurable, negative change in a natural resource (species, protected natural habitat, water and soil) or a measurable deterioration in a service provided by natural resources (functions provided by a natural resource benefiting another natural resource or the public) that may occur through direct or indirect action.

■ Environmental economics

A branch of economics studying the theory behind the relationships between human societies and the environment, notably in the framework of environmental economic policies.

■ Environmental good

A good available free of cost and whose production did not require any human work. This may be the air we breathe, a landscape, the quality of a water body, the presence of animals in an environment, the absence of noise and visual pollution, etc.

■ Environmental tax

A tax instituted by the State in order to limit pollution and overuse of water resources. In terms of pollution, the tax consists of a fee per unit of discharge that is equal to the marginal cost of reducing the pollution. Economically speaking, a tax is more efficient than a standard because the effort involved in reducing the pollution is apportioned naturally and at lesser cost.

■ External costs

Costs incurred by one activity to the detriment of another and not compensated or assumed by the entity generating those costs. For the Water framework directive 2000/60/EC, economists look at the external costs for the environment caused by water uses and, more generally, water-related activities (abstractions, discharges, development work, etc.). For example, if a resource is polluted, the cost of finding and operating a new resource is ultimately borne by the customers of the drinking-water service via the cost per cubic metre. One of the primary techniques used by environmental economics consists of integrating external factors affecting market prices. In other words, the price of environmental degradation (pollution, over-use, etc.), which would otherwise be ignored, is taken into account by environmental economists.

■ Externality

Externalities occur when the activity of an economic agent impacts other agents, in those cases where the impact is not the objective of the activity and the other agents are not involved in the activity. The other agents are not consulted and do not receive (if the impact is negative) or pay (if the impact is positive) any compensation. An externality may be positive or negative, and may be the result of production or consumption.

■ Fixed capital

All material means of production that are not consumed during the production process. Their service life exceeds one year.

■ Fixed costs

Fixed costs are that part of production costs that do not vary depending on the quantities produced. They depend on the structure of the economic activity. For example, fixed costs are the primary cost in industrial activities employing networks. For public water and sanitation services, fixed costs may represent 80% of total costs.

■ Good

See *Complementary goods*, *Discrete goods*, *Economic good*, *Environmental good*, *Market good*, *Non-market good*, *Public good*, *Substitute (or substitutable) good*.

■ Green gross domestic product

The result of a calculation subtracting any drop in the stock of natural resources (e.g. water resources) from the standard gross domestic product. This accounting method provides better information on whether an economic activity increases or decreases domestic wealth when it uses natural resources.

■ Hedonic-pricing method

A method used to determine the environmental factor in real-estate prices. The price of real estate depends on its characteristics and a number are directly related to the quality of the local environment.

■ Heritage value

The non-use value arising simply from the fact that the heritage exists.

■ Hypothetical bias

A type of bias resulting when respondents, confronted with a fictitious market, encounter difficulty in expressing their preferences. In the environmental field, the lack of references results in answers very different than the choices that individuals would make in a real situation.

■ Inclusion bias

A type of bias resulting when individuals report the same willingness to pay (WTP) for a particular environmental good (e.g. a river reach) and a larger good (e.g. all the rivers in the river basin or all the rivers in the department). This confusion between geographic scales or between environmental issues (aquatic environments, biodiversity, air quality) represents the inclusion bias.

■ Information bias

A type of bias resulting when the information on the assessed good is insufficient and the questioned person does not provide an accurate estimate of their willingness to pay.

■ Internalisation

This technique consists of integrating external costs in the economic flows. For example, the polluter-pays principle is a means to internalise the external costs created by the polluter and affecting other users and the environment.

■ Investigator bias

A type of bias resulting when the respondent indicates a willingness-to-pay value higher than the true value in order to please the investigator.

■ Market good

Market goods are items that may be bought or sold.

■ Method

See *Contingent-valuation method (CVM)*, *Environmental assessment method*, *Hedonic-pricing method*, *Protection-expenditure method*, *Travel-cost method*.

■ Natural monopoly

Situation in which a single firm or person offers a particular good or service to an array of purchasers. The monopoly is said to be natural when production yields rise with output, notably when fixed costs are much higher than the variable costs.

■ Non-market benefit

Benefit that may result from a project, but is not marketable (saleable).

■ Non-market good

Non-market goods cannot be bought or sold.

■ Non-use value

The value assigned to a good or service due to its simple existence, by an economic agent who does not intend to use it. The non-use value comprises two components, the existence value and the value for others.

■ Opportunity costs

The value of the opportunity lost because one use of available resources was preferred over another, in cases where the resource is limited. In the water field, for example, this may be the value of irrigated corn that could have been produced if the river water had not been used for drinking water or to generate hydroelectricity.

■ Option value

The use value assigned to the preservation of an asset in view of its future use, e.g. the preservation of a plant due to its medicinal value.

■ Pareto efficiency

Situation in which it is impossible to make any one individual (or category of individuals) better off without making at least one individual (or category of individuals) worse off. This is a reference situation in economic theory dealing with resource allocation.

■ Polluter-pays principle

A principle, now inserted in the French Environmental code, stipulating that any costs arising from measures to prevent, reduce or eliminate environmental pollution must be assumed by the polluter.

■ Pollution-rights market

Market of tradable permits enabling a stakeholder (company, individual, etc.) to discharge a pollutant or to draw on natural resources. The State sets environmental-quality objectives and then grants a corresponding amount of rights. These rights may then be purchased and sold on the market, it being understood that a polluter may not discharge pollutants in excess of the corresponding permits in his possession.

■ Price setting

The purpose of this policy is to influence water use through the price paid by users. The WFD 2000/60/EC required that the Member States ensure, by 2010, that pricing policy encouraged efficient use of water to avoid waste.

■ Private costs

A private cost is the part of the social cost assumed by the economic entity incurring the cost. A private cost is an internal cost.

■ Programme of measures

A set of measures designed to reach the objectives for the entire river basin, contained in the river-basin management plan (RBMP).

■ Protection-expenditure method

A method of assessing pollution costs on the basis of expenses incurred by households to protect themselves from environmental degradation, e.g. the purchase of water softeners, bottled water, etc.

■ Protest zero

A rejection of all the proposed scenarios by a respondent during a contingent valuation. Some individuals may declare zero willingness to pay (protest zeros) in spite of the fact that they are in favour of the proposed project. It is possible to distinguish protest zeros from real zeros during a survey. Protest zeros are generally excluded from the analysis.

■ Public good

A good or service whose use is non-competitive and non-exclusive. The term "non-competitive" means that consumption/use of the good by one individual does not impede its consumption/use by another (e.g. fireworks). The term "non-exclusive" means that all individuals have free access to the good or service (e.g. public lighting).

■ Resource costs

The value of the opportunity lost because one use of available resources was preferred over another, in cases where the resource is limited. This is the difference in benefit value between the option producing the highest benefit value and the selected option.

■ Sampling bias

A type of bias resulting when the sample is not representative of the population receiving a benefit, for example a survey carried out exclusively in cities.

■ Self-selection bias

A type of bias resulting when individuals concerned by an issue or those visiting a site more frequently are more likely to be questioned (a situation encountered when face-to-face surveys are carried out on recreational sites).

■ Sensitivity analysis

Method of determining the robustness of economic-analysis results depending on variations in certain parameters or assumptions.

■ Shadow-price value

Amount that the Ecology ministry recommends for routine use in quantifying the value of non-market environmental services provided by aquatic environments, as profits from the preservation or restoration of aquatic environments or as losses incurred by their degradation.

■ Social costs

Social costs are the set of all costs incurred by an activity and borne by society as a whole. They include both private costs and external costs.

■ Strategic bias

A type of bias resulting when respondents think they can influence the final decision by exaggerating their willingness to pay. Some individuals may indicate a lesser value on the assumption that others will pay for them (stowaway phenomenon). These individuals have nothing to gain by revealing their true preferences if they think they can obtain an advantage by masking their opinions.

■ Substitute (or substitutable) good

Two goods are said to be substitutable if they satisfy the same or similar needs. Examples are automobiles and trains.

■ Total cost of water

The total cost of water, including environmental, resource and service costs.

■ Total economic value

The sum total of the use and non-use values of a good or service.

■ Transaction costs

Cost incurred during an economic exchange and, more precisely, on a market. The cost may be direct (stock-market fees) or indirect (prospecting costs, time and effort spend in negotiations and checking the transaction, etc.).

■ Travel-cost method

A method to estimate the maximum price that visitors would be willing to pay in order to continue visiting a site. It is based on the idea that the travel costs incurred by the visitors in reaching the site represent the amount they are willing to pay. The travel cost is a measure of each individual visit.

■ Use value

The value assigned to a good or service by an economic agent depending on the usefulness that may be derived from the good or service. The use value comprises two components, the effective use value and the option value residing in the possible future use.

■ Value

See *Bequest value*, *Heritage value*, *Non-use value*, *Option value*, *Shadow-price value*, *Total economic value*, *Use value*.

■ Variable costs

Variable costs are that part of production costs that vary depending on the quantities produced. For example, the procurement cost of raw materials is a variable cost that increases when business activities or production increase.

■ Water body

A homogeneous aquatic environment (lake, reservoir, river reach, unit of groundwater, etc.).

■ Water footprint

The footprint includes all the water used at all steps in the production process of a product (a facility, good or service). The total volume is also called the "virtual water content". For example, a total of 140 litres are required to produce a cup of coffee and 16 cubic metres (16 000 litres) are required to produce one kilogram of beef. The footprint represents the total amount of water (expressed in litres or cubic metres) that is used directly or indirectly for an activity and any related activities, including the water used in the supply system.

■ Water-related activity

Economic activity using water and water services.

■ Water service

Water services include, for households and all other economic activities, the abstraction, impoundment, storage, treatment and distribution of surface water or groundwater, as well as the collection and treatment facilities for wastewater prior to its discharge to surface waters.

■ Wealth effect

The influence of wealth on a datum. For example, the willingness to pay of wealthy persons is generally higher than that of poorer persons.

■ Well-being

The satisfaction of an individual or of a community.

■ Willingness to accept (WTA)

Amount of money that surveyed individuals are willing to accept in exchange for degradation to their environment.

■ Willingness to pay (WTP)

Amount of money that surveyed individuals are willing to pay to avoid degradation to an environmental good or for its improvement. WTP expresses in euros the change in well-being or satisfaction linked to the degradation/improvement in the environment.

■ Willingness-to-pay survey card

A card on which survey respondents may check one of several monetary amounts corresponding to their willingness to pay.

The above definitions were drawn from the EauFrance site (<http://www.glossaire.eaufrance.fr/>).

Bibliography and web references

Bibliography

France

- Amélioration des connaissances sur les fonctions et usages des zones humides : évaluation économique sur des sites tests, Agence de l'eau Loire Bretagne, 2011
- Analyse sur les coûts compensatoires en France et en Europe dans le cadre de la Directive Cadre sur l'Eau, Onema, 2011
- Atteinte du bon état des eaux en Seine-Normandie, Analyses coûts bénéfiques à différentes échelles, Jérémy Devaux, mémoire de master 2 recherche économie de l'environnement, 2008
- Circulaire DCE 2006/17 du 5 octobre 2006 relative à l'élaboration, au contenu et à la portée des programmes de mesures, Ministère de l'écologie et du développement durable et de la mer, 2006
- Circulaire du 22 avril 2004 relative à l'analyse de la tarification de l'eau et à la récupération des coûts des services en application de l'article 9 de la directive 2000/60/DCE du 23 octobre 2000 du Parlement et du Conseil établissant un cadre pour une politique communautaire dans le domaine de l'eau, Ministère de l'écologie et du développement durable et de la mer, 2004
- Directive 2000/60/CE du 23 octobre 2000 établissant un cadre pour une politique communautaire dans le domaine de l'eau, Parlement européen et Conseil de l'Union européenne, 2000
- Élaboration d'un scénario tendanciel d'évolution de la qualité des cours d'eau du bassin de la Seine et des fleuves côtiers normands à l'horizon 2015, Agence de l'eau Seine Normandie, 2004
- Étude de calcul de la récupération des coûts des services liés à l'utilisation de l'eau pour les bassins hydrographiques français en application de la directive cadre sur l'eau, OIEau, 2012
- Évaluation économique des services rendus par les zones humides, Études & documents n°49, septembre 2011, Commissariat général au développement durable
- Évaluation économique du programme de mesures de gestion quantitative des ressources en eau dans l'Ouest de l'Hérault, Agence de l'eau Rhône Méditerranée Corse, 2008
- Évaluer les bénéfices issus d'un changement d'état des eaux, collection "études et synthèses" de la Direction des Études Économiques et de l'Évaluation Environnementale, Ministère de l'écologie et du développement durable, Patrick Chegrani, 2007
- Exemptions pour coûts disproportionnés, Méthode et résultats, Agence de l'eau Rhône Méditerranée Corse, 2009
- Guide méthodologique de justification des exemptions prévues au titre de la directive cadre sur l'eau, Ministère de l'écologie, de l'énergie, du développement durable et de la mer, 2009
- Justification des reports sur le secteur Morbihan Sud, Agence de l'eau Loire Bretagne, 2010
- Justification des dérogations économiques à l'atteinte du bon état des eaux en Seine-Normandie, Approches à différentes échelles, Aurore Large, mémoire de fin d'études, 2008
- La détermination des coûts disproportionnés sur le bassin Rhin-Meuse, Sophie Nicolai, Patrick Weingertner, Agence de l'eau Rhin Meuse, 2008
- La valeur économique et sociale des espaces naturels protégés, Cahier de recherche n°247, A.Dujin, B.Maresca, X.Mordret, R.Picard, Credoc 2008
- Stratégie, SAGE de Saint Brieuc, 2009

England and Wales

- National Impact Assessments, Impact assessment of 1st cycle of River Basin Plans developed to implement the EC Water Framework Directive, DEFRA-WAG, 2009
- Report on guidance on the evidence required to justify disproportionate cost decisions under the Water Framework Directive – revised summary guidance, CRP project 3, 2007
- River Basin Management Plan, Anglian River Basin District, Environment Agency, 2009
- River Basin Planning Guidance volume 1, DEFRA-WAG, 2006
- River Basin Planning Guidance volume 2, DEFRA-WAG, 2008

Europe

- Economics and the Environment – The Implementation Challenge of the Water Framework Directive, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance document n°1, 2003
- Guidance document on exemptions to the environmental objectives, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance document n°20, 2009

Web references

- Characterisation reports and data on water use, established for the WFD:
- Adour-Garonne Water agency
<http://www.eau-adour-garonne.fr/fr/quelle-politique-de-l-eau-en-adour-garonne/un-cadre-le-sdage/etat-des-lieux.html>
- Artois-Picardie Water agency
<http://www.eau-artois-picardie.fr/-Etat-des-lieux,482-.html>
- Loire-Bretagne Water agency
http://www.eau-loire-bretagne.fr/sdage/elaboration_sdage/etat_lieux_04
- Rhin-Meuse Water agency
http://www.eau2015-rhin-meuse.fr/dce/site/documents_etat_lieux.php
- Rhône-Méditerranée-Corse Water agency
<http://www.rhone-mediterranee.eaufrance.fr/gestion/dce/etat-des-lieux.php>
<http://siecorse.eaurmc.fr/>
- Seine-Normandie Water agency
<http://www.eau-seine-normandie.fr/index.php?id=2258>
- Espaces naturels, revue des professionnels de la nature, no. 30, April 2010
<http://www.espaces-naturels.fr/Media/Images/Aten/Revue-n-30>
- Economic assessments of the services rendered by wetlands
<http://www.developpement-durable.gouv.fr/Evaluation-economique-des-services.html>
<http://www.developpement-durable.gouv.fr/L-evaluation-economique-des.html>
<http://www.developpement-durable.gouv.fr/Evaluation-economique-des-services,24313.html>
<http://www.developpement-durable.gouv.fr/Evaluation-economique-des-services,24314.html>
<http://www.developpement-durable.gouv.fr/Evaluation-economique-des-services,30186.html>
<http://www.developpement-durable.gouv.fr/Evaluation-economique-des-services,30185.html>
- Onema
<http://www.onema.fr/rubrique/Publications>
- Data tables on the status of water bodies
<http://www.rapportage.eaufrance.fr/dce/2010/valorisation/tableaux>

Author

Maria Salvetti, Onema Research and development department

Editor

Véronique Barre, Onema Research and development department

Translation

Bartsch & Cie (info@bartsch.fr)

Graphic design and layout

Béatrice Saurel (saurelb@free.fr)

Citation

Salvetti M., 2013. Economic analysis for management of water and aquatic environments.
Onema. 172 pages.

Acknowledgements

We wish to sincerely thank everyone who contributed to this book:

Olivier Gorin, Stéphanie Blanquart, Sarah Feuillet, Stéphane Robichon, Jérémy Devaux, Blandine Boeuf,
Carine Gendrot, Sara Hernandez, Philippe Dupont, Jean-Pierre Amigues, Pierre Strosser.

Prepared in collaboration with IOWater.



The Knowledge for action series provides professionals in the water and aquatic-environment sector (scientists, engineers, managers, instructors, students, etc.) with information on recent research and science-advice work.

Already published

1. River hydromorphology. A primer
(2010, English translation in 2013)

**2. Managing sediment transport
in rivers. A primer**
(2011, in French)

**3. Evaluating the ecosystem services
of aquatic environments. Scientific,
political and operational issues**
(2011, English translation in 2012)

**4. Observed trends in river flow
rates in France**
(2012, English translation in 2013)

**5. Improving control over nutrients by
restoring river hydromorphology**
(2012, English translation in 2013)

**6. Tools to characterise seawater
intrusion and the potential impact of
sea levels on coastal aquifers**
(April 2013)

**7. Structural characteristics of
priority abstractions of use in
designing protection systems**
(September 2013)

**8. Economic analysis for management
of water and aquatic environments**
(2013, English translation in 2014)

Contact: veronique.barre@onema.fr