

# *References*

## On SEA methodologies and practice

- Bedfordshire County Council and the Royal Society for the Protection of Birds (1995) A step by step guide to environmental appraisal. Bedford
- BirdLife International (1996) The Environment and the Structural Funds: the role of Strategic Environmental Assessment - the Sicilian experience. Cambridge
- CEARC (1988) The Assessment of Cumulative Effects: A Research Response. Canadian Environmental Assessment Research Council, Hull, Quebec
- CEC (1990) Vade Mecum for use in providing environmental information relating to plans, programmes and projects financed through the Structural Funds. A report by Norman Lee
- CEC (1994) Strategic Environmental Assessment: Existing Methodology, report to Directorate General XI
- CEC (1995) Cohesion Policy and the Environment. Communication of the Commission to the Council and Parliament. Brussels
- CEC (1996) State of the art on Strategic Environmental Assessment for transport infrastructure. Directorate General for Transport, Brussels
- CEC (1997) Spatial and Ecological Assessment of the Trans-European Transport Network. Scope, methods, data, research needs. Technical workshop, Brussels, 24-25 April 1997, Proceedings. DGXI
- Cocklin C, Parker S and Hay J (1992a) Notes on Cumulative Environmental Change I: Concepts and Issues, in the Journal of Environmental Management, Vol. 35 No. 1 pp.31-49
- Cocklin C, Parker S and Hay J (1992b) Notes on Cumulative Environmental Change II: a Contribution to Methodology, in the Journal of Environmental Management, Vol. 35 No. 1 pp.31-49
- Council on Environmental Quality (1997) Considering Cumulative Effects Under the National Environmental Policy Act. Federal Government. USA
- Damman D C, Cressman D R and Husain S H (1995) Cumulative Effects Assessment: the development of practical frameworks. In Impact Assessment Vol.13 Dec. 1995, pp433-454
- Department of the Environment (1993) Environmental Appraisal of Development Plans: A Good Practice Guide, HMSO, London
- English Nature (1995) Strategic Environmental Assessment and Nature Conservation. Report to English Nature by R Therivel and S Thompson of Oxford Brookes University
- Environmental Resources Management (1995) Manual on Public Participation. European Bank for Reconstruction and Development, London
- European Conference of Ministers of Transport (1998) Strategic Environmental Assessment in the Transport Sector, OECD

- Hughes J and N Lee (1995) Strategic Environmental Assessment Legislation and Procedures in the Community, Final Report Vol.2, University of Manchester, Manchester
- J Jaap de Boer and B Sadler (1996) Environmental Assessment of Policies - Briefing papers on experience in selected countries. For the Ministry of Housing, Spatial Planning and Environment of the Netherlands and International Study of Effectiveness of Environmental Assessment
- Partidário MR (1996) SEA: Key Issues Emerging from Recent Practice. Environmental Impact Assessment review, 16 (1), pp.31-55
- Sadler B and Verheem R (1996) Strategic Environmental Assessment. Status, challenges and future directions. Ministry of Housing, Spatial Planning and the Environment of The Netherlands. EIA Commission
- Sheate WR (1992) Strategic Environmental Assessment in the Transport Sector. Project Appraisal, September, pp.170-174
- Thérivel R, E Wilson, S Thompson, D Heaney and D Pritchard (1992) Strategic Environmental Assessment, Earthscan, London
- Thérivel R and Partidario MA (1996) The Practice of Strategic Environmental Assessment. Earthscan Publications
- Verheem R (1994) Case Study: Strategic Environmental Assessment of the Dutch ten Year Programme on Waste Management. Paper presented at the International Association for Impact Assessment annual conference, Quebec
- World Bank (1993) Sectoral Environmental Assessment. Sourcebook Update, October 1993, number 4

### On sustainable development and the state of the environment

- CEC (1992) The Fifth Environment Action Programme
- CEC (1995) Towards Sustainability. The Commission's Progress Report
- CEC (1997) Towards Sustainability. The Commission's Progress Report
- EEA (1995) Europe's Environment: The Dobbris Assessment
- EEA (1995) Environment in the European Union.

### On indicators

- Adriaanse, A. (1993) Environmental Policy Performance Indicators, The Hague: Ministry of Housing, Physical Planning and Environment of the Netherlands.

- Baldares, M., Gutierrez, E., Alvarado, A., Brenes, L.G. (1993) 'System Development of Sustainability Indicators for the Agriculture and Natural Resources Sectors of Latin America and the Caribbean Countries', San Jose: University of Costa Rica.
- Bartelmus, P. (1995) 'Indicators of Sustainable Growth and Development - Linkage, Integration and Policy Use', Background paper for Scientific Workshop on Indicators of Sustainable Development, Wuppertal, 15-17 November 1995
- Bringezu, S. (1993) 'Towards Increasing Resource Productivity: How to Measure the Total Material Consumption of Regional or National Economies', Wuppertal: the Wuppertal Institute.
- CEC (1997) Indicators of Sustainable Development - A pilot study following the methodology of the United Nations Commission on Sustainable Development
- Cobb, C. and Halstead, T. (1994) The Genuine Progress Indicator: A Measure of the Socio-Economic Well-Being and Sustainability of the Nation 1950-1992, California: Redefining Progress.
- Department of the Environment, United Kingdom (1996) 'Indicators of Sustainable Development for the United Kingdom', London: HMSO.
- Dixon and Hamilton (1996) 'Expanding the Measure of Wealth', Finance and Development, December 1996.
- EEA (1996) Institutional Indicators of Sustainable Development. Interim Report. Copenhagen
- FAO (Land and Water Bulletin no. 5, 1996) *Land quality indicators and their use in sustainable agriculture and rural development*
- Jesinghaus, J. (1995) 'The Pressure Indices Project: Theory and Structure', Brussels: Commission of the European Union.
- Lammens (CDO 1996) *Institutional Indicators of Sustainable Development*
- OECD (1995) Environmental Indicators. Paris
- OECD (1993) Indicators for the Integration of Environmental Concerns into Energy Policies. Environment Monographs No.83. Paris
- OECD (1993) Indicators for the Integration of Environmental Concerns into Transport Policies. Environment Monographs No.80. Paris
- OECD (1993) OECD Core Set of Indicators for Environmental Performance Reviews. Environment Monographs No.83. Paris
- Prescott-Allen, R. (1995) 'The Barometer of Sustainability: A Method of Assessing Progress Toward Sustainable Societies.

- RIVM (1994) 'Global Change and Sustainable Development: A Perspective for the Next Decade'. RIVM report no. 461502004. Bilthoven: Dutch National Institute of Public Health and Environmental Protection.
- Schmidt-Bleek (1993) 'A Universal Ecological Measure', Fresenius Environmental Bulletin Vol 2:8 Birkhauser.
- Serageldin, I. (1996) 'Sustainability and the Wealth of Nations - First Step in an Ongoing Journey', Washington D.C.: The World Bank
- UNEP/RIVM (1995) 'Scanning the Global Environment: A framework and methodology for integrated environmental reporting and assessment', UNEP/EATR.95-01; RIVM402001002, Nairobi: Environment Assessment Sub-Programmes, UNEP.
- UNEP/DPSCD (1995) 'The Role of Indicators in Decision-Making', Discussion paper for the Workshop in Indicators of Sustainable Development for Decision-Making in Ghent, Belgium, January 1995, Jointly prepared by the United Nations Environment Programme and the United Nations Department for Policy Co-ordination and Sustainable Development, Bruxelles: Federal Planning Office of Belgium.
- United Nations (1993a) 'Agenda 21 - Report of the United Nations Conference on Environment and Development', Rio de Janeiro, 3-14 June 1992, Volume 1: Resolutions Adopted by the Conference, A/CONF.151/Rev.I (Vol. 1), Sales No. E.93.I.8, New York: United Nations.
- United Nations (1993b) 'System of National Accounts', Series No. 2, Rev.4, Sales No. E94.IV.II.4, New York: United Nations.
- United Nations (1996a) 'Indicators of Sustainable Development: Framework and Methodologies', New York: United Nations.
- United Nations (1996b) 'Work Programme on Indicators of Sustainable Development of the Commission on sustainable Development', Prepared by the Division for Sustainable Development in the department for Policy Co-ordination and Sustainable Development, New York: United Nations.
- United Nations (1996c) 'Report of the Secretary General on Chapter 40 of Agenda 21, Information for Decision Making, to the Fourth session of the Commission on Sustainable Development', New York: United Nations.
- UNCP (1995) 'Human Development Report 1995', New York: Oxford University Press for the United Nations Development Programme.
- Van, Dieren, W. (1995) Taking Nature in Account - a Report to the Club of Rome. New York: Springer-Verlag New York, Inc.
- Wackernagel, M. and Rees, W. (1996) Our Ecological Footprint - Reducing Human Impact on Earth, Gabriola Island: New Society Publishers.
- WCED (1987) 'Our Common Future', Oxford: World Commission on Environment and Development / Oxford University Press.

- Winograd, M. (1995) 'Environmental Indicators for Latin America and the Caribbean - Toward Land-use Sustainability', Washington D.C.: World Resources Institute
- World Bank (1995) 'World Development Report 1995', Washington D.C.: Oxford University Press.
- World Bank (1996) 'Monitoring Environmental Progress: Expanding the Measure of Wealth', Washington D.C.: the World Bank.
- World Resources Institute (1995) 'Environmental indicators - A Systematic Approach to Measuring and Reporting on Environmental Policy Performance in the Context of sustainable Development', Washington D.C.: World Resources Institute.

### Example of national publications:

- UK: Round Table on Sustainable Development (1997) *Getting the Best out of Indicators* and Department of Environment (1996) *Indicators of Sustainable Development for the UK*
- Spain: Ministerio de Medio Ambiente (1996) *Indicadores ambientales. Una propuesta para España*
- Scandinavia: Nordic Council of Ministers (1997) *Indicators of the State of the Environment in the Nordic Countries*
- France: Institut Français de l'Environnement (1997) *Indicateurs de performance environnementale de la France.*

### Information and publications available from Internet:

#### Indicators, targets and sustainability reference values

The European Environment Agency STAR database on targets and sustainability reference values

<http://salmon.eea.eu.int/star>

World Bank Indicators

<http://www.worldbank.org/wdi/>

World Business Council for Sustainable Development Eco-efficiency Indicators Discussion

<http://www.wbcsd.ch/discussi.htm>

## **International conventions and European Environmental Legislation**

UN Framework Convention on Climate Change

<http://www.unfccc.de/>

Site monitoring UN Negotiations related to environment

<http://www.iisd.ca/linkages/>

Ramsar Convention

<http://iucn.org/themes/ramsar/>

Bonn Convention

<http://www.wcmc.org.uk/cms/english/>

CITES

<http://www.wcmc.org.uk/CITES/english/index.html>

Convention to Combat Desertification

<http://www.unccd.ch/>

European Community Environmental Legislation, publications

<http://europa.eu.int/en/comm/dg11>

## **Environment data and general information**

CORINAIR EEA air quality data

<http://www.aeat.co.uk/netcen/corinair/corinair.html>

European Environment Agency

- homepage (with links to environmental data and information sites) - <http://www.eea.eu.int/default1.htm>
- ETC Nature Conservation homepage - <http://www.mnhn.fr/ctn/>
- ETC Land Cover homepage - <http://www.mdc.kiruna.se/etc/index.htm>

European Conference of Transport Ministers

<http://www.oecd.org/cem/index.htm>

Links to Government servers and information worldwide (general ministry sites, may have legislation and policy documents)

<http://www.eff.org/gov.html>

EUROSTAT homepage

<http://europa.eu.int/en/comm/eurostat/serven/home.htm>

EUROSTAT's Euro-Environment 1998 programme (environmental indicators project)

<http://www.telcom.es.tau>

United States EPA laws and regulations

<http://www.epa.gov/epahome/rules.html>





# *Annex I*

## *Assessment of the ent nonment tton he sene*

*In Annex I:*

- I.1 Introduction*
- I.2 How Data Can Influence the Content of  
RDPs and OPs*
- I.3 Quantity and Quality of Data  
Requirements*
- I.4 Presentation of Data*
- I.5 Identification of Additional Needs for  
Data.*

## I.1 INTRODUCTION

In sections 3.3 and 3.5 of this Handbook we have discussed the significance of a sound knowledge of the state of the environment - the baseline, for the development of RDP's and OPs/SPDs. In this Annex we provide some information on how environmental authorities can go about the task of assembling and analysing baseline data in the context of the Structural Funds process. This information is valid for both RDP's and OP's.

Identifying baseline data for economic, social, and environmental characteristics of target regions is the starting point of any planning activity. This stage of the assessment ensures that the environmental characteristics of a region are described and assessed. This will meet the requirement of the Structural Funds Regulations for an appraisal of the environmental situation <sup>(1)</sup>. A Member State's *State of the Environment* (often produced by national governments to describe broad trends in environmental protection and enhancement), *Environmental Action Programme* or *Agenda 21* reports,<sup>(2)</sup> can offer a useful starting point. The information from these pre-existing sources will have to be accompanied by a detailed explanation of their relevance to key economic development sectors. It is not sufficient to simply incorporate data from pre-existing sources without analysing its relevance to the RDP. It is also important to assess what baseline information is not available which is necessary for assessing the impact of the programme since provision should be made for this data to be collected.

The environmental baseline should include information on the current condition of all

environmental resources and should, wherever possible, include an assessment of trends. Guidance on environmental baseline data is provided in Box I.1. Baseline data which will be of relevance to RDP's is also crucial to the development of environmental indicators for the global evaluation of the RDP (see Section 3.3.6 and Annex IV of the Handbook).

The following paragraphs describe in detail four important aspects of environmental baseline data:

1. How data can influence the content of RDPs and OPs
2. Quantity and quality of data requirements
3. Presentation of the data
4. Identification of additional needs for data and resources.

### I.2 HOW DATA CAN INFLUENCE THE CONTENT OF RDPs AND OPs

Detailed baseline data of direct relevance to development sectors likely to receive Structural Funds will help to identify environmental problems, opportunities for environmental improvements and constraints for actions which might be included in the RDPs and OPs (hereafter, the Documents). For example:

- a plan or programme may include provisions for the establishment of a waste-to-energy facility. It is important that this can be achieved without causing air quality to deteriorate to levels which breach national and EU requirements. Programme managers therefore need sufficient data to be sure that the project will not give rise to such problems.

(1) Regulation 2081/93/EEC. See also *Section 1.1* of the Handbook for further information

(2) See Glossary.

### **Box I.1     *Introducing Baseline Data***

At RDP level, it is important for data on the state of the environment to be collected according to a general broad classification which can be developed and made more detailed as the SEA process moves to OP level.

Below is a list of key environmental themes from the 5EAP and the EEA's 'Environment in the European Union' (1995) which could be used as a broad framework for organising the collection and presentation of data on the environmental baseline.

- Climate change
- Ozone layer depletion
- Acidification
- Air pollution and quality
- Natural resources and biodiversity
- Inland water resources
- Urban environment issues
- Noise
- Coastal zones and marine waters
- Waste management
- Soil quality

(Table I.1 in this Annex provides more detailed suggestions)

A crucial role of the baseline data stage of SEA is to describe positive and negative interactions between environment, natural resources and the key economic sectors which exert pressure on the environment such as transport, energy, agriculture and industry. Knowledge of the current status of environmental resources and the pressures upon them will be important in developing the assessment of the RDP and in making inputs into the later stages of the programming process since the development priorities are likely to include sectors that give rise to pressures on the environment and knowledge of the balance between resources and pressures will help in making decisions regarding economic, social and environmental priorities.

The five target sectors in the 5EAP are: manufacturing industry, energy, transport, agriculture and forestry, and tourism. These are also key sectors for regional economic development. Any analysis of pressures on the environment should take account of these sectors. Below is a list of types of development which are included in the EIA Directive and which could also be used as a starting point for analysing pressures on environmental resources:

- Agriculture forestry and fishing
- Energy industry
- Water supply
- Extraction and processing on non-energy producing minerals and derived products
- Chemical industry
- Metal manufacture and mechanical electrical and instrument engineering
- other manufacturing industries (including: food, drink, textile, leather, clothing, timber and wooden furniture, paper, rubber and plastics)
- Building and civil engineering works, infrastructure developments.

(see Table I.2 in this Annex for an example).

A first indication of the interaction between each theme and development sectors is given in the 5EAP, and a detailed up-to-date analysis can be found in the EEA 1995 report mentioned above.

- a plan or programme may provide for the development of industrial units in a town. It will be important to assess if local water infrastructure is adequate to support further development in the area. If not, local sewage infrastructure may have to be upgraded (perhaps through the allocation of resources from the programme).

The role of the Environmental Authorities at the start of the plan or programme is therefore to build an awareness of the state of the environment, the capacity and capabilities of the region's environmental infrastructure and the spatial environmental constraints and opportunities in terms of areas to be protected or improved, and to ensure that this information can be integrated into the Documents.

### **I.3 QUANTITY AND QUALITY OF DATA REQUIREMENTS**

Data referring to the environmental baseline will be relevant at the RDP and OP/SPD levels. For RDPs, baseline information should concentrate on providing an overview of the strategic aspects of the region's environment.

The degree of detail will partly depend on the availability of data. Some regions may have detailed and up to date databases on the state of the environment linked to GIS which adds a spatial dimension to the information; others could have less up to date or complete data. Ideally, the following information should be gathered:

- Information on the strengths and weaknesses of regions' environment and natural resources (see Box I.2), with particular reference to key environmental resources and the pressures on them);

- Environmental pressures and priorities for each principal regional development sector targeted by the development plan (agriculture, industry, tourism etc);
- Details on location and characteristics of environmentally sensitive areas and areas important for cultural heritage where development needs to be managed particularly sensitively, or where certain sorts of development may not be appropriate;
- Complete overview of Community, national and regional environmental policy and legislation; its requirements and the implications (including financial ones) for the Structural Fund programming period;
- A summary of the environmental impacts (positive and negative) resulting from the previous programming period;
- Establish what sorts of monitoring data will be available to assess the performance of plans and programmes; what environmental indicators are already in use; give a first indication of new indicators which may need to be developed and the additional data -if any- that may need to be collected.

**Box I.2      Strengths and Weaknesses****Strengths**

will refer to the environmental characteristics and conditions of a region which will contribute to the achievement of development goals.

*For example*, a region could be well endowed with renewable energy resources (eg wind or solar), thus helping to develop an energy strategy seeking to increase the production of renewable energy and reduce on non-renewable resources and imports.

**Weaknesses**

will refer to the environmental characteristics and conditions of a region which are likely to be negatively affected by certain development strategies, or which need to be targeted in order to be protected or enhanced.

*For example*, a region could be affected by periodical droughts thus becoming vulnerable to any increase in water demand (eg irrigation projects). Alternatively, this characteristic could lead to a water sector strategy which promotes a reduction in water losses through the distribution system.

Table I.1 shows an example of baseline data linked to two development sectors: transport and energy. These two development sectors are critical to regional economic development but also have a considerable impact on the environment. Baseline data on economic sectors is important in highlighting pressures on the environment in terms both of resource use and pollution. Basic knowledge on aspects of economic development such as transport use and energy consumption can help to highlight areas of concern on environmental grounds and also issues for discussion such as where the emphasis in transport and energy programmes should lie and how this relates to environmental priorities such as reducing air pollution from motor vehicles and increasing energy efficiency and the use of renewable energy resources.

**Table I.1    Example of Baseline Data for the Energy and Transport Sectors <sup>(1)</sup>**

<b>Transport</b>	<ul style="list-style-type: none"> <li>• Share of passenger travel by road, rail, air</li> <li>• Share of passenger travel in urban areas (car, public transport, walking and cycling);</li> <li>• Share of travelling to work modes (car, public transport, walking and cycling);</li> <li>• Average distance over which freight is moved</li> <li>• Share of freight traffic carried by road, rail, inland waterways, sea, air.</li> </ul>
<b>Energy</b>	<ul style="list-style-type: none"> <li>• Amount of total consumption;</li> <li>• Amount of energy from renewable energy sources;</li> <li>• Amount of energy from non-renewable energy sources</li> <li>• Energy use efficiency.</li> </ul>

Table I.2 gives an example of the type of environmental baseline data that environmental authorities could gather on a number of important environmental themes.

The greater precision of the type of activities to be funded by the OPs may require the information on the environmental baseline to be more detailed than that produced for RDPs. However, if the approach suggested in this Handbook has been followed, the majority of the data needed will have already been collected in the SEA for RDPs.

(1) This table is based on CEC (1992) Fifth Community Environmental Action Programme, EEA (1995) Environment in the European Union, and SEA literature.

**Table I.2 Examples of Baseline Data for Key Themes <sup>(1)</sup>**

<b>Key Criteria</b>	<b>Environmental Baselines</b>
Air and climate change	<ul style="list-style-type: none"> <li>• Air quality levels;</li> <li>• Sulphur dioxide levels;</li> <li>• Carbon dioxide emissions</li> </ul>
Protected Areas:	<ul style="list-style-type: none"> <li>• Area (ha) covered by national or international nature conservation designations (eg Natura 2000 - Special Area of Conservation and Special Protection Areas -, Ramsar Sites, Biogenetic Reserves);</li> <li>• Area (ha) of regional or local importance for habitats and/or species protection, which are not designated as protected areas;</li> <li>• List of threatened species (red data species; species listed in the annexes of Directives EC/92/43 and EC/79/409; species listed in national Biodiversity Strategies - Convention on Biological Diversity-)</li> <li>• List of endemic species</li> </ul>
Natural resources: <i>Water</i>	<ul style="list-style-type: none"> <li>• River and groundwater quality levels;</li> <li>• Estuary and coastal water quality levels;</li> <li>• Waste water treatment infrastructure</li> <li>• Water Balance Rates</li> <li>• Water consumption levels (domestic and industrial)</li> <li>• Irrigated surface area</li> <li>• Abstraction Rates (Surface and Groundwater)</li> </ul>
Natural resources: <i>Land</i>	<ul style="list-style-type: none"> <li>• Type and distribution of land uses (urban, industrial-minerals-derelict land, agriculture, forestry, nature conservation, open water, open land)</li> <li>• Amount (ha) of high quality soil;</li> <li>• Amount (ha) of green areas around urban centres;</li> <li>• Amount (ha) of derelict land;</li> <li>• Amount (ha) of contaminated land;</li> <li>• Amount (ha) of public open space;</li> <li>• Amount (ha) of forested area.</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>• Area (ha) covered by national landscape designations (eg National Parks, Natura 2000 sites);</li> <li>• Area (ha) covered by local landscape designations in (eg Community Forests, Areas of Special Landscape value)</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• proportion of population exposed to levels between 55-65 Leq dB(A), and to less than 55 Leq dB(A)</li> <li>• Total surface area which is 4km or more distant from settlements and transport infrastructure</li> </ul>
Coastal zones	<ul style="list-style-type: none"> <li>• Water quality (including eutrophication);</li> <li>• Erosion trends;</li> <li>• Areas potentially affected by sea level rise;</li> <li>• Extent of protected areas;</li> <li>• Extent of habitats at risk</li> <li>• Risk of major accidents (eg from navigation).</li> </ul>

(1) This table is based on CEC (1992) Fifth Community Environmental Action Programme, EEA (1995) Environment in the European Union, and SEA literature

**Table I.2** *continued*

<b>Key Criteria</b>	<b>Environmental Baselines</b>
Wastes	<ul style="list-style-type: none"> <li>• Amount of commercial and industrial waste production;</li> <li>• Amount of waste sent to landfill;</li> <li>• Amount of commercial and industrial waste re-used or recovered (including materials recycling and energy recovery);</li> <li>• Amount of use of secondary and recycled aggregates;</li> <li>• Amount of household waste generated.</li> </ul>
Cultural Heritage	<ul style="list-style-type: none"> <li>• Number of listed buildings and conservation areas;</li> <li>• Number of scheduled and other ancient monuments;</li> </ul>
Minerals	<ul style="list-style-type: none"> <li>• Known resources</li> <li>• Rates of abstraction of resources</li> </ul>

#### **I.4 PRESENTATION OF BASELINE DATA**

The way and the timing with which baseline data is presented is crucial to its effectiveness. The people who plan and ultimately decide on the shape of an RDP or OP are the key target for this data, and they must find it easy to use. This means that its relevance to the aims and objectives of the programme needs to be stressed and clarified, helping Development Authorities to see why they need to refer to it, and how it can make their work easier and more efficient.

To ensure that the environment is considered a crucial part of sustainable and long term economic development, Environmental Authorities should make an effort to present the data showing the strengths as well as the weaknesses of the region's environment; the opportunities for environmentally sustainable development as well as the threats which growth -and certain sectors- can cause to the environment if not properly planned.

Maps of each region, as well as summary maps of the whole area receiving Structural Fund assistance within a Member State, are usually very helpful and provide a quick and comprehensive overview of a region's status, with the advantage of showing information in a spatial context. These maps can be produced through GIS or manually, depending on how the authorities have gathered and stored data.

Timing is equally important. Data should reach the Development Authorities before they start working on the RDP and OPs for the next programming period (2000-2006), ensuring that collaboration and interaction between the Environmental and Development Authorities takes place from the very beginning of the programming process. It is highly recommended that the Environmental Authorities take action and present the

baseline data *before* the programming process actually starts. This would greatly increase the effectiveness of integration, since Development Authorities would find all relevant material for their area of work (eg transport or industry) available from the start.

#### **I.5 IDENTIFYING NEEDS FOR ADDITIONAL DATA AND RESOURCES**

While reviewing the state of the environment and the pressures on natural resources deriving from each development sector, the Environmental Authorities should identify data gaps which it may be necessary to fill in order to produce baseline indicators for evaluation and monitoring.

The Environmental and Development Authorities should also jointly consider what additional human and financial resources will be needed in their administrations. An early appreciation of the need for additional expertise will help Member States in targeting resources for urgent priorities which would assist in the effective delivery, monitoring and evaluation of programmes.

These actions are particularly important at the RDP level, since the authorities should aim to use their findings in order to ensure that sufficient funds (both at the CSF and OP levels) are allocated to address the gaps identified.



**Sources of information:**

- At regional and/or national level, each Member State will have state of the environment reports
- At the Community level the European Environment Agency (based in Denmark) and Eurostat (based in Luxembourg) can provide a variety of information on key environmental themes. The detail of this data will vary significantly, but in general it will provide a first overview of a Region's environmental, economic and social characteristics.
- Also, several EC Directives relating to the environment involve the collection and management of information on one or more aspects of the environment. Obvious examples are the Directive on Urban Waste Water Treatment (91/271/EEC) and the Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC).

# *Annex II*

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*In Annex II:*

*II.1 Introduction*

*II.2 Sustainability Criteria*

## ***II.1 INTRODUCTION***

In this annex to the Handbook we present information on the way that Environmental Authorities can use sustainability criteria of relevance to their region and its environmental policies to develop environmental Objectives and Priorities and also to assess and hopefully improve the contribution to sustainable development of Objectives and Priorities within other sectors. These criteria can be applied to both the RDP and the OP.

## ***II.2 SUSTAINABILITY CRITERIA***

The remainder of this annex consists of tables setting out ten key sustainability criteria developed in the context of a UK Structural Fund programme. These criteria are then applied to key development/investment sectors. They are intended to assist Environmental Authorities think about these issues. Each region will need to decide what its own key criteria should be.

## **Criterion 1 *Minimise Use of Non-Renewable Resources***

### ***Key Sustainability Criteria***

The use of non-renewable resources, such as fossil fuels, mineral ores and aggregates reduces the stock available to future generations. A key principle of sustainable development is that these non-renewable resources should be used wisely and sparingly, at a rate which does not restrict the options of future generations. This also applies to unique and irreplaceable geological, ecological or landscape features which contribute to productivity, biodiversity, scientific knowledge and culture (see however, Key criteria 4, 5 and 6).

### ***Issues to Look For***

#### *Non-energy Resources*

- Could the measure lead to projects which make substantial use of non-renewable resources (eg aggregates or borrow for construction)?
- Does the measure offer opportunities to use renewable in preference to non-renewable resources?
- Does the measure offer opportunities for recycling and re-use of non-renewable primary material?

#### *Energy: Transport*

- Could the measure lead to projects which:
  - increase the length of trips by private vehicle?
  - increase the number of trips by private vehicle,
  - result in a reduction in number or length of trips by car or lorry?
  - facilitate public transport use?
  - enable the replacement of car and lorry use by rail transport or other means such as improved telecommunications?
  - encourage walking or cycling?
  - use more efficient vehicle or fuel technology than present alternatives?

#### *Energy: Built Environment*

- Could the measure lead to projects which require substantial capital energy requirements (eg for materials used in construction)
- Could the measure lead to projects which encourage energy efficiency in buildings (eg use of energy efficient designs and materials, incorporation of renewable energy sources such as solar power)?
- Will the measure provide opportunities for use of combined heat and power?

**Criterion 2 Use Renewable Resources within limits of Capacity for Regeneration**

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***Key Sustainability Criteria***

In the use of renewable resources in primary production activities such as forestry, fisheries and agriculture, there is a maximum sustainable yield from each system beyond which resource degradation begins to set in. When we use the atmosphere, rivers, estuaries and the sea as "sinks" for waste material, we are also treating them as renewable resources in that we rely on their natural self-cleansing capacity. It is possible to overload this self-cleansing capacity, leading to long term resource degradation. The objective must therefore be to use renewable resources at or below a rate at which they can naturally regenerate in order that the stock of these resources is maintained or increased for future generations.

***Issues to Look For***

- Could the measure lead to projects which make substantial use of renewable resources which have a limited capacity for regeneration (eg timber, water) such that the stock of the resource is likely to be reduced?
- Are resources of wind, water, wave and biomass energy potential likely to be endangered by projects under this measure?
- Could projects under this measure offer opportunities for regenerating renewable resources which have been degraded by past activities?

See also Key Criterion 5 regarding soil and water resources and Key Criteria 7 and 8 regarding local, regional and global environmental quality.

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**Criterion 3 *Environmentally Sound Use and Management of Hazardous/Polluting Substances and Wastes***

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***Key Sustainability Criteria***

In many situations there are opportunities to use less environmentally harmful substances and to avoid or reduce the generation of wastes and of hazardous wastes in particular. A sustainable approach will seek to use the least environmentally harmful inputs and to minimise the production of waste by adopting effective systems of process design, waste management and pollution control.

***Issues to Look For***

- Could the measure lead to projects which involve the use of environmentally harmful materials where less harmful alternatives might be available? (eg pesticides, solvents, process chemicals, CFCs, toxic substances in raw materials and products)?
  - Could the measure lead to projects which generate substantial quantities of construction, demolition or processing wastes or spoil, or to any quantity of hazardous waste?
  - Will the measure encourage prevention or minimisation of pollution at source (eg waste minimisation, use of clean technology)?
  - Could the measure lead to the re-use or recovery and recycling of wastes?
  - Will the measure encourage the careful storage, handling, use and disposal of materials and wastes?
  - Does the measure encourage the use of environmentally friendlier technologies?
  - Could the measure result in projects which present risks to human health and the environment from the use or release of toxic substances?
  - Could the measure lead to projects which have a requirement for long distance transport or special arrangements for disposal of waste?
-

**Criterion 4 Conserve and Enhance the status of Wildlife, Habitats and Landscapes**

---

***Key Sustainability Criteria***

The fundamental principle here is to maintain and improve the stock and quality of natural heritage resources for the enjoyment and benefit of present and future generations. These natural heritage resources comprise flora and fauna, geological and physiographical features, natural beauty and amenity. Natural heritage therefore embraces landform, habitats, wildlife and landscapes, the combination of and interrelationships between them and their potential for enjoyment. There are also intimate links to the cultural heritage (see Key criterion 6).

***Issues to Look For***

- Could the measure lead to projects which might cause loss of or damage to:
    - protected and endangered species (eg badgers, otters, bats, red squirrels, rare plants)?
    - areas designated for their nature conservation or landscape significance by international, national or local authorities or other bodies?
    - other natural or semi-natural areas of importance to wildlife, in particular, remnant green spaces, urban fringes, woodlands and forests, hedgerows, other wildlife corridors (eg riverbanks, disused railway lines)?
    - sites of importance for their unique geology or physiography?
  - Could the measure lead to projects which occupy open countryside which might be accommodated within developed areas on brownfield sites?
  - Does the measure encourage projects which could benefit natural heritage resources by increasing wildlife potential (eg creating green spaces and corridors), using natural landscaping, clearing dereliction and creating new landscape resources?
  - Does the measure encourage projects which could enhance people's enjoyment or benefit from natural heritage resources by improving access for recreation, education, scientific research?
-

**Criterion 5 *Maintain and Improve Soils and Water Resources***

---

***Key Sustainability Criteria***

Soil and water are natural, renewable resources which are essential to human health and welfare and which may suffer particular threats from loss by abstraction or erosion, or from pollution. The key principle is therefore to protect the quantity and quality of existing resources and to improve resources which are already degraded.

***Issues to Look For***

- Could the measure lead to projects which might:
    - result in discharges of pollutants to water either intentionally or through accidental releases?
    - require abstraction of substantial quantities of water from ground or surface supplies?
    - result in erosion of soils?
    - cause contamination of soils or groundwater?
    - cause loss of good quality agricultural land?
  - Could the measure lead to projects which:
    - reduce pollution of water?
    - reduce the need for abstraction of water from limited resources?
    - remediate contaminated land?
    - bring vacant or derelict land back into beneficial use?
    - repair erosion?
-



**Criterion 6 *Maintain and Improve Historic and Cultural Resources***

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***Key Sustainability Criteria***

Historic and cultural resources are finite resources which, once demolished or damaged cannot be replaced. As non-renewable resources, the principles of sustainable development require that features, sites or areas of rarity, which represent a particular period or type, or which make a particular contribution to the traditions and culture of an area should be conserved. These may include upstanding buildings, other structures or monuments from any period, buried archaeology, designed landscapes, parks and gardens, and facilities which contribute to the cultural life of a community (theatres, *etc*). Traditional lifestyles, customs and languages also constitute historic and cultural resources which it may be appropriate to conserve.

***Issues to Look For***

- Could the measure lead to projects causing loss of or damage to:
    - listed buildings and conservation areas?
    - areas of archaeological importance?
    - other areas, buildings or features which are of cultural or historic significance?
  - Could the measure lead to projects which might erode traditional lifestyles, customs or language?
  - Does the measure encourage projects which conserve or retain historic and cultural resources, for example through adaptive re-use of buildings which might otherwise be demolished due to dereliction?
  - Does the measure encourage architectural forms for new buildings which are sympathetic to adjacent historic buildings or places?
-

**Criterion 7 *Maintain and Improve Local Environmental Quality***

---

***Key Sustainability Criteria***

In the context of this discussion the quality of a local environment can be defined by air quality, ambient noise, visual and general amenity. Local environmental quality is most important for residential areas and places where people spend leisure or working time. Local environmental quality can change dramatically in response to changes in traffic, industrial activities, construction works and quarrying, development of new buildings and infrastructure, and general increases in the level of activity, for example by visitors. It is also possible to substantially improve a blighted local environment through the introduction of new development.

See also Key Criterion 3 regarding reduction in use and release of polluting substances.

***Issues to Look For***

- Could the measure lead to projects which will:
    - increase emissions of air pollutants into the atmosphere? these might include gaseous emissions from fuel combustion in stationary plant or vehicles, dust from construction or quarrying, odours or other emissions from processes?
    - cause increased noise or vibration from traffic (road, air, sea), industrial or other processes, blasting *etc*?
    - introduce intrusive new structures into the environment with the potential to cause visual intrusion?
    - introduce a new source of light into otherwise dark areas?
    - increase levels of activity in otherwise quiet areas?
  - Could the measure lead to projects which will:
    - reduce emissions of air pollution by reducing traffic, introducing less polluting processes or improving environmental practices?
    - reduce levels of noise and vibration?
    - enhance townscapes or landscapes by improving, maintaining or renewing buildings, structures and open spaces?
    - improve the management of visitor activity?
    - increase/maintain public access to open space in urban and rural areas?
-

**Criterion 8 *Protection of the Global and Regional Atmosphere***

---

***Key Sustainability Criteria***

One of the main driving forces behind the emergence of sustainable development has been the evidence of global and regional problems caused by emissions to the atmosphere. The links between combustion emissions, acid rain and acidification of soils and water, and between chlorofluorocarbons (CFCs), destruction of the ozone layer and human health effects were identified in the 70s and early 80s. Identification of the link between carbon dioxide and other greenhouse gases and climate change followed. These impacts are long term and pervasive and present major threats to future generations.

***Issues to Look For***

- Could the measure lead to projects which reduce consumption of fossil fuels and resulting emissions of carbon dioxide, sulphur oxides, nitrogen oxides and unburnt hydrocarbons by reducing traffic, improving energy efficiency, using cleaner technologies (see also key Criterion 1)?
  - Could the measure lead to projects which create sinks for carbon dioxide by new tree planting or sustainable forestry management practices?
  - Could the measure lead to projects which replace fossil fuel consumption by, for example, wind, wave or biomass energy or use of waste materials as fuels (see also Key Criterion 3)?
  - Does the measure discourage use of ozone depleting substances?
  - Could the measure lead to projects which reduce methane and carbon dioxide emissions from landfill sites or industrial installations?
-

**Criterion 9 *Develop Environmental Awareness, Education and Training***

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***Key Sustainability Criteria***

The involvement of all partners in the economy in achieving sustainable development is fundamental to the principles established at Rio (UNCED, 1992). Awareness of the issues and the options is crucial and environmental management information, education and training are keys to achieving sustainable development. This can be achieved through dissemination of research findings, the integration of environmental programmes in professional training, schools, higher and adult education, and through the development of networks within economic sectors and groupings. Access to environmental information in homes and at recreation locations is also important.

***Issues to Look For***

- Does the measure encourage corporate commitment to good environmental management in all projects?
  - Will the measure promote the provision of environmental information and training, for example by providing materials for education, providing employee training in new or existing ventures, establishing interpretative centres?
  - Does the measure promote increased public access into the countryside and natural areas and with this enhanced awareness of our interaction with the environment?
  - Will the measure result in publicity for or publications on environmental initiatives?
-

**Criterion 10 *Promoting Public Participation in Decisions about Development***

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***Key Sustainability Criteria***

The Rio Declaration (UNCED, 1992) establishes the involvement of the public and affected parties in decisions affecting their interests as a fundamental tenet of sustainable development. The principal mechanism for this is identified as public consultation during development control and in particular the involvement of third parties in Environmental Assessment. Beyond this sustainable development envisages a broadening of public involvement in the formulation and implementation of development proposals so that an increased sense of ownership and shared responsibility can emerge.

***Issues to Look For***

- Will decisions on projects under the measure be subject to any involvement of the affected or wider public?
  - Is the measure likely to lead to projects resulting in local controversy?
  - Does the measure encourage public involvement in the design and implementation of projects?
  - Will the measure lead to projects resulting in ongoing opportunities for public participation?
-

# *Annex III*

## *Techniques for the environmental assessment of transport infrastructures in operation and planning*

*In Annex III:*

- III.1 Impact Matrices and Other Assessment Techniques*
- III.2 An Example of a Typical Environmental Assessment of RDPs Using a Matrix Approach*
- III.3 Environmental Evaluation of OPs*
- III.4 Assessing OP Priorities, Objectives and Targets*
- III.5 Assessing the Impact of OP Measures*
- III.6 Assessing Cumulative Impacts*

### III.1 IMPACT MATRICES AND OTHER ASSESSMENT TECHNIQUES

In this Annex to the Handbook we present information on methods which can be used to assess the environmental implications of RDP's and OP's.

Impact matrices <sup>(1)</sup> have been used extensively to identify and present information on environmental impacts in the context of EIAs. The basic concept is that matrices relate the content of proposed development plans or programmes to their associated impacts on the environment. Table III.1 below provides an example of the typical format of an impact matrix.

At the level of SEA the environment can be described in terms of:

- Environmental objectives and priorities;
- Type of environmental impacts;
- Environmental indicators.

Matrices can provide a simple way of considering environmental impacts for decision-makers. Their flexibility means they can be refined and modified as more information becomes available, and they can include different levels of detail. The information which can be presented in a matrix includes:

- Short written descriptions;
- Use of various symbols (ticks and crosses, or more elaborate symbols representing levels of impacts such as black dots of varying sizes);
- Numerical information which can be summed to indicate total environmental impacts.

This is illustrated in a number of Tables below (see Tables III.2, III.3 and III.5).

In contrast to the use of matrices for EIAs, there is no standard list of 'activities' which should be included and assessed. It is essential that Development and Environmental Authorities think about the results that the plans and programmes are designed to achieve and the type of actions which will be necessary to implement them. The aim is to be as comprehensive as possible in identifying the potential for positive and negative impacts, including uncertainties. Box III.1 below highlights some of the key issues relating to uncertainty and impact prediction.

#### **Box III.1     *Uncertainties and Lack of Knowledge***

In general, the prediction of impacts at the strategic level will involve a number of uncertainties:

- Scientific uncertainties - due to long time scales or complex interactions or lack of knowledge;
- Lack of precision in measuring the impacts;
- Uncertainty about the precise activities and Measures by which the plan or programme will be implemented (typically the location of development).

All uncertainties should be made explicit in the SEA.

Uncertainties may refer to potentially significant\* and irreversible\* effects the proposal (eg. a section of the plan or programme dealing with a particular sector or priority). In this case uncertainties should be reduced to acceptable proportions by further studies over a short period (maximum six months), leading to the control of remaining uncertainties by reasonable and enforceable conditions. Such Measures should be taken before the plan or programme is finalised.

\* = see Glossary

(1) see Glossary

**Table III.1** *Typical Format for an Environmental Impact Matrix*

	Sub-prog. 1	Sub-prog. 2	Sub-prog. 3	Sub-prog. 4
<b>Global Sustainability</b>				
Transport energy efficiency - trips				
Transport energy - modes				
Built environment				
Efficient total energy use				
Rate of CO2 fixing				
Biodiversity (wildlife & Habitats)				
<b>Natural Resources</b>				
Air Quality				
Water Conservation Quality				
Land & Soil Quality				
Minerals Conservation				
<b>Local Environmental Quality</b>				
Landscapes & Open Land				
Urban environment				
Cultural heritage				
Public access to open space				
Building quality				
Innovation, technology & R&D				

*Other assessment techniques include:*

- *Questionnaires, interviews and panels*  
useful to gather information from different government departments involved and from non-governmental bodies and individual experts. They can lead to consensus building which is crucial for establishing what types of impacts are significant at the strategic level. They also have the advantage of facilitating transparency in dealing with uncertainty and with subjective/qualitative data.
- *Checklists*  
can help to identify significant impacts, however, care should be taken in developing them since strategic and cumulative impacts (see section III.6) usually involve more complex cause and effect chains than project-level assessment where checklists have often been used;
- *Trend analysis*  
to assess the state of a natural resource, ecosystem or sensitive area over time. It usually results in a graphical projection of past and future conditions, and can be used to calculate changes in the occurrence or the intensity of a pressure factor (eg. noise from traffic, pollution from agriculture) over time;



- *Overlay mapping and Geographical Information Systems (GIS)*  
enables to add a spatial dimension to the analysis and the data gathered. It can be used to identify areas where development should be limited or avoided (constraint mapping), or areas where environmental impacts will be greatest (eg. show potential encroachment of planned developments on sensitive areas). It can be of particular help in the analysis of cumulative impacts, identifying areas where development pressures tend to accumulate;
- *Biodiversity and ecosystem analysis*  
this is particularly useful at the strategic level since it centres around holistic approaches and broad regional and inter-regional perspectives. It can help to address the issue of sustainable use of natural resources. It is normally based on natural boundaries or sensitive areas;
- *Networks and system diagrams*  
to understand, explain and represent cause and effect relationships. They will help to assess the multiple impacts of an OP's Measures, for example, and to identify indirect and cumulative effects.

### III.2 AN EXAMPLE OF A TYPICAL ENVIRONMENTAL ASSESSMENT OF A REGIONAL PLAN USING A MATRIX APPROACH

Presented below is an example of the practical application of the Impact Matrix technique to a regional plan. The region in question is the West Region in the Republic of Ireland.

The West Regional Development Plan contains four sub-programmes designed to implement the plan priorities. These are:

- Sub-Programme 1 - economic infrastructure
- Sub-Programme 2 - economic development
- Sub-Programme 3 - human resources development
- Sub-Programme 4 - rural development

These sub-programmes and their proposed Measures, have been subjected to a strategic analysis of their environmental impacts in terms of global sustainability, natural resources and local environmental quality. The analysis is not intended to accurately reflect what the precise impact of any individual Measure or project is likely to be on the receiving environment in the region. Rather it is intended to provide information on the potential environmental impacts that can and do arise when undertaking economic development.

Table III.2 below, gives a summary overview of the likely environmental impact of the proposed sub-programmes. The assessment criteria used to produce the matrix are derived from UK Government good practice guidance on "Environmental Appraisal of Development Plans (1993).

The West Regional Authority and its partners are committed to ensuring that the implementation of the plan contributes to the sustainable development of the region and that actions resulting from it should have a beneficial effect and should not, on balance, harm the environment. The use of the impact matrix is a first step in helping them meet that objective.

To ensure that the proposers/ implementers of Measures under the sub-programmes take all necessary (statutory and other) and reasonable steps to implement environmentally beneficial actions the following activities, to be carried out by the regional authorities were proposed:

- Establishment of baseline Measures and assessments including baselines against Environmental Stock Criteria and indicators (see Table III.3 below) and baseline data gathering and mapping of important sites of conservation interest;
- Establishment of an appropriate monitoring system for tracking regional environmental indicators;
- Establishment of a clear system for informing, selecting and appraising projects in conjunction with existing partners at local, regional and national level (see Annex VI of this Handbook);
- Production of appropriate advisory and information literature as well as guidance notes for project applicants (see Annex VI of this Handbook).

**Table III.2 Summary Environmental Impact Analysis**

	Sub-prog. 1	Sub-prog. 2	Sub-prog. 3	Sub-prog. 4
<b>Global Sustainability</b>				
Transport energy efficiency - trips	+/-	0	0	+/-
Transport energy - modes	+/-	0	0	+
Built environment	+	0	0	0
Efficient total energy use	+	+	0	0
Rate of CO <sub>2</sub> fixing	+	0	0	+
Biodiversity (wildlife & Habitats)	x	0	+	+/-
<b>Natural Resources</b>				
Air Quality	0	+	0	+
Water Conservation Quality	+	+/-	+	+
Land & Soil Quality	+/-	+	0	+/-
Minerals Conservation	0	0	0	+/-
<b>Local Environmental Quality</b>				
Landscapes & Open Land	+/-	+/-	0	+
Urban environment	+	0	0	0
Cultural heritage	+/-	+/-	+	+
Public access to open space	+/-	0	+	+
Building quality	0	+	0	+
Innovation, technology & R&D	0	+	+	+

Key	X	negative effects
	+	positive effects
	+/-	both positive and negative effects

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0	neutral effects
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**Table III.3 Proposed Environmental Stock Criteria and Environmental Impact Indicators for the West Region of Ireland**

General Criteria	Impact Indicators
<b>Global Sustainability</b>	
Transport energy efficiency - trips	reduced trip length; reducing the number of motorised trips
Transport energy - modes	increasing public transport rate; increased use of other modes walking and cycling in urban areas
Built environment-energy	development of management plan
Efficient total energy use	practices in context of energy management plan
Rate of CO2 fixing	increased afforestation, where appropriate.
Biodiversity (wildlife & Habitats)	safeguarding of designated NHAs, SPAs, and SACs; species diversity
<b>Natural Resources</b>	
Air Quality	reducing levels of pollutants; monitoring traffic pollution
Water Conservation Quality	improvement in potable water supplies; maintenance of water quality in rivers and lakes; improved water resources management & conservation
Land & Soil Quality	reducing levels of pesticides and better nutrient management planning
Minerals Conservation	reduction of consumption of fossil fuels and minerals; more effective re-use, or increase in recycling of materials
<b>Local Environment Quality</b>	
Landscapes & Open Land	enhancing and maintaining general landscape quality; safeguarding prime landscape amenities
Urban environment	enhancing townscapes in rural towns and villages; development of cultural heritage locations
Cultural heritage	safeguarding important cultural heritage sites and buildings; safeguarding archaeological and geological value
Public access to open space	development and maintenance of rural open spaces; forests, parks
Building quality	improvement in the general quality of the building stock
Innovation, technology & R&D	environmental Measures linked to waste minimisation, waste recycling and cleaner production.

### III.3 ENVIRONMENTAL EVALUATION OF OPERATIONAL PROGRAMMES

Operational Programmes are the principal means by which Member States and regions implement particular development priorities agreed within the CSF for a particular region. They generally contain more information and detail on the precise nature, scope and

intended Measures that will be co-financed under the programme. As a consequence, it is possible to examine further, the likely environmental impacts of a particular development priority by examining in detail, the OP. Here again, environmental impact matrices are a very useful tool which can assist in the task of evaluation.

### **III.4 ASSESSING OP PRIORITIES, OBJECTIVES AND TARGETS**

Table III.4 presents an example of how the impact matrix approach can be used to assess the priorities, objectives and targets of an OP against environmental objectives. Once again, the matrix format is a helpful way of presenting material in a clear and concise fashion.

### **III.5 ASSESSING THE IMPACT OF OP MEASURES**

As discussed earlier in this annex, impact matrices enable large amounts of information to be presented in a clear and simple format. They combine environment and development issues in a single framework, summarising their interaction in terms of potential impacts on the regions' environment. If a Measure results as having potentially significant negative impacts it should be subject to more detailed assessments. Table III.5 shows an example of an assessment matrix applied to an OP Measure.

Depending on the approach chosen, the type of impact assessed can change to include a range of the impacts listed in the paragraph above. For example, for direct and indirect impacts, the key to assessment types could be changed to:

- 2      negative direct effect
- 1      negative indirect effect
- ✓/x    both negative and positive effects
- ><     both negative and positive effects  
         where no consensus was reached
- #       no clear impact can be deduced
- +1      positive indirect effect
- +2      positive direct effect.

Possible additional variables for more detailed impact matrices include:

1. *Magnitude* (this can be calculated in different ways, eg. the amount of a resource affected relative to the existing stock, or the intensity of the impact and its timing and duration)
2. *Significance* (this can be interpreted in different ways, eg. international, cross-boundary, national regional)
3. *Likelihood* (this is intended to show whether the possibility of an impact is certain, very likely, or unlikely).

Set out below are some important issues in assessing the impact of OP Measures which Environmental Authorities may wish to take into consideration.

#### ***Information on Measures***

The Environmental Authorities will need to ensure that the OP provides the following information for Measures:

- Main impacts (positive or negative) for each type of Measure
- Scale of each Measure (this can be deduced by the description of its aims, the types of projects being proposed, the level of proposed expenditure, and the overall target to be achieved by the Measure)
- Location (especially if in sensitive or designated areas).
- Indicators relating to environmental impacts and benefits (where relevant) .

Where such information is not evident from the text of the draft OP then the Environmental Authorities should attempt to obtain it.

**Table III.4 Example of a Summary Matrix Comparing Objectives and Targets for a Programme's Priority 'Development of the Tourism Industry'**

<p><b>Basic Information:</b></p> <p><b>Priority:</b> Develop a Sustainable Tourism Industry (Include a brief description)</p> <p><b>Categories of environmental and sustainable development objectives:</b></p> <p>A) use of renewable resources  B) hazardous/ polluting substances and wastes  C) protected areas  D) landscapes  E) soils  F) water  G) historic and cultural resources  H) local environmental quality  I) air  J) global warming  K) environmental awareness, education and training  L) public participation.</p>	
<b>The development Priority</b>	<b>Assessment against environmental/sustainable development objectives</b> (see list A to L above)

<b>Priority objectives</b>	<b>Priority targets</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>etc.</b>
1. Strengthen the region's ability to attract 'elite' tourism	<ul style="list-style-type: none"> <li>Development of new facilities in town X and a new marina in resort Y</li> </ul>	✓/!? There is no clear plan to use solar energy despite local potential	•? Marina will require oil/waste disposal facilities	?	x (partly) Area of new marina includes protected coastal features	
2. Development of sustainable tourism (focus on coastal zones and small islands)	<ul style="list-style-type: none"> <li>Define a sustainable tourism management plan for areas X, Y and Z with particular reference to water resource demand management and coastal eutrophication</li> </ul>	?	✓	✓	✓	etc.

Key:	<ul style="list-style-type: none"> <li>No relationship or significant impact</li> <li>✓ Significant beneficial impact</li> <li>? Uncertainty of prediction or knowledge</li> </ul>	<ul style="list-style-type: none"> <li>✗ Significant adverse impact</li> <li>✓? Likely, but unpredictable, beneficial impact</li> <li>✗? Likely, but unpredictable, adverse impact</li> </ul>
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**Table III.5 Example of an Assessment Matrix for an OP Measure**

<b>Priority: COMMUNICATIONS</b>		
<b>Measure: Improving the railway transport system</b>		
<b>Key Sustainability Principle *</b>	<b>Assessment</b>	<b>Comments</b>
Minimise use of non-renewable resources	✓	The objectives of the this type of initiative -to support sustainable, environmentally friendly public transport systems- will have a beneficial effect in the long term, shifting passengers from private car transport to rail transport which consumes less fuel
Use renewable resources within limits of capacity for regeneration	●	No relationship
Environmentally-sound use and management of hazardous/ polluting substances and wastes	✓?	Rail transport systems can provide higher level of safety in the management of hazardous/polluting substances and waste. However, the Measure does not make a direct link to this aspect
Maintain and improve the quality of wildlife, habitats and landscapes	✓	The Measure aims to minimise impacts on the natural environment by building tunnels where the proposed railway would otherwise affect a natural area
Maintain and improve the quality of soils and water resources	✓	The Measure includes a requirement to adopt the best environmental solution for the reduction of leakage from the operation of transport infrastructure
Maintain and improve the quality of historic and cultural resources	●	It is not envisaged that the projects resulting from this Measure will affect (positively or negatively) areas of historic and cultural value
Maintain and improve local environmental quality	✓?	If the proposed initiatives result in a reduction in traffic congestion then they will have a beneficial effect
Protection of the atmosphere (global warming)	✓?	If the proposed initiatives result in a reduction in traffic congestion then they will have a beneficial effect
Develop environmental awareness, education and training	?	The Measure makes no provision for developing environmental awareness of the public and promoting greater use of public transport. It is recommended that it is amended to include the development of awareness
Promote public participation in decisions involving sustainable development	✓?	The establishment of new public transport systems is likely to have a beneficial effect if public consultation forms part of the planning and design process
<b>Overall assessment:</b>	✓	This type of initiative will have clear environmental benefits
<b>Key:</b> <ul style="list-style-type: none"> <li>● No relationship or significant impact</li> <li>✓ Significant beneficial impact</li> <li>? Uncertainty of prediction or knowledge</li> <li>✖ Significant adverse impact</li> <li>✓? Likely, but unpredictable, beneficial impact</li> <li>✖? Likely, but unpredictable, adverse impact</li> </ul>		



*The type of impacts that need to be considered by Environmental Authorities in the ex-ante evaluation of OP Measures include:*

- *Direct impacts* on the environment (how Measures are likely to directly affect the quality of the environment and natural resources). For example: a new waste water treatment plant will have a direct impact on the effluents affecting water quality;
- *indirect impacts* on the environment. For example: intensification of agriculture practices leading to greater use of pesticides and nutrients which affect the quality of water receptors and, in turn, habitats and species which depend on these water bodies;
- *Secondary impacts* (when proposed development will trigger further development which itself will have an impact on the environment) For example: a new transport link will trigger new development along its corridor;
- *Impact interactions* (the way impacts can interact with one another to produce a more severe impact) for instance the impacts on water resources of a number of economic activities being developed within a given area which will be much greater than the impact of a single development;
- *Likely cumulative effects* of Measures and of any other closely connected initiative (eg Cohesion Fund projects, EIB loans etc) (see Section III.6).

### III.6 ASSESSING CUMULATIVE IMPACTS

#### *Introduction*

Cumulative effects refer to the impact (positive and negative, direct and indirect, long-term and short-term) on the environment arising from the incremental impact of OP Measures when added to other past, present, and reasonably foreseeable future plans or programmes.

The assessment requires the setting of spatial and temporal boundaries and the aim is to assess the incremental impacts which result from a range of activities throughout an area or region, where each individual effect may not be significant if taken in isolation.

This type of analysis provides important information which can help decision-makers to choose between alternative strategies and Measures for the implementation of CSF Priorities, as well as identify ways of avoiding, minimising and mitigating adverse effects.

#### *The Assessment of Cumulative Impacts and the Environmental Assessment of OPs*

There is no agreed or fixed methodology for assessing cumulative impacts and to date most of these assessments have been applied to project level EIAs, rather than to the more strategic level assessment which is the focus of this Handbook.

This Handbook proposes that the assessment of cumulative impacts in the context of OPs could concentrate on significant cumulative impacts on sensitive areas, key natural resources and ecosystems. These should largely have been identified in stage 1 of the SEA (*Assessment of the Environmental Situation - Defining the Baseline*).

In order to carry out an assessment of cumulative impacts in the context of this SEA process, Environmental Authorities should ensure that the following issues are considered during the overall environmental assessment:

- Define boundaries of sensitive areas and natural resources (eg. protected areas, watersheds) and the carrying capacity of ecosystems, which are important at this strategic planning level;
- Identify the type of development priorities likely to affect the areas;
- Any other past, present or future plan for development (eg. Cohesion Fund and EIB projects, regional plans etc.) in the area which could interact with the OP proposals;
- The type of impact which such development could have on the area;
- Assess the potential cumulative impacts of the programme, its Measures and related development plans or programmes, and use natural boundaries or sensitive area boundaries when assessing the impact on resources and ecosystems.

The assessment of cumulative impacts could involve specific studies for example on large infrastructure projects, or on Measures which are clearly linked to other EU funded projects, with the aim of assessing their potential cumulative impacts on sensitive areas.

For example, a transport OP may include a number of Measures involving new infrastructure which will partly connect with other infrastructure initiatives funded by the Cohesion Fund or EIB. The Environmental Authorities may consider it appropriate to carry out a detailed

assessment of the combined impacts of these different proposals. This assessment could also lead to better project co-ordination and effectiveness.

### *Spatial boundaries for natural resources, ecosystems and sensitive areas*

Defining the spatial boundaries for the assessment of cumulative impacts is a crucial step. Box III.2 offers a few suggestions.

#### **Box III.2 Possible Geographic Areas for the Analysis of Cumulative Impacts on Natural Resources and Ecosystems**

Air Quality:
Metropolitan area, airshed, or global atmosphere
Water Quality:
Stream, watershed, river basin, estuary, aquifer
Vegetation:
Watershed, forest, range, or ecosystem
Wildlife:
Species habitat or ecosystem; for migratory wildlife: breeding grounds, migration route, wintering areas, or total range of affected population units
Fishery Resources:
Stream, river basin, estuary, spawning area and migration route
Coastal Zones:
coastal region or watershed.

Source: Council on Environmental Quality (1997) Considering Cumulative Effects Under the National Environmental Policy Act, Federal Government, USA

In terms of *sensitive areas*, the basic approach should take into account all areas identified by Community legislation, including Special Protection Areas (Directive 79/307/EEC), Special Areas for Conservation (Directive 92/43/EEC), Sensitive Areas and Less

Sensitive Areas (Directive 91/271), and  
Vulnerable Areas (Directive 91/676/EEC).

### *Temporal boundaries*

The first step is to consider the time frame of the OP under analysis and identify plans and programmes which are likely to occur during that same period. In addition, Environmental Authorities should identify those effects which are likely to have significant cumulative impacts further into the future and endeavour to set temporal boundaries for these.

### *Assessment techniques*

Most of the techniques described above for SEA are applicable to the assessment of cumulative impacts. Details on how to carry out these assessments can be found in:

Council on Environmental Quality  
(1997) *Considering Cumulative Effects  
Under the National Environmental  
Policy Act*, Federal Government,  
USA.

# *Annex IV*

## *Indicators*

*In Annex IV:*

*IV.1 Introduction*

*IV.2 Indicators at the RDP Stage*

*IV.3 Indicators at the CSF Stage*

*IV.4 Indicators at the OP Stage.*

## IV.1 INTRODUCTION

The Handbook has discussed the role of indicators at the RDP, CSF and OP stages in the Structural Funds process. The aim of this Annex is to provide the user of the Handbook with some additional information on the use of indicators.

Indicators are intended to use quantified information to help identify and explain changes over time. Box IV.1 sets out the key criteria which could be used in selecting indicators (social, economic or environmental) at all stages in the Structural Funds Process (RDP, CSF and SPD/OP).

If indicators do not correspond to these basic requirements then it is unlikely that they will assist in establishing the current situation or assist in measuring the impact of programmes.

Environmental and Development Authorities should review indicators at each stage in the Structural Funds process and should, where necessary, replace indicators which do not appear to work or collect more data on indicators which appear to be poorly supported by available data.

## IV.2 INDICATORS AT THE RDP STAGE

In section 3.3.6 of the Handbook we have presented the main issues concerning the importance of environmental indicators at the RDP stage. We have also discussed the differences between *baseline* and *performance* indicators and their different roles in the development of the RDP. In this Annex we provide some more detailed examples of categories of *baseline* and *performance* indicators which may be of relevance to environmental authorities when they are producing their inputs to RDP's. In addition we also provide some examples of baseline and performance indicators of relevance to sustainable developments for sectors other than the environment, which, however, have considerable potential for both environmental impacts and benefits.

Tables IV.1 and IV.2 below provide examples of typical baseline and performance indicators that could be used at RDP stage. Whilst the information provided in these tables is not exhaustive it provides coverage of some of the principal environmental issues that are addressed by RDP's. Additional information on assessment of the environmental baseline can also be found in Annex I of this Handbook.

### Box IV.1 Key Criteria for Selection of Indicators

Indicators should:

- be representative;
- be scientifically valid;
- be simple and easy to interpret;
- show trends over time;
- give early warning about irreversible trends where possible;
- be sensitive to the changes in the environment or the economy it is meant to indicate;
- be based on readily available data or be available at reasonable cost;
- be based on data adequately documented and of known quality;

- be capable of being updated at regular intervals.

**Table IV.1 Examples of Environmental Baseline Indicators**

Sector	Indicator
Water (Infrastructure)	<ul style="list-style-type: none"> <li>• Total installed capacity of waste water <i>Treatment Plants:</i></li> <li>• Percentage of waste water treatment plants in operation</li> <li>• Percentage of total population connected to a sewage collection system</li> <li>• Percentage of industrial discharges connected to a collecting system</li> </ul>
Water (Quality)	<ul style="list-style-type: none"> <li>• Number of bathing areas in compliance with the Bathing Water Directive (Directive 96/160/EEC)</li> <li>• Length of rivers identified as being of good quality</li> <li>• Length of rivers identified as being of poor quality</li> </ul>
Municipal Waste	<ul style="list-style-type: none"> <li>• Volume of municipal waste generated, per capita</li> <li>• Volume of municipal waste collected, per capita</li> <li>• Percentage of waste being land-filled</li> <li>• Percentage of waste being recycled</li> <li>• Capacity of recycling installations</li> <li>• Percentage of waste being incinerated</li> <li>• Capacity of incineration facilities</li> </ul>
Industrial and Toxic and Hazardous Waste	<ul style="list-style-type: none"> <li>• Capacity of industrial and toxic and hazardous waste disposal facilities</li> <li>• Percentage of waste exported for treatment and disposal</li> <li>• Percentage of waste treated domestically</li> </ul>
Derelict and Contaminated Land	<ul style="list-style-type: none"> <li>• Total area of identified derelict land</li> <li>• Total area of identified contaminated land</li> </ul>

**Table IV.2 Examples of Environmental Performance Indicators**

Theme	Indicator
Water	<ul style="list-style-type: none"> <li>• Increase in the percentage of bathing areas which meet the standards of the Bathing Water Directive (Directive 76/160/EEC)</li> <li>• Increase in the percentage of the population connected to treatment plants with secondary treatment</li> <li>• Increase in the length of rivers meeting environmental quality objectives</li> <li>• Increase in the percentage of industrial discharges connected to waste water treatment plants</li> </ul>
Waste	<ul style="list-style-type: none"> <li>• Increase in the percentage of households served by waste collection systems</li> <li>• Increase in the percentage of domestic waste being recycled</li> <li>• Increase in the percentage of industrial waste being recovered</li> <li>• Decrease in the amount of toxic waste being produced</li> <li>• Decrease in the amount of toxic waste being exported for treatment</li> <li>• Increase in the amount of toxic waste being treated locally</li> <li>• Decrease in the number of shipments of toxic waste</li> </ul>
Derelict and Contaminated land	<ul style="list-style-type: none"> <li>• Decrease in the area of derelict land awaiting redevelopment</li> <li>• Increase in the percentage of known contaminated sites undergoing remediation</li> <li>• Increase in the area of derelict and contaminated land successfully redeveloped</li> </ul>
Air Pollution	<ul style="list-style-type: none"> <li>• Reduction in the number of recorded exceedences of air quality limit values</li> <li>• Reduction in emissions of priority pollutants</li> </ul>



In Section 3.3.6 of the Handbook we have discussed the importance of establishing baseline indicators for sectors other than the environment within the RDP. Set out below are some examples of *baseline* and *performance indicators* for key development sectors. Environmental authorities will need to consider that environmental indicators need to be applied to other development sectors within the RDP. The examples presented below may be of assistance to environmental authorities in helping them to develop such indicators at the RDP stage.

#### **Transport:**

- number of people using public transport (baseline) increase in number of people using public transport (performance)

#### **Energy:**

- energy intensity per unit of GDP (baseline)
- domestic energy consumption per capita (baseline)
- percentage of energy demand supplied from renewable sources (baseline)
- reduction in energy intensity per unit of GDP (performance)
- reduction in domestic energy consumption per capita (performance)
- increase in the percentage of energy demand being supplied from renewable sources (performance).

#### **Agriculture:**

- number of areas covered by Agri-Environment management measures (baseline)
- number of reported incidents of agricultural pollution (baseline)
- increase in the number of areas covered by Agri-Environment management measures (performance)

- reduction in the number of reported incidents of agricultural pollution (performance).

#### **Tourism:**

- percentage visitors present outside the peak season (baseline)
- increase in the percentage of visitors present outside the peak season (performance).

### **IV.3 INDICATORS AT THE CSF STAGE**

Section 3.4.4 of the Handbook describes the function of environmental indicators at the CSF stage. Table IV.3 below presents a further example of the way in which environmental indicators can be applied to the CSF. It also provides an example of the application of environmental indicators to other development sectors within the CSF.

### **IV.4 INDICATORS AT THE OP STAGE**

Section 3.5.5 of the Handbook has discussed the role of indicators within Operation Programmes and has also explained the different functions of *baseline*, *impact* and *performance* indicators.

As indicated in the 'Description' sub-section of the part of the Handbook dealing with Environmental Indicators and Operational Programmes (Section 3.5.5 of the Handbook), the selection of baseline and performance indicators for an OP should be based on data collected for the RDP on the state of the environment within the region and on the indicators chosen for the RDP and the CSF. The indicators chosen for the OP should have a clear relationship to those used in the RDP and the CSF. Table IV.4, below, indicates how priorities within a programme can be linked to performance indicators and to targets which can be



measured and which will enable the impact of the programme to be measured. Table IV.5 provides some typical examples of impact indicators that might be used in an OP.

Tables IV.6, IV.7 and IV.8 illustrate how for one sector, water resources, baseline, impact and performance indicators can be developed for an OP.

**Table IV.3 Example of Environmental Indicators and Targets at CSF Level**  
(taken from the Republic of Ireland's CSF 1994-99)

Sector	Environmental Indicator	Unit	1993 baseline	1994	1995	1996	1999 target
Environment	Urban wastewater being treated to Dir. 91/271	(%)	12,33	13	14,09		80
	Dumping of sewage sludge at sea	(%)	40	40	40		0
	Recovery rate for packaging waste	(%)	10	13	15,6		25
	Level of recycling of municipal solid waste	(%)	8	8	8		15
	Compliance with Directive 80/778 a) public supplies b) group supplies	(%)	93.7 80.8	94.4 80.9			100 100
Transport	Rail passenger Numbers	No° (millions)	7,9	8,10	8,31	8,15	8,7
Energy	Energy intensity (TPER/GDP)	(%)	83	82	76	75	75
	Primary Energy supply by source						
	Coal	(%)	20	18	18		18
	Peat	(%)	12	12	11		10
	Oil	(%)	49	51	51		53
	Natural Gas	(%)	17	17	18		17
	Renewables	(%)	2	2	2		2
	Energy supplied by renewables	MW	8	14	15		219
Tourism	Visitors in off-peak	(%)	70	75	71	72	75
	Contribution of indigenous fuels to TPER	(%)	31	31	29		14
Agriculture	No of fish kills	recorded kills	22	11	18	15	
	Serious pollution due to agriculture	% km of river length	36	36	24	28	

Source: CSF for Ireland, 1994-99, Government Publications Office

**Table IV.4 Example of Performance Indicators and Targets for an OP**

General criteria	Relevant priority type	Performance Indicator	Target
Transport energy efficiency - Trips	Transport	1. Reduction of the number of commuter trips by car from business centres around cities	1. reduce by 10% in business centres X and Y around city Z
Management of protected areas	Environment	2. Increase in the total regional/national surface area designated for nature conservation 3. Development of management plans for protected areas 4. Additional resources for protection from forest fires in areas	2. increase by 10% by year 200X 3. for X number of Natura 2000 sites by 200X 4. (detail of type of measure) for areas A, B and C
Water conservation and quality	Agriculture Forestry Tourism Industry	5. Maintain groundwater levels at 199X levels 6. Reduction in nitrate content of rivers 7. Reduction in the area under irrigation	5. maintain at 199X levels 6. reduce by X in rivers A, B and C 7. reduce by 20% in region Z
Landscape and open land	Agriculture Forestry Rural development	8. Increase in woodland coverage.	8. increase by 15% in zones Y and Z around cities A, B and C

**Table IV.5 Examples of Environmental Impact Indicators**

Priority	Environmental Impact Indicators (positive and negative)
Agriculture Rural development	<ul style="list-style-type: none"> <li>Loss of (ha) quality agricultural land;</li> <li>Development (ha) on green field sites;</li> <li>Existing public open space damaged, allowed to fall into disrepair or lost to development (ha).</li> </ul>
Tourism Cultural Heritage	<ul style="list-style-type: none"> <li>Number of protected buildings or extent (ha) of conservation areas damaged, or number of listed buildings demolished;</li> <li>Number of protected buildings or extent (ha) of conservation areas restored, enhanced;</li> <li>Number and extent (ha) of parks and gardens of special historic interest damaged;</li> <li>Number and extent (ha) of parks and gardens of special historic interest restored, enhanced.</li> </ul>
Water Resources	<ul style="list-style-type: none"> <li>Increased pollutants into rivers, groundwater sources, estuaries or coastal waters;</li> <li>Reduced pollutants into rivers, groundwater sources, estuaries or coastal waters;</li> <li>Increased area under irrigation;</li> <li>Reduced area under irrigation;</li> <li>Increased drainage of wetlands;</li> <li>Reduced drainage of wetlands.</li> </ul>
Environment (Air)	<ul style="list-style-type: none"> <li>Increased consumption of fossil fuels;</li> <li>Reduced consumption of fossil fuels;</li> <li>Increased consumption of renewables.</li> </ul>
Environment (Biodiversity)	<ul style="list-style-type: none"> <li>Damage to or loss of areas covered by national or international nature conservation designations (ha) (eg Natura 2000);</li> <li>Increased number of areas covered by national or international nature conservation designations (ha) (eg Natura 2000), or enhancement of existing;</li> <li>Damage to or loss of regionally or locally important but non-statutorily designated wildlife areas (ha);</li> <li>Increased number of regionally or locally important but non-statutorily designated wildlife areas (ha), or enhancement of existing</li> </ul>
Environment (Landscape)	<ul style="list-style-type: none"> <li>Damage to or adverse impact on areas covered by national landscape designations (ha);</li> <li>Enhancement of areas covered by national landscape designations (ha).</li> </ul>

**Table IV.6 *Baseline Indicators for the Water Sector***

<b>Baseline Indicators</b>
<ul style="list-style-type: none"> <li>• river and ground water quality levels (including drinking water)</li> <li>• water quality in surface waters</li> <li>• total surface area being irrigated</li> <li>• total reservoir capacity</li> <li>• available under-ground water</li> <li>• number of waste water treatment plants</li> <li>• quantity of raw water abstracted</li> <li>• number of houses connected to the supply</li> <li>• quantity of raw water treated</li> </ul>

**Table IV.7 *Performance Indicators for the Water Sector***

<b>Performance Indicators</b>
<ul style="list-style-type: none"> <li>• decrease in water consumption levels</li> <li>• improvement of quality standards (including drinking water)</li> <li>• improved efficiency of irrigation infrastructure</li> <li>• improved ecological flow of rivers, reduction in the cases of "low flow".</li> <li>• all major urban centres to be served by a treatment plant</li> <li>• reduction of leakage from the supply network.</li> </ul>

**Table IV.8 *Impact Indicators for the Water Sector***

<b>Impact Indicators</b>
<ul style="list-style-type: none"> <li>• number of areas connected to supply network</li> <li>• increase in the quantity of raw water abstracted</li> <li>• increase in the number of waste treatment plants</li> <li>• increase in the number of people served by treatment plants</li> <li>• increase in the percentage of industrial effluents being treated.</li> </ul>

# *Annex V*

## *Monitoring and Evaluation*

*In Annex V:*

*V.1 Introduction*

*V.2 Monitoring and Evaluation of OPs*

*V.3 The Role of Interim and Ex-post  
Evaluations of OPs.*

## V.1 INTRODUCTION

Monitoring within the Structural Funds is carried out at the level of the CSF and the programmes implemented through it, i.e. Operational Programmes. The CSF Monitoring Committee manages this task. The Environmental Authorities should form an active part of the Committee.

The implementation of the CSF and of the OP require a number of monitoring and evaluation stages. Each of these stages should involve the Environmental Authorities.

The stages are as follows:

- Monitoring
- Interim Evaluation and Ex-Post Evaluation

Each of these stages, and the role of the Environmental Authorities during them, is described in greater detail below for both the CSF and OP.

### *Monitoring of the CSF*

Monitoring and Interim Evaluations are the responsibility of the CSF Monitoring Committee on which the Environmental Authorities should be represented.

The role of the Environmental Authorities is to collect relevant monitoring data on the implementation of the CSF based on baseline and impact indicators (see Annex IV of this Handbook) where these relate to environmental objectives and priorities, and to comment on data from other sectors within the CSF which are relevant to the achievement of the overall sustainable development objectives of the CSF.

Annual reports are prepared on the implementation of the CSF and the Environmental Authorities should use

these as an occasion to comment on key issues relating to objectives and priorities within the CSF and issues relating to the overall environmental impact of the CSF.

### *Interim and Ex-Post Evaluations*

Interim Evaluations are required under Article 25 of the Co-ordinating Regulation No. 4253/1988. They should include a critical analysis of the data collected through monitoring. Interim Evaluations should measure the extent to which the objectives of the CSF are gradually being attained, explain any apparent disparities and forecast the results of the operation. They should express a view about the validity of the CSF and its ongoing implementation in terms of its relevance to the development objectives selected.

The role of the Environmental Authorities is to actively participate in the Interim assessment process focusing on the aspects of particular relevance to the environment and sustainable development. The Interim Evaluations also provide an opportunity to review the performance of the environmental indicators selected for the CSF and to make any adjustments that are necessary.

It should be noted that Interim Evaluations (sometimes termed Mid-Term Reviews) are also carried out at the level of individual OP's or for SPDs.

Ex-Post Evaluation like Interim Assessment is carried out for both CSF and OPs or SPDs.

The Ex-Post Evaluation of the CSF is based on information generated by monitoring, the results of Interim Evaluations and the collection of statistical data relating to indicators which reflect the objectives of the CSF.

The Environmental Authorities should contribute to the Ex-Post Evaluation of the CSF by preparing an assessment of its performance based on information coming from the environmental indicators selected to monitor the CSF (see Annex IV of this Handbook) and an assessment of the extent to which the CSF has met its environmental and sustainable development objectives. The indicators should be those agreed at the start of the CSF (taking account, where necessary of changes made due to the results of Interim Evaluations).

## **V.2 MONITORING AND EVALUATION OF OPERATIONAL PROGRAMMES**

The Environmental Authorities should be actively involved in the monitoring of OPs. This role is described in detail below

Operational Programmes usually include procedures for monitoring their performance and that of the measures which have been implemented since it helps to establish the speed and effectiveness of physical and financial implementation of programmes against their original plans and also permits assessment of their physical impact in terms of their objectives.

The objectives of monitoring from an environmental and sustainable development point of view are:

- to assess the environmental impact of each development Priority within a Programme, at regular stages during implementation.
- identify negative impacts requiring action (which could involve a change in the Programme's aims and Priorities).
- to monitor the performance of environmental indicators at Measure

and OP level both in terms of impact and performance indicators.

- to assess the performance of the programme and its contribution to meeting the objectives of the CSF.
- to advise the Monitoring Committee regarding key issues regarding the physical and financial implementation of the programme (with specific focus to the environment and sustainable development objective).

This requires the active involvement of the Environmental Authorities in the monitoring process. To enable this to happen it is important that the Environmental Authorities contribute to the definition of the environmental components of the monitoring plan for the programming period. This plan will normally be drawn up by the Development Authorities in collaboration with the sectoral authorities responsible for the implementation of the various elements of the OP.

The agreed Monitoring Plan for the OP should contain clear roles and responsibilities for the Environmental Authorities along with details of the monitoring data which they will be responsible for collecting and analysing.

The monitoring plan should judge programme and project performance against the environmental baseline and against projected outputs forecast in the RDP and CSF.

## **V.3 THE ROLE OF INTERIM AND EX-POST EVALUATIONS OF THE OPERATIONAL PROGRAMMES**

The objective of these evaluations from an environmental point of view, is to assess whether the CSF/SPD and Operational Programmes have had any impact on the environment in terms of positive

contributions to the reduction of disparities in environmental infrastructure for example, or in terms of other positive or negative effects on the environmental resources of the target region.

The starting point for such an exercise will be the findings of the environmental assessment of the regional plan and/or programmes, the *Ex-Ante* Evaluations of RDP and OP and the results of ongoing monitoring and surveillance of agreed indicators for both baseline and performance indicators related to improving or reducing environmental impacts.

At the interim stage structural and delivery issues affecting the performance of the programme can be addressed and adjustments made. At ex-post stage the overall impact of the programme will be assessed. Interim Evaluations (also called Mid-Term Reviews) are also a good point at which to reassess the feasibility of reporting on the indicators chosen for the CSF and OP and making any amendments in the selection of indicators to be measured at the ex-post stage.

It is important to note that the procedures to be followed in the Interim and Ex-Post Evaluations will have been defined early in the programming process (eg at the CSF stage). The environmental dimension for evaluation must therefore be included within this framework. It is important that the Environmental Authorities are involved in this process.

The specific objectives of the two evaluation phases are as follows:

#### *Interim Evaluation*

- organisation and co-ordination of data relating to the physical, financial and impact indicators for the programme

- analysis of qualitative aspects of implementation of the programme (including delivery structures, programme management, project identification and selection etc)
- forecasting the future development of the programme as a whole and of individual measures within the programme
- assessment of the robustness of indicators
- Evaluation of the need to amend Measures
- Evaluation of the need to amend indicators.

Key Actions for the Development and Environmental Authorities at the Interim Evaluation stage are presented below.



*Ex-Post Evaluation*

- assessment of data relating to programme indicators
- assessment of the impact of the programme in comparison with its agreed objectives
- assessment of the contribution of the programme to the achievement of the objectives of the CSF.

Key Actions for the Development Authorities and Environmental Authorities at the Ex-Post Evaluation stage are presented in the box below.

The principal outputs from both Interim and Ex-Post Evaluations are the evaluation reports themselves and the analyses and recommendations that they contain. Both reports should contain information relating to the actions at each stage presented above. The Environmental Authorities should ensure that the key results and recommendations from the evaluations of environmental aspects of the OP are effectively integrated into the overall Interim and Ex-Post Evaluation Reports.

**Outputs**

## **Actions - Interim Evaluations**

### **Action 1 (Development and Environmental Authorities**

**To agree with the Monitoring Committee on the scope and objectives of the evaluation.**

#### **Action 2a) Development Authorities**

- Assessment of the physical, financial and impact indicators of the OP against targets.

#### **Action 3a) Development Authorities**

- Assessment of the delivery of the programme

#### **Action 4a) Development Authorities**

- Production of a forecast of the future development of the programme

#### **Action 5a) Development Authorities**

- Identification of key issues for arising from the Interim Assessment

#### **Action 6a) Development Authorities**

- Analysis of the results of the Monitoring Plan

#### **Action 2b) Environmental Authorities**

- Assessment of physical, financial and impact indicators of relevance to the environment.

#### **Action 3b) Environmental Authorities**

- Assessment of the delivery of environmental aspects of the programme

#### **Action 4b) Environmental Authorities**

- Production of a forecast of the future development of environmental aspects of the programme

#### **Action 5) Environmental Authorities**

- Identification of key issues

#### **Action 6b) Environmental Authorities**

Analysis of the results of the Monitoring Plan

### **Action 7) Development Authorities and Environmental Authorities**

- To produce an overall Interim Evaluation of the Programme.

## **Actions - Ex-Post Evaluations**

### **Action 1) Development Authorities and Environmental Authorities**

**To agree with the Monitoring Committee on the scope and objectives of the evaluation**

#### **Action 2a) Development Authorities**

- Assessment of the financial status of physical, financial and impact indicators for the OP against targets and the objective of the CSF

#### **Action 3a) Development Authorities**

- Assessment of the overall delivery of the programme

#### **Action 4a) Development Authorities**

- Analysis of the contribution of the programme to the objectives of the CSF

#### **Action 5a) Development Authorities**

- Identification of key issues affecting the delivery and contribution of the programme

#### **Action 2b) Environmental Authorities**

- Assessment of environmental indicators against indicators of the OP and targets and objectives of the CSF

#### **Action 3b) Environmental Authorities**

- Assessment of the overall environmental impact of the programme

#### **Action 4b) Environmental Authorities**

- Assessment the contribution of the programme to the environmental and sustainable development objectives of the CSF.

#### **Action 5b) Environmental Authorities**

- Identification of key issues affecting the delivery and contribution of the programme

### **Action 6 Development Authorities and Environmental Authorities**

**To produce an overall Ex-Post Evaluation of the Programme**

# *Annex VI*

*Implementing the  
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*In Annex VI:*

*VI.1 Introduction*

*VI.2 Project Screening and Selection Criteria*

*VI.3 Project Scoring*

*VI.4 Guidance to Applicants.*

## VI.1 INTRODUCTION

In this annex of the Handbook we present information on techniques which can assist the Environmental Authorities and the Development Authorities to manage the selection of projects and therefore insure that measures make a positive contribution to the environmental and sustainable development objectives of the Programme.

Once the assessment of the OP is completed the Environmental Authorities need to review the results of the assessment:

- to establish whether measures should be reviewed and elements which are likely to be environmentally damaging can be amended or dropped from the programme;
- to identify key recommendations concerning enhancements to measures based on an improved integration of sustainable development objectives;
- to propose amendments to development objectives which have been assessed as potentially damaging to the environment;
- to identify areas where guidance and briefing for both programme managers and future applicants may be necessary which will help to increase the sustainability of measures to be co-financed within the programme and reduce possible negative impacts.

The information from the assessment may contribute to:

- developing extra guidance for applicants;
- developing eligibility and project selection criteria to help ensure that

environmentally acceptable ways of meeting the goals of a Measure or Priority/Sub-Programme are selected;

- identifying types of projects which should be considered ineligible for funding in specified areas due to environmental constraints (this will need to be set against economic and social objectives by the programme managers and should be discussed with the relevant authorities);
- identifying types of project which could require early consultation with Environmental Authorities so as to maximise their benefit to sustainable development of the region.

In the remainder of this annex we provide further information on developing eligibility and project selection criteria and on developing guidance for applicants. These are very closely related activities and both require the Environmental Authorities to work actively with the Development Authorities and Operational Programme managers.

## VI.2 PROJECT SCREENING AND SELECTION CRITERIA

Once the implementation of the OP begins, Programme Managers will need to select projects eligible for funding. This means that decision-makers will require tools which help to identify the best projects from an environmental, as well as an economic and social perspective.

Project screening and selection criteria endeavour to link the Programme's overarching environmental social and economic priorities to the type of projects which are likely to be proposed. OP's may list the eligibility or selection criteria which apply to each Measure. In addition, the Environmental and Development Authorities may wish to provide additional

guidance on selection criteria to applicants (see VI.4 below) and to develop systems which allow them to rank or score projects (see VI.3 below).

Guidance on selection criteria should be user-friendly, since it is of relevance to organisations and individuals involved in making project proposals and also governmental staff responsible for their assessment.

The environmental authority should seek to be involved in the appraisal, scoring and selection of all projects which may have an environmental impact or which have the potential to assist in sustainable development of the regional economy. In particular, the environmental authority should either carry out the assessment of the environmental impacts and the evaluation of EIAs submitted with any projects, or it should have a position on the committee which undertakes these tasks. This is not to suggest that the Environmental Authorities or environmental priorities should outweigh other concerns only that it is important that the environment is given due consideration.

Eligibility criteria may include:

- compliance with planning and EIA regulations;
- controls on locations where types of development may occur;
- conservation of resources such as water and soil;
- efficient use of energy, low waste generation etc; and
- value for money assessments.

Where possible, eligibility and selection criteria should be used to encourage the incorporation of positive environmental attributes, even if the project is unlikely to have detrimental effects. For example, training of industrial managers could be rewarded if it includes a module on environmental best practice.

Project selection criteria will obviously vary according to the nature of the project and will vary from technical feasibility assessments and full cost-benefit analyses through to simple scoring procedures (see VI.3 below).

Selection criteria may be supported by screening criteria. These will be criteria which can be used to screen out projects which although they agree with the broad objectives of an OP Measure do not address significant social, economic or environmental issues. Box VI.1 below provides an example of some screening criteria.

#### ***Box VI.1 Example of Some Screening Criteria***

##### **Example of screening criteria for measures which fund projects for the provision of sites and premises**

In reviewing project proposals, Authorities will need to identify, amongst other issues, whether:

- the associated environmental infrastructure (water supply and treatment, waste collection and disposal systems) is suitable in terms of capacity and performance;
- the project will re-use existing buildings or redevelop brownfield sites;
- it will take place in a location well served by public transport and will not generate excessive new traffic;
- the building is well designed with regard to energy conservation, water conservation and the use of recycled and recyclable materials; and
- it is designed to be sympathetic to local architecture, landscapes and streetscapes.

### **VI.3 PROJECT SCORING**

Box VI.2 shows an example of a form-based scoring technique which could be adopted by programme managers when

assessing proposed projects. Clearly any environmental scoring procedure needs to be integrated into an overall procedure for scoring projects which covers all of the priorities of the OP. In many cases it will be necessary to trade-off benefits and impacts between economic, social and environmental priorities. The critical thing is that this should be done in a transparent fashion.

Tables VI.1 and VI.2 show two examples of a pro-forma for a different scoring system which applies environmental criteria to projects from other Priorities within the OP. Table VI.3 provides an example of environmental scoring criteria.

#### **VI.4 GUIDANCE TO APPLICANTS**

In order to ensure that applications for project funding are of a high standard, guidance should be issued to potential applicants. The guidance should include information on eligibility and project selection criteria and, wherever possible, advice on how to design projects which maximise sustainable development benefits and minimise harmful impacts.

#### **Actions**

Guidelines on selection criteria should also include a simple explanation of why it is necessary and desirable to ensure that development proposals are compatible with the environment, from both a regional development and an environmental perspective. They should stress that early and careful consideration of environmental impacts of projects can significantly enhance their potential. As a result, the belief that environmental improvement and protection are obstacles to economic development can be demonstrated to be a misconception.

Finally, it can be useful to provide a selection of local contacts who are able to give advice on key issues, such as the requirement for EIA or how to incorporate best practice.

The forms attached to this annex provide actual examples of guidance documents prepared by regions to assist in the management of OP's

#### **Action 1a) Development Authorities and Environmental Authorities**

*To jointly develop guidance to applicants which includes requirements covering all relevant OP objectives including an explicit statement on the environmental impacts and benefits of proposals. This guidance should contain an explicit requirement for applicants to specify how their project is going to contribute to OP targets including those for the environment.*

*It should also ask applicants to describe how their project is going to contribute to the sustainable development of the region. This document should be relevant to all Measures in the OP.*

#### **Action 2a) Development Authorities** to develop Project Selection Criteria

**Action 2b) Environmental Authorities**  
to produce guidelines for screening projects and for setting environmental selection criteria which integrate with the selection criteria for other development/programme objectives.

#### **Action 3a) Development Authorities** to develop Project Scoring Criteria and agree a final set of criteria together with the Environmental Authorities and

ensure their distribution to applicants and evaluators.

**Table VI.1 Example of a Project Scoring System - Transport and Community**

*To be used in conjunction with the following measures:*

- 
- 

*Project:*

*Reference:*

	Yes	No
1. Will the project reduce air or water pollution or noise levels arising from transport?	<input type="checkbox"/>	<input type="checkbox"/>
2. Will the project reduce road traffic, lead to better traffic management or promote public transport use?	<input type="checkbox"/>	<input type="checkbox"/>
3. Does the project respect the integrity of designated areas such as Natura 2000 sites, nature reserves, the greenbelt or conservation areas?	<input type="checkbox"/>	<input type="checkbox"/>
4. Will the project provide public transport access to sites not previously served by public transport, or will they serve brownfield sites which are a focus for redevelopment?	<input type="checkbox"/>	<input type="checkbox"/>
5. Will the project include appropriate mitigation measures to minimise any adverse environmental consequences arising from infrastructure investment?	<input type="checkbox"/>	<input type="checkbox"/>
6. Will the project remove or reduce traffic in areas which are particularly sensitive to road traffic, such as near schools or in residential neighbourhoods?	<input type="checkbox"/>	<input type="checkbox"/>

Score: 20 points for each criterion met up to a maximum of 100.

*Points deducted for inadequate justification*

*Total score (maximum = 15)*

**Table VI.2      Example of a Project Scoring System -  
Support for Business**

*To be used in conjunction with the following measures:*

- 
- 

*Project:*

*Reference:*

	Yes	No
1. Will the project assist businesses and farms by cutting energy/water/raw material consumption and costs and/or by reducing the costs of waste generation and removal (eg emissions permits)?	<input type="checkbox"/>	<input type="checkbox"/>
2. Will the assistance highlight business opportunities arising out of environmental concerns and/or environmental regulations, or aid businesses seeking to market environmental products?	<input type="checkbox"/>	<input type="checkbox"/>
3. Will the assistance given help businesses and farms to comply with environmental regulations and/or suggest least cost ways of meeting regulatory or voluntary environmental standards?	<input type="checkbox"/>	<input type="checkbox"/>
4. Will the assistance help businesses and farms to introduce production and management techniques that are less harmful to the environment?	<input type="checkbox"/>	<input type="checkbox"/>
5. Will the project help businesses to improve their local environment, be it built, natural or agricultural?	<input type="checkbox"/>	<input type="checkbox"/>
6. Will the project enhance the special characteristics of designated areas such as Natura 2000 sites, nature reserves, greenbelt, listed buildings or urban conservation areas?	<input type="checkbox"/>	<input type="checkbox"/>

Score: 20 points for each criterion met up to a maximum of 100.

*Points deducted for inadequate justification*

*Total score (maximum = 15)*



**Table VI.3      Example of a Project Scoring System - Environmental Quality and Regional Image**

*To be used in conjunction with the following measures:*

- 
- 

*Project:*

*Reference:*

	Yes	No
1. Will the project be innovative or advance best practice in the management of environmental issues and activities in the region, for example in waste handling, visitor management or urban renewal?	<input type="checkbox"/>	<input type="checkbox"/>
2. Will the project lead to local environmental improvements?	<input type="checkbox"/>	<input type="checkbox"/>
3. Will the project raise public awareness about environmental problems of relevance to the area, or about the positive environmental attributes of the region?	<input type="checkbox"/>	<input type="checkbox"/>
4. Will the project help employees, visitors or community groups to manage environmental issues better, for example through relevant training or the introduction of management and conservation systems?	<input type="checkbox"/>	<input type="checkbox"/>
5. Will the project promote the redevelopment of brownfield sites or derelict buildings, or refurbish or return buildings to productive use?	<input type="checkbox"/>	<input type="checkbox"/>
6. (Events) Will the event be adequately served by public transport?	<input type="checkbox"/>	<input type="checkbox"/>

Score: 20 points for each criterion met up to a maximum of 100.

*Points deducted for inadequate justification*

*Total score (maximum = 15)*

## Box VI.2 Example of a scoring technique for projects

Guidance to Assessors for Scoring		
<p>The scores range from 0 to a maximum of 10 points. Scores are based on the ratio of environmental benefits to actual environmental costs (ie those which will not be mitigated against or compensated for). The score for the project is calculated as follows.</p> <p>Using the 'environmental checklist' form total the numbers in each of the Environmental Benefits and Environmental Costs boxes. Where Mitigation/Compensation information is provided and the measures proposed are considered meaningful, give each measure a score of one, total them and enter the total in the box below.</p>		
		Totals
A. Environmental Benefits		
B. Environmental Costs		
C. Mitigation Measures		
<p align="center"><b>Environmental Benefits/Costs Ratio A: (B - C)</b></p>		
<p>This ratio should only be used as a guide. A judgement must also be applied taking into consideration such factors as:</p> <ul style="list-style-type: none"> <li>• scope for greater positive impacts</li> <li>• clear justification of impacts/mitigation measures</li> </ul> <p>actual numbers of costs/benefits identified</p>		
Ratio	Environmental Impact	Score
1 : $\geq$ 4	Significant costs without mitigation	0 - 1
1 : $\geq$ 1	Negative impact	2 - 3
1 : 1	Likely neutral impact	3 - 5
$\geq$ 1 : 1	Positive impact and mitigated environmental costs.	6 - 8
	Scope for greater positive impact?	
$\geq$ 4 : 1	Overall positive impact	9 - 10
Source: Government Office of the West Midlands		

## Example 1 - Guidance to Applicants

### Checklist of possible environmental effects

Yes	No	Don't know	N/A
-----	----	------------	-----

1. Will the project have *environmental benefits* in:

- a) Conserving and/or improving environmental assets, eg wildlife, habitats, landscape, buildings or historic features
- b) Reducing energy consumption and/or promoting renewable energy sources
- c) Reducing water consumption
- d) Making the best use of the public transport system
- e) Reducing and/or treating pollution, eg noise, air, water, land
- f) Reducing the area of derelict land
- g) Reducing waste disposal requirements, eg through recycling
- h) Educating and training people in environmental skills
- i) Other (specify)


2. Will the project have *environmental costs* through development or pollution of:

- a) The best and most versatile agriculture land - grade 2 or 3a
- b) Land and features of high landscape quality
- c) Other significant landscape features such as drystone dykes, hedges, lochs, skylines
- d) Areas, sites and species of wildlife importance
- e) Potentially workable mineral deposits
- f) The water environment and waterside habitats
- g) The air environment


### Compensation/ mitigation

3a Will the project include measures and proposals to *compensate* for any impact on the environment?

3b Will the project include measures and proposals to *mitigate* adverse effects on the environment?


Please specify where the reply to question 2 is yes \_\_\_\_\_

Source: Strathclyde European Partnership

## Example 2 - Guidance for Applicants on Completion of the Environmental Checklist

The Environmental Checklist is intended to encourage applicants to consider the environmental impacts of their projects on key environmental indicators for the Objective 2 area and to consider how they can minimise and compensate for adverse impacts. The environmental indicators in the checklist are derived from the assessment of the Environmental Issues for the Objective 2 area contained in section 2.1 of the Single Programming Document and from the objectives for the e Priorities.

You must complete this checklist in addition to the sections about the environment in the ERDF Application Form.

If you would like advice or assistance in completing the checklist, the names and addresses of organisations who can help appear at the end of this guidance note. To complete the checklist you will need to take the following steps:

1. Enter a score of between 1 to 3 in the appropriate box in the "Increase" or "Decrease" column or ticking the box in the N/C column. Please remember to include both direct and indirect effects. The score can be calculated in the following way:

1 = slight 'net' increase/decrease at project level

2 = modest 'net' increase/decrease at project level

3 = significant 'net' increase/decrease at project level

If the project has no impact on the environmental indicator then tick the N/C ('No Change') box.

2. Briefly describe and quantify wherever possible the reasons for the scores you have given your project for each indicator in the appropriate "Further Information" section which follows each set of indicators. Where you have ticked the N/C box you must indicate in the "Further Information" section why you think the project has no impact on this set of indicators.

3. Make sure that you complete a box for each Environmental Indicator and that you have provided further information in respect of each response. If necessary continue on a separate sheet using the reference numbers given by the impact indicators to clearly identify the indicator concerned.

4. Where you have entered a score in a box in the decrease column you should consider whether there are any measures that you can take to minimise or compensate for the adverse environmental impact you have identified. If you can take such measures you should indicate what these are in the "Minimisation/Compensation" section for each set of indicators, referencing them with the number of the impact indicator. When the checklist is scored significant minimisation or compensation measures may help to offset negative scores.

In this case minimisation means measures taken to reduce a negative environmental impact resulting from a project. For instance, the building of business units could result in the loss

of tree cover on the site but effective planning of the site layout and building form and careful landscaping could result in minimising the loss of trees.

Following this example through, in some circumstances it will not be possible to avoid the loss of tree cover entirely and therefore compensatory measures should be considered. For instance, tree planting could be undertaken on another site by the to compensate for the loss of trees on the development site or a sum could be paid to public or other bodies to undertake tree planting elsewhere.

Source: Government Office of the West Midlands, United Kingdom

### Example 3 - Guidance to Applicants on Environmental Impact Indicators

#### Transport

Motor vehicle use has both global and local environmental quality implications. These include: use of energy/natural resources, pollution, damage to buildings and roads and effects on habitat and biodiversity.

##### *Trip Lengths:*

Will the average journey lengths in the area for commuting, deliveries, shopping, taking children to school and leisure increase or decrease as a result of the project? Consider the distance of employee/user/supplier populations from the project.

##### *Use of Public Transport:*

Will there be an increased or decreased use of bus/rail/metro by the public? Consider whether the project is easily accessible by public transport.

#### Environmental Management

Good environmental management will help to reduce the impact on the environment of projects and encourage and facilitate good environmental practice. Improved levels of environmental understanding and awareness amongst employees and communities will encourage good environmental behaviour and promote sustainable development.

##### *Use of Good Practice in Energy Conservation:*

Will there be usage (increase) or no usage (decrease) of measures to conserve energy? Consider incorporating measures to minimise, mitigate or compensate for increased energy consumption, increasing the amount or share of use of renewable energy sources/Combined Heat and Power.

##### *Environmental Management Systems in the Context of a Sound Environmental Policy:*

Will the project lead to an increase in the number of Environmental Management Systems to EMAS or ISO 14001 or equivalent level.

##### *Expertise and Awareness of Environmental Issues:*

Will there be an increase or decrease of expertise or awareness of environmental issues amongst managers, employees or the general community as a result of the project? Consider consultation, environmental review, monitoring, training.

##### *Contamination and Dereliction:*

Will the amount of contamination and dereliction of land increase or decrease as a result of the project? Derelict Land is 'land so damaged by industrial or other development that it is incapable of beneficial use without treatment'. Consider de-contamination of sites, risks of ground contamination, waste disposal.

*Habitat Quality and Species Diversity:*

Will there be an increase or decrease in the variety and extent of wildlife habitats and in the variety and abundance of different species present, in particular those which are locally scarce? Consider habitat creation, relocating habitats within the site, changes for the management of habitats that could increase the viability of species populations and, at the outset, changing the form and layout of the development.

*Water Quantity:*

Will there be increased usage or decreased usage of water and what water conservation and efficiency measures can be taken? Consider the influence of water abstraction, minimising leakage, encouraging metering, supporting water efficient domestic appliances, promoting recycling/ re-use of water.

Source: Government Office of the West Midlands, United Kingdom

## Example 4 -Guidance to Applicants

Aspects that may demonstrate environmental quality of a project

- Studies to identify and mitigate environmental effects, eg surveys, literature reviews, modelling, expert advice, Environmental Assessment (EA).
- Contacts with environmental authorities or local environmental groups to check on any potential environmental problems.
- Features of the Project's design which will contribute to reducing any adverse effects on the environment, eg pollution control technology, site selection, layout, access landscaping, use of renewable resources, waste minimisation, recycling.
- Measures taken to create environmental improvements associated with the project, eg site clean-up creating new habitats, landscaping and tree planting and environmental training.

Notes on completing the ERDF application form

- In Section 12 applicants should include in the project description a summary of the project's environmental implications and how these will be mitigated or enhanced.
- In Section 13 applicants should demonstrate how their project fits the environmental objectives of the Programme and how it meets the environmental selection criteria for the relevant priority and measure.
- In Section 23a applicants should describe how the project meets or exceeds the requirements of any relevant environmental legislation or other statutory approvals. Information on the nature and extent of positive impacts should be provided, together with details of monitoring or auditing that will be carried out.
- In Section 23b applicants should provide details of the types, extent and results of any environmental impact study carried out. Some projects may require formal environmental assessment (EA) under relevant legislation. Where EA is not required, applicants should nevertheless show that environmental concerns have been considered and taken into account in designing the project.
- In Section 23c applicants should describe the nature, extent and significance of any outstanding negative impacts, the measures proposed to mitigate them, and the results of any discussions about the impacts with relevant third parties and/or environmental authorities.

In addition, all applicants must include a completed version of the following checklist of possible environmental effects along with each ERDF application form.

Source: Strathclyde European Partnership, Scotland



# *Annex VII*

*A Checklist for  
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## Introduction

This annex provides a general view of the principal EU environmental legislative instruments as they relate to key development sectors or priorities that are often co-financed through the Structural Funds. The information is designed to highlight to those preparing programmes, the need to ensure that they take on board, as appropriate and where relevant, the requirements of these legal instruments.

The list of legal instruments is not exhaustive nor is it a full reflection of EU policy in regard to sustainable development and the need to integrate environmental protection requirements into the definition and implementation of other policies. Detailed advice on the precise environmental policy and legislative context relating to each development theme should therefore always be sought from the competent environmental authorities in the Member State concerned.

*The themes addressed in this annex are as follows:*

- Transport infrastructure
- Telecommunications
- Economic Development
- Tourism
- Agriculture and Rural Development
- Fisheries
- Infrastructure to support Economic Activities (including Environmental Infrastructure)
- Human Resources
- Technical Assistance
- Support for Employment and Competitiveness
- Environmental Regeneration
- Support for Research Technology and Innovation
- Improving Transport Access
- Urban Development.

This list covers the principal themes found in Structural Fund programmes in all types of assisted regions and across four Funds (ERDF, ESF, EAGGF and FIFG).

Before analysing the relevant environmental legislation and integration issues for each theme, this Annex highlights the key aspects of two Directives which are potentially relevant to most types of interventions funded by the Structural Funds: the EIA Directive (85/337/EEC and 97/11/EEC) and the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).

## DIRECTIVES

Environment and Development Authorities should be familiar with the contents of the following Directives and have a clear understanding of the type of initiatives for which they may be relevant:

**Directive 97/11/EC (OJ L73, 14.3.97) on the assessment of the effects of certain public and private projects on the environment (all major infrastructure projects) (amending Directive 85/337/EEC).**

This Directive requires that before consent is given for certain development projects - such as large scale infrastructure projects - an assessment is undertaken of the effects they may have on the environment. Projects listed in Annex I must be subject to assessment (see below). The public, and certain authorities, have to be consulted and the public is to be informed about the content of the decision.

Annex I: For example includes: oil refineries, nuclear or large thermal power stations; construction of motorways, express roads, railway lines and airports; trading ports and inland waterways; large pipelines; large quarries; large intensive farms; installations for incineration, treatment or landfill of hazardous waste, groundwater abstraction or artificial groundwater recharge schemes, works for the transfer of water resources between river basins, dams, quarries and open-cast mining, construction of overhead electrical power lines, installations for storage of petroleum, etc.

Annex II: For example includes: agriculture, silviculture and aquaculture; extractive industry; production and processing of metals; mineral industry, chemical industry; food industry; infrastructure projects; tourism and leisure; other projects.

**Directive 79/409 (OJ L103, 25.4.79) (as amended) on the conservation of wild birds (all projects).**

The Birds Directive requires Member States to establish a general system of protection for all species of wild birds. Particularly vulnerable species, listed in Annex 1 are subject to special conservation measures. The Directive (now 175 species) requires Member States to classify habitats supporting the most important species as **Special Protection Areas (SPAs)**. Member States are required to protect these sites from deterioration and the requirement of Article 6 of Directive 92/43 (see below) apply. The Directive requires that particular attention is given to wetlands because of their importance for migratory species.

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**Directive 92/43 (OJ L206, 22.7.92) on the conservation of natural habitats and of wild fauna and flora (all projects).**

This directive, usually known as the Habitats Directive, seeks to establish a “favourable conservation status” for habitat types and species selected as being of community interest. Member States have to draw up and submit to the Commission a list of sites of community importance referring to the habitat types listed in Annex I (168 types) and Annex II listing animal and plant species. Priority species and habitat types are identified in the annexes. In due course the most important sites will be designated as **Special Areas of Conservation (SACs)**. These SACs, together with the Special Protection Area (see above), will form a European network (**Natura 2000**). Under the Directive, Member States are subject to certain obligations to protect sites on the Commission’s list and those designated as SACs. The main requirements for site protection are set out in Article 6.

**Article 6** places a general obligation on Member States to ensure that “appropriate steps” are taken to protect all sites which appear on the Commission’s list, irrespective of whether they have been designated as SACs.

- An assessment is to be undertaken of any “plans or projects” which individually or in combination with others are likely to have a significant effect on the conservation value of a site.
- On the basis of this assessment the competent national authorities shall permit the plan or project only if they have established that it will not adversely affect the integrity of the site.
- However, where an assessment indicates that a plan or project must proceed because of “imperative reasons of overriding public interest” the Member State must take all compensating measures necessary to protect the overall coherence of Natura 2000. It must inform the Commission of the measures adopted.
- In the case of *priority sites* (identified in the Annexes to the Directive) the grounds for proceeding with damaging projects are restricted to those relating to “human health or public safety, environmental improvements of primary importance or other imperative reasons of overriding public interest” on which the Commission has given its opinion.

## THEME 1 TRANSPORT INFRASTRUCTURE

To check in the case of all projects involving land management, whether the route or planned layout concerned could affect vulnerable areas which are part of the Natura 2000 Network (Directive 79/409/EEC and Directive 92/43/EEC).

If the answer is yes:

- Assess the impact in terms of the nature conservation status of the site (n.b. A general EIA will not be sufficient, it will have to be adapted to the conservation objectives which justified Community interest in the site);
- If the impact threatens to be negative, look for alternative routes/layouts
- If the project is retained because it is of major public interest, provide for compensatory and mitigation measures and inform the Commission of them.

(n.b. when the site shelters a priority habitat or species, the conditions for retaining a project which has a negative impact are limited by Article 6 of the Habitats Directive 92/43/EEC).

### *MOTORWAYS AND ROADS*

Check in all cases whether the projects fall under Annex I or Annex II of Directive 97/11/EEC (bypasses, alternative routes and ring roads are regarded as projects falling under Annex I). Then assess the following:

- Have the Annex I projects been subject to an EIA in accordance with the Directive?
- Do the projects under Annex II require a statement from the environmental authorities mentioning whether an EIA is necessary or not?

It is important to identify whether the project proposals have explicit requirements for:

- Plans for construction and waste tips and dumps
- Side slope stabilisation and embankment plant cover
- Measures aimed at avoiding increased run-off and erosion both during and after construction
- Noise control measures.

The project should include an analysis of the impact of atmospheric and/or noise contamination, particularly in urban or residential areas, or in the vicinity of schools, hospitals etc.

It is also important that the project should address the impact of the new road on public transport systems and it should demonstrate how the road links in with existing or planned public transport provision (including that funded by other European sources, e.g. Cohesion Fund or EIB loans).

## **RAILWAYS**

### **1 *Main lines, TENs routes, national and regional links***

Check in all cases whether projects fall under Annex I or Annex II of Directive 97/11/EEC (including parallel tracks and improvements to existing tracks)

- Projects under Annex I are subject to an EIA in accordance with the Directive
- Projects under Annex II require a declaration from the competent environmental authority mentioning whether an EIA is necessary or not.
- Projects should contain specific analyses on the impacts of construction noise and pollution (dust etc.) and operational noise on affected areas.

### **2 *Suburban trains (Light Rail, Metros etc.)***

Projects should indicate clearly the measures to be taken to reduce pollution, noise and congestion during the construction phase, and pollution and noise during the operational phase.

The project should also present a clear analysis of the impacts of the project on the use of public transport in the target area.

## **PORTS**

Check whether the projects fall under Annex I or Annex II of Directive 97/11/EEC:

- Projects under Annex I are subject to an EIA in accordance with the Directive
- Projects under Annex II require a declaration from the competent environmental authority mentioning whether an EIA is necessary or not.

Make sure that the impact of the projects to be carried out on adjacent areas (erosion of beaches, changes in coastal dynamics) can be assessed.

Assess whether facilities to treat, collect or dispose of bilge oils and waste and for the cleaning of wharves have been adequately provided for.

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**AIRPORTS**

Check whether the projects fall under Annex I or Annex II of Directive 97/11/EEC:

- Projects under Annex I are subject to an EIA in accordance with the Directive
- Projects under Annex II require a declaration from the competent environmental authority mentioning whether an EIA is necessary or not.

Check on the measures introduced to mitigate noise and air pollution.

Emphasise the importance of integrating the different modes of transport (public transport, railway networks, etc.), and seek to ensure that the airport will be adequately serviced by public transport.

Make sure that the airport's design takes account of waste management and water treatment needs.

**OTHER TRANSPORT MEASURES**

Try to ensure that priority is given to public transport in development plans and programmes.

Make sure that issues of energy use, access, and journey time are addressed.

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**THEME 2 TELECOMMUNICATIONS**

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In the case of all communication networks establish whether an EIA is required by Directive 97/11/EEC.

If the route chosen crosses vulnerable areas such as those mentioned in Directive 79/409/EEC on the conservation of wild birds and Directive 92/43/EEC on Habitats, find alternatives, analyse the need for mitigation measures, or determine whether or not there is a need to carry out an EIA.

## THEME 3 DEVELOPMENT OF THE ECONOMY

### *MANUFACTURING AND PROCESS INDUSTRIES*

Develop criteria and guidance so that assistance to industries:

- Favours the introduction of clean technologies
- Promotes improvement in processes (reduction in use of raw materials, energy efficiency, water recycling etc.)
- Plans for the collection, treatment, re-utilisation and optimisation of waste
- Improved effluent treatment
- Assessment of the scope for reducing transport of goods/ materials
- Introduce environmental management, systems and training

In addition the possibility of offering guidance to companies on improving their environmental performance should be assessed.

### *PROFESSIONAL TRAINING*

The environmental authorities should assess the role of training with regard to clean technologies, economic processes and the re-utilisation of resources within the programme at measure level.

This should include the role of professional training modules concerning environmental aspects on industrial production, for example:

- Specific training in environmental issues/ techniques/ best practice
- Environmental training modules specific to activities linked with programme priorities such as the improvement of environmental infrastructure, where training in operation and maintenance may be required.

## THEME 4 - TOURISM

The environmental authorities should assess the scope for integrating environmental concerns into tourism investments and training. Some ideas on key issues are presented below.



**AID FOR TOURISM INVESTMENTS**

- Promote aid aimed at the rational and sustainable use of resources (water, energy, soil);
- In areas with a water shortage, question investments which would tend to aggravate the problem (such as golf courses or resorts/leisure facilities);
- Promote land management which is compatible with the environment and the carrying capacity of the territory concerned which takes into account local environmental conditions and resources;
- Introduce provisions to eliminate the most severe environmental problems (transport, water, open space, purification, waste) and make sure that these aspects of developments are clearly examined and dealt with by projects.

**TRAINING REQUIREMENTS**

- Promote training on diversifying tourism so as to make the widest use of resources (cultural, natural, landscape, etc.)
- Assist in the delivery of training packages concerning the effects and potential of tourism on the environment including “green tourism” and tourism linked to rural/agricultural areas.

**THEME 5 - AGRICULTURE AND RURAL DEVELOPMENT**

Check that the actions correspond to Annex I or Annex II of Directive 97/11/EEC.

See whether the actions will affect the vulnerable areas which form part of the Natura 2000 network (Directive 74/409/EEC on “Birds” or Directive 94/43/EEC on “Habitats”).

Check that proposed actions conform with the requirements of Directive 91/676/EEC (Nitrates) and Directive 86/278/EEC (Sewage Sludge).

Insist on the proper application of Agro-Environmental Measures (Regulation No 2078/92) especially in those regions where vulnerable areas included in the Natura 2000 network are to be found (Directives 79/409/EEC or 97/43/EEC).

Ensure that programmes encourage practices in agriculture which favour the environment. Examples of areas of concern are given below.

- In the area of livestock production apart from actions connected to the Nitrates Directive to safeguard the quality of water, it is also necessary to encourage the preservation of biodiversity in animal husbandry. Plans for the sustainable management of agricultural wastes should be encouraged;
- Integrated methods of production and biological production should be fostered, and the use of inputs (fertiliser etc.) in general should be reduced;
- Water management; preference should be given to irrigation methods which save water, drainage operations should be made compatible with preserving wetlands of environmental interest and measures to manage periods of drought or possible flooding should be promoted;
- Soil Protection; encouragement should be given to non-ploughing practices or other practices which improve soil structure. Vigilance must be exercised when carrying out minor water management works, reforestation or other measures which involve the movement of earth;
- Afforestation measures; the planting of endogenous species should be favoured, as should the management of forests to reduce the risk of fires;
- Protection of biodiversity and the countryside; agricultural practices which respect the environment must be encouraged;
- It is also very important that programmes address other economic activities in rural areas, such as the promotion of craft activities, rural tourism or other complementary activities which encourage the population to stay in the area, this helps to prevent desertification and the abandonment of the rural landscape which often leads to environmental degradation;
- In addition programmes should promote the training needed to ensure that all the new environmentally sensitive agricultural methods are practised.

## THEME 6 - FISHERIES

It is important that programmes are in accordance with the following objectives:

- Avoid depleting fish stocks and favour selective fishing methods.
- Provide for the treatment and purification of residues in fish farms
- Provide for the treatment in warehouse and markets of residual products and the purification of effluents before they enter the sewage system.
- To make the industry and its employees aware of the need for such measures and to provide professional training for new activities.
- Take account of the carrying capacity of the environment in which aquaculture is practised in natural areas (rivers, coastlines).



## THEME 7 - ECONOMIC ACTIVITY SUPPORT INFRASTRUCTURES

In all cases, check whether projects meet the criteria of Annex I or Annex II of Directive 97/11/EEC.

- If they fall under Annex I, carry out an EIA in accordance with the Directive.
- If they fall under Annex II, a statement from the competent environmental authorities is required indicating whether an EIA is necessary or not.

### ! WATER

In the case of dams, see whether they are necessary and their objectives are consistent (irrigation, energy production, channel reduction, rolling, water supply) with relation to existing infrastructures and if possible, see whether existing structures could be improved or renewed, also make sure that the scope for demand management measures such as savings, improvement of networks, improvement of growing techniques, re-utilisation of purified waters, improvement of industrial recycling processes, etc. have been considered.

In the case of water transfer operations, make sure that alternative solutions have also been addressed.

Irrigation projects need to be assessed against data water resource availability so as to establish their feasibility.

Any action proposed in this sector will have to be environmentally justified in terms of improved management of all aspects of water supply, distribution, use and recovery and conservation.

Key issues to be addressed include:

- The re-utilisation of purified water,
- Sludge treatment,
- Maintenance services,
- Plans for the management of industrial effluents to avoid discharges of toxic products or dangerous products which could affect the operation of purification plants,
- Treatment demand forecasts depending on population ratios and the way the area will develop after the project has been carried out.

## ENERGY

- Analyse the planned routes for gas lines and power lines and identify any sensitive areas which may require detailed assessment.
- Promote renewable energies (wind, sun, geothermal, etc.)
- Establish parameters which will make it possible to determine:
  - The use of less polluting forms of energy,
  - Substitution of energy sources,
  - Economic optimisation of this type of investment by establishing a comparison between economic costs and environmental and social benefits,
  - How to promote energy efficiency,
  - How to promote the use of the most efficient combustion technologies available,
  - how to promote clean technologies.

## WASTE MANAGEMENT

Planned actions in the field of waste management should provide indicators regarding the initial and final situation regarding urban solid waste treatment. For toxic and dangerous residues (and clinical wastes), actions should reflect national and/or regional strategies.

Indicators concerning any forecast improvement to be achieved through actions financed by the Structural Funds should also form part of the assessment.

## DEVELOPMENT AND INNOVATION

The issues to be developed under this heading include the improvement of industrial processes to use raw materials, changes in components and contaminating products and the minimisation and recovery of residues.

## TRAINING REQUIREMENTS

In this area, the participation of the environmental authorities can help direct training towards new employment sectors (maintenance of purification and waste treatment plants, product management techniques, rural tourism, etc.)

In addition, environmental training modules in the various target sectors of Operational Programmes will have to be included in sectoral training.

# THEME 8 - OPTIMIZATION OF HUMAN RESOURCES

The same observations as for the *Training Requirements* sub-section of the previous section apply. In addition the following actions can be implemented where appropriate:

- Training for the unemployed through projects which, within the CSFs, aim at introducing new technologies or new production methods which help to improve the environment;
- Training for trainers in the context of creating “environmental training packages in the industrial environment” to integrate these into other types of training;

## THEME 9 - TECHNICAL ASSISTANCE, MONITORING AND SURVEILLANCE

Given the qualitative importance which the Structural Funds Regulations attribute to the environment, this will give rise to new tasks which the Environmental Authorities will have to carry out. Part of the budget provided for the technical assistance of projects should be made available for such activities including data collection and analysis, project evaluations and provision of regional databases, GIS etc. of relevance.

## THEME 10 - SUPPORT FOR JOBS AND BUSINESS COMPETITIVENESS

The environmental authorities should be proactive in developing criteria for aid to firms, promoting sustainable approaches to business such as:

- Saving of resources (water, energy) - improvement of technologies;
- Improvement of technical processes and replacement of contaminating materials;
- Improvement of methods to minimise waste;
- Aid to firms which specialise in the treatment of waste, effluents and emissions;
- Aid for firms which re-utilise, recover and transform waste;
- Equipment for the recycling and recovery of waste in industrial areas;
- Set up information networks on environmental advantages and drawbacks to assist firms;
- Setting up support services and programmes to improve the industrial environment and technology centres serving the business community;

- Environmental training packages (on processes, EMAS, resource saving, waste; information on the composition of products) in the context of training for employees and firms.

## THEME 11 - ENVIRONMENT

The Environmental Authorities should be actively seeking opportunities for integrating the following issues into proposals presented to the OP and should also develop guidance for applicants where necessary.

- Equipment directly linked to improving pollution (emissions, effluent, waste, etc.) emphasising preventive approaches;
- Rehabilitation of derelict land, possibly by redeploying it for social and cultural purposes for instance local open spaces, recreational areas or small areas of urban woodland;
- Setting up business networks focusing on environmental issues;
- Encouraging the set up of local companies in the field of environment.

## THEME 12 - SUPPORT FOR RESEARCH, TECHNOLOGY AND INNOVATION

The Environmental Authorities should try to establish the possibility of carrying out the following actions:

- Construction of, or improvement to, industrial technology centres linked to the environment in the widest sense (improvement of processes, analysis and research centres);
- Research aimed at improving the environment in industrial production;
- Set up of research networks focusing on local environmental issues;
- Set up of courses to enhance the training of researchers in the area of industrial environment (less polluting processes, clean technologies, the treatment and re-utilisation of waste, etc.).

## THEME 13 - LOCAL AND URBAN DEVELOPMENT

Given the significance of urban centres in many assisted regions, the Environmental Authorities should seek to integrate the following actions into proposals:



- Upgrading of the urban environment specifying environmental improvements (rehabilitation of public spaces, rationalisation of urban transport, reduction of transport emissions, etc.);
- Projects to guide and assist firms in improvements to their production and in environmental auditing.

The environmental authorities should also take into account that the aim of plans for urban development, in accordance with the recommendations of the Green Paper on Urban Environment, is to create towns which are:

- Compact: where contacts and relationships between the inhabitants can be fostered through proximity and pedestrianisation
- Multifunctional: where the functions encourage accommodation, employment, human contacts, culture, commerces and information to be within every citizen's reach,
- Diversified: in space and function, to offer different types of space (for culture, sports, relaxation, nature, walking, work and habitation) in a way which brings them closer to citizens while avoiding areas which have only a single function,
- Deliberately continuous: by avoiding buffer areas which define and encourage environmental degradation.