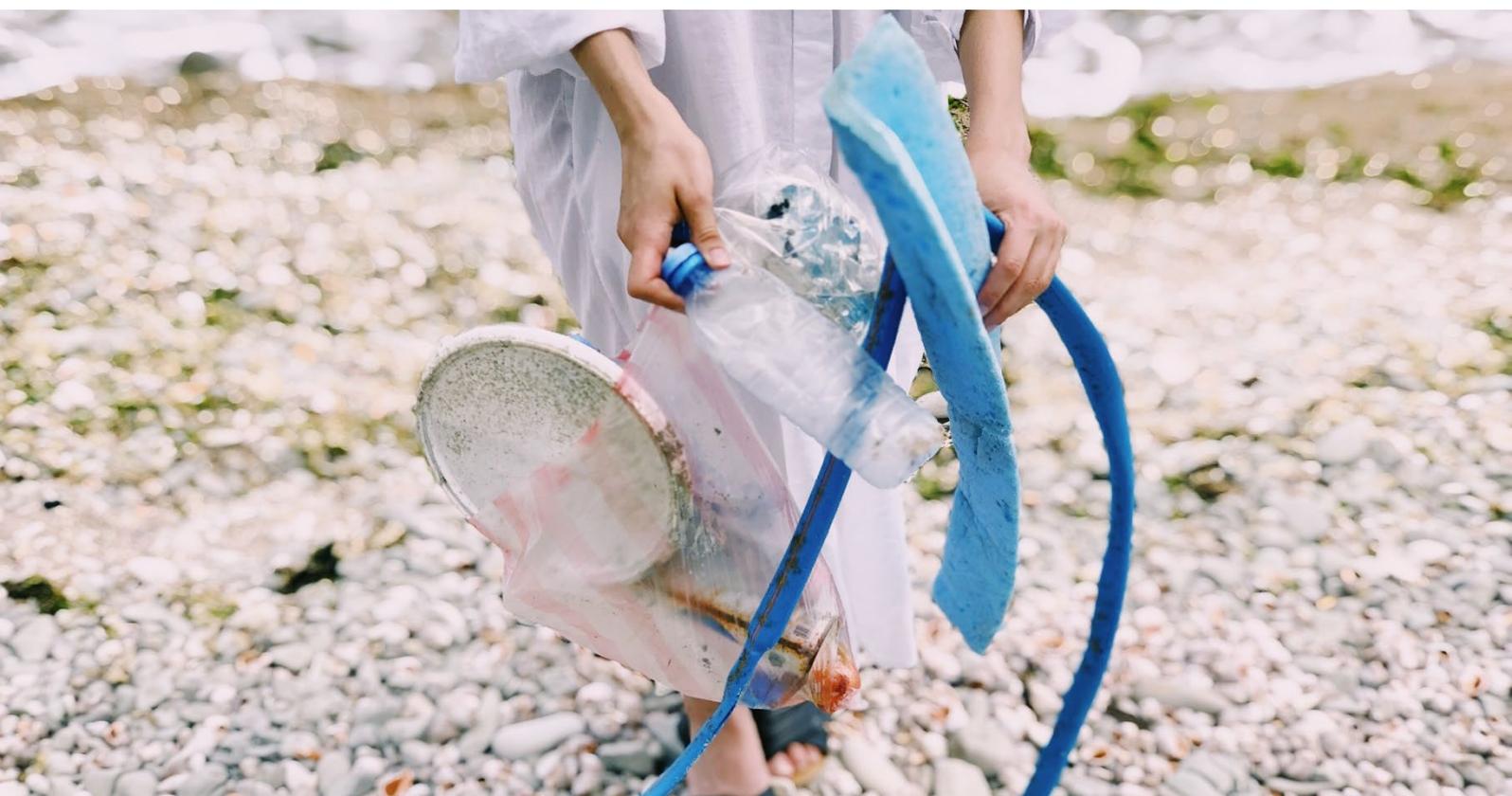


# Application of the Polluter Pays Principle in **Waste Management projects**

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## JASPERS Knowledge Economy, Energy and Waste Division Staff Working Papers

### Application of the Polluter Pays Principle (PPP) in Waste Management Projects

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## Application of the Polluter Pays Principle (PPP) in Waste Management Projects

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### 1 Introduction

This Guidance Note is intended to inform on the relevance and significance of the Polluter-Pays-Principle (PPP) in the Solid Waste Management sector in general and provide guidance on the ways of implementing it in projects seeking financial support from EU Structural Funds.

### 2 General Definition and History

The Polluter Pays Principle (PPP) is an environmental policy principle, which requires that the costs of pollution inflicted on the natural environment be borne by those who cause it. Main tenet of the PPP is that the prices of goods and services should reflect the full costs of production, including resource costs and environmental externalities. Through the internalization of resource costs and environmental externalities into the economic sphere, the PPP seeks to:

- Promote economic efficiency by encouraging producers to use scarce environmental resources more efficiently, to reduce waste and to increase possibilities for reuse and recycling;
- Avoid distortions in international trade and investment by eliminating all kind of subsidies, which would prevent producers to bear the costs of pollution.

This is reflected in the first mention of the PPP at the international level, the 1972 Recommendation by the OECD Council on Guiding Principles concerning International Economic Aspects of Environmental Policies [1], which stated that:

“The principle to be used for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment is the so-called Polluter-Pays Principle“

Today, the PPP is a fundamental principle of environmental policy of both the Organisation for Economic Co-operation and Development (OECD) and the European Community and is a widely recognized principle of International Environmental Law explicitly mentioned or implicitly referred to in a number of Multilateral Environmental Agreements, such as the 1992 Rio Declaration (Principle 16 [2]).

### 3 The PPP in EU Law

Since 1987, the PPP has been part of EU Law, where it is consistently mentioned as a guiding principle in different pieces of primary and secondary legislation.

It is included in Article 191 of the Treaty on the Functioning of the European Union - TFEU (ex Article 174 TEC [3]):

“Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.”

Similarly, in the 6<sup>th</sup> Environment Action Plan [4], which establishes the framework for environmental policy-making in the European Union for the period 2002-2012, the PPP is mentioned in Article 2 as part of its principles and overall aims:

“The Programme constitutes a framework for the Community's environmental policy during the period of the Programme with the aim of ensuring a high level of protection, taking into account the principle of subsidiarity and the diversity of situations in the various regions of the Community, and of achieving a decoupling between environmental pressures and economic growth. It shall be based particularly on the polluter-pays principle, the precautionary principle and preventive action, and the principle of rectification of pollution at source”.

Pieces of secondary EU law explicitly mentioning PPP among its main principles and objectives are for example:

- Environmental Liability Directive (2004/35/EC)
- Directive on management of waste from extractive industries (2006/21/EC)
- IPPC Directive (2008/1/EC)
- Water Framework Directive (2000/60/EC)
- Waste Framework Directive (2008/98/EC)
- Soil Framework Directive (proposed in COM(2006) 232)

#### **4 The PPP in EU Law on Waste Management**

In EU law on waste management in particular, the PPP is mentioned in the Waste Framework Directive (WFD [5]), in its Article 14:

1. In accordance with the polluter-pays principle, the costs of waste management shall be borne by the original waste producer or by the current or previous waste holders.
2. Member States may decide that the costs of waste management are to be borne partly or wholly by the producer of the product from which the waste came and that the distributors of such product may share these costs.

Here it is important to note that while the WFD requires the application of the PPP, it leaves the decision on the how to apply it in practice (i.e. who will contribute, and in which way) to the individual Member States.

#### **5 Application of the PPP in Waste Management**

There is a wide variety of methods for the application of PPP in waste management, targeting different types of waste and waste producers. There is generally no right or wrong approach in applying PPP in waste management. An integrated waste management strategy will often require a combination of different measures. In any case, any single measure or combination of measures needs to be thoroughly evaluated before implementation, carefully weighing the costs of

implementation against the expected benefits, and adapted to the circumstances of a particular country or region.

In the following, different methods of applying the PPP in waste management are briefly presented. One can generally differentiate between economic instruments and legislative measures. While economic instruments seek to force changes in behaviour of waste producers through changes in the cost structure at some point in the product life cycle, legislative measures work through the restriction of waste management options legally available. For an overview of different instruments applied in different environmental domains (including waste management) in different countries of the world, refer to the "OECD/EEA database on instruments used for environmental policy and natural resources management" which is freely available in the internet [6].

#### a) Waste tariffs/fees for waste collection/treatment/disposal:

The most obvious (and common) economic instrument used to apply PPP are waste tariffs or fees charged upon different waste producers (i.e. households/consumers, commerce, industry), aimed at recovering the cost of building and operating the services and infrastructure required for collection, treatment and disposal of the waste they produce. When correctly applied, they also send signals to consumers to reduce the amount of waste produced.

Tariffs and fees are applied in many countries to finance municipal solid waste management systems. In the case of residential (households) and smaller non-residential waste producers, waste tariffs and fees are paid in many different forms, but most commonly in form of a monthly flat-fee charge (per household or per person) or as a volume-based tariff (i.e. for receptacles or bags with fixed volumes and collected with defined periodicity). Another method is the payment of waste charges together with the property tax (i.e. calculated based on type and size of property). For large commercial and industrial producers of municipal waste there is generally a weight-based gate-fee, which has to be paid directly at the treatment or disposal facility.

Some countries have introduced weight-based tariff systems also for residential and small non-residential waste producers, which provide the best signal to reduce waste and therefore constitute the ideal application of the PPP. However, its application requires additional investment, operating and administrative cost, which is not always affordable.

In many countries, separate tariffs and fees apply for the disposal of hazardous wastes produced by industry. This makes sense, as their management requires special collection, treatment, and disposal facilities. These may be paid directly at the treatment or disposal facility as a gate-fee or in advance, in the form of an advanced disposal fee. In addition to special tariffs/and fees, hazardous waste management systems often impose use and handling restrictions on hazardous waste producers through a series of legislative measures that seek to minimize the use of hazardous substances and the generation of wastes containing them.

#### b) Environmental taxes:

Other economic instruments are applied to discourage consumption of specific types of products, and thus reduce the arising of specific types of waste (i.e. product taxes), or to discourage specific types of waste disposal schemes (i.e. landfill tax). Usually, environmental taxes have the objective of raising revenue to support environmental programmes, which however must not necessarily be targeted at dealing with the specific type of waste from which the tax comes from.

Product taxes are applied on the price of certain goods such as disposable or non-recyclable beverage containers, plastic tableware, plastic bags, disposable cameras, products containing hazardous substances, etc.). Raw material taxes are similar to product taxes but they are effective further upstream in the product lifecycle. They are applied on raw material used for the production of goods whose consumption is to be discouraged (i.e. raw material used to produce plastic liquid containers).

Waste disposal or landfill taxes have been introduced in several EU countries as a means to discourage landfilling of waste and/or providing incentives for general waste prevention or recycling.

### c) Extended Producer Responsibility:

A concept closely related to the PPP is that of Extended Producer Responsibility (EPR). The OECD defines EPR as [7]:

“An environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle. An EPR policy is characterised by: (1) the shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities (and thus the public in general); and (2) the provision of incentives to producers to take into account environmental considerations when designing their products. While other policy instruments tend to target a single point in the chain, EPR seeks to integrate signals related to the environmental characteristics of products and production processes throughout the product chain.”

There are many variations in the implementation of EPR. The most common EPR schemes include:

- Take-back schemes: impose a legal requirement on manufacturers, importers, and sellers to take back their products from end users at the end of the products’ useful life
- Deposit-refund schemes: require the collection of a monetary deposit on a product’s packaging, usually beverage containers, at the point of sale. The deposit is refunded to the redeemer when the container is returned to an authorized redemption center. Non-recovered deposits may be used to finance waste collection and disposal facilities.

Most current EPR schemes target packaging waste but also other types of wastes, such as batteries, electronic waste, end-of-life vehicles, vehicle tyres, and other consumer goods. The EPR concept provided the basis for the EU Directives regulating the (separate) management of Packaging Waste, WEEE, ELV, batteries, and other special wastes.

## **6 Application of the PPP in Projects co-funded by EU Funds**

In EC Regulation 1083/2006, the application of the PPP is mentioned as a way to modulate the financial contribution from EU funds (ERDF, CF) to projects presented by Member States (Article 52). Additional references on this issue are found in the following guidance documents:

- Guide on Cost Benefit Analysis of Investment Projects [8], subsequently referred to as the “EC Guide on CBA”
- Revised Guidance Note on Article 55 for ERDF and CF of Council Regulation (EC) No 1083/2006: Revenue Generating Projects [9], subsequently referred to as the “COCOF Note”

The EU Guide on CBA states that (ref. section 2.4.2.2, page 37):

*“A fundamental principle for the evaluation of EU projects is the Polluter Pays Principle, which, according to regulations, should be used for the modulation of the co-financing rate”*

and further:

*“For projects co-financed by the Community the rate of assistance should be modulated to encourage the introduction of [11] charging systems when the environmental costs of pollution and preventive measures are borne by those who cause pollution”.*

The EU Guide on CBA also points out that:

*“...the introduction of higher tariffs, in line with the Polluter Pays Principle, means usually a lower contribution from the EU assistance...” which “...has a positive effect on the project financial sustainability (...) and on decreasing the associated risks.”*

In accordance with the COCOF Note, another benefit of applying PPP, especially when it results in prevention/mitigation measures, is that it may increase consensus from the local population which for some projects (i.e. waste treatment plants) can be essential (ref. section 2.2.5, page 11).

However, both the EU Guide on CBA and the COCOF Note recognize the need for trade-offs in some cases, i.e. to deal with tariff affordability (i.e. the capacity to pay tariffs by users). The COCOF Note recommends that *"managing authorities duly consider tariff affordability because if users will not be in a position to pay the related tariffs then the project may experience shortage of money during its life"* and suggests as a possible solution to ensure affordability *"to set tariffs as a percentage of average income or lower income group depending on the existing income distribution of the served area"*. Reference is made to examples of affordability rates in Annex II of Working document n° 4 of 2006 [10]. National authorities of each Member State are given an important role in identifying criteria for setting tariffs.

It is important to note that the Application Form for Major Infrastructure Projects seeking financial support from EU Funds [11] requires the project promoter to provide information on how the project respects the "polluter pays" principle (Section F.1) as well as details on the charges applied to users, including the types and level of charges and on the principle or Community legislation on the basis of which the charges have been established (section E.1.4). In Section E.1.4 the Application Form explicitly requires the promoter to explain whether charges are proportional "to the use of the project/real consumption" and "to the pollution generated by users" (items c) i) and ii) of section E.1.4). The implementation of the PPP is a general aspect that is checked on by default by the Commission Services and JASPERS during appraisals of major waste projects. Refer for instance to:

- Check-lists used by DG Environment for the appraisal of water and waste major projects [12]
- Guidelines to fill up the Application for Funding in Waste Management Projects prepared by JASPERS [13]

## **7 JASPERS clarifications/recommendations concerning the application of PPP in waste projects**

While the EU legislation and relevant guidelines for project preparation in the field of waste management are clear in the sense that the PPP must be applied, it provides only little guidance on how to deal with it in practise. For example, although trade-offs between fully cost-reflective prices and affordability are basically accepted, no specific guidance is provided on the setting affordability limits or how to deal with them over time. Neither is any guidance provided on how to deal with tariffs to be paid by the CII sector (commerce, institutions, industry), which cannot be assumed to have the same affordability limitations as households.

For this reason, JASPERS has prepared the following recommendations/clarifications for Managing Authorities and project promoters to consider when dealing with PPP issues in waste management projects.

In general,

- a) The application of the PPP in waste management should be generally understood as the introduction of economic and/or legislative instruments that make waste producers pay for the collection, treatment and disposal of the waste they produce.
- b) The simplest way to implement the PPP is the introduction of full cost recovery waste tariffs/fees to be paid by the producers of waste. Waste producers can be the final consumers (households), the intermediate holders (commerce) or the original producers (industry) of products giving rise to the waste.
- c) Systems in which public waste management services are financed through general taxes are not in line with the PPP, as these are not paid by the waste producers but by society as a whole.

- d) Full cost recovery tariffs/fees are defined as such, which are high enough to recover the full cost of the service(s) provided, including the (financial) capital and operating costs of services/facilities as well as management and administrative costs of the system. A failure to achieve this, will force municipalities or the state (and thus society as a whole) to pay subsidies, which are in contradiction to the PPP. Environmental externalities should be covered as well and can be considered to be largely internalized, if (i) technical standards are defined and enforced that minimize environmental impacts from waste management services/facilities and (ii) where possible and technically feasible environmental charges are levied on remaining pollution from waste management facilities (i.e. such as emissions to air and/or water).
- e) An indicator (or proxy) for the full cost recovery tariff/fee is the dynamic prime cost (DPC) or levelized unit cost (LUC) of the waste management service for which the tariff/fee is applied, which is calculated by dividing the discounted total cost required to build and operate the required infrastructure over its economic lifetime (i.e. investment, O&M and reinvestment cost minus revenues from any saleable outputs) with the discounted value for the total amount of waste treated during the same period.
- f) Waste tariffs/fees should provide an effective incentive to reduce waste. This can only be achieved if the waste producer perceives the link between the contribution he/she pays and the amount of waste produced. Where technically and economically feasible, preference should be given to volume or weight based tariffs schemes. Awareness raising campaigns are also important to accompany the introduction of waste tariffs/fees.

In practice, trade-offs in the application of the PPP can be considered in the following cases:

- g) Where household income levels are generally low or household income is unevenly distributed, residential waste tariffs can be temporarily set below full cost recovery levels as long as:
- There is a standard policy on affordability limits defined by the national authorities. As a reference, the following table shows affordability limits currently applied for waste projects in selected Member States as well as those generally recommended by the World Bank. In general, for EU funded projects, the common practice seems to be the use of an affordability threshold of around 1.5% of the average household income of the lowest income deciles.

Country	Affordability threshold	as a % of	Source	Comments
Poland	0.75%	median disposable HH income	Polish CBA Guidelines	Methodology + Reference per capita income at regional level provided in Guidelines
Slovenia	1.8%	lowest quintile of HH income	CF/ERDF project approved at national level	Equivalent to approx. 0.55% of average HH income
Hungary	0.9%-1.2%	average disposable HH income	CF/ERDF project approved by the EC	
Bulgaria	1%	average HH income	National CBA Guidelines	Can temporarily go up to 1.5% during project implementation
Romania	1.8%	Average income of HH in lowest income deciles	National Policy + CBA Guidelines	
Croatia	3%	"total (average?) HH income"	Croatian 07-15 Waste Management Plan	
Cyprus	0.2%-0.4%	average HH income	currently observed level	expected to go up to 0.5%-0.65% as new projects are implemented
World Bank	0.75%-1.7%	Average disposable HH income		For middle-income countries
World Bank	3%-4%	(Average?) HH income	WB Technical Paper "MSW Incineration"	For developing countries

- Tariffs below full cost recovery levels are maintained only as long as affordability limitations persist. Any envisaged improvement of the referential household income should be immediately reflected in an equal increase of the tariff/fee and full cost recovery tariffs should be introduced as soon as affordability limitations are fully overcome.
  - Affordability limits apply only to residential waste producers. Non-residential waste producers should generally be assumed to be able to pay for the full-cost recovery tariff without limitations from the very beginning, unless duly justified (see point g) below).
  - Affordability limits imposed on tariffs do not compromise the financial sustainability of the project at any time (i.e. the project does not have a negative cash-flow in any year of the reference period). As a minimum requirement, tariffs/fees should cover the operating costs and replacement cost of assets and equipment with short economic lifetime as soon as project facilities become fully operational.
- h) Where waste tariffs/fees currently do not exist or are very low, introduction of full cost recovery tariffs/fees can be staged over a certain number of years to ensure acceptability of the new/higher tariffs by users and avoid inappropriate disposal of waste during first years of operations. A staged introduction of waste tariffs/fees are acceptable as long as:
- The transition period is limited to only a few years and full cost recovery tariffs are introduced after the end of the transition period. Longer transition periods may be accepted in special cases such as for hazardous wastes, to encourage their separate collection and proper disposal. Effective signals to waste producers to prevent/substitute hazardous waste should nonetheless be sent through the tariffs/fees from the very beginning.
  - The lower tariffs do not compromise the financial sustainability of the project at any time (i.e. the project does not have a negative cash-flow in any year of the reference period). As a minimum requirement, tariffs/fees should cover the operating costs and replacement cost of assets and equipment with short economic lifetime as soon as project facilities becomes fully operational.

## 8 Bibliography

The following list contains all literature used in the preparation of this note or referred to in this note as well as several useful links for further study on the PPP.

### a) Literature referred to in the note:

[1] OECD, Recommendation of the Council on Guiding Principles concerning International Economic Aspects of Environmental Policies, 1972, web-link:

<http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=4&InstrumentPID=255&Lang=en&Book=False>

[2] UNEP, Rio Declaration on Environment and Development, 1992, web-link:

<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163>

[3] EU, Treaty on the Functioning of the European Union, 2008, web-link: [http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:en:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:en:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:en:PDF)

[4] EU, Sixth Community Environment Action Programme (Decision No 1600/2002/EC), 2002, web-link: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:242:0001:0015:EN:PDF>

[5] EU, Waste Framework Directive (Directive 2008/98/EC), 2008, web-link : [http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF)

[6] OECD, OECD/EEA database on instruments used for environmental policy and natural resources management, web-link: <http://www2.oecd.org/econinst/queries/index.htm>

[7] OECD, Extended Producer Responsibility – A Guidance Manual for Governments, weblink:

<http://www.oecd-ilibrary.org/docserver/download/fulltext/9701041e.pdf?expires=1313665856&id=id&accname=ocid194786&checksum=FF9E0C3AB565B9B0ED53F9F61EEC2DBE>

[8] EU/DG Regio, Guide to Cost Benefit Analysis of Investment Projects, 2008, web-link:

[http://ec.europa.eu/regional\\_policy/sources/docgener/guides/cost/guide2008\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf)

[9] EU/COCOF, Revised Guidance Note on Article 55 for ERDF and CF of Council Regulation (EC)

No 1083/2006: Revenue Generating Projects, 2010, web-link: [http://www.interact-eu.net/downloads/3165/Commission\\_Guidance\\_Note\\_Revised\\_Article\\_55\\_Revenue\\_Generating\\_Projects.pdf](http://www.interact-eu.net/downloads/3165/Commission_Guidance_Note_Revised_Article_55_Revenue_Generating_Projects.pdf)

[10] EU/DG Regio, Guidance on the Methodology for carrying out Cost-Benefit-Analysis – Working Document No. 4, August 2006, weblink:

[http://ec.europa.eu/regional\\_policy/sources/docoffic/2007/working/wd4\\_cost\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docoffic/2007/working/wd4_cost_en.pdf)

[11] EU/DG Regio, Annex XXI – Major Project Request for Confirmation of Assistance under Articles 39 – 41 of Regulation (EC) No. 1083/2006, downloadable from

[http://ec.europa.eu/regional\\_policy/sources/docoffic/official/regulation/newregl0713\\_en.htm](http://ec.europa.eu/regional_policy/sources/docoffic/official/regulation/newregl0713_en.htm)

[12] EU/DG Environment, Checklists for Water and Waste Major Projects and Explanatory power point presentation regarding the checklists, November 2009, downloadable from

[http://ec.europa.eu/environment/integration/cohesion\\_policy\\_en.htm](http://ec.europa.eu/environment/integration/cohesion_policy_en.htm) (seek under point 3) Important Documents)

[13] JASPERS, Guidelines to fill up the Application for Funding in Waste Management Projects,

March 2011, weblink: [http://www.jaspers-europa-info.org/attachments/117\\_Guide\\_SW\\_Major\\_Projects\\_Application\\_Form\\_Annexe%20XXI.pdf](http://www.jaspers-europa-info.org/attachments/117_Guide_SW_Major_Projects_Application_Form_Annexe%20XXI.pdf)

b) Other sources of information used to prepare the note:

- Encyclopedia of the Earth, weblink: [www.eoearth.org/article/Polluter\\_pays\\_principle](http://www.eoearth.org/article/Polluter_pays_principle)

- Turner, R.K. Environmental Policy: An Economic Approach to the Polluter Pays Principle, weblink: [http://www.uea.ac.uk/env/cserge/pub/wp/pa/pa\\_1992\\_04.pdf](http://www.uea.ac.uk/env/cserge/pub/wp/pa/pa_1992_04.pdf)

- Wilson, D. C., Economic and Policy Instruments for Waste Management, weblink:

[http://www.worldbank.org/urban/solid\\_wm/erm/Annexes/US%20Sizes/New%20Annex%204B.4.pdf](http://www.worldbank.org/urban/solid_wm/erm/Annexes/US%20Sizes/New%20Annex%204B.4.pdf)

c) Useful links and literature for further reference/study

- On environmental policies and instruments in general:

- OECD, Environmental Policies and Instruments:

[http://www.oecd.org/departement/0,3355,en\\_2649\\_34281\\_1\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/departement/0,3355,en_2649_34281_1_1_1_1_1,00.html)

- On financing of waste management services:

- UNEP, Solid Waste Management, Chapter 16: Financial Arrangements on Solid Waste Management: [http://www.unep.or.jp/ietc/publications/spc/solid\\_waste\\_management/Vol\\_1/24-Chapter16.pdf](http://www.unep.or.jp/ietc/publications/spc/solid_waste_management/Vol_1/24-Chapter16.pdf)

- ISWA, Financing of Waste Management – Different Approaches and Examples (Presentation): [http://www.iswa.org/uploads/tx\\_iswaknowledgebase/Rachel-Williams.pdf](http://www.iswa.org/uploads/tx_iswaknowledgebase/Rachel-Williams.pdf)