COHESION POLICY AND SUSTAINABLE DEVELOPMENT

Supporting Paper 3

Role of non-Cohesion Policy Instruments

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1 INTRODUCTION

1.1 Background

This is the Supporting Paper 3 to the final report[1] of the project 'Cohesion Policy and Sustainable Development' (contract number: 2009.CE.16.0.AT.069 and 2009.CE.16.C.AT.035). It has been drafted by the Institute for European Environmental Policy (IEEP) with CEE Bankwatch Network (hereafter Bankwatch), BIO Intelligence Service S.A.S, GHK, Institute for Ecological Economy Research (IÖW), Netherlands Environmental Assessment Agency (PBL) and Matrix Insight.

This report should be quoted as follows:

Skinner, I., Hjerp, P. Medhurst, J., Medarova-Bergstrom, K., Cachia, F., Grubbe, M., Kettunen, M., Peacock, M., and ten Brink, P. (2010) *Cohesion Policy and Sustainable Development-Role of non-Cohesion Policy Instruments,* Supporting Paper 3. A report for DG Regio, December 2010.

The purpose of Supporting Paper 3 is to understand the role that non-Cohesion Policy instruments can make in support of both Cohesion Policy objectives and environmental objectives. The report presents the thematic reviews of non-investment policy instruments that could be appropriate to support Cohesion Policy funds to encourage transition to a more environmentally sustainable economy, including those instruments that integrate environmental objectives into broader economic measures (see also Box 1 on terms and definitions). The scope of instruments needs to be understood in terms of their ability to complement win-wins already achieved; or their ability to reduce the typical trade-offs between Cohesion Policy and the loss of environmental assets and eco-system services.

Box 1: A Note on Definitions

The task will examine the contribution of instruments for the environmental themes. This refers to the range of instruments used at EU or Member State/local levels to pursue environment objectives in each of the themes specified in the Terms of Reference with the Conservation and Management of Natural Resources theme being divided into biodiversity (including ecosystem services) and water. These instruments tend to operate independently of Cohesion Policy and Operational Programmes, except where required, for example in the case of Strategic Environmental Assessment (SEA). Note we have used "thematic" to refer to the grouping of environment instruments; and "domain" to refer to the grouping of OP measures.

These instruments could be aligned more explicitly with Programmes, so that they address in part at least the enhancement of environmental assets or mitigation of environmental impacts. Where this is done informally, through for example some cross-referencing in policy statements to the intention for improved policy alignment, we define these to be "complementary instruments". Where this is done formally, for example through the specification of conditionality requirements on the part of OP, we define these to be "conditional instruments". In the context of this report, conditional or

[1] Hjerp, P., Medarova-Bergstrom, K., Cachia, F., Evers, D., Grubbe, M., Hausemer, P., Kalinka, P., Kettunen, M., Medhurst, J., Peterlongo, G., Skinner, I. and ten Brink, P., (2011) *Cohesion Policy and Sustainable Development,* A report for DG Regio, October 2011

complementary instruments aim to either reduce the environmental losses in win-losses or to enhance environmental wins in win-wins. Hence, charging (either transport or water) can only be considered to be a conditional or complementary instrument if it implements the polluter pays principle.

Finally we differentiate between non-investment and investment measures. As an investment programme, the case for improved integration could be made by including additional or extended domain related investment in the Operational Programmes. The issue for the Task to address is the evidence that suggests this investment should be included or excluded and on what basis. Non-investment instruments are clearly outside the direct funding measures of Operational Programmes.

1.2 Approach and Structure

The analysis undertaken within this task focuses on non-investment policy instruments and the potential for private investment, i.e. on actions that could be taken outside of Cohesion Policy. The implications of this analysis for Cohesion Policy generally, and its interventions in particular, are covered in Supporting Paper 5, including what changes if any should be made to the types of investment included or excluded in OPs to better support environmental integration.

The approach taken consists of the following steps.

Step 1: Identification, by theme, of Potential Win-Wins and Win-Losses of potential OP investments

Step 1 aims to provide an overview of the potential win-wins and win-losses that might potentially result from OP measures. Indicative areas of potential win-wins and win-losses were identified in the literature review of Supporting Paper 1; the aim of this Step is to undertake a more comprehensive analysis of potential win-wins and win-losses. The assessment of win-wins and win-losses is undertaken in Annex 1 for each theme (based on Cohesion Policy activity, OP investment measure, economic and social wins, environmental wins, environmental losses and finally, type of win-win/win-loss)

Step 2: Identification, by theme, of non-investment policy instruments that could deliver environmental benefits

The aim of Step 2 is to identify, by theme, a list of policy instruments, other than investment measures, that have the potential to deliver environmental benefits and therefore which, in subsequent steps, could either be used instead of Cohesion Policy interventions to enhance win-wins or be used to complement Cohesion Policy interventions, e.g. to mitigate win-losses (and to be further analysed in Supporting Paper 5). These policy instruments are listed in Annex II for each theme and are divided into regulatory instruments (including environmental Directives), market based instruments (including greater use of full cost recovery) and voluntary mechanisms and includes the implementation level of the instrument (national, regional and/or local).

Step 3: Identification, by theme, of whether categories of intervention (particularly those that deliver win-wins) could be delivered by non-investment policy instruments

Step 3 focuses on the impacts of investments, particularly but not exclusively on those that deliver win-wins, and assesses these to determine whether the investments, which were identified in Step 1, could be achieved by any of the policy instruments listed in Step 2.

This assessment is done in Annex III, and for the selected Cohesion Policy activities the following issues are addressed:

- Is there an alternative EU instrument in place (other than Cohesion Policy) that could deliver the investment?
- Could another policy instrument (other than public financing) deliver the investment?
- If public financing is required, could this be funded at the national (or regional) level rather than by the EU?
- Does the funding of the intervention contribute to economic, social and territorial cohesion?
- Assessment of whether investment could be delivered by non-investment policy instruments (note any potential differences between EU MSs)

Step 4: Identification, by theme, of whether existing investments (particularly win-wins) are leading to the crowding out of potential private investment

Step 4 assesses whether existing investments (particularly those that are leading to win-wins) are leading to the crowding out of potential private investment. This is undertaken at this stage from the perspective of the knowledge of the respective theme leads of their respective areas. However, the findings of this step will be confirmed (or otherwise) by selected case studies undertaken. This assessment of Cohesion Policy activities is undertaken in Annex IV, covering the following issues:

- How could private money be used for the investment?
- What type of private enterprise would potentially invest?
- To what extent would this assessment vary between Member States and regions?
- Assessment as to whether current interventions are leading to a crowding out of potential private investment

Step 5: High level assessment of potential to use non-investment policy instruments as conditional or complementary instruments

Whereas Steps 3 and 4 focused on the impacts of investment generally, Step 5 focuses on win-losses, particularly the way in which non-investment policy instruments could potentially mitigate win-losses resulting from CP-funded interventions. The detail of how non-investment policy instruments can be used to mitigate any win-losses and the implications for OP design and operation will be addressed in Supporting Paper 5. This Supporting Paper 3 focuses on assessing non-investment policy instruments more generally for their potential to be used as conditional or complimentary instruments to mitigate any win-losses that might arise from CP interventions or to enhance any win-wins. Additionally, it is worth noting that some of the case studies will provide more detailed analysis of the potential use of certain non-investment policy instruments to mitigate win-losses and indications as to the way in which particular instruments can be used in conjunction with OPs to mitigate win-losses. The results of the case studies will be integrated with the findings of this Step in Supporting Paper 5.

This Step involves a high level assessment of the long-list of potential non-investment policy instruments, which each theme lead of the consortium identified at Step 2 and will be based on a 'first principles' assessment based on the expert judgement of the thematic experts. The Step has two stages:

i) **Identify a short-list** of non-investment policy instruments for each theme that could potentially be used to mitigate win-losses.
ii) Confirm the **relevance of the short listed instruments** with respect to the investments.

The criteria to be used for the first stage of this assessment are covered by Annex 5:

- **Potential to be applied across MS and regions:** The aim of this criterion is to give an indication as to whether the instrument could be used across all MSs and regions, if it were to be applied as a complementary or conditional instrument.
- **Potential to be applied across different types of OP**: This criterion aims to provide an indication as whether the instrument could potentially be used with all types of OP e.g. national, regional and across all types of non-environmental OP (see list in Annex I).
- **Impact on the net costs of the OP:** The aim of this criterion is to identify whether the use of the instrument as a complementary or conditional instrument potentially results in either cost savings (ie benefits) for the OP, eg moving some or all of investment to the private sector or reducing the demand for the services being provided by the OP), or whether it will potentially result in increased net costs, eg the costs faced by the intervention increase.
- **Environmental impacts mitigated:** The non-investment policy instruments identified in Step 2 were chosen as they have the potential to deliver environmental benefits for the respective themes. Under this criterion, theme leads will specify in more detail the environmental impacts that the instrument potentially mitigates.
- **Impact on the operation of the OP:** The aim of this criterion is to assess whether the use of the instrument could help improve the operation of the OP. This includes an improved management of the OP, an improvement to the appraisal of OP potential projects, e.g. to improve their cost-effectiveness, or reducing any potential adverse environmental impacts.
- **Added value of using the instrument to complement OP measures:** The aim of this criterion is to assess the added benefits of using the particular instrument as a conditional or complementary instrument.
- **Assessment and conclusion as to whether the instrument should be included on the short-list:** This criterion will be used to provide an overall assessment as to whether the non-investment policy instrument should be included on the short-list of instruments that could be used as complementary or conditional instruments to mitigate win-losses resulting from Cohesion Policy interventions.

This first stage assessment aims to identify one to three non-investment policy instruments by theme that could be used as a conditional or complementary instrument to mitigate potential win-losses resulting from Cohesion Policy interventions. The aim of the second stage of this Step is essentially a check to ensure that the short-listed instruments are relevant to be used as conditional or complementary instruments to the categories of intervention that could be funded by Cohesion Policy (i.e. those identified in Step 1). Hence, Annex VI assesses each short-listed instrument as to whether it could be potentially used as a conditional or

complementary instrument for the respective Cohesion Policy activities and addresses the following issues:

- Will the instrument operate at the appropriate scale?
- Will the instrument operate across all types of OP?
- Will the instrument generate cost savings for the OP?
- Will the instrument generate environmental benefits?
- Will the instrument improve OP operation?
- What is the added value of using the instrument as a conditional or complementary instrument?
- Is its use as a conditional or complementary instrument relevant to the activity?

For the short-listed instruments the following aspects will be evaluated in more detail:

- regulatory basis/current institutional framework ;
- current deployment in the EU, and trends in deployment;
- type/scale of investment that might be influenced ;
- impacts from the use of the instrument;
- barriers, both the nature of these and how they might be overcome
- benchmarks/indicators to determine where instrument might be used; and
- initial thoughts on implications for the design of the OP .

Part I (i.e. Sections 2 to 5) of this report are a synthesis of the findings of the five themes of transport, clean energy and climate change, sustainable consumption and production, water and biodiversity. This is followed by Part II (Sections 6 to 10) that contains the detailed analysis for each theme. Part II contains the evidence based analysis, on which the synthesis is based upon. The tables supporting these detailed analyses can be found in Annexes 1 to 5. Note that some of the issues linked to conditional or complementary instruments and Cohesion Policy investment (i.e. harmful subsidies) will be further developed in Supporting Paper 5.

PART I: SYNTHESIS REPORT

2 DELIVERING WIN-WINS BY NON-INVESTMENT POLICY INSTRUMENTS

It is important to note that the assessment of whether win-wins can be delivered by non-investment policy instruments differs between the themes, as the themes themselves are different in nature. It should be recalled that in the context of this project a win-win is defined as an economic (and potentially a social) win, i.e. the first "win", and an environmental win (the second "win"). This is clearly a simplification of reality as the first win captures a range of economic and social wins, while the second win covers a range of environmental issues, but it is a necessary simplification for the purpose of the analysis in this report. Hence, in order that a non-investment policy instrument delivers a win-win, it must deliver wins for both the economic (and potentially the social) pillar and the environmental pillar. For some of the themes this is possible, for others it is not, due to the nature of the theme and the type of relevant investment delivered by Cohesion Policy.

Cohesion Policy investments deliver win-wins under both the climate change and clean energy and water themes. In both cases investment delivers economic (and social) benefits, but also environmental benefits, as a better quality environment results than would otherwise have been the case. For these two themes, it is relevant in this section to discuss whether non-investment policy instruments could also deliver such win-wins.

Under the clean energy and climate change theme, there is a range of non-investment policy instruments that have the potential to deliver significant win-wins. Price-based incentives such as energy/CO_2 taxes and markets, local regulations (risk zoning, etc.), financial instruments (insurance schemes) are likely to deliver win-wins but Cohesion Policy funding and public funding in general is still needed in order to complete these policies (e.g. externalities related to GHG emissions are not fully integrated in actual energy fiscal schemes) and to support spill over effects, such as knowledge and information based externalities that justify public financing of RD and innovation (through subsidies, for example).

For the water theme there are two principle non-investment policy instruments, enabled under the terms of the Water Framework Directive, which could be used to deliver some elements of the win-wins; improved appraisal of the needs generated by existing EU legislation and water pricing. These have the potential to deliver a reduced need for funding of water supply and wastewater treatment investment. However the ability of new MS, where the need is greatest for investments in water quality, to meet the requirements of legislation more cost-effectively or to introduce water pricing is limited by several important factors notably affordability, and in many instances it is likely that Cohesion and Structural fund investment will be required irrespective of non-investment policy instruments.

For the biodiversity theme, the focus is on delivering an environmental win, i.e. protecting or benefiting from natural resources, which delivers an increased economic benefit as natural resources that are supplying eco-system services are protected or enhanced. The "win-wins" interventions for biodiversity can be supported by a range of non-investment policy instruments. These include, for example a range of regulatory instruments targeting both biodiversity and the environmental sustainability of sectoral policies, eg those of energy and transport. Furthermore, several market based instruments, such as reform of subsides, introduction of taxes and fees and the establishment of payments for environmental services

(PES) can be used to create long-term benefits for both biodiversity and regional socio-economic development. Finally, several voluntary mechanisms can play a significant role in enabling the uptake of "win-wins" in practise (e.g. provisioning of information, (voluntary) standards or codes and training & capacity building).

In general, it is considered that the identified non-investment policy instruments are important in supporting, rather than replacing, investments under Cohesion Policy. For example, regulatory instruments continue to be important in securing the protection of most vulnerable species and habitats and maintaining a minimum quality of ecosystems and their service. In addition, the key EU legislative instruments establishing the Community regime for biodiversity conservation (i.e. the Habitats and birds Directives) specifically provide for their implementation to be supported by the EU funds.

On the other hand, for transport, investment from Cohesion Policy delivers economic (and social) wins, but causes environmental damage as a result of both the construction and use of infrastructure. As a result, discussion of absolute win-wins in the context of transport is not relevant; rather it is a matter of discussing relative win-wins, i.e. reducing the extent of "losses" that would otherwise occur. Hence, in this respect the important element is to introduce conditional or complementary instruments to mitigate the environmental losses for transport.

Finally, the focus of sustainable consumption and production (SCP) is making existing approaches to consumption and production more sustainable. Hence, in this respect the focus of SCP is on the second win, rather than the first.

3 THE POTENTIAL FOR CROWDING OUT OF PRIVATE INVESTMENT

For transport it is possible to obtain private financing for transport infrastructure. However, the extent to which it is possible to use private finance depends on a range of economic, social, political, legislative, ownership and attitudinal factors that will vary between different countries. Hence, the potential to attract private investment to fund transport infrastructure does not necessarily imply that crowding out of private investment has resulted from Cohesion Policy investment in transport infrastructure. On the other hand, given the increasing amount of private money being attracted to fund transport infrastructure, there is clearly the possibility that Cohesion Policy funds have been relied upon where private investment could have been sought.

In the case of biodiversity, it is not considered that existing investment under Cohesion Policy is at present leading to the crowding out of potential private investment. The lack of private investment in biodiversity is rather linked with the limited awareness in biodiversity related socio-economic benefits and "win-wins".

For clean energy and climate change the potential for crowding out regarding public investments in the field of renewable energies is significant. In order to minimise the risk of crowding out and to optimise the overall effectiveness of the policies, OPs have to be designed so as to avoid generating negative interactions with national/regional schemes and regulations regarding renewable energies and especially feed-in-tariffs. This concerns both the scope the investments and their level, the latter depending on MS level market characteristics and forecasts.

However, even if it is clearly possible and beneficial to obtain private financing for investments in renewable energies and climate change mitigation schemes, the use of private money in this way is often controversial and does not always deliver the anticipated results (e.g. private financing of carbon capture and storage facilities). Additionally, the extent to which it is possible to use private finance depends on a range of economic (e.g. market conditions and characteristics), social (ability of low income consumers to pay, reduction in social benefits if payment is required) political, legislative, ownership (e.g. energy grid ownership) and attitudinal factors that will vary by country. However, regarding adaptation to climate change, the situation is quite different, as no or very little private investors seem to be interested in these interventions. Private investment in adaptation is limited because of the low level of private return compared to investments in other areas (even if the absolute level of private return is positive), such as renewable energies, sustainable transport, etc. It is also limited because of the lack of a policy framework which is needed to provide information on the economic benefits of investing in adaptation to climate change. As economic benefits are likely to appear on the medium to long-term, a policy framework is also needed to identify and introduce the necessary incentives to drive private investment towards these types of actions.

For SCP it can be argued that a potential short-term crowding-out of private investments may exist in regard to investments to promote the uptake or implementation of Ecolabel, EMAS, etc., as private firms could have an incentive to invest in these measures. However, figures show that the uptake of EMAS and Ecolabel has been very low in new Member States, indicating that there has not been significant private investment in the uptake of the EMAS scheme there. In Malta, Lithuania and Bulgaria, for example, there are no registered

organisations with EMAS.[2] Similarly, the statistics for the Ecolabel uptake are also low for new member states.[3] In relation to GPP, a report by the OECD in 2003[4] warns of the potential problem of crowding out green consumption in the private sector. If the public sector introduces GPP yet suppliers are not quick enough to meet the new demand, the private sector, who might have previously bought green, will be forced to purchase the non-green option. However, as long as GPP is introduced gradually, with warnings to suppliers, this is unlikely to be a problem.[5]

For the water theme crowding out is unlikely to occur, particularly when it is considered that those Member States that receive significant Cohesion Policy funding (new and southern Member States) are some of the least deregulated. Evidence shows that even where private sector interests had originally been expressed, the highly regulated nature of the market for water services has meant rates of return that make such investments unattractive to the private sector.

2 Correct as of 30 June 2010 http://ec.europa.eu/environment/emas/pictures/Stats/2010-04_EMAS_Quarterly_Graph.jpg; http://ec.europa.eu/environment/ecolabel/about_ecolabel/facts_and_figures_en.htm

3 http://ec.europa.eu/environment/ecolabel/about_ecolabel/facts_and_figures_en.htm

4 OECD, (2003), The Environmental Performance of Public Procurement: Issues of Policy Coherence

5 Commission Staff Working Document (2007), Options to improve the Uptake of Green public procurement in the EU: Impact Assessment

4 SUMMARY OF SHORT-LISTED INSTRUMENTS

Policy instruments in each of the selected themes were identified through a process of review and selection leading to a shortlist of possible instruments, as described in the introduction.

Table 1 summarises the shortlisted instruments by theme. The instruments comprise market based instruments and voluntary instruments, that sometimes are required by legislation.

Table 1: Short-list of non-investment instruments, by Theme, that might be used as conditional or complimentary instruments

Theme	Instruments	Type of Instrument
Sustainable Transport	Charges on Use	Market based instrument
	Green Procurement of Vehicles	Voluntary instrument; recently also legal requirement
Sustainable Consumption & Production	Green Public Procurement	Voluntary instrument
	Environmental Management & Audit (EMAS)	Voluntary instrument within legal context
	EU Eco-label Scheme	Voluntary instrument within legal context
Natural Resources: Biodiversity	Application of biodiversity related EU Regulations	Regulatory instrument
	Application of key MBIs for biodiversity, i.e. Payments for Eco-system Services (PES) and Reform of Subsidies	Market based instrument
Natural Resources: Water	Water framework Directive and associated Directives	Regulatory instrument
	Applying Water Pricing to Cohesion Policy spending	Market based instrument
Climate Change	Renewable Energy Feed-in Tariffs	Market based instruments set in legal context

4.1 Regulatory basis/current legislative framework

Many of the short-listed instruments that could be used as conditional or complimentary instruments are allowed or enabled under EU legislation. Indeed some are existing EU legislation. Hence, these could be relatively easily be used as conditional instruments in the context of Cohesion Policy.

For both the water and biodiversity themes, existing EU legislation, which for both is considered to be relatively comprehensive, is considered to be a potential conditional instrument. For biodiversity, the implementation of the legislation is considered to be a problem, hence ensuring that relevant investments are implemented when Cohesion Policy funding is provided is potentially a soft approach (as opposed to legal action) of ensuring that the relevant legislation is implemented. Existing support schemes – CAP and CFP – are undergoing reform to enable these to better protect biodiversity, but such support continues to have negative impacts in practice. There are few taxes and charges directly targeting biodiversity; some schemes are being developed that could be considered to be payments for

environmental/ecosystem services, but these still play a marginal role. Similarly, for water, requiring Cohesion Policy funded investment to meet the requirements of existing EU water legislation could be a softer means of ensuring that this legislation is implemented, or alternatively of enabling the legislation to be implemented more quickly than otherwise would have been the case.

Green Public Procurement (GPP), which was short-listed under both the SCP and transport themes, is allowed by EU law (e.g. the public procurement Directives) and is encouraged by various Communications and Council conclusions. However, apart from road transport vehicles, for which GPP is required by the clean vehicles Directive, GPP is generally not required. Similarly, the legislative framework for both EMAS and Ecolabels are set at the European levels in their respective Regulations, but neither is compulsory. The legislative framework for feed-in tariffs is set out within Directive 2009/28/EC, which provides the framework within which national schemes can be developed.

The framework for user charging in road transport is also set at the European level, in the Eurovignette Directive. This Directive however limits the extent to which users can be charged the full external costs of their travel. Other legislation restricts the application of user charging for other modes.

Hence, the framework within which many of the instruments listed in Table 1are used is already set out in various pieces of European legislation. Hence, it is possible to use most of these as either conditional or complementary instruments associated with Cohesion Policy. Having said that, the extent to which some instruments can be applied, e.g. transport user charging, is restricted within existing legislation.

4.2 Current deployment in the EU, and trends in deployment

Generally, the instruments listed in Table 1 are increasing in popularity within the EU. GPP and feed-in tariffs can be found in the majority of Member States, while the use of EMAS and ecolabels is increasing.

At the regional and national level, a number of initiatives are being established to explore the use of market based instruments for biodiversity. However, these schemes still play a rather marginal role in financing biodiversity conservation. The problem with the existing EU biodiversity legislation is not its level of deployment, but its implementation, as noted above. Similarly with water, the short-listed instruments are actually requirements of EU legislation, so the issue is with respect to their implementation, rather than their level of deployment.

There are some examples of user charging in transport, e.g. some distance charges for heavy good vehicles and localised congestion charging schemes, but universal road user charging has not yet been implemented, although the instruments regularly appears in national transport debates, as well as in relation to revisions of the Eurovignette Directive. For international transport, some airports differentiate their charges on environmental grounds, but this approach is not widespread and the type of charging that can be applied is limited by international conventions.

Hence, most of the instruments in Table 1 are already relatively widespread and these are likely to increase, particularly with the need to move towards a low carbon economy. The application of some of the instruments, e.g. user charging in transport, is still not that extensive.

4.3 Type/scale of investment that might be influenced

The instruments of SCP, i.e. GPP, ecolabels and EMAS, could be used to influence purchases and operations for all types of investment within Cohesion Policy. GPP for transport is relevant for all those categories of activity under which construction materials or vehicles are purchased, while feed-in tariffs are relevant for those categories of activity that focus on renewable energy.

User charging for transport is relevant for all investments that develop or construct transport infrastructure, which covers around 25% of the expenditure within Cohesion Policy. Water charging and the implementation of the EU' water legislation is relevant for those categories of activity that focus on the provision of infrastructure for water.

For biodiversity, specific focus should be given to Cohesion Policy measures that affect natural resources and land use with the aim of ensuring that these measures also actively seek ways to contribute to and deliver the objectives of both biodiversity policy and Cohesion Policy. Additionally, PES schemes could be targeted to support the conservation and sustainable use of ecosystems and ecosystem services of high EU or national importance.

Hence, some of the instruments listed in Table 1could be applied relatively widely within Cohesion Policy, while others, such as user charging, are more relevant where relevant infrastructure is constructed or developed.

4.4 Impacts from the use of the instruments

Given that all of the instruments listed in Table 1 have been assessed with respect to their potential to improve the environmental performance of Cohesion Policy, all have the potential to deliver environmental benefits. However, with all of the instruments the detail of the design is important in order to ensure that such benefits are realised. Generally such design considerations will be addressed by the wider legislative frameworks outside of Cohesion Policy, many of which are developed at the European level (see above). However, when using any of these instruments as either a conditional or a complementary instrument associated with Cohesion Policy, it will be important to ensure that the detail of the way in which the instrument is used will deliver environmental benefits. If the instruments do have beneficial environmental impacts, they will clearly improve the environmental performance of the Operational Programme. With respect to biodiversity and water, the potential environmental benefits are dependent on the implementation of existing EU legislation.

From an economic perspective, it is important to distinguish between short-term costs to the OP, and longer-term, i.e. life cycle, costs incurred by the user. In the short-term, some of the instruments listed in Table 1 have the potential to incur costs to the OP, even if it is only the administrative costs of setting up an EMAS scheme or the training required to familiarise procurement officers with the detail of GPP. Similarly, for charging instruments, new infrastructure needs to be set up and operated, which will also incur short-terms costs to the OP if it funds such costs. In the longer-term, however, it can be expected that there will be economic savings, particularly for users, e.g. in terms of lower costs associated with the use of resources. Additionally, the application of PES schemes for biodiversity should deliver economic savings over the long-term. Hence, the net economic impact of most of these measures, when taken over the lifecycle of the instrument, is anticipated to be beneficial. Furthermore, the environmental costs associated with the activities that are being affected by the introduction of these instruments should also decline. Finally, water and transport user

charging should also contribute to the provision of environmentally, and therefore economically, efficient levels of use of infrastructure, which should result in efficient levels of infrastructure being supplied. Consequently, with user charging, lower levels of infrastructure would probably be supplied than without user charging, but this would be a more economically efficient outcome as inefficient use will have been eliminated.

In cases where the introduction of an instrument increases short-term costs, this would potentially increase the costs that would need to be covered by the OP. For example, if an organisation sets up an EMAS or buys some alternative vehicles under a Cohesion Policy funded project, these would increase short-term costs and therefore the costs of the Operational Programme funded project. However, in the longer-term, i.e. over the lifecycle of the project, costs faced by the user that are associated with use should decline and hence any of these costs covered by Cohesion Policy funds would potentially be less than they otherwise would have been.

User charging on the other hand has the potential to lower levels of use and thus reduce the need for as much infrastructure, e.g. water charging could reduce the amount of water that needs to be supplied and subsequently treated, hence reducing the need for infrastructure. In such cases, where less infrastructure needs to be funded by Cohesion Policy, there is a potential beneficial economic impact on the OP as it no longer needs to cover the costs of infrastructure that would have serviced the inefficient levels of demand that no longer occur with the advent of user charging.

4.5 Barriers, both the nature of these and how they might be overcome

For many of the instruments listed in Table 1, barriers include upfront costs and a lack of knowledge, awareness or training. GPP is hindered by a perception that greener products are more expensive, whereas over the lifecycle of the product this is often not the case. Similarly, the implementation of EMAS requires implementation costs, which can be quantified relatively easily, whereas longer-term environmental benefits are more difficult to quantify. Cost is also a significant barrier to potential applications to join the Ecolabel scheme. The way in which costs are assessed, i.e. often not from a lifecycle perspective, is therefore an important barrier, which could be addressed by better taking account of the full lifecycle costs of instruments. Ecolabels on the other hand, often suffer from a lack of economic incentive to join the scheme. A lack of awareness in relation to all three of these instruments is also a barrier, which needs to be overcome by awareness raising activities, training and guidance. The lack of data from which to reliably and accurately assess the needs of respective Member States is also a barrier to the use of EU water legislation as a complementary or conditional instrument.

With both GPP and EMAS, there is a further barrier with respect to the participation of SMEs, which often do not have the capacity or capital available to implement these instruments.

For biodiversity, one of the key barriers is the perceived conflict between biodiversity protection and socio-economic development. This is reinforced by a lack of understanding and awareness with respect to how biodiversity underpins socio-economic development, and thus a lack of resources being made available for biodiversity protection.

The main barrier with respect to transport and water user charging is the likely resistance of the public and industry to either increased costs or to pay for something that was previously

free at the point of use. This barrier can best be overcome by communicating the benefits of the implementation of charging, e.g. to the environment, less congested infrastructure and the potential to invest in alternative modes of transport. Additionally, existing Cohesion Policy acts as a barrier to the use of user charging on roads funded by Cohesion Policy, at least in the short-term. In both instances, consideration of the needs of those on lower incomes, taking account of their ability to pay, is also important. The availability of information is also a barrier, e.g. if users are going to be charged on the basis of their use, it is important to know how much each uses.

4.6 Benchmarks/indicators to determine where instrument might be used

GPP, EMAS and Ecolabels could potentially be used in all types of OP and in all Member States and regions. Charging is best applied as a conditional or a complementary instrument where there is a need to apply the polluter pays principle.

For both biodiversity and water, compliance is an important factor when addressing where relevant instruments could be used. In the case of water the affordability is an important consideration as well. The evidence provided in section 10.5.2 suggests that the largest proportion of Cohesion Policy funding is likely to be required in Bulgaria, Romania, Latvia and Lithuania. In the case of biodiversity, PES is relevant for all OPs. Ideally, PES would target OPs with areas where they can support the delivery of several EU policy goals, such as conservation of water and biodiversity resources.

4.7 Initial thoughts on implications for the design of the Operational Programme

Cohesion Policy funding could be, and in some cases already is, used to increase the capacity of organisations with respect to the implementation of GPP, EMAS or Eco-labels. Alternatively, all three of these instruments could be used as conditional complementary or conditional instruments that are required under Cohesion Policy. Organisations could be required to apply GPP in order to receive funds from Cohesion Policy. In this respect, the criteria that have been developed for the European Commission for 18 priority products are important. When procuring products covered by these criteria, organisations receiving funding under Cohesion Policy could be required to apply the common criteria that have been identified. For products not covered by these criteria, organisations could still be required to include relevant provisions of the public procurement Directives, e.g. requiring:

- the inclusion of environmental requirements in technical specifications;
- the use of eco-labels;
- setting social and environmental conditions for the performance of contracts;
- economic operators to demonstrate they have met their environmental obligations;
- economic operators to demonstrate they can perform a contract in accordance with environmental management measures; and
- the application of award criteria based on environmental characteristics.

Additionally, when purchasing vehicles, Cohesion Policy should require the provisions of the clean vehicle Directive to apply, i.e. those that require that the energy and environmental impacts of vehicles are taken into account when purchasing road vehicles.

Similarly, making the application of EMAS a conditional complementary or conditional instrument would improve uptake and lead to environmental benefits, although separate provisions would need to be made with respect to SMEs.

For biodiversity, the implementation of existing EU legislation with due considerations on the broader socio-economic importance of biodiversity, ecosystems and related services. and the introduction of ecosystem services could be used as conditional complementary or conditional instruments for relevant categories of funding. Furthermore, OP could make clear reference / contribution to supporting testing and uptake of market-based instruments, such as payments for ecosystem services (PES), for biodiversity. The associated introduction of improved needs assessment, especially in water, given the flexibilities available under the Water Framework Directive, should be conditional. The introduction of user charging could also be used as a condition of receiving funding on any relevant infrastructure for both transport and water, while feed-in tariffs could be used as a conditional instrument for all relevant Cohesion Policy funding.

5 CONCLUSIONS

With respect to whether the win-wins that are currently delivered by Cohesion Policy could be delivered by non-investment policy instruments, the analysis was different for each theme, due to the nature of each theme and the type of relevant investment delivered by Cohesion Policy. With respect to clean energy and climate change, there are a range of potential non-investment policy instruments that could deliver the win-wins currently delivered by Cohesion Policy funding. For water, existing EU legislation and measures to improve the cost effectiveness of water investment, and water pricing should also deliver the same win-wins delivered by Cohesion Policy, but the ability of the new Member States in particular to deliver these without Cohesion Policy funding is limited. For biodiversity, there are no non-investment policy instruments that could deliver the win-wins currently delivered by Cohesion Policy funding, although there are instruments that could be used as conditional or complementary instruments for Cohesion Policy funding in order to improve the environmental performance of the funding (see below). Similarly, for transport and SCP, complementary or conditional instruments to improve the environmental performance of Cohesion Policy investments are also important. This was due to the fact that for transport and SCP, it does not make sense to talk about absolute win-wins delivered by Cohesion Policy. For transport, all Cohesion Policy investment delivers an environmental loss, although some investments have the potential to be relatively less damaging than others. The benefits of SCP are focused on greening existing approaches, hence these are ideally suited to be complementary or conditional instruments rather than to replacing investment.

For both the transport and climate change and clean energy themes, there is the potential that some crowding out might have occurred as a result of Cohesion Policy funding, as private investment has been used to fund similar schemes to that which Cohesion Policy funds. However, this does not necessarily mean that crowding out has occurred. It needs also to be recognised that the use of private investment for such infrastructure can be controversial and does not necessarily lead to the desired impact. Additionally, the ability to attract private investment will depend on the Member State, including the political and legislative context, as well as the existing ownership structures of the industries concerned. Similarly, while there is the potential for crowding out in water, it is unlikely that this has occurred, as the Member States that receive significant Cohesion Policy funding are some of the least deregulated. For SCP, it could be argued that some short-term crowding out may have occurred if Cohesion Policy invests in the implementation of Ecolabelling and EMAS, but again Cohesion Policy support tends to target those countries were the uptake of these measures is low, so actual crowding out is probably limited. Finally, for biodiversity, it is not considered that existing investment under Cohesion Policy is at present leading to the crowding out of potential private investment.

The assessment identified a number of instruments that could be used as **conditional or complementary instruments** to improve the environmental performance of Cohesion Policy funding (see Table 1). The framework within which most of these could be applied is already set at the European level, so the instruments themselves could all be used in the context of Cohesion Policy. However, the extent to which some instruments can be applied, e.g. transport user charging, is restricted by existing legislation. Given their potential environmental benefit, the use of most of the instruments is already increasing, some of which are encouraged by EU legislation and strategies. Others, such as user charging, are on the political agenda, but are proving to be more difficult to implement. The categories of

investment with which the conditional or complementary instruments could be used is relatively clear-cut, i.e. the transport conditional or complementary instruments should be used with the transport categories, the water instruments with the water categories, etc. The biodiversity instruments are relevant for any Cohesion Policy investment that affects natural resources or land use, while the SCP instruments could potentially be applied in a cross-cutting fashion to accompany any relevant investment. For example, where products are bought, GPP could be applied and where organisations are involved, compliance with EMAS could be required.

The use of these conditional or a complementary instruments should be beneficial to the environment, as this is why they have been chosen. From the economic perspective, some of the instruments may increase short-term costs to the OP, e.g. as some cleaner products are more expensive to buy and there will be administrative costs associated with EMAS, for example. However, most should reduce longer-term user costs, e.g. cleaner products are often cheaper to use, and the application of instruments to protect and enhance biodiversity should deliver economic benefits in the longer-term. User charging also has the potential to deliver short-term savings, if demand is reduced and thus lower levels of infrastructure are required than otherwise would have been delivered by contributions from Cohesion Policy funding.

The barriers to the use of the instruments include higher upfront costs, which could be covered by Cohesion Policy funding, thus enabling Cohesion Policy funding to deliver clear added value. For other instruments, such as those enhancing biodiversity, the main barriers are a lack of awareness and understanding and existing perceptions, which could be overcome by increased technical assistance funded under Cohesion Policy. For user charging on roads, existing legislation is also a barrier.

The inclusion of these instruments as conditional complementary or conditional instruments for Cohesion Policy funding would also help to overcome barriers with respect to awareness, as long as sufficient technical assistance is also funded. In this respect, it is possible to identify ways in which all of the short-listed instruments could be used as conditional complementary or conditional instruments linked to Cohesion Policy investments.

PART II: THEMATIC ANALYSIS PER THEME

6 TRANSPORT

6.1 General introduction

Transport, whether passenger or freight, contributes to the economic and social development of society. Investment in transport infrastructure and, to a lesser extent, services enables transport, but requires the use of resources to construct, operate and maintain this infrastructure. Additionally, the provision of infrastructure enables mobility and trade, which requires vehicles that need to be manufactured and disposed of at the end of their useful life, and which use energy and emit pollutants in the course of being used.

Hence, in the context of the win-wins and win-losses within this project, investment in transport infrastructure delivers economic and social benefits, while using environmental resources, including land, energy and other resources, emits pollution, such as carbon dioxide (CO_2), and affects habitats and biodiversity. In the language of the development path analysis, investing in transport infrastructure develops manufactured capital, which enables the development of human and social capital, while consuming natural capital. Consequently, there are no pure win-wins from investment in transport infrastructure. Rather, it is a question of maximising the economic and social wins, while minimising the environmental losses (see Annex 1).

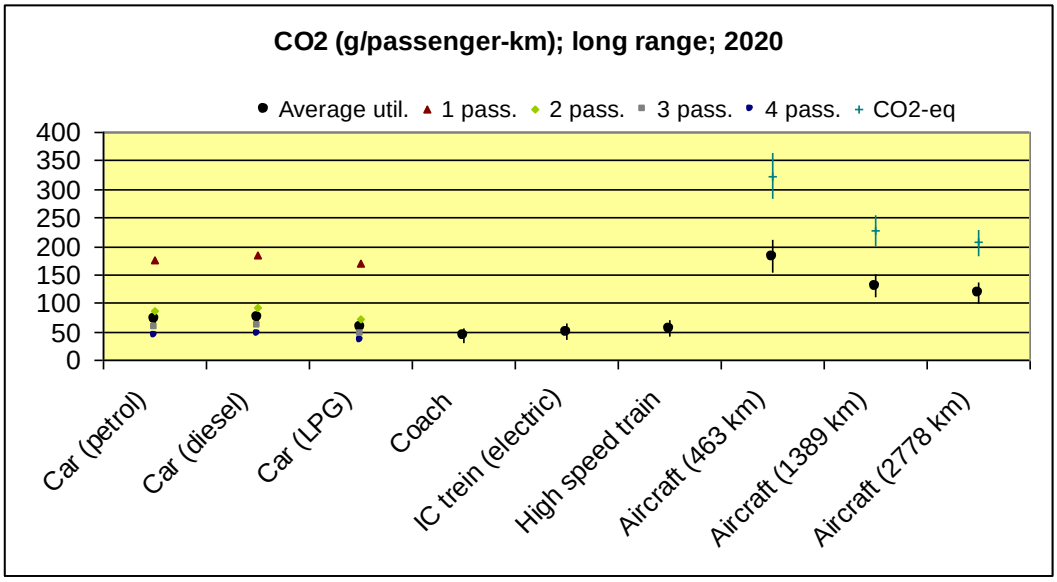
Hence, with respect to climate change, the construction of infrastructure leads to the emission of CO_2, e.g. resulting from the extraction and transport of resources, the construction itself and its subsequent operation and maintenance. Generally, the provision of infrastructure will stimulate its use (see Section 6.5.4), which will in turn (with the current energy mix used by transport) lead to the emission of CO_2 from the combustion of fossil fuels. It is also important to note that these conclusions are applicable to some extent to all modes of transport. Even the construction of cycle paths requires resources and the use of energy, and thus will lead to emissions of CO_2 and other pollutants.

However, from the perspective of climate change some modes will be preferable to others where these directly compete, i.e. they offer similar types of service to similar locations. Currently, different modes have different average CO_2 emissions and this is also likely to be the case in 2020, which is likely to come within the next programming period. **Figure 1** shows average projected CO_2 emissions in 2020 for long distance passenger transport in the Netherlands. This shows that CO_2 emissions per passenger kilometre are generally much higher for aviation than for other modes, particularly when the impacts of other greenhouse gases are also taken into consideration. Cars are comparable to other modes, e.g. trains and buses, when these are well-utilised. **Figure 2** shows that car occupancy is also an important factor in comparing the CO_2 emissions from different modes over short distances. **Figure 3** shows similar figures for short-range freight transport, which suggest that transport by rail and inland waterway is less CO_2 intensive per tonne-kilometre than road transport. Over longer distances, larger ships are comparable to trains, but generally less polluting than road transport (see **Figure 4**)[6].

[6] CE Delft (2008) *Stream Studie naar Transport Emissies van Alle Modaliteiten* Delft. Graphs taken from van Essen *et al* (2009) *Modal split and decoupling options* Paper 5 produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

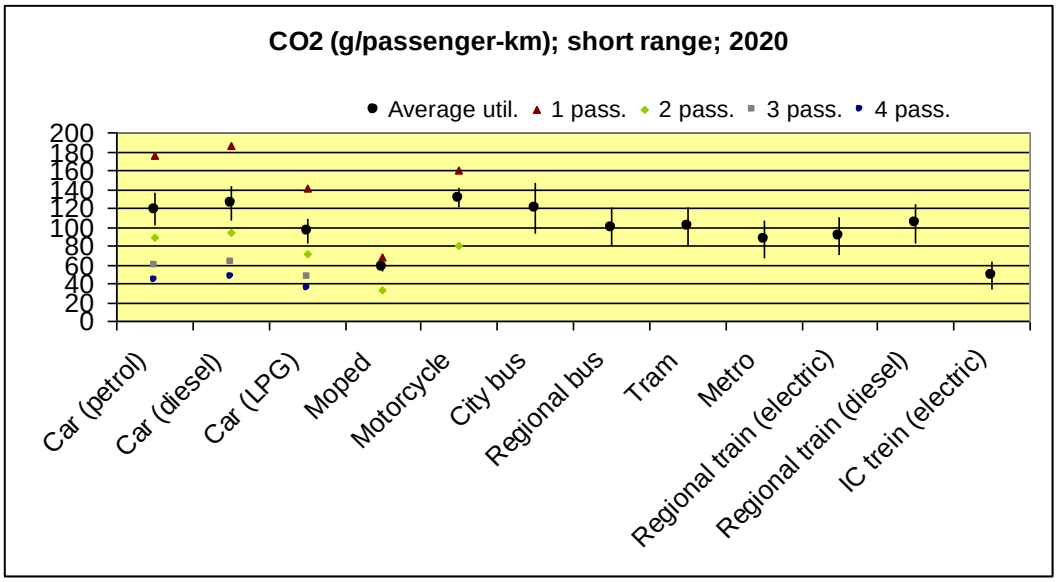
It is important to note, however, that the extent to which road, rail or inland waterways is chosen to transport a particular type of freight depends on the characteristics of the freight transported, so much freight carried by road could not necessarily be transported by either rail or inland waterways.

Figure 1: Average CO_2 emissions for long distance passenger transport modes



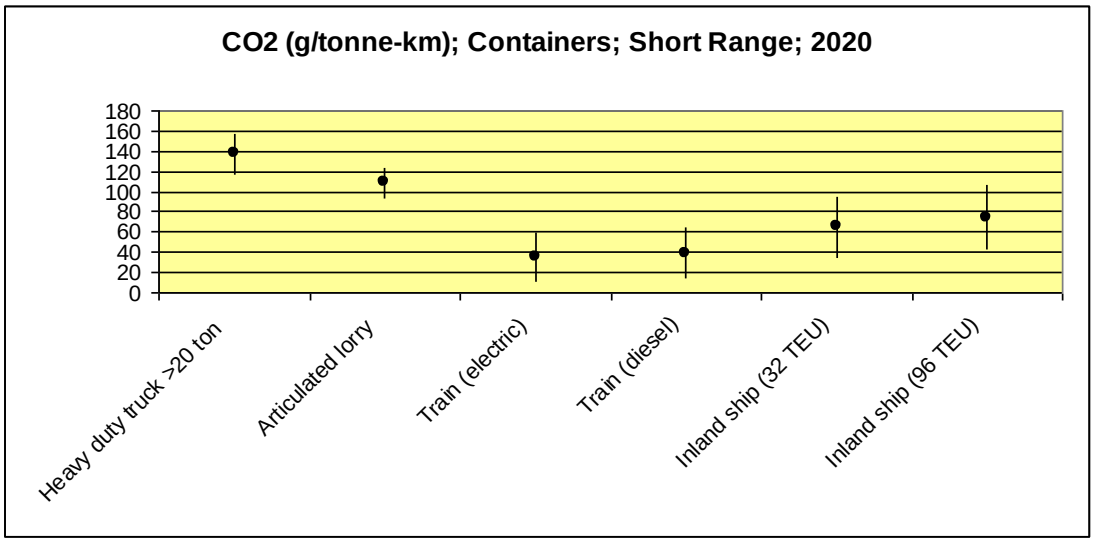
Source: CE Delft (2008)

Figure 2: Average CO_2 emissions for short distance passenger transport modes



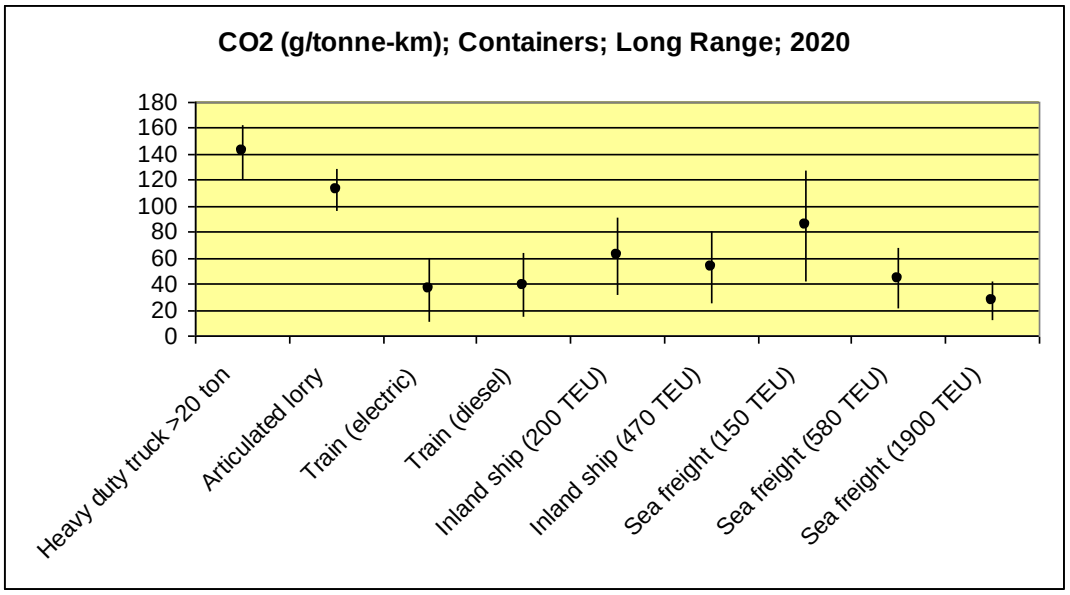
Source: CE Delft (2008)

Figure 3: Average CO_2 emissions for short range container transport modes



Source: CE Delft (2008)

Figure 4: Average CO_2 emissions for long distance container transport modes

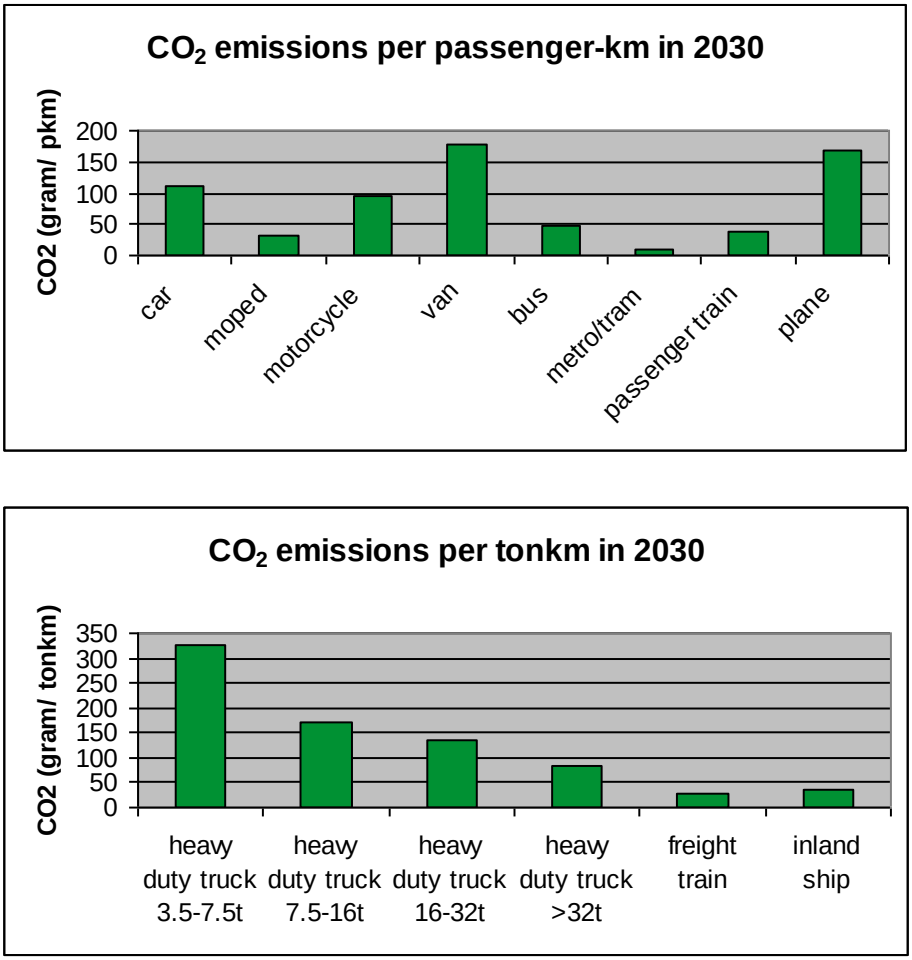


Source: CE Delft (2008)

It is likely that the results of similar analyses for different countries and for the EU as a whole would be different as the figures would depend *inter alia* on the respective mix of fuels used to supply electricity in each country. Figure 5 shows the average CO_2 emissions for various transport modes in the EU that are assumed for 2030 by the EU transport and environment model TREMOVE. Although these do not include the range of modes, or indicate the impacts of different car utilisation rates, the relative positions of the different modes are similar to the above tables; differences in the numbers are largely due to the assumed utilisation rates[7].

[7] Graphs taken from van Essen et al (2009) *Modal split and decoupling options* Paper 5 produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

Figure 5: Average CO_2 emissions for various passenger and freight transport modes according to TREMOVE



Source: van Essen et al (2009)

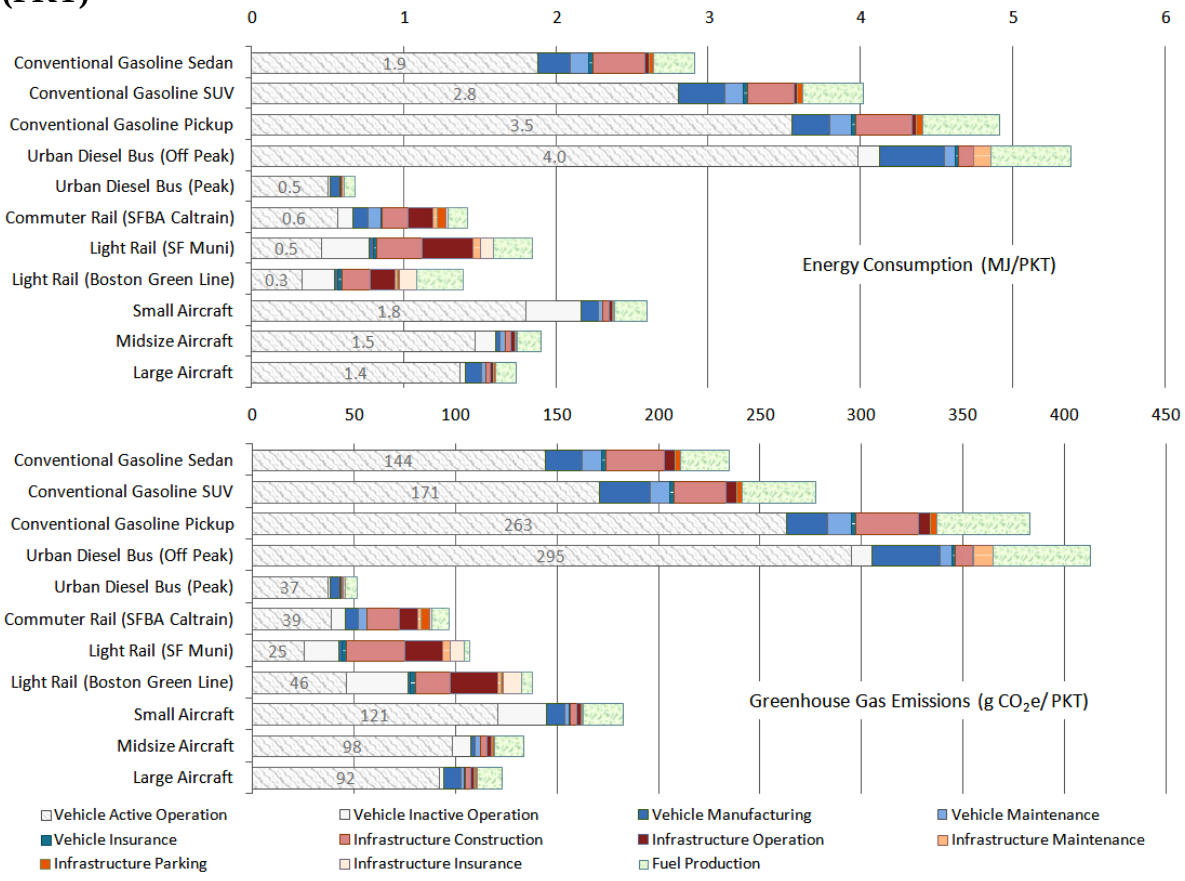
It is also important to note that CO_2 emissions also arise from the manufacture and disposal of vehicles, as well as the construction, operation and maintenance of infrastructure. **Figure 6** shows the results of a US study that attempted to take account of these so-called lifecycle emissions for various passenger transport modes. It can clearly be seen that the emissions resulting from a vehicle's use make up the largest proportion of total lifecycle emissions, but that emissions from other stages of the lifecycle are not insignificant. The figures for public transport show the impact of the higher utilisation, in this case of peak periods, on GHG emissions, as **Figure 1** and **Figure 2** showed for cars.

Consequently, modal shift is potentially beneficial from the perspective of reducing transport's impact on climate change. However, it is important to note that modal shift will only reduce transport's overall CO_2 emissions if its net impact is a reduction in emissions. For example, if new public transport services attract some journeys previously undertaken by car, the new impact on CO_2 emissions will depend on the extent to which the road space freed up by the shifted journeys is taken up by new car journeys.

From the perspective of their respective impacts on land take and biodiversity, the provision of infrastructure takes land, which could be of environmental importance. This applies both to rural areas, where land might have an economic value (in terms of its relevance to

agriculture or tourism) or a conservation value, and to urban areas where the availability of open or green spaces can contribute to a good quality of life. Infrastructure also adversely affects wildlife through its provision, use and proximity to areas of conservation importance. Again, this applies to infrastructure to all modes, although the type of impact will clearly vary between modes. It has not been possible to identify a study that concludes that infrastructure for any one particular mode is likely to be better for biodiversity, habitats and wildlife more generally than that for another mode. Part of the reason for this is probably that the impacts are very location-specific and would also depend on the details of the design of the infrastructure, including the extent of any biodiversity proofing that has been applied. However, clearly factors such as the speed and frequency of use of infrastructure would influence the scale of the potential effect on biodiversity and wildlife.

Figure 6: Energy consumption and GHG emissions per passenger kilometre travelled (PKT)



Notes: Energy consumption and greenhouse gas emissions resulting:

i) from the operation of the vehicle are shown in grey; ii) from other parts of the vehicle lifecycle are shown in shades of blue; iii) relating to infrastructure are shown in shades of red and orange; iv) relating to fuel production are shown in green.

Source: Chester and Horvath (2009)[8]

[8] Chester, M.V. and Horvath, A. (2009) "Environmental assessment of passenger transportation should include infrastructure and supply chains", *Environmental Research Letters 4*; see http://iopscience.iop.org/1748-9326/4/2/024008/

There is a wide range of **non-investment policy instruments that could deliver environmental benefits** for transport (see Annex 2). Regulation is an important means of improving the environmental performance of products, e.g. vehicles and fuels. Within the EU, such product-related regulation is generally developed at the European level in order to ensure that the Single Market is preserved, i.e. Member States do not develop their own standards that could then be used as barriers to trade. Emission limit values for conventional pollutants, e.g. those that contribute to poor air quality, are set at the European level for all inland modes, i.e. road, rail and inland waterway vessels. Emissions performance standards are also in place for CO_2 emissions for some vehicles, while recycling standards exist for cars. Quality standards are also set at the European level for transport fuels[9].

These standards are complemented by product labelling, which can be put in place at the European, national or even regional levels. Examples of such labelling at the European level include the ecolabel and energy efficiency labels for white goods, e.g. washings machines and refrigerators, and cars. The information communicated on these labels can also be used as criteria in public procurement in order to ensure that products or services used by the public sector meet high environmental standards. green public procurement (GPP) can also help to develop a market for what might be potentially more expensive products and services[10].

At a more strategic level, planning controls can be used to manage, or reduce, transport demand, thus improving the overall environmental performance of the transport sector, while tools such as SEA and EIA can be used at the *ex ante* stage in order to identify and mitigate potential adverse environmental effects[11].

Market-based instruments (apart from investment) can be used in various forms to improve the environmental performance of transport. Taxes and charges can be used to encourage some actions instead of others, e.g. support for public transport, taxes on cars, or the purchase of less carbon-intensive vehicles. Duties on fuel can be differentiated in order to stimulate the use of cleaner or less carbon intensive fuels. Instruments can also be used to reduce the demand for transport generally, e.g. increasing fuel taxes, or in specific areas or at specific times, e.g. road pricing or congestion charges. User charging more generally can be used to ensure the application of the polluter pays principle in transport. Finally, reform of existing subsidies that stimulate the demand for travel, e.g. some company car taxation and the tax treatment of some business travel, also has the potential to deliver environmental benefits[12]. Market-based instruments generally lie within national competence, although the framework (e.g. for energy products, road user charging) is often set at the European level.

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9 For example, see Smokers et al (2010) *Regulation for vehicles and energy carriers.* Paper produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

10 For example, see Brannigan et al (2009) Information to raise awareness and instruments to stimulate innovation and development: Paper 9 Paper produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

11 For example, see Kampman et al (2009) Infrastructure and spatial policy, speed and traffic management Paper 8 produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

12 See, for example, van Essen et al (2010) *Economic Instruments* Paper 7 produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

Finally, there are voluntary instruments, many of which could also be required by legislation, which also have the potential to deliver environmental improvements in transport. These include the provision of information on alternative means of travel, integrated public transport ticketing, fuel-efficient driver training and codes of practice for the construction and management of infrastructure[13].

6.2 Delivering win-wins by non-investment policy instruments

As noted in Section 6.1, there are no pure win-wins, from an environmental perspective, that might result from CP transport interventions. The reason for this is that investment in transport generally increases the capacity of the transport system, which enables more travel. While this should deliver economic and social benefits in terms of enabling mobility and trade and improving accessibility, the additional transport will use energy resources, currently principally fossil fuels, and lead to emissions of conventional pollutants and CO_2, as noted above. Similarly, any new infrastructure will take land, require the use of energy and have other environmental impacts resulting from its construction, operation and maintenance, as discussed above. Consequently, while policy instruments could be used to mitigate some of these adverse environmental impacts (see Section 6.4) there are no win-wins that might be delivered through non-investment policy instruments.

6.3 Cohesion Policy transport interventions and crowding out private investment

The issue of whether private money is being crowded out by existing CP investments in transport infrastructure is linked to the potential for attracting private investment in transport infrastructure in the first place. In order to attract private money to invest in transport infrastructure, there needs to be a means of delivering a return on the private investment. One means of achieving this might be for the state to introduce user charging, which would enable it to recoup its investment over time. Additionally, it is possible to use various forms of partnership with the private sector, such as Public Private Partnerships (PPPs), which include Private Finance Initiatives (PFIs), in order to bring in private investment to contract and operate infrastructure. In such cases, the application of user charging could be the means by which the private sector recoups its investment and then eventually delivers a profit.

The potential use of user charging as a conditional instrument is discussed in Section 6.6. This section will focus on the potential for user charging to be applied to infrastructure as a means of engaging the private sector in financing. (It could of course be used by the public sector to ensure that users pay for the costs of maintaining transport infrastructure.) The UK's first privately-funded motorway, the M6 toll way relief road, was opened in 2003 north of Birmingham and is operated and maintained by a private company, which charges tolls[14]. Elsewhere in the EU, e.g. in Italy and France, the private sector is engaged in operating motorways, although many within different regional and national legislative and contractual frameworks[15].

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[13] Brannigan et al (2009)

[14] Fanning, T "*M6 Toll: Giving motorists the choice"* Public Sector Review, summer 2006, pages 54 to 55.

[15] For example, D Fiorello, F Torta and R Scatamacchia (2009) *Integrated motorways toll schemes in the Italian region of Lombardy* Paper presented at the 2003 European Transport Conference; see http://www.etcproceedings.org/paper/integrated-motorways-toll-schemes-in-the-italian-region-of-lombardy; and Goavec (2003) *The A28 toll motorway: an innovative approach to financing*. Paper presented at the 2003 European Transport Conference; see http://www.etcproceedings.org/paper/the-a28-toll-motorway-an-innovative-approach-to-financing

Ecorys (2006)[16] notes that there are few privately-operated toll roads in Europe outside of France, Spain and Portugal. However, several countries have charging systems, e.g. vignette system where a weekly, monthly or annual charge is levied for use if the main road network, e.g. Bulgaria, Czech Republic[17]. In the new Member States, Ecorys' national reports suggest that tolled motorways exist in Poland (two cases) and Slovenia, whereas a toll system in Hungary was replaced by a vignette. However, a motorway in Hungary was being built using a PPP, while the Czech Republic and Slovakia were considering using toll roads to fill in the gaps in their respective motorway networks.

The NAO (2010) identified that UK infrastructure generally (i.e. not just transport infrastructure) is financed in three main ways[18]:

- By private companies, "with some form of explicit public regulation or implicit public support", e.g. in the largely privately owned and financed UK water and energy sectors.
- Public funds, with the possibility of some private contributions for large one-off projects, e.g. the Olympics.
- Under a PFI or other form of PPP, e.g. some roads.

In the UK, PFIs are used to fund many road developments and other infrastructure[19], while forms of PPP have been used, sometimes with less than satisfactory outcomes, to bring in investment to the national rail network and the underground urban rail in London[20]. Ecorys (2006) and SDG (2010) both give examples of the use of private funding for transport infrastructure in Europe, although this has been relatively limited to date. Ecorys (2006) notes that ports have been relatively successful in attracting private investment, e.g. Malta, Cyprus, the three Baltic States, Spain and Portugal. In air transport, the carriers are increasingly becoming privately-operated, although airports, terminals and safety generally remain in the public sector. Exceptions to this are the UK, where airports and traffic control have been privatised (SDG, 2010), and the privately operated airports in Bulgaria (Varna and Burgas) Romania and Slovakia (Bratislava and Kosice). New airports for Athens, Lisbon and Larnaca (Cyprus) were being built using private funds (Ecorys, 2006). PFI projects have also been used to fund transport infrastructure elsewhere, e.g. airports in Turkey[21] and port infrastructure in Australia[22]. The use of PPP to fund transport infrastructure is expected to

[16] Ecorys (2006) *Strategic Evaluation on Transport Investment Priorities under Structural and Cohesion Funds for the Programming Period 2007-2013*, for European Commission's DG Regio, contract number 2005.CE.16.AT.014. Synthesis and national reports; see http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/strategic_trans.pdf

[17] For example, see http://www.motorway.cz/stickers; also see European country summaries on www.theaa.com/allaboutcars/overseas/european_tolls_select.jsp

[18] National Audit Office (2010) *Financing PFI projects in the credit crisis and the Treasury's response: Report by the Comptroller and Auditor General* HC 287 Session 2010–2011, 27 July 2010. London: The Stationery Office; see page 4.

[19] See the latest list from the UK's HM Treasury at http://www.hm-treasury.gov.uk/ppp_pfi_stats.htm

[20] For example, see National Audit Office (2008) *Letting Rail Franchises 2005-2007* HC 1047 Session 2007-2008, 15 October 2008. London: The Stationery Office and National Audit Office (2009) *The failure of Metronet* HC 512 Session 2008-2009, 5 June 2009. London: The Stationery Office

[21] http://www.terminal5.mottmac.com/projects/airportprojects/pfiturkey/

[22] http://uk.reuters.com/article/idUKLDE6491MN20100510

increase[23]. A summary of the state of play in relation to selected Member States' use of PPPs, as it stood in 2006, is given in Table 2.

Table 2: Overview of Public-Private Partnership activity per country

Country	**Overall policy**	**PPP unit/taskforce** **+ need identified** **++ in progress** **+++ established**	**PPP Law** **+ discussion** **++ drafted** **+++ in place**
Spain	Mainly toll motorways. Increasing role in ports		+++
Portugal	Active policy. Focus on motorways, but also light rail, port terminals, part railway network	++a	+++
Greece	Active policy: 3 major PPP projects (airport, road, bridge). Intention to use for new motorways	+++	++
Cyprus	PPP constructions in ports and airports		
Czech	Active policy; newly established PPP expert centre in 2004; projects in rail and motorway; new legislation in 2006	+++	++
Estonia	No PPP schemes have been implemented yet.	++	++
Hungary	Legal framework available; mixed experience with PPP in past (M5 motorway construction). New PPP involvement in new motorway construction (M6)	++	+++
Latvia	Legal framework present but only limited number of small projects have been implemented	++	+++
Lithuania	No major infrastructure projects. Limited experience with public-private cooperation in ports (Klaipeida).		
Malta	No significant experience, nor specific policy	+	
Poland	Mixed success in 2 motorways projects; new law on PPP due to pass parliament in 2006; no political priority anymore	++	++
Slovakia	No experience yet; first initiatives regarding motorway financing.		
Slovenia	No transport projects. Concession law amended to comply with EU guidelines.		+++
Bulgaria	No transport projects	+	+++
Romania	Existing concession law (law 219/1998). Previous initiatives not successful; possible chances in airport development. Little support available.	+	+++

[a] informal taskforce

Source: Table taken from ECORYS (2006); for original sources, see this report.

[23] For example, see Goavec (2003)

The extent to which it is possible to use private finance clearly depends on a range of factors, including national politics, the attitude of relevant governments to using private finance for this purpose, national and regional legislative structures, existing infrastructure ownership structures and the availability of private sector companies that have the confidence to invest. However, just because it is possible to attract private investment to fund transport infrastructure does not necessarily mean that crowding out of private investment has resulted from Cohesion Policy investment in transport infrastructure. On the other hand, given the increasing amount of private money being attracted to fund transport infrastructure, there is clearly the possibility that Cohesion Policy funds have been relied upon where private investment could have been sought.

6.4 Summary of possible instruments that can reduce or remove win-losses

The high level assessment of non-investment policy instruments that could be used to reduce the environmental impacts of Cohesion Policy investments showed that there are a number of instruments that could be used to improve the environmental performance of transport. However, the assessment also showed that many of these instruments are already developed outside of the context of Cohesion Policy and it is not clear in many cases how these could be used to complement Cohesion Policy (see Annex 5).

As noted in Section 6.1, product standards, e.g. for transport fuels and vehicles, and product labelling, e.g. for cars, are already in place at the European level. These have been relatively successful in reducing emissions of conventional pollutants and, in more sophisticated ways, are increasingly being applied to vehicles and fuels in order to improve their performance from the perspective of climate change. For example, there are targets to decarbonise transport fuels and increase the proportion of transport's energy that is from renewable sources, as well as CO_2 emissions performance standards for cars and proposed standards for vans. Energy efficiency/CO_2 labelling for cars is linked to emissions performance standards and aims to stimulate consumers to purchase more fuel efficient cars. While these standards themselves are developed distinctly from Cohesion Policy, they could be used in conjunction with Cohesion Policy programmes and projects via GPP. Having said that in many cases, the purchase of vehicles is not funded by Cohesion Policy, but where it is, such an approach could be used.

An additional potential application of GPP to transport under Cohesion Policy is with respect to the construction and maintenance of transport infrastructure. The construction of infrastructure requires the use of various resources, as does the manufacture of various other elements of "street furniture" that are needed in order that the infrastructure can operate properly, e.g. for roads, these include traffic signs, road lighting and traffic signals. All of these can be made in more or less energy- or resource-intensive ways. Additionally, those items of street furniture that consume energy themselves, e.g. lighting and traffic signals, can also use energy in more or less intensive ways. Similar arguments apply for infrastructure used by other modes. In such cases, GPP could be applied in order to ensure that the construction, operation and maintenance of the infrastructure are undertaken in ways that at least minimise adverse environmental impacts (see Section 6.5 below for a more detailed discussion).

As noted in Section 6.1, market-based instruments have the potential to be used in a wide range of ways to improve the environmental performance of transport. While the taxation of fuels or vehicles in this way impacts on the costs that projects might face, e.g. if they needed

to buy transport vehicles or fuels, it is not clear how they could be used in conjunction with Cohesion Policy in order to improve the environmental performance of the investments of the latter as these generally focus on the provision of infrastructure. As noted in Section 6.1, the provision of transport infrastructure will generally lead to the increased use of transport infrastructure. Hence, in order to reduce the environmental impacts of this increased use, it will be important to ensure that travel that is not economically-efficient is not undertaken. This requires the application of user charging that internalises the external costs of transport and ensures that users pay for the pollution that they cause, i.e. that the Polluter Pays Principle applies[24]. Hence, **user charging in transport** is a potentially important conditional or complementary instrument for reducing the environmental impacts of Cohesion Policy investments. This will be discussed further in Section 6.6.

6.5 Assessment of the use of green public procurement

6.5.1 Regulatory basis/current instructional framework

The use of GPP in the EU has been encouraged by the Commission since its 2003 Communication on Integrated Product Policy[25]; the use of GPP was clarified from the legal perspective in the 2004 public procurement Directives[26]. The 2003 Communication encouraged Member States to draw up National Action Plans (NAPs) to green their public procurement processes. The Commission has also developed common GPP criteria for 18 sets of product categories, including criteria for transport vehicles (cars, buses and waste collection trucks), roads and road signs, and street lighting and traffic signals (see below). From the transport perspective, the clean vehicle Directive 2009/33 requires public authorities, as well as organisations principally financed or administered by such authorities, to take account of the environmental performance of road vehicles when these are being purchased[27].

Hence, while GPP is not generally required by EU policy, European law allows GPP and the Commission is actively encouraging Member States to green their public procurement. The clean vehicle Directive goes further as it actually requires Member States to take account of the environmental performance of road vehicles that they purchase. Consequently, given that GPP is allowed under EU law and is being actively encouraged by the European Commission, the inclusion of GPP for transport within Cohesion Policy is clearly possible and arguably desirable as it would ensure that Cohesion Policy helps to contribute to meeting the Commission's environmental and other objectives.

6.5.2 Current deployment in the EU, and trends in deployment

A 2006 study identified that GPP was more common in northern EU countries than in those in the south or east[28]. However, as noted above, since 2003 the Commission has taken a

[24] EEA (2006) Using the market for cost-effective environmental policy: Market-based instruments in Europe EEA Report 1/2006, Copenhagen. ISSN 1725-9177

[25] COM (2003)302 *Communication from the Commission to the Council and the European Parliament - Integrated Product Policy - Building on Environmental Life-Cycle Thinking;* see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52003DC0302:EN:NOT

[26] Directive 2004/17/EC of the European Parliament and of the Council coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors; Directive 2004/18/EC of the European Parliament and of the Council on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts

[27] Directive 2009/33/EC of the European Parliament and of the Council on the promotion of clean and energy-efficient road transport vehicles

number of measures to stimulate GPP, so it is likely that the use of GPP has increased in recent years. In a 2010 analysis of Member States GPP NAPs, the Commission identified that 20 Member States had developed such plans, while 21 had adopted targets or criteria for GPP[29]. This suggests that most Member States are taking active measures to promote green public procurement. In the light of the need to move towards virtually a zero carbon economy, the stimulation of low carbon products will be important and GPP is one means of stimulating a market for such products, hence it is likely that the use of GPP will increase.

6.5.3 Type/scale of investment that might be influenced

From the perspective of transport in Cohesion Policy, GPP is probably most relevant to those programmes and projects that contribute to the development of transport infrastructure. In other words, the categories that fund transport interventions, i.e. the categories from 16 to 32 and 52, although GPP for transport could be applied in any programme or project that delivers improvements in transport infrastructure or requires the use of vehicles. It could be applied equally to inter-urban infrastructure as to the development of infrastructure in urban areas and to infrastructure for public transport as well as to infrastructure for private modes.

Theoretically, GPP could also be applied in all operational programmes and in all Member States where vehicles might be purchased. While few vehicles are bought under Cohesion Policy programmes and projects, expenditure categories focusing on urban transport (i.e. 25 and 52) might fund the purchase of buses and other public transport vehicles, while Cohesion Policy categories 18 and 19 cover mobile assets for railways.

Given that 23.7% of planned expenditure, and 25.4% of committed expenditure[30], was allocated to the transport categories listed above, GPP for transport could be applied to around one quarter of the total Cohesion Policy funds. Currently 49% of the planned spending under the transport categories (11.6% of total allocated spend) is allocated to road transport, hence applying GPP to road infrastructure has the potential to deliver environmental benefits. The majority of the rest of the allocated expenditure under transport (nearly 30%) would fund rail transport, while around 10% is allocated for urban transport (including cycling) with the remainder allocated to other modes, inter-modal transport and intelligent transport systems. Hence, GPP for rail might also have an important environmental benefit. Having said that, in order to ensure a level playing field, particularly given the potentially increased costs incurred (see Section 6.5.4), it is arguable that GPP should be applied to all modes.

6.5.4 Impacts from the use of the instrument

The Commission argues that the potential benefits of GPP from the perspective of the environment include helping public bodies meet environmental targets, setting an example to private consumers and raising awareness of environmental issues. The Commission also argues that there are social and health, economic and political benefits of GPP, including providing incentives to industry to innovate, helping to reduce prices of environmental technologies and lowering the cost of use[31].

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[28] The countries were Austria, Demark, Finland, Germany, Netherlands, Sweden and the UK. Virage et al (2006) Green public procurement in Europe; see http://ec.europa.eu/environment/gpp/pdf/take_5.pdf

[29] http://ec.europa.eu/environment/gpp/action_plan_en.htm

[30] GHK calculations

[31] http://ec.europa.eu/environment/gpp/benefits_en.htm

Environmental and economic impacts

The use of GPP in the construction and operation of **infrastructure** has the potential to mitigate the potential adverse environmental impacts from the construction of infrastructure, particularly the potential impacts on biodiversity. In this sense, the instrument focuses on reducing the "environmental losses" associated with the construction of infrastructure. For example, the use of recycled or sustainably sourced raw materials could contribute to the reduction of adverse environmental impacts resulting from the abstraction and (potentially) transport of the raw materials needed for construction. The vehicles used in the course of construction and for the transport of the raw materials could be required to meet particular emission limit standards, which are set at the EU level for such non-road mobile machinery. The infrastructure itself could be designed to ensure that it limits the impact on ecosystems and wildlife through either its location or it design.

While measures such as SEA and EIA have potential roles to play in this respect, it will also be important to fully understand the wider environmental implications associated with the construction of the transport infrastructure in any one location, which potentially requires a wider assessment than that required by EIA for example. This issue will be addressed as part of Task 7 within this project.

For all modes of transport, the use of **more energy efficient vehicles** emits less GHG emissions per kilometre travelled than the use of less fuel efficient vehicles. Consequently, if vehicles are going to be used, from an environmental perspective (both in terms of energy use and emissions of carbon dioxide (CO_2) and conventional air pollutants) it is preferable to use the most energy efficient and cleanest (from the perspective of the emission of conventional pollutants) vehicles possible. Hence, GPP applied to vehicles could help to deliver this. In this context, GPP focuses on reducing the level of "environmental losses" associated with any vehicles that are used or purchased as a direct or indirect result of Cohesion Policy funding.

One of the reasons that public procurement is proposed as an instrument for stimulating the purchase of energy efficient vehicles is that greener products tend to be more expensive due to the lack of consideration of wider environmental impacts in the economic system, i.e. external costs are often not included in the prices that consumers face. This is clearly evident for vehicles using alternative technologies, such as hybrid cars, electric vehicles or fuel cell-powered buses, as these are more expensive than conventional vehicles. Such technologies are still relatively new and are not yet commercially viable when compared to less energy efficient vehicles. Green public procurement, therefore, aims to stimulate a market for such vehicles by requiring that environmental considerations, including a vehicle's CO_2 emissions as well as its emissions of other pollutants, are taken into account when public authorities purchase such vehicles. Once a market has been developed, it is anticipated that the costs of new vehicles would decline, thus making them more attractive to the general public. Additionally, it is worth noting that the use of many alternatively-fuelled vehicles is cheaper than the use of conventional vehicles.

It is likely that a similar argument applies to other potential resources and products, otherwise there would be no need for GPP. Hence, the cost of sustainable aggregates, more efficient lighting and of designing infrastructure to be more sensitive to the needs of biodiversity and conservation are likely to cost more.

Impacts on the OP

As noted above, GPP affects the type of resource and product that is used, i.e. more sustainable resources and greener products. In this sense, it does not aim to reduce resource use, rather it aims to 'green' what is used. Hence, it does not aim directly to address either the demand for transport or the infrastructure that enables it, so the impact of GPP on an OP will not be to reduce the investment needs, rather it aims to 'green' the investment. In this respect, GPP has the potential to contribute to a decoupling of resource use and pollution from economic growth.

The most significant impact of GPP on an OP of GPP will be to increase the costs of an OP due to the expected increased costs associated with more sustainable resources and greener products. On the other hand, when seen from a wider economic perspective, increasing the use of recycled material or reducing the environmental damage associated with the extraction of raw materials, has the potential to reduce wider environmental costs, so the net economic impact is less clear. In this way, Cohesion Policy could be used to deliver longer-term environmental benefits (and cost savings) both by ensuring that more sustainable resources and cleaner vehicles are bought and used, but also by contributing to the development of a market for such resources and products.

6.5.5 Barriers: Nature and how they might be overcome

Virage (2006) identified five main barriers to GPP:

- Green products can be more expensive.
- Lack of environmental knowledge that inhibits the development of environmental criteria.
- Lack of managerial and political report.
- Lack of practical tools and information.
- Lack of training for public procurement officers.

As noted above, the profile of GPP, at least at the European level, is increasing, which could contribute to addressing the lack of higher level managerial and political support. The Commission's development of common criteria in a range of priority areas potentially helps to address the knowledge gaps and to provide tools that procurement officers might use, as long as they are aware of these.

Cohesion Policy has a potential role in helping to overcome these barriers. For example, requiring GPP to be used in Cohesion Policy would increase its profile and reference to the developing European tool-kit would help to improve knowledge and provide procurement officers with tools. Additionally where green products are more expensive (Virage suggested that this was not always the case), Cohesion Policy could bring added value by funding any increased costs that national or regional public authorities might otherwise be reluctant to cover.

6.5.6 Benchmarks/indicators to determine where instrument might be used

As noted above, theoretically GPP for transport could be applied in all Member States and regions and across all OPs that provide transport infrastructure or require the purchase of vehicles. Given that funds under Cohesion Policy are generally given to Member States or regions that are considered in need of financial assistance, it might be concluded that such countries and regions would not otherwise spend additional money buying more expensive

resources or products just because these are more sustainable or greener. Hence, it could be argued that GPP should be applied under Cohesion Policy and that Cohesion Policy funds be used to bring added value to investment by covering any additional costs incurred by applying GPP.

6.5.7 Initial thoughts on implications for the design of the OP

The above discussion suggests that GPP could be applied to all OPs that fund the expenditure categories that focus on transport infrastructure, i.e. categories 16 to 32 and 52. Additionally, GPP could also be applied to any project or programme where vehicles are purchased, e.g. potentially under the urban transport categories. GPP could be applied in this way across all Member States and regions.

It would be important to ensure that, as far as is possible, common, agreed GPP practices are applied. In this respect, the work that the European Commission has undertaken on the development of the GPP tool kit is particularly important. In this respect, the following documents are particularly important:

- Product sheet and background report for **transport vehicles** (covering cars, vans, public transport vehicles and waste collection trucks), which is the fifth of the first set of GPP criteria[32].
- Product sheet and technical background report for **road construction and traffic signs**, which is the sixth of the second set of GPP criteria.
- Product sheet and technical background report for **street lighting and traffic signals**, which is the seventh of the second set of GPP criteria[33].

When either road construction or the purchase of vehicles is part of a programme or a project funded by the Cohesion Policy, the application of these criteria could be made compulsory. For other elements of road infrastructure and for non-road infrastructure, programmes could be required to include relevant provisions of the procurement Directives, e.g. to require:

- the inclusion of environmental requirements in technical specifications;
- the use of eco-labels;
- setting social and environmental conditions for the performance of contracts;
- economic operators to demonstrate they have met their environmental obligations;
- economic operators to demonstrate they can perform a contract in accordance with environmental management measures; and
- the application of award criteria based on environmental characteristics[34].

When purchasing vehicles, Cohesion Policy could require the provisions of the clean vehicle Directive to apply, i.e. those that require that the energy and environmental impacts of vehicles are taken into account when purchasing road vehicles.

This would ensure that Cohesion Policy is better aligned with the objectives of other EU policies, particularly those relating to environment. Additionally, Cohesion Policy could be

[32] http://ec.europa.eu/environment/gpp/toolkit_en.htm

[33] http://ec.europa.eu/environment/gpp/second_set_en.htm

[34] As set out on http://ec.europa.eu/environment/gpp/eu_public_directives_en.htm

used to cover the additional costs associated with an investment that would otherwise increase public spending. Hence, the green public procurement of vehicles could be relatively easily implemented in Cohesion Policy as a **conditional instrument.** The use of GPP as a conditional instrument for infrastructure development should help to reduce the environmental impact of infrastructure construction, operation and maintenance and, for vehicles, should ensure that any subsequent transport is undertaken in vehicles that are less environmentally damaging and that are more fuel efficient.

6.6 Assessment of the application of charges on the use of transport infrastructure

6.6.1 Regulatory basis/current instructional framework

Tolls and user charges that might be faced by heavy duty vehicles are regulated by the so-called Eurovignette Directive (1999/62/EC), which allows some environmental characteristics to be taken into account in such charges, although it does not yet permit the internalisation of all external costs[35]. As long as any tolls or user charges[36] are consistent with the requirements of this Directive, then Member States are permitted to introduce tolls and charges on their road transport infrastructure.

Member States are obliged by EU legislation to charge train operators the variable costs of railway infrastructure and some even charge operators full costs. Charging for external costs is allowed, as long as this is also applied to other transport modes. The imposition of user charges for non-land based modes is potentially problematic for international travel, as these are governed by international conventions and bi-lateral agreements between countries. However, there are ways of increasing the charges faced by users domestically. France charges tolls for the use of inland waterways and it is common practice for locks to charge for their use. For aviation and maritime shipping, the only user charges that could be applied for infrastructure use relate to the use of airports and ports, which are more like parking charges for road transport than user charges. However (air)port charges are already levied, so could be differentiated on environmental grounds[37]. Additionally, it is possible that some Member States have national legislation that further restricts the potential to apply user charging, e.g. in the UK primary legislation at the national level was needed before London could introduce its congestion charge.

Hence, if user charging in transport were to be used as either a conditional or a complementary instrument, this would have to be consistent with the existing legislative frameworks.

As long as it is consistent with the restrictions of the existing legislative framework for that particular mode and locality, user charging could be applied on transport infrastructure across the EU to discourage its use (e.g. congested roads in urban areas), manage demand, limit use to economically-efficient levels (generally), or to stimulate its use, depending on the relative environmental benefits of the use of the infrastructure concerned. In this respect, transport

[35] There is an outstanding proposal to amend the Directive to enable it to address environmental externalities better.

[36] Directive 1999/62 defines a "toll" as a payment made for a vehicle travelling between two specified points, e.g. on a bridge or a defined section of road, and a "user charge" as a payment that enables a vehicle to use infrastructure for a particular period, e.g. a year or between certain hours.

[37] van Essen, H.; Blom, M.; Nelissen, D. And Kampman, B. (2010) *Economic Instruments for reducing transport's GHG emissions* Paper 7 produced as part of contract ENV.C.3/SER/2008/0053 between European Commission Directorate-General Environment and AEA Technology plc; see website www.eutransportghg2050.eu

user charging is clearly more appropriate for the OPs and categories of investment that focus on the development of transport infrastructure, although it might be relevant for other OPs if these have significant transport infrastructure development.

6.6.2 Current deployment in the EU, and trends in deployment

There are some examples of transport user charges in the EU, for example distance-based charges are in place for heavy goods vehicles in Austria, the Czech Republic and Germany and are being planned in France, the Netherlands and Slovakia[38], while congestion charging for all road users exists in London and Stockholm. In the new Member States, there is a charging scheme for vehicles entering Valletta, while schemes have been considered, but not yet implemented, for Budapest and Vilnius (Ecorys, 2006). As noted in Section 6.3, motorways in France, Spain and Portugal are often tolled, while a few examples of tolled roads exist in the New Member States, some of which are used by private operators to recoup the cost of constructing the road. The use of tolls or charges is also common on large bridges, for example, to help maintain these, e.g. bridges across the Danube in Romania[39] and the Oresund bridge between Denmark and Sweden[40].

To date, however, none of these systems amount to a true road user charging system. Tolls on motorways and bridges are often at fixed rates for fixed distances, and do not reflect time of use and the conditions, e.g. state of congestion, as a road charge that aimed to influence behaviour and recoup external costs would arguably do. Generally, existing charges are used to cover the costs of maintenance and operation, and sometimes construction. While the fact that the tolls exist will have an impact on the use of the roads, as otherwise the use of the roads would be higher, but demand management is not their primary objective. The small number of congestion charging schemes in place do aim to control demand to some extent by increasing the cost of entry, often only at certain times. The 2010/2011 revision of the Eurovignette Directive will enable road charges to be used to cover some external costs, so will potentially lead to more developed user charges on roads. However, to date, there are no examples of comprehensive network-wide road user charging.

It is likely that the application of user charging for transport infrastructure will increase due to a number of pressures, including the need to manage congestion in urban areas and on inter-urban routes in densely populated regions, concerns about climate change and the need to find new investment for transport infrastructure, at least to maintain and operate it, if not to provide additional capacity. However, it is likely to be controversial in many places, as it has been on the political agenda for decades, but has not yet been implemented extensively.

6.6.3 Type/scale of investment that might be influenced

As with GPP for transport (see Section 4.3), user charging is probably most relevant for those programmes and projects that contribute to the development of transport infrastructure, i.e. the categories from 16 to 32 and 52. Given that around one quarter of Cohesion Policy funds are allocated to these activities, the application of user charging in transport could be applied to a significant amount of Cohesion Policy funding. As nearly half of the planned spending

[38] Akyelken, N. (2010) *Policy implications of External Costs: Charging Policies* Working Paper 1045 of the Transport Studies Unit, University of Oxford; see http://www.tsu.ox.ac.uk/pubs/1045-akyelken.pdf

[39] Ecorys (2006)

[40] SDG (2010) *Ex Post Evaluation of Cohesion Policy Programmes 2000-2006 Co-financed by the European Fund for Regional Development (Objectives 1 & 2) - Work Package 5A: Transport,* for European Commission's DG Regio, contract number 2008.CE.16.AT.017

under the transport categories is allocated to road transport, applying user charging to road infrastructure has the potential to deliver environmental benefits.

6.6.4 Impacts from the use of the instrument

Environmental and economic impacts

The potential importance for the application of charges for the use of transport infrastructure is to reduce the "environmental loss" from investing in transport infrastructure. With respect to transport, Cohesion Policy focuses on the provision of, and investment in, infrastructure. Once transport infrastructure is in place, it effectively increases the capacity of the transport system (without other policy measures) and therefore enables more travel to be undertaken. Hence, increasing the costs faced by such potential users has the potential to discourage some of the potential additional travel and thus reduce the potential adverse environmental impacts that would otherwise have been caused.

Depending on its level, the application of user charges or tolls should result in lower traffic levels than might otherwise have been the case. Where user charging is applied to new infrastructure, any adverse economic or social impacts should be limited, as long as the charging system is introduced as soon as the infrastructure is open. In this case, the application of the charge would lead to the use of the infrastructure by those who obtain an economic benefit from its use. This applies particularly to commercial transport, whose journey times would be cut (both for freight transport and business travel), but for private travel. Clearly, the application of the charge would mean that some journeys that would have been made would not now be made. Furthermore, it is likely that the poorer sections of society would be the ones who would be less likely to benefit directly from the new infrastructure. However, if some of the revenues were used to improve local public transport modes, then these sectors of society might also benefit from the new infrastructure. However, if the road was privately constructed, rather than being constructed by the state, then using revenues in this way might be more difficult.

If a charge is applied to infrastructure that was previously in existence, e.g. if Cohesion Policy funds were used to upgrade or improve infrastructure, then there is an increased risk of adverse social implications, as some people who had previously used the infrastructure would not be able to afford to make as many journeys, which may in turn affect their ability to access employment opportunities and services[41]. In such cases, it is often those who already have difficulty using the transport system or those who have no alternative to driving at particular times, who are the worst affected. In this respect, there is a risk that road pricing schemes can adversely affect existing social exclusion, particularly for low income groups that have no alternative to driving[42]. The extent of the social impact would depend on the level of charges, the time periods concerned and other details of the scheme, such as any

[41] For example, see Litman, T (2010) *Evaluating Transportation Affordability*, Victoria Transport Policy Institute, see http://www.vtpi.org/affordability.pdf; and Barham, P, and May, A (2009) *CURACAO: State of the Art Review, Ch.10: Equity* University of Leeds

[42] For example, see Lucas, K, Grosvenor, T, Simpson, R (2001) *Transport, the environment and social exclusion* Joseph Rowntree Foundation, York; and Parkhurst G., Dudley G., Lyons G. Avineri E., Chatterjee K. and Holley D. (2006) *Understanding the social and distributional impacts of road pricing. Report two: Rapid evidence assessment*, for UK Department of Transport

exemptions. Again, investing some of the money raised from charging to improve local public transport could reduce any regressive effects. If the charging area was a particular area, e.g. an urban area, then the boundary of such a scheme would also be important in minimising any adverse impacts[43]. However, it should be remembered that by enabling the efficient use of the transport system, e.g. maintaining traffic flows and ensuring that congestion does not occur, user charging has the potential to provide wider macro-economic benefits, as congestion can be a significant cost to the economy.

However, it is important to remember that the way in which user charging is designed has the potential to improve its environmental and economic effectiveness. For example, charges could be differentiated according to the emissions standards of the vehicles concerned, while the effectiveness of the charge from an economic perspective depends on the level of the charges and the use of the funds. The funds raised also have the potential to meet social objectives, if, for example, the revenues that are raised are recycled into developing public transport infrastructure for example.

Impacts on the OP

User charging does not necessarily reduce the costs associated with the construction of the infrastructure, at least in the short-term. However, charges could be applied to cover the costs of construction and to cover the costs of operation and maintenance, hence user charging could be used for the purpose of cost recovery. Hence, in the longer-term, the application of user charging could reduce the net costs of the provision of the infrastructure. The tolls permitted by the Eurovignette Directive explicitly state that these should be related to the costs "constructing, operating and developing" the infrastructure network concerned. Tolls or road charges could be used as a means attracting private investment to transport, as described above (Section 6.3). User charging, e.g. congestion charging in urban areas, could be used to manage demand and raise funds to cover the increased provision of public transport, as was done in London.

User charging has the potential to improve the operation of OPs, as they could help to ensure that the OPs deliver project that are economically efficient, in that they do not stimulate inefficient amounts of travel, and environmentally effective as they do not lead to inefficient environmental impacts.

Hence, the added value of applying user charging for transport infrastructure is two-fold: it ensures that the OP delivers economically efficient levels of activity and ensures that Cohesion Policy is consistent with other EU policy goals, particularly those relating to the environment.

6.6.5 Barriers, both the nature of these and how they might be overcome

The most significant barrier to the use of user charges is likely to be resistance from public and industry. However, if it is clear from the outset that the infrastructure would not otherwise be constructed, any resistance might be lessened. Alternatively, if the charges are used to manage demand and fund alternative modes, then this could also help to overcome any resistance from the public. However, for this to happen, communication with relevant stakeholders from the outset is important. The costs of setting up and operating a toll or charging system should not be overlooked, but these could be recouped by the subsequent

[43] E.g. Parkhust et al (2006)

tolls or charges. Furthermore, the necessary administrative structure needs to be put in place. For city-wide congestion schemes, this could be the city's transport authority, but for sections of infrastructure, or wider charging schemes, then new administrative structures might be required.

As noted above (in Section 6.6.1), there may also be legislative barriers to the use of congestion charges for particular modes and in particular locations. One that currently exists within Cohesion Policy itself is the limitations on the potential to earn revenue from Cohesion Policy-funded infrastructure, which inhibits the application of road user charging on Cohesion Policy-funded roads in the short-term.

6.6.6 Benchmarks/indicators to determine where instrument might be used

As discussed above, one of the main barriers to user charging is resistance from road users. The potential use of road user charging has been on and off the political agenda in several European countries over the last few decades, e.g. the Netherlands and the UK. However, as yet, there is no large scale application of road user charging. Additionally, there will be sensitivity in many Member States to EU policies dictating how revenue should be raised and spent. However, as noted above, there is a case to be made for the application of road user charging in transport, and its use as conditional instrument within Cohesion Policy could contribute to its wider application. Clearly, it will be important to engage with the governments and stakeholders of the relevant Member States in order to increase awareness of the case for user charging for transport infrastructure that is funded by the Cohesion Policy budget.

6.6.7 Initial thoughts on implications for the design of the OP

The application of tolls or user charges could be added as a condition of receiving funding from Cohesion Policy. In cities, these could take the form of congestion charging for road users and could be implemented in parallel to investment in infrastructure or public transport services. For inter-urban infrastructure, the implementation of user charging could be a condition on the infrastructure that is funded. In both cases, the introduction of user charging might be more appropriate in some locations than in others. In cities, the introduction of congestion charging would be appropriate where space for the development of transport infrastructure is limited and where high levels of congestion and/or poor air quality exists. On inter-urban routes, it might be more appropriate to require user charging where alternative (less GHG intensive) infrastructure exists. However, for this to happen, the requirement that Cohesion Policy-funded investment cannot deliver returns in the years following the investment would need to be amended.

Additionally, the introduction of user charging on roads potentially opens the way for the use of alternative means of funding the infrastructure, eg loans that could be repaid from the proceeds of user charging, or forms of Public Private Partnership.

6.7 Concluding Summary

6.7.1 Alternative means of delivering win-wins

The construction, operation and maintenance of infrastructure for all modes leads to CO_2 emissions and land take, which could adversely impact biodiversity and habitats, as well as leading to other adverse environmental impacts. However, the existence of this infrastructure enables mobility and trade, and improves accessibility, thus providing economic and social

benefits. However, the use of the infrastructure requires the use of vehicles, which have to be manufactured and disposed of at the end of their useful lives, with the accompanying adverse environmental impacts, as well as consuming energy and emitting CO_2 while they are being used. Hence, as noted in Section 6.1, there are no pure win-wins from investment in transport infrastructure and hence a question of maximising the economic and social wins, while minimising the environmental losses.

6.7.2 Potential to reduce or avoid crowding out

Section 6.3 reviewed ways of encouraging private investment in transport infrastructure and showed that it has been achieved for most modes. Hence it is clearly possible to obtain private financing for transport infrastructure, but the use of private money in this way is often controversial and does not always deliver the anticipated results. Additionally, the extent to which it is possible to use private finance depends on a range of political, legislative, ownership and attitudinal factors that will be peculiar to different countries. However, the potential to attract private investment to fund transport infrastructure does not necessarily imply that crowding out of private investment has resulted from Cohesion Policy investment in transport infrastructure. On the other hand, given the increasing amount of private money being attracted to fund transport infrastructure, there is clearly the possibility that Cohesion Policy funds have been relied upon where private investment could have been sought. Additionally, the introduction of user charging for road transport potentially allows for the use of other forms of finance to be used for roads, e.g. loans and Public Private Partnerships.

6.7.3 Use of non-investment instruments to mitigate win-losses

The assessment of non-investment policy instruments that could be used to mitigate the win-losses that potentially result from Cohesion Policy funding of transport identified two instruments of potential importance:

- Green Public Procurement, which could be applied to the construction, operation and maintenance of infrastructure, as well as to the purchase of any vehicles.
- User charging.

Both instruments could potentially be applied in all Member States and regions and in all types of OPs, as long as there are no legislative barriers at the national or regional levels, as there might be for user charging. Additionally, the way in which user charging can be applied is regulated by EU legislation and various international agreements, so user charges could only be applied where they are consistent with the respective legislative framework for that mode and locality.

GPP is permitted under EU procurement legislation and is being actively encouraged by the European Commission. Additionally, the Commission has developed criteria for various elements of road transport, which could be readily applied to transport activities funded by Cohesion Policy (see Section 6.5.7). Hence, GPP could be used as a conditional instrument.

There are potential European and national barriers to road user charging, which currently prevent it being used to apply the polluter pays principle. However, the application of user charging is still possible, although not necessarily to apply for external cost pricing, and has potential benefits, so could be used as a conditional instrument.

7 BIODIVERSITY

7.1 General introduction: Win-wins & win-losses for biodiversity

The assessment of possible Cohesion Policy interventions resulted in several potential "win-wins" between Cohesion Policy objectives for sustainable development and biodiversity conservation, including the protection of ecosystems' quality & services they provide. However, if not carefully considered the same Cohesion Policy interventions can also result in negative impacts on biodiversity, i.e. "win-loss" situations. These identified key "win-win" and "win-loss" interventions are summarised below with further details in Annex 1.

Promotion of biodiversity and nature protection (e.g. Natura 2000). Ecosystems and the resources and services they provide (i.e. our natural capital) underpins our socio-economic welfare. Therefore, supporting the protection and sustainable management of biodiversity and ecosystems can also bring benefits to broader sustainable socio-economic development and support the goals of Cohesion Policy. For example, protected areas such as Natura 2000 sites can play an important role in creating tourism, maintaining food security, supporting physical and mental health and protecting cultural heritage values.

Environmental risk management. Protection and sustainable management of ecosystems ability to prevent and mitigate environmental risks (e.g. flooding, drought, intensity of wild fires) helps to prevent biodiversity loss while also protecting environmental and socio-economic stability. On the other hand, development of man-made infrastructure for risk prevention can result in negative impacts on biodiversity, ecosystems & ecosystem services (e.g. destruction of important habitats, fragmentation). Similarly, **rehabilitation of industrial sites and contaminated land** enables future socio-economic activities on previously contaminated areas but it can also create important possibilities for restoring natural ecosystems and their biodiversity. If not carefully considered, however, some restoration methods might be very intrusive and therefore cause negative impacts on biodiversity at the vicinity of the target area (e.g. increased erosion and leaching of nutrients from the disturbed soil).

Mitigation of and adaption to climate change. Support to ecosystem-based mitigation and adaptation strategies to climate change (e.g. protection of forests' carbon storage, protecting / restoring natural ecosystems to mitigate flooding/droughts/fires) could create significant co-benefits for both biodiversity while effectively helping sustainable development of regions within the EU. On the other hand, a number of mitigation activities (e.g. biofuel production, wind farms) can have negative impacts on biodiversity. Similarly, development of man-made infrastructure for adaptation (e.g. risk prevention) can results in negative impacts on biodiversity, ecosystems & ecosystem services. Therefore, the broader impacts of climate change interventions under Cohesion Policy would need to be carefully considered and steered towards "win-win" solutions.

Water supply & water purification. Protection and sustainable management of ecosystems' natural ability to retain and purify water supports sustainable environmental development and can also lead to significant cost savings. However, without due consideration of biodiversity, opting for man-made infrastructure to maintain water supply and quality might have negative impacts on biodiversity. For example, hydrological works (e.g. dams and dikes) are known to distract migration and spawning of several fish species.

Promotion of natural assets & heritage (e.g. for tourism). Promotion of opportunities for sustainable tourism, recreation and the maintenance of cultural and heritage values can increase revenues from tourism and also help to finance the protection of biodiversity. For example, sustainable ecotourism can support financing the management of protected areas (e.g. Natura 2000). On the other hand, unsustainable tourism activities can contribute to the degradation of ecosystems and their services with negative impacts on biodiversity.

Education & capacity building. Cohesion Policy interventions on education and capacity building can also create win-wins for both biodiversity and regional development. For example, support for self-employment and business start-up can be targeted to promote sustainable ecotourism, agriculture & forestry (e.g. producing, labelling and marketing biodiversity-friendly certified products). Also, support to the inclusion and rehabilitation of unemployed, immigrants, ex-criminals etc. can be linked to conservation and restoration of biodiversity, ecosystems and their services in the area (e.g. management of Natura 2000 or eradication of invasive alien species etc.).

In addition to the risks of "win-losses" identified above, a number of other Cohesion Policy supported interventions are also known to have caused negative impacts on biodiversity. In particular, support to **transport infrastructure and networks** can results in negative impacts on biodiversity, ecosystems & ecosystem services (e.g. destruction of important habitats, fragmentation). Therefore, it is hoped that planning new transport infrastructure and networks could be carried out so that they have less harmful impacts on biodiversity (e.g. via avoiding negative impacts to biodiversity and ecosystems already in the planning process, development of ecologically functioning green corridors along cycling routes etc.).Similarly, support to **renewable energy** production (e.g. biofuel production) can bare negative consequences for biodiversity. However, if sustainably planned and managed biofuel production could bring some benefits to biodiversity, ecosystems and their services compared to previous intensive land use practises

7.2 Delivering win-wins by non-investment policy instruments

The "win-wins" interventions for biodiversity (as identified above) can also be supported by a range of non-investment policy instruments (Annex 2). These include, for example a range of **regulatory instruments** targeting both biodiversity and the environmental sustainability of sectoral policies. Furthermore, several **market based instruments**, such as reform of subsides, introduction of taxes and fees and the establishment of payments for environmental services (PES) can be used to create long-term benefits for both biodiversity and regional socio-economic development. Finally, several **voluntary mechanisms** can play a significant role in enabling the uptake of "win-wins" in practise (e.g. provisioning of information, (voluntary) standards or codes and training & capacity building).

In general, it is considered that the identified non-investment policy instruments are important in supporting, rather than replacing, investments under the Cohesion Policy. For example, regulatory instruments continue to be important in securing the protection of most vulnerable species and habitats and maintaining a minimum quality of ecosystems and their service. In addition, the key EU legislative instruments establishing the Community regime for biodiversity conservation (i.e. the Habitats and birds Directives) specifically provide for their implementation to be supported by the EU funds. Furthermore, there are also possibilities to explore whether the implementation of already existing regulatory instruments can also be targeted to seek "win-wins" between goals for conservation and broader socio-

economic development. It is not, however, foreseen feasible to facilitate the uptake of above identified "win-wins" solely by regulation, thus the role of Cohesion Policy interventions remains important.

It has been commonly acknowledged that there is a gap between the level of current funding and the actual financing needed for biodiversity conservation in the EU[44]. Even though innovative market based instruments, such as PES schemes, are hoped to play an increasing role in the conservation of biodiversity, ecosystems and their services in the future, they are also foreseen to complement, not replace, public support to biodiversity. Therefore, investment from the EU Budget to support the delivery of Community's biodiversity goals (e.g. through Cohesion Policy) remains important. Furthermore, it is hoped that Cohesion Policy interventions could support the uptake of more innovative, "win-win" solutions for biodiversity in the future and help to bridge the existing gap in funding. For example, support to economic diversification could be targeted to broaden the uptake of biodiversity & business opportunities, supporting conservation objectives throughout the EU.

Finally, education and capacity building are considered crucial to raise awareness on the socio-economic benefits and opportunities linked with biodiversity. However, it is unlikely that this could be carried out successfully only via voluntary means and it is rather foreseen that Cohesion Policy interventions are needed to support these awareness raising opportunities and ensure the uptake of identified "win-wins" for biodiversity and sustainable development.

7.3 Cohesion Policy and crowding out private investment

It is not considered that existing investment under Cohesion Policy is at present leading to the crowding out of potential private investment on biodiversity. The lack of private investment in biodiversity is rather linked with the limited awareness in biodiversity related socio-economic benefits and "win-wins". As outlined above, it is foreseen that Cohesion Policy could play an important role in further supporting and innovating business involvement in biodiversity conservation.

7.4 Detailed assessments of key non-investment instruments: Application of biodiversity related EU Regulations

7.4.1 Current deployment and framework in the EU

A number of biodiversity related EU regulations are already in place and it is generally considered that the existing Community legislation provides a rather solid basis for conservation and sustainable use of biodiversity in the EU (e.g. Birds and Habitats Directives, EIA and SEA Directives, Water and Marine Framework Directives, minimum standards under the Common Agricultural and Fisheries policies (CAP and CFP) etc.)[45].

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[44] E.g. Kettunen, M., Baldock, D., Adelle, C., Cooper, T., Farmer, M. Hart, K., Torkler, P. 2009. BIODIVERSITY & THE EU BUDGET - Making the case for conserving biodiversity in the context of the EU Budget Review; Kettunen M., A Berghofer, M. Bouamrane, A. Bruner, S. Chape, N. Conner, N. Dudley, S. B. Gidda, P. Morling, K. J. Mulongoy, L. Pabon, A. Seidl, S Stolton, P. ten Brink, and A. Vakrou (in press). Investing in Ecological Infrastructure. In: The Economics of Ecosystems and Biodiversity in National and International Policy Making. An output of TEEB, edited by Patrick ten Brink. Earthscan, London.

[45] Kettunen, M., Baldock, D., ten Brink, P., Lutchman, I., Tucker, G., Baumueller, A. & Arroyo, A. 2010. EU Biodiversity Policy Post-2010. Exploring the possibilities for safeguarding broader ecosystems – A scoping paper. WWF & Institute for European Environmental Policy (IEEP), London / Brussels. 53 pp.;

However, gaps still exist, for example, in relation to prevention of negative impacts of invasive alien species (IAS) and protecting the quality of soils. Also, the minimum standards for different sectoral policies (e.g. CAP, CFP and Cohesion Policy) could be made more biodiversity-specific in order to ensure more effective conservation. Furthermore, it is not yet clear whether the post-2010 emphasis on protecting broader ecosystems and their services will require more targeted regulative instruments in the long-run.

Regardless of these existing gaps, the lack of effective implementation, rather than the lack of EU regulative instruments, is seen as one of the key reasons behind on-going biodiversity loss. Therefore, ensuring that the existing regulations are appropriately implemented and/or more specifically used to target the conservation of biodiversity, broader ecosystems and their services (e.g. EIA and SEA), is foreseen as an immediate priority for the future.

Given the above, the existing and potential new EU regulative instruments are envisaged to be used as the baseline/conditional instruments 1) to ensure the investment under Cohesion Policy will not have negative impacts of biodiversity and 2) as the basis for steering Cohesion Policy investments towards "win-wins" between biodiversity and socio-economic development (e.g. financing for Natura 2000 areas).

7.4.2 Type & scale of investment to be targeted and benchmarks & indicators for successful use.

In general, the EU regulations ensuring the conservation and sustainable management of biodiversity, ecosystems and their services should be used as a baseline for biodiversity proofing of all investment under Cohesion Policy

For establishing "win-wins" between biodiversity and regional socio-economic development, specific focus should be given to Cohesion Policy measures focusing on natural resources and land use with an aim to ensure that these measures also actively seek ways to contribute to/deliver both the biodiversity policy a Cohesion Policy and Cohesion Policy objectives (e.g. where appropriate, focusing on maintaining and restoring ecosystems and their natural processes rather than supporting development of man-made infrastructure). As for benchmarks & indicators for successful use, the EU regulative instruments for biodiversity apply similarly across the Community and therefore there is no clear differences between their use as conditional instruments for Cohesion Policy within the EU.

7.4.3 Impacts from the use of the instrument

In short-term, more comprehensive and biodiversity-specific use of EU regulative instruments for biodiversity (e.g. EIA & SEA) as conditional instruments for Cohesion Policy (e.g. for systematic biodiversity proofing of Cohesion Policy investments) may lead to somewhat higher net costs to project operators due to more stringent and / or broader requirements to avoid any further deterioration in environmental quality, ecosystems and their services. However, on the longer run the protection of valuable species and habitats and maintaining the quality of wider ecosystems and their services is foreseen to underpin sustainable development of the region[46]. Furthermore, targeted investment towards activities

SEC/2008/3044. Accompanying document to the mid-term assessment of implementing the EC Biodiversity Action Plan. (http://ec.europa.eu/environment/nature/biodiversity/comm2006/bap_2008.htm)

[46] TEEB reports 2009 and 2020 (www.teebweb.org)

benefiting both biodiversity and socio-economic development (via support to ecosystem services) could enhance more immediate "win-wins" between biodiversity and Cohesion Policy.

7.4.4 Initial thoughts on implications for the design of the OP

The existing EU regulative instrument already provide a framework for investment under Cohesion Policy, therefore to improve their use as a conditional instrument for Cohesion Policy is not foreseen to drastically change the operation of OPs. However, more comprehensive biodiversity proofing of Cohesion Policy investment could lead to certain activities with negative impacts on biodiversity, ecosystems and ecosystem services to be revised and / or made ineligible for funding.

7.4.5 Barriers, both the nature of these and how they might be overcome

Biodiversity conservation and socio-economic development have traditionally been seen as competing, rather than complementing, policy objectives. Consequently, the lack of political will and adequate resources (e.g. financing) continues to be one of the key barriers for integrating biodiversity into Cohesion Policy and other different sectoral policies. Also, the lack of appreciation and awareness on how biodiversity, healthy ecosystems and their services underpin socio-economic welfare is hinders the uptake and effective implementation of biodiversity measures. Furthermore, there is a need for capacity building among stakeholders on how "win-wins" for biodiversity and sustainable socio-economic development could be implemented in practise.

7.5 Detailed assessments of key non-investment instruments: Application of key market based instruments for biodiversity

This section briefly outlines the application of a number of identified key market-based instruments for biodiversity. In particular, these include the reform of harmful subsidies and market based incentives for conservation of biodiversity, ecosystems and their services.

Please see Annex 5 for more detailed information of other market based instruments for biodiversity such as taxes and charges, green public procurement and creation of new sustainable markets.

7.5.1 Current deployment and framework in the EU.

Different EU policies, such as CAP and CFP, have undergone and/or are undergoing a subsidy reform with a view to ensure, among other things, that the supported activities are in the long-run environmentally sustainable (e.g. non-harmful to biodiversity). Also, environmental sustainability already forms one of the general framework conditions for investment under Cohesion Policy. However, in practise it is generally acknowledged that support (e.g. EU investment) to Community's key sectoral policies continues to cause negative impacts on biodiversity.

As for taxes & charges, a number of environmental taxes and charges are in place in the EU, however none of them specifically targeted to biodiversity. Therefore, there might be a possibility to explore a targeted application of such measures to support biodiversity conservation in the future. Also, using taxes and changes to prevent unsustainable use of other natural resources (e.g. water) can help to maintain the quality of broader ecosystems and their services, thus indirectly help to protect habitats and biodiversity.

As for using marked based incentives to reward sustainable use of ecosystems and biodiversity, EU's agri-environment schemes are often considered as a form of payment for environmental/ecosystems services (PES) at the EU level. At the regional and national level, a number of initiatives are being established to explore the use of market based instruments for biodiversity. However, these schemes still play a rather marginal role in financing biodiversity conservation. There is an increasing interest (and need) for the use of PES and other market based incentives to support biodiversity conservation in the EU, however so far no other EU-wide frameworks for PES exist. Consequently, and given the financing gap for biodiversity, it is not likely that market-based instruments could replace the need for public investment for biodiversity (e.g. support from EU funds). Furthermore, CP investment could be used to help to initiate innovative incentive schemes for biodiversity at the EU and/or regional level.

7.5.2 Type & scale of investment to be targeted and benchmarks & indicators for successful use.

From the perspective of effective delivery of EU's biodiversity policy objectives, the removal of environmentally harmful subsidies (e.g. agricultural and fisheries subsidies supporting the over-extraction of natural resources should be a condition of any investment aiming to support sustainable use of natural resources. In general, the scope for removal depends on the extent to which the subsidy is a reflection of other EU policies (especially agriculture and transport) and the degree to which economic benefits flow that would be expected to be compensated through cohesion policy. Therefore a blanket condition may be infeasible.

Given the requirement of added value at the Community level, possible future EU-level financing schemes/frameworks for incentivising conservation of broader ecosystem and their services and creating biodiversity benefits (e.g. public / public-private funded PES schemes) could, for example, be targeted to support the conservation and sustainable use of ecosystems and ecosystem services of high EU or national importance[47]. These could include, for example, ecosystems that play an important role in mitigation of and adaptation to climate change, mitigation and management of environmental risks, maintenance of water security or any other benefits and values identified as important for general EU public (i.e. EU-level public goods). Furthermore, the schemes could be targeted to areas where they could support a delivery of several EU policy goals (or a bundle of ecosystem services) including, for example, conservation of water and biodiversity resources. Also, such EU-wide payment schemes could be specifically targeted to support protection of biodiversity, ecosystems and ecosystem services at trasboundary scales (e.g. from transboundary river basins).

In general, PES schemes are known to work best where a clear "cause-and-effect" link can be established between stakeholders benefiting from and helping to maintain the sustainable supply an environmental services.

As stated above, also the innovative market based instruments, such as PES schemes, are foreseen to complement rather than replace public support to biodiversity. Therefore, investment from the EU Budget is foreseen to play an important role in supporting the

[47] Kettunen, M., Baldock, D., ten Brink, P., Lutchman, I., Tucker, G., Baumueller, A. & Arroyo, A. 2010. EU Biodiversity Policy Post-2010. Exploring the possibilities for safeguarding broader ecosystems – A scoping paper. WWF & Institute for European Environmental Policy (IEEP), London / Brussels. 53 pp.

delivery of Community's future biodiversity goals, e.g. the conservation of broader ecosystems and their services. Given that one of Cohesion Policy's key objectives is to support sustainable socio-economic development it could be well placed to support the maintenance and restoration of the key ecosystem services that underpin the socio-economic welfare in the EU level.

7.5.3 Impacts from the use of the instrument

In general, the removal of harmful subsidies and incentivising the sustainable use of natural resources via market based instruments (e.g. PES) are foreseen to lead to more sustainable use of natural resources (e.g. ecosystems and their services) in the long run, with clear benefits to biodiversity conservation. Given that sustainable use of natural capital (e.g. reduced degradation of ecosystems and their services) is recognised fundamental for maintaining human welfare, further the use of market based instruments reform is also envisaged to support EU's long-term socio-economic development[46].

In the long term the use of these instruments could lead to the reduction of interventions and funding (e.g. Cohesion Policy investment) required to protect and restore biodiversity. In particular, the subsidy removal can reduce the pressure on natural capital/the environment and free up funds for other uses. Also, the reformed subsidies could be targeted to actively encourage sustainable use of natural resources and maintenance and restoration of ecosystem services, with a view of creating "win-wins" between biodiversity and socio-economic development. On the other hand, in short-term there might be possible needs for greater Cohesion Policy intervention if reduced subsidies (e.g. reduced subsidies for agriculture in rural areas) lead to reduction of possibilities for social cohesion in the EU.

7.5.4 Initial thoughts on implications for the design of the Operational Programme

None of the market based instruments are envisaged to have significant impact on the operation of OP. It is, however, hoped that they will help to bridge the existing gap in financing biodiversity conservation and to increase the complementarily between different measures for biodiversity conservation.

7.5.5 Barriers, both the nature of these and how they might be overcome

The lack of political will and competition of limited resources between different sectoral interests continues to be one of the key barriers for a subsidy reform. Furthermore, there is also often a need to create alternative, more environmentally sustainable sources of livelihood in areas that currently rely heavily on subsidies. Thus, Cohesion Policy investments could play a crucial role in enabling communities to make a shift towards a more sustainable socio-economic model that also brings benefits to biodiversity (e.g. creation of green markets and uptake of biodiversity-based sources of livelihood).

Also, the lack of appreciation and awareness on how biodiversity, healthy ecosystems and their services underpin socio-economic welfare is hinders the uptake of market based measures (e.g. PES schemes). Furthermore, there is a need for capacity building among stakeholders on how "win-wins" for biodiversity and sustainable socio-economic development could be implemented in practise. The establishment of a clear framework and / or guidelines for PES schemes for biodiversity could help to encourage further creation of and investment in these instruments.

7.6 Concluding Summary

There are several potential "win-wins" between Cohesion Policy objectives for sustainable development and biodiversity conservation, including promoting the protection of ecosystems' quality & services they provide. These "win-wins" include, for example, investment in ecosystem-based prevention of environmental risks (e.g. flooding), ecosystem-based mitigation of and adaptation to climate change, support to water security and promotion of biodiversity-relate business opportunities.

However, if not carefully considered Cohesion Policy interventions can also results in negative impacts on biodiversity, ecosystems and their services, i.e. "win-loss" situations. Therefore, **biodiversity proofing** of all Cohesion Policy investments can be seen as one of the key measures ensuring the improvement of the sustainability of Cohesion Policy in the future.

The "win-wins" interventions for biodiversity can also be supported by a range of non-investment policy instruments. These include, for example a range of **regulatory, market-based and voluntary instruments** targeting both biodiversity and the environmental sustainability of sectoral policies. In general, it is considered that the identified non-investment policy instruments are important in supporting and complementing, rather than replacing, investments under Cohesion Policy.

8 CLEAN ENERGY AND CLIMATE CHANGE

8.1 General introduction

Investments in clean energy contribute to increase the mix of non-GHG emitting energy sources in the overall energy mix of the EU. These types of investments lead to a reduction of the CO_2 intensity of the European economy. In this sense, these investments are expected to generate direct environmental benefits. However, the extent to which an increase in the share of renewable energies in total energy production translates into absolute CO_2 emission reductions depends on the growth rate of total energy consumption. The level and evolution of energy consumption depends in turn on a large variety of factors, some of which are submitted to high inertia, such as population growth and production and consumption behaviours, and some more volatile, such as economic growth or price changes. As a consequence, benefits relating to investments in clean energy need to be assessed against a baseline situation (or no policy scenario) in order to assess the avoided emissions due to the investment. In this report, the analysis of the win-wins and win-losses will be carried out in a qualitative way, but bearing in mind that environmental impacts of clean energy investments have to be put in a wider context and analysed in conjunction with other factors. The main win-wins and win-losses regarding investments in clean energy and climate change are presented below:

Win-wins

Potential win-wins regarding clean energy and climate change are likely to be found in OP measures relating to:

- *Investment in research activities focused on energy efficiency and renewable energies*
  These investments are likely to generate direct and indirect positive effects on regional competitiveness, related to economic benefits from increased innovation and technological change aimed at improving production processes. Due to spill-over effects, energy efficiency-driven innovation might also spur innovation in other sectors and improve overall economic competitiveness.
- *Control of energy demand, development of renewable energies and eco-materials*
  By reducing dependency on fossil energies, improving energy efficiency and reducing overall energy demand, these investments will generate direct economic gains for households (reduced energy bills) and businesses (reduction in production costs, spur innovation, etc.).
- *Sustainable urban and land use planning*
  Sustainable urban and land use planning is likely to provide benefits in terms of reduction of exposure to climate change impacts, as illustrated for example in the case-study, focusing on adaptation to climate change in the Languedoc-Roussillon region. Substantial economic benefits might also appear on the long-run, thanks increased productivity, due for example to more efficient use of infrastructure and a more efficient localisation of the activities throughout the region.
- *Protection of natural resources and ecosystems*
  Economic benefits are likely to appear on the long-term thanks for example to increased revenues from tourism or to increased agricultural yields (linked for example. to increased soil diversity and better structure) and reduced costs (less need for irrigation water, etc.).

Win-losses

Potential win-losses for investments related to clean energy and climate change are likely to appear in relation to the construction of new infrastructure (energy infrastructure or transport infrastructure, for example) and their consequences on the consumption of natural resources, their impact on biodiversity and ecosystems and might also have other negative externalities (such as noise due to wind turbines, for example). The extent to which these environmental losses outweigh potential gains will depend on the design and scope of the investment.

Other losses might appear if investment in research projects is directed towards unsustainable or high cost technologies, such as carbon capture and storage (CCS) or nuclear energy, with the risk of creating lock-in situations. For example, recent studies such as McKinsey's report on marginal abatement cost curves for GHG emissions (2008) evaluate the cost of reducing one ton of CO_2eq from CCS in the range of 40-60 Euros whereas energy efficiency improvements, for example, would be directly profitable (~-20Euros/tCO_2eq).

8.2 Delivering win-wins by non-investment policy instruments

In the field of climate change mitigation, policies and measures leading to increased energy prices and/or aiming at giving a price to GHG emissions are likely to provide similar win-wins than the proposed investments under the Cohesion Policy. In some case, and in theory, the former are also likely to be more cost-effective. The main non-investment instruments in this field are the following:

8.2.1 Energy and climate change mitigation

- *Energy and CO_2 taxes and carbon markets*: increased energy taxes and the creation of carbon markets such as the EU-ETS lead to higher final prices for energy, both for consumers and producers and creates incentives for changes in behaviours in terms of energy consumption as well as overall consumption (energy intensive products become more and more expensive due to increased production costs), spurs innovation in energy efficiency and redirects demand towards renewable energies, thereby creating/increasing the market for renewable energy producers. Short-term impacts can be negative for some actors (depending on revenue recycling policies) but as substitution possibilities materialize, reductions in GHG emissions are combined with net economic gains for businesses and consumers alike. Evidence of potential environmental benefits of these policies can be found in impact assessments carried out by authorities and/or independent agencies in countries where these types of policies have already been implemented. For example, in the case of Sweden (who has put into place a CO_2 tax in 1991), emissions are likely to have been reduced by 9% thanks to CO_2 pricing (according to the Swedish Ministry of Finance). Furthermore, an independent evaluation of the carbon tax project in France[48] found that the proposed scheme would help reduce France's CO_2 emissions by 8-10% on the medium-term.
- Support schemes such as, but not limited to, *feed-in tariffs*: this instrument is analysed in detail in section 8.5.

[48] La contribution Climat-Energie: une double dividende économique et écologique, Agence Française de l'Environmement et de la Maîtrise de l'Energie (ADEME), Stratégie et Etudes, june 2009

Despite the existence of these potentially cost-effective instruments, there is still a rationale for public investment, including regional investments. This is because:

- The level of taxes and/or prices on energy and CO_2 is lower than what is needed to provide the necessary incentives that would lead to mitigation actions capable of generating the necessary GHG emissions reductions. For example, a report commissioned by the French government[49] showed that the price of CO_2, that would be consistent with the European commitments in terms of GHG emissions reductions, would be in the range of 30-45 Euros/tCO_2 today. The value of one ton of CO_2 on the market is about half this number and the effective taxation of CO_2 is still significantly lower than this figure in most European countries.
- Energy taxes and CO_2 prices do cover all the sectors, especially the ones that have a significant share of total GHG emissions, such as the transport sector, the agriculture sector and small and medium enterprises (only big emitters are submitted to the EU-ETS). This significantly undermines the overall price signal.

8.2.2 Climate change adaptation

Regarding adaptation to climate change, a number of instruments already exist at national and regional level with the potential to provide both environmental and economic benefits. These relate essentially to regulation on construction in areas vulnerable to climate related hazards, such as flooding, storms or landslides. Evidence shows that existing regulations are not enforced as completely as they should and lead to increased exposure of economic activities and residential housing to climate-related risks. Enforcing these regulations as well as adapting existing regulations (or creating new ones) in order to take into account new risk levels would reduce the expected impacts of climate change and provide economic benefits in the long-term to the society as a whole. However, enforcing these regulations might also lead to significant social costs on the short-term as households and/or economic activities are not allowed to settle in attractive areas (such as coastal areas) or forced to re-settle.

Another regulatory instrument, preliminary associated with land and urban planning regulations, is the zoning and mapping of risks. Recent weather-related catastrophes, such as the major flooding in the Vendée and Charente-Maritimes region in February-March 2010 highlighted inappropriate risk zoning, which allowed construction in areas subject to high flood risk. Improvement in risk zoning schemes, better information on risks and capacity and information building by regions and at national level will reduce the overall exposure to climate-related risks and generate significant economic gains (relative to the actual situation).

These non-investment instruments can clearly complete and be supported by Cohesion Policy investments, for example through the funding of projects aiming at restoring coastal areas or involving the relocation of human activities in less exposed areas, as in the case of the Lido de Sète project (see corresponding case-study as part of task 6).

8.3 Cohesion Policy and crowding out private investment

Clean energy and climate change mitigation

[49] Rapport Quinet sur la valeur tutélaire du carbone, Centre d'Analyse Stratégique, June 2008

The level of crowding out for the investments in the field of clean energy and climate change can be inferred from the split of the spending between public and private financing. As regards energy, especially renewable energies, the structure of the financing in the scanned OPs indicates that the level of private financing is significant. For example, in the case of the Languedoc-Roussillon region, one of the OP that has been analysed on the context of this project, roughly two thirds of the spending is public (national, regional and EU) and one third comes from private investors. This suggests that public investments, including EU funding in the context of Cohesion Policy, might lead to crowding out, at least partially. Given the market conditions in this industry and the incentives that have been implemented in order to increase the relative profitability of renewable energies, the fact that partial crowding out might occur in this sector is not surprising. However, given the high capital investments required in this industry, public intervention is generally necessary in order to reduce financial risks related to the project. As a consequence, assessing the real crowding out is not an easy task. This would require interviews directly with private investors.

To summarize, the risk of crowding out in the field of clean energy and climate change mitigation investments is highest when:

- The technology/process concerned by the investment has already diffused and is likely to be profitable;
- Significant incentives (such as feed-in tariffs) are in place to bridge the profitability gap between conventional and innovative energies, technologies or processes;
- Capital investments required are more limited;
- Financing conditions are favourable.

Climate change adaptation

Public investments in the area of adaptation to climate change are unlikely to provoke crowding out, for at least two reasons:

- High capital investments are usually required for projects aiming at protecting/restoring areas submitted to climate change risks as they often involve the construction/adaptation of infrastructure. For example, the budget for the project of the Lido de Sète (dealing with adaptation to climate change in coastal areas) is above 50 M€. These types of actions, aimed at reducing the vulnerability to climate risks and increasing resilience are the most frequent in the OPs The profitability of these projects is uncertain and likely to be low on the short-term, at least for the private sector. The economic benefits for this type of projects can be mainly expressed in terms of avoided losses more than direct profits, which makes sense from the standpoint of the society as a whole but less from the point of view of the private sector (unless the investor is tied to economic activities submitted to climate change risks and would directly benefit from a reduction of their exposure).

Private sector investment is usually very low or non-existent in the area of investments in climate change adaptation (for example, public investment represents the totality of the funding in the case of the Lido de Sète project).

Additional barriers are:

- Information barriers: private investors may be unaware of possible returns or unable to foresee and estimate them correctly;

- Private returns are likely to appear in the long-run, hence decreasing the present value of the investment (due to discounting), compared to other actions.

Consequently the likelihood of crowding out is likely to be very low, if existent at all.

8.4 Summary of possible instruments that can reduce or remove win-losses

In general, win-losses often appear because all the costs and benefits of investments have not been correctly factored in calculations in the design phase of the investments. The general category of instruments aiming to give a value to environmental externalities would naturally limit win-loss investments. For example, projects involving infrastructure and/or building construction might lead to environmental losses regarding the overall exposure to climate change related risks. By giving a value to the services provided by ecosystems such as meadows, forests or wetlands, projects will naturally tend to limit their impact on these ecosystems and/or be pushed to compensate potential adverse impacts.

In addition, win-losses related to the lock-in in low cost-effectiveness and/or high risk technologies (such as CCS or nuclear energy) might be removed by appropriate incentives (e.g. subsidies, private-public partnerships) to research on the cost and benefits of different options, business awareness raising, improved communication and training.

8.5 Feed-in-tariffs

Feed-in tariffs and premiums are granted to operators of eligible domestic renewable electricity plants for the electricity they feed into the grid. The preferential, technology-specific feed-in tariffs and premiums paid to producers are regulated by the government. Feed-in tariffs take the form of a total price per unit of electricity paid to the producers whereas the premiums (bonuses) are paid to the producer on top of the electricity market price. An important difference between the feed-in tariff and the premium payment is that the latter introduces competition between producers in the electricity market. The cost for the grid operator is normally covered through the tariff structure. The tariff respectively the premium is normally guaranteed for a period of 10 – 20 years. In addition to the level of the tariff respectively the premium, the guaranteed duration provides a strong long term degree of certainty which lowers the market risk faced by investors. Both feed-in tariffs and premiums can be structured to encourage specific technology promotion and cost reductions (the latter through stepped reductions in tariff/premiums).

8.5.1 Regulatory basis/current institutional framework

To achieve energy policy goals of sustainability, security of supply and improved competitiveness, the production of renewable energy is promoted across Europe. On the Community level, Directive 2009/28/EC introduced mandatory national overall targets and measures for the use of energy from renewable sources, established a guarantee of origin regime, and addressed barriers to market entry faced by renewable electricity. It has provided an important framework for national support schemes, such as Feed-in-tariffs. Partly induced by this legislation, Member States have put in place a range of support measures for promoting renewable electricity, market based instruments that compensate for the various market failures that leave renewable energy at a competitive disadvantage compared to conventional energy, in particular the negative externalities of fossil fuels and security of energy supply.

The EU provides a framework for feed-in-tariffs (and other renewable energy support schemes) but does not have any specific competence in the use of instruments. In particular, the level at which financial incentives are set and regularly revised as well as the scope of the instrument in terms of energies covered is determined individually by Member States. The instrument is therefore flexible in approach and leads to different incentives across the EU-27.

8.5.2 Current deployment in the EU, and trends in deployment

Feed-in tariffs and premiums are used in 18 Member States, as shown in Table 3. The internal characteristics of these schemes vary across MS, in terms of energies covered and level of financial incentives. Specific MS schemes are briefly described below for a sample (not necessarily representative) of European countries, in the case of feed-in-tariffs for solar power:

In France, a new feed-in tariff for solar electricity was published on July 26, 2006, granting 0.30 €/kWh (0.40 €/kWh in overseas) plus extra 0.25 €/kWh if integrated to building (+0.15 €/kWh in overseas). This tariff is limited to solar only installations with less than 12 MW capacity and less than 1500 hours/year operation. For production over this limit the tariff is 0.05 €/kWh.

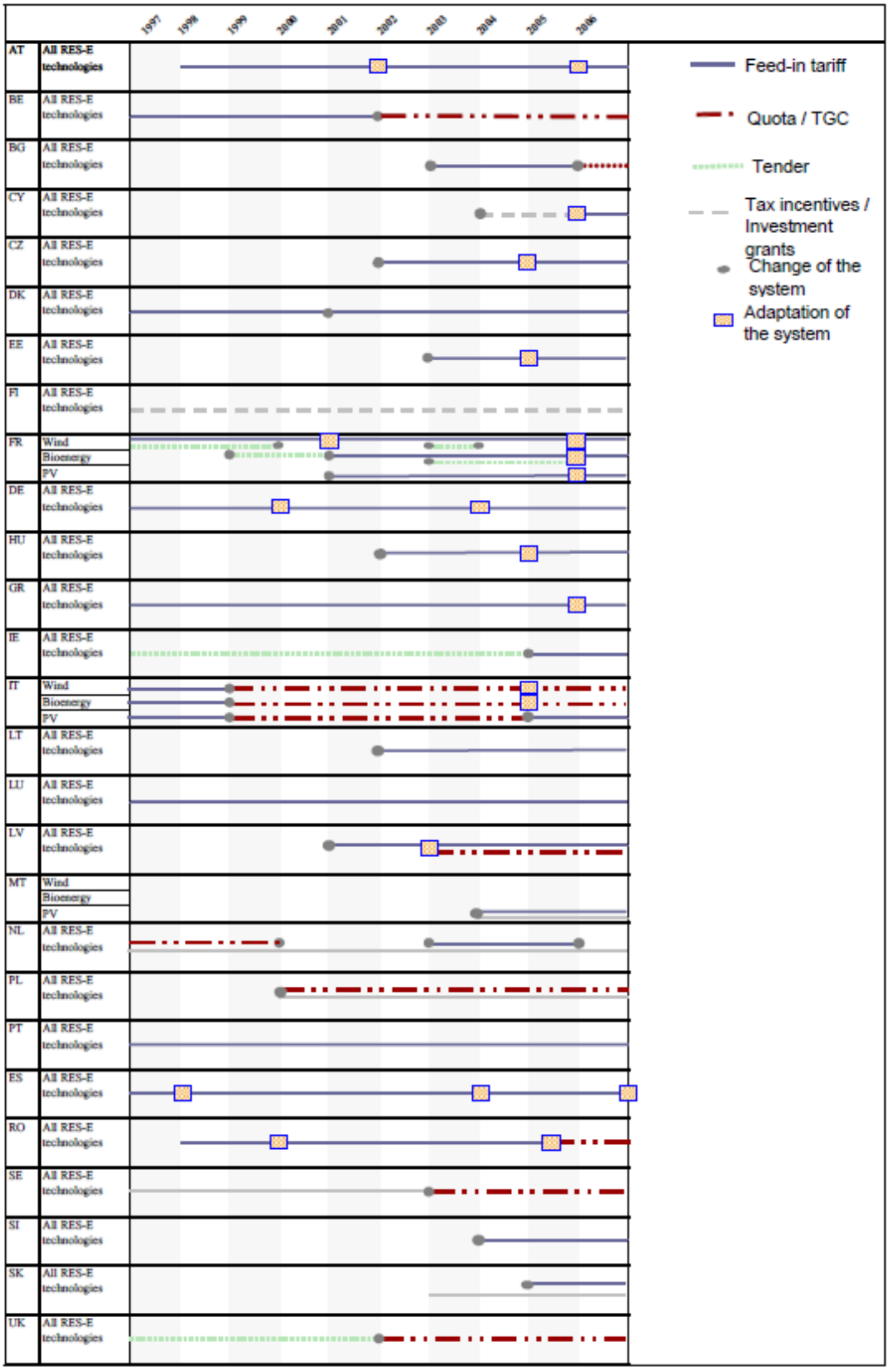
In Spain, the feed-in tariff regulations have been refined with the recent Royal Decree 661 from 2007. Basic change with respect to the previous regulation is the decoupling from the market reference price, which increased with oil price increases and automatically increased renewable tariffs with the oil price. A fixed tariff of 0.269375 Euro/kWh is granted for CSP plants up to 50MW for 25 years, increasing yearly with inflation minus 1 per cent point. The CSP target was increased to 500MW by 2010.

In Germany, a remunerative arrangement is made available for a period of up to twenty years per plant, with the exception of hydroelectricity installations, which require longer amortisation periods. In addition, degressive steps have been incorporated, starting in 2002, for plants coming on line then. The law also offers scope for altering the compensation rates for future installations if necessary. This remuneration system does not mean the abandonment of market principles, but only creates the security needed for investment under present market conditions. There is adequate provision to safeguard the future existence of all the plants already in operation.

General support for the production of renewable energies is likely to strengthen in the years to come if MS are to comply with EU targets in terms of share of renewable energies in the total energy mix. However, whether this support will take the form of feed-in-tariffs or if these targets will automatically translate into the coverage and incentive level of the scheme remains uncertain and will depend on a number of factors, such as:

- the level and growth of penetration of renewable energies in the total energy mix;
- the existence of other instruments likely to provide a similar incentive at a lower cost (such as carbon markets and/or carbon taxes);
- the level of incentive (tax levels, etc.) of these existing schemes;
- the overall long-term targets at the MS, EU and international level regarding GHG emission reductions;
- MS and EU level regulations regarding power utilities and the electricity market; and
- the evolution of social and political acceptance of renewable energies

Table 3. Recent and current support schemes in Member States[50]



[50] Source: OPTRES, 2007 (modified by DG TREN)

8.5.3 Type/scale of investment that might be influenced

Investments under Cohesion Policy targeted on renewable energies have to be dimensioned and designed taking into account existing Member State based schemes and instruments such as FIT. In particular, the scope of energies likely to benefit from EU-funding should be consistent with the priorities set at MS level.

As renewable energies are becoming more widespread and their production technology is diffusing and becoming more mature, there is a need of adapting existing FIT schemes in terms of scope of energies and level of incentives. Recent decreases in FIT (especially regarding solar energy) reflect changing market conditions and the fact that their underlying profitability has considerably increased.

It follows that investments made under Cohesion Policy in the field of renewable energies have to be carefully designed, both in terms of energies concerned and level of financing so as to match the priorities set at MS level. Otherwise, investments might lead to a decrease in the overall cost-effectiveness of climate change mitigation and renewable energy policies.

Where investment in renewable energies is already high (whether from public or private sources), additional public funding risks being less effective or may even generate adverse effects (not directed to the relevant energy sources, over investment, etc). Hence the importance to adapt existing FIT schemes to ensure that the overall effectiveness of investment schemes is positively impacted by cohesion policy funding.

8.5.4 Impacts from the use of the instrument

In general, environmental impacts associated with the FIT are positive, as an increase in the share of renewable energies in the energy mix leads to lower CO_2 emissions per unit of energy consumed. Co-benefits associated with reduced environmental risks linked to the production and distribution of energy (e.g. oil spills) and increased energy security can also be identified.

However, environmental losses can occur depending on instrument design, in terms of scope (what renewable energies should be considered and where) and level of financial incentives. Ill-designed FIT could lead to a lock-in in technologies and energies with a low cost-effectiveness. In addition adverse environmental effects might appear, as the development of some renewable energies might lead to increased material consumption directly related to energy production (e.g. use of silicium for production of solar panels) and linked to the adaptation and upgrading of energy grids (e.g. construction of new infrastructure). Social and political acceptance of renewable energies might also be limited by adverse impacts on landscape (solar, wind) and noise (wind).

Furthermore, as shown in various studies[51], feed-in tariffs have the ability to deliver renewable energy at the necessary pace in order to comply with EU targets in terms of share of renewables in the total energy mix. The effectiveness of policies promoting wind energy, biogas and photovoltaics technologies has indeed been highest in countries using feed-in tariffs as their main support scheme. For onshore wind energy, Denmark, Germany and Spain

[51] See for example : The support of electricity from renewable energy sources (2008), European Commission staff Working Document

are showing the highest effectiveness indictors for the period 1998-2006. High investment security coupled with low administrative and regulatory barriers in these countries has stimulated a strong and continuous growth of wind energy over the last decade. Compared to 2005, important improvements can also be seen in other feed-in tariff countries like Ireland and Portugal. Portugal increased its installed capacity by more than 50% in 2006. The effectiveness of support to onshore wind in Belgium and the UK has grown more strongly in 2005 and 2006 but is still comparatively low compared to the above-mentioned countries with feed-in tariffs. The effectiveness indicators for the new Member States show that progress has been generally much lower, with the exception of Hungary and Latvia. Latvia showed the highest relative growth in the period considered, followed by Hungary for onshore wind.

The possibility of a rise in final electricity price is one of the possible negative economic impacts that can be identified in the case of feed-in-tariffs. Indeed, even if feed-in-tariffs do not directly impact final consumer prices, they do increase the overall cost of purchasing electricity for utilities. These might pass this rise in purchasing costs on to final prices, depending on a number of factors, such as market characteristics (market concentration, market power, etc.) and existing regulations regarding electricity prices (in many countries these are still regulated and utilities cannot increase final prices without the government's approval). A rise in electricity prices might be detrimental for consumers and businesses alike and is likely to have similar macro-economic impacts as an oil price rise. However, if environmental and socio-economic benefits related to the reduction of electricity production from fossil sources are taken into account, feed-in-tariffs are in fact likely to generate net positive economic gains. As shown by Gonzalo Sáenz de Miera et al. (2008)[52], in the case of wind generation in Spain, the reduction in environmental and socio-economic costs is greater than the increase in the costs for the consumers arising from the RES-E support scheme (the feed-in tariffs), which are charged to the final consumer. This provides an additional argument for feed-in tariffs support and contradicts one of the usual arguments against feed-in tariffs deployment: the excessive burden on the consumer.

8.5.5 Barriers, both the nature of these and how they might be overcome

However good a support scheme, such as feed-in-tariffs is, its effectiveness is hindered by a host of non-cost barriers. The major role that administrative, physical, social and financial barriers play in discouraging the development of renewable energy is well known. Article 6 of Directive 2001/77/EC[53] highlights several key barriers and exhorts Member States to take action to reduce them. COM(2006)627 assessed the (inadequate) progress made in reducing these barriers in most Member States and made five precise recommendations. These were for Member States to establish:

- One-stop authorisation agencies to take charge of processing authorisation applications and providing assistance to applicants.
- Clear guidelines for authorization procedures with a clear attribution of responsibilities. As the case law of the Court of Justice states, authorisation procedures must be based on objective, non-discriminatory criteria which are known in advance to the undertakings concerned, in such a way as to

[52] Analysing the impact of renewable electricity support schemes on power prices: The case of wind electricity in Spain (2008), Energy Policy Volume 36, Issue 9

[53] Repealed by Directive 2009/28/EC

circumscribe the exercise of the national authorities' discretion, so that it is not used arbitrarily.
- Pre-planning mechanisms in which regions and municipalities are required to assign locations for the different renewable energies.
- Lighter procedures for small projects.
- Guidance on the relationship with European environmental legislation.

In most Member States, little progress has been made to date. The effectiveness of support schemes are affected by the existence of administrative barriers. Member States should therefore continue to implement measures to reduce these barriers.

8.5.6 Benchmarks/indicators to determine where instrument might be used

It is especially relevant to use this instrument in situations where incentives for producing renewable energies are comparatively low and where existing energy infrastructure needs up scaling and upgrading (i.e. where the potential for improvement is greater). In addition, in order to maximize the cost-effectiveness of funds, investments should be targeted in priority to the most performing energies even if these seem to appear less mature than others in terms of market penetration.

8.5.7 Initial thoughts on implications for the design of the Operational Programme

The above discussion suggests that Feed-in-Tariffs could be applied to all OPs that fund the expenditure categories that focus on renewable energies and energy efficiency, i.e. categories 39 to 43. Feed-in-Tariffs could be applied in this way across all Member States and regions.
Feed-in-tariffs are a cost-effective tool to increase the production of energy from renewable sources. Its increased use throughout member states would reduce the need for cohesion policy funding and/or increase the effectiveness of funding (e.g. cohesion policy funding being directed to investment in the construction of new energy infrastructure or adaption of existing infrastructure, combined with appropriate FITs to ensure that potential increase in energy demand is met by renewable energies and not CO2 emitting fossil ones).

8.6 Assessment of standards for the thermal insulation of buildings

The adoption of standards for thermal insulation of buildings have a significant impact on the life-cycle energy performance of a building. Given the fact that energy consumption in buildings represents approximately one third of the EU total energy consumption, there is a large potential for savings through the use of thermal insulation. Space heating is responsible for the largest amount of energy consumption from buildings. The demand for cooling is still relatively small, but growing rapidly. The regulations can have a significant role in reaching the EU objectives for energy savings in 2020 and in achieving security in energy supply.

Standards on thermal insulation are considered a particularly important tool for reducing the energy use in buildings. This is due to the fact that other architectural measures, such as the building orientation, may often be restricted since they are subject to several constraints (e.g. the existing urban environment). Improved thermal insulation can be put into place relatively easily both on new and existing buildings.

8.6.1 Regulatory basis/ current institutional framework

In 2002, the Directive on the Energy Performance of Buildings (EPBD) was adopted, setting minimum standards for the Member States on the energy performance of new- and existing

buildings subject to a major renovation. The Directive is based on a common calculation methodology which focuses on several aspects of energy efficiency and not solely the efficiency of building's insulation. Not all types of buildings are concerned. Residential and commercial buildings are included, while others are excluded (e.g. the industrial sector). The minimum standards are specified individually by the Member States. Thermal insulation is considered in conjunction with aspects such as heating and air-conditioning installations, application of renewable energy sources and several other design and architectural aspects of the building (e.g. building orientation). The transposition of this directive –which came into effect on 2006 - requires the Member States to establish a scheme by which energy certificates will be issued by accredited bodies that will describe the energy- performance of individual buildings for certification. The EPBD also had a great effect in enhancing energy efficiency by forcing Member States without national standards on energy performance to introduce such standards.

The EPBD provides a general framework to the Member States on how energy efficiency should be controlled in the building sector including the installation of thermal insulation. In this context thermal insulation standards and regulations can be considered as a flexible instrument, which leaves significant autonomy to Member States to develop (or adopt) their own norms or standards.

8.6.2 Current deployment in the EU and trends in deployment

In the EU, technical aspects of the building sector (including thermal insulation) are strongly regulated. Apart from the fact that there are several health and safety aspects involved, the number of technologies with a large energy-saving potential is limited. The individual regulations and standards for the building sector which are applied in each Member State vary and they are influenced not only by the socio-economic situation in each state but also by the climatic conditions. In Finland for example, due to the relatively cold climate there is a longstanding regulation framework on thermal insulation. Overall, the standards on thermal insulation, have become progressively stricter, as specific issues related to energy efficiency started to become more apparent (e.g. climate change, security of energy supply etc). In parallel, the EU legislation has become more demanding (e.g. by the adoption of the EPBD). This is reflected in the Member State standards. Table 4 shows that the insulation standards in 4 categories in Finland have progressively become stricter over time.

Table 4. Transmission coefficient U (W/m2 K) according to the different versions of the Finnish Thermal Insulation Ordinance[54]

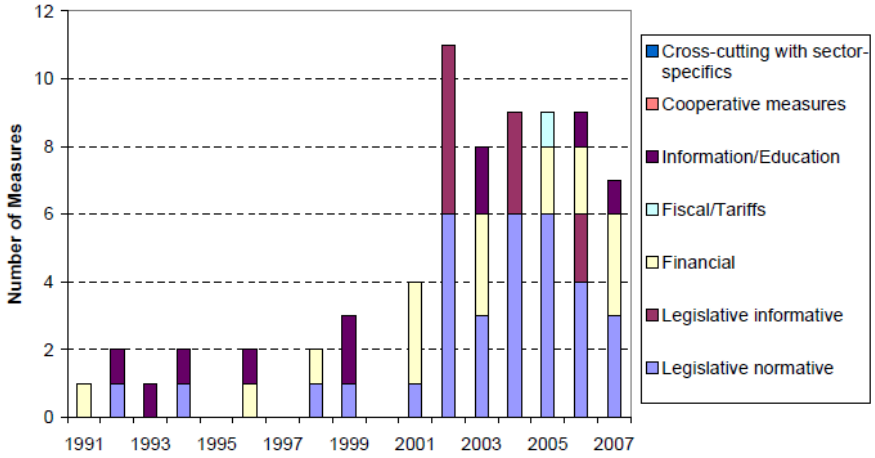
	Outer wall	**Ceiling, roof**	**Base floor (with/without "crawling space")**	**Window (normal/display)**
1976	0.9/0.7/0.4	0.35	0.4	2.1/3.1
1978	0.35/0.29	0.29/0.23	0.23/0.4	2.1/3.1
1985	0.28	0.22	0.22/0.36	2.1/3.1
2003	0.25	0.16	0.25	1.4/2.1
2008	0.24	0.15	0.19/0.24	1.4
2010	0.17 (an exception for log walls 0.40)	0.09	0.17/0.16	1.0

Figure 7 represents the evolution of the different types of measures for residential buildings in the new Member States for the period 1991-2007. Interestingly, the figure illustrates that

[54] ISIS – MURE II Database, Finish Thermal Insulation Ordinance

building regulations which have been developed to implement the EPBD and the associated building certificates (the legislative-normative measures) constitute a large share of the total measures taken in the new Member States. The same applies for the informational measures and subsidies. Therefore, an important progress has been achieved by the deployment of this instrument over the past few years and especially following the adoption of the EPBD. In Lithuania for example the applied standards are 4 to 5 times stricter than in the 1980s.

Figure 7. Dynamics of Measure types in the residential sector (NMCs)[55]



It is also important to point out that in several countries there are well established market conditions which foster the development of the thermal insulation sector. Within these markets the construction sector has adopted labelling or certification schemes carried out by quality assurance bodies (e.g. ISO, DGNB, PassivHaus in Germany, BBC or HQE in France, BREEAM in the UK, etc.). The accreditation of these labels are generally carried out on a voluntary basis, although in some cases they are required (e.g. in publicly owned buildings).

8.6.3 Type/scale of investment that might be influenced

As in the case of the FIT, the investments schemes in energy efficiency and renewable energy need to take into account the Member State norms and standards for the building sector. Technological changes also need to be considered in decisions on investments under the Cohesion Policy. Technological improvements of thermal insulation can improve insulation efficiency and cost-effectiveness in buildings. This allows Member States to apply stricter standards in order to achieve their goals in energy efficiency, also affecting positively the market conditions for thermal insulation.

Consequently as in the case of FIT, the Cohesion Policy funding mechanism needs to carefully take into account the technological and market aspects. In this context, unnecessary funding can lead to a crowding-out of private investment. This mostly applies in Member States and regions where regulations are well established and the market conditions in the insulation sector are highly profitable. On the other hand in Member States with poor market conditions and a low energy efficiency in buildings (mostly in new Member States), Cohesion Policy funding can provide a positive boost. This could be achieved by directly funding projects in the area of thermal insulation of public buildings and publicly owned

[55] ADEME (2007), Evaluation and Monitoring of Energy Efficiency in the New EU Member Countries and the EU-25

residential buildings or indirectly by investing in research and training in relation to new construction materials and energy efficiency technologies, for example. A spill-over effect of this type of instrument could be the provision of stricter standards on thermal insulation as these would be easier to meet. Reversely, stricter standards can act as a driver towards technological development. However, on the short to medium term this would considerably increase the construction costs. Public investment could have an important role in mitigating this effect. This issue is further discussed in the following section.

8.6.4 Impacts from the use of the instrument

The application of standards on the thermal insulation of buildings can have great environmental benefits, at least in terms of energy savings potential. For example due to the related legislation in Germany, the thickness of the thermal insulation increased from 5 cm to 20 cm, between 1975 and 2001. This led to a decrease in the average annual residential energy consumption from 300 kWh/m^2 to 50 kWh/m^2. Consequently, thermal insulation has a direct effect also in reducing the consumption of fossil fuels and the GHG emissions.

However, there are several issues regarding the potential environmental and health impacts that occur not only during the production phase of the thermal insulation materials but also during the construction and use of buildings. The severity of these side-effects are partly related to the chemical components of the thermal insulation. For example thermal insulation is potentially a major source of Volatile Organic Compounds (VOC). This might have considerable long-term effects on the indoor air quality leading to severe impacts on human health.

The installation of thermal insulation is expected to have positive economic effects which arise from reduced energy consumption. However, these economic benefits are expected to occur in the long term. The exact period of time and the exact extent of the economic benefits are subject to several factors, such as the cost and efficiency of the applied insulation, the energy prices etc. The standards might have several spill-over effects as they support the creation of new employment opportunities, not only in the construction sector but also in related, new areas (e.g. energy inspectors, certification bodies etc.). In the short term the application of the instrument can have potentially negative economic effects, as it may considerably increase the construction cost of buildings.

Consequently the adoption of stricter standards might not be socially accepted, especially when it concerns the residential sector. Individuals tend to take decisions with a short-term perspective in comparison to businesses that assess their investments in a longer-term. In the commercial and industrial sectors the benefits are expected to be higher due to several factors such as the larger-scale (and therefore larger energy saving potential) or the substitution (partial or full) of mechanical cooling with thermal insulation to assure that required temperatures are maintained etc. Similarly, the investment cost is also higher when buildings are renovated (e.g. when mechanical cooling has already been installed). This cost can be covered by public funds and incentives. If no such supporting schemes are available, it is most likely that this cost will be passed on to the consumers through higher market prices. Alternatively, a company might cover this cost by alternative means, such as capitalising its reputation through green marketing.

8.6.5 Barriers, both the nature of these and how they might be overcome

As it has been pointed out above, the standards on thermal insulation and the level of these standards can be subject to an opposition from the construction sector and households, due to the increased costs on the short to medium-term. This is particularly important in a period of economic and budgetary crisis, when the planned investments are examined and evaluated in the context of a highly uncertain economic environment. To overcome this, additional market based incentives might be needed, such as subsidies or tax reduction. Other measures might involve raising awareness on the overall benefits of thermal insulation. As it will be discussed in section 8.6.7, cohesion policy can play an active role in both of these types of measures.

Another barrier is the uncertainty regarding the actual energy savings generated and the pay-back period of investments in thermal insulation. An improved knowledge of these aspects (i.e. by identifying more accurately the energy savings by type of insulation, climatic conditions etc) would increase the level of certainty on the cost – efficiency. Therefore, funding should be directed to research in appropriate fields, by developing accurate and solid measurement tools and indicators. Investment in the awareness raising of the benefits of thermal insulation to key decision makers is another important factor that needs to be considered.

8.6.6 Benchmarks/indicators to determine where instrument might be used

The potential reduction of energy consumption and GHG emissions is the main driver when determining the most efficient type of thermal insulation. However, other factors need to be considered such as the longevity and life – cycle of the material. The life-cycle of the insulation is particularly important as it defines the amount and type of raw materials used and the overall impacts through several stages of the cycle (e.g. energy consumption at the production stage, impacts during the end of life phase etc). In practice, a life-cycle analysis could determine whether the overall negative impacts of thermal insulation outrange the energy savings during the use phase. In this context, in regions with mild climate (e.g. in the Mediterranean area) thermal insulation might not be as effective as in colder climates. This factor needs to be considered when assessing the cost – effectiveness of investments. There are also numerous other indicators and tools that can be applied to assess the instrument, including:

- Environmental Input / Output Analysis (IOA)
- Checklists for Eco – design, eco-audit
- Market Analysis
- Environmental Performance Evaluation

8.6.7 Initial thoughts on implications for the design of the OP

Based on the above discussions, there are several implications of the standards of thermal insulation for the design of the measures imposed by the OP. To enhance the energy efficiency of buildings which are built or renovated under the funding schemes, OP could impose standard requirements on the applied thermal insulation. In this context standards on thermal insulation could serve as a conditional tool for funding that involves the construction of buildings. Depending on the specificities of each Member State or region these standards can be more demanding than those imposed by national or regional legislation. This is mainly applicable in regions where the energy-saving potential is particularly high. The definition of the appropriate standards can be based on the standards developed by accreditation bodies, such as ISO or other national organisations such as BREEAM. As it has also been highlighted

in the EPBD it is important to focus on public authority buildings and buildings frequently visited by the public as these can act as an example to the benefits of this type technology. Predefined standards can also serve as criteria in Green Public Procurement when the technical specifications of buildings are set. It is important to note that these standards do not need to be applied as conditionality to the OP only for the type of buildings that the EPBD concern by they can be imposed for a wider variety of buildings.

As discussed above, OPs can also have an important role in enhancing research that is needed to better define the energy-saving potential and consequently the cost-effectiveness of the investments in thermal insulation. Similarly, the adoption of measures for the dissemination of the most appropriate technologies and of the benefits of these technologies could be also beneficial on reaching the EU and Member State objectives on energy efficiency.

In some situations, when there is lack of funding or particularly large energy- saving potentials (e.g. in prefabricated residential blocks in Eastern Europe), OPs could directly fund the installation of thermal insulation at a large – scale.

8.7 Concluding Summary

8.7.1 Alternative means of delivering win-wins

As mentioned throughout this report, clean energy and climate change is a field in which alternative means of delivering win-wins is significant. Price-based incentives such as energy/CO_2 taxes and markets, local regulations (risk zoning, etc.), financial instruments (insurance schemes) are likely to deliver win-wins but Cohesion Policy funding and public funding in general is still needed in order to complete these policies (e.g. externalities related to GHG emissions are not fully integrated in actual energy fiscal schemes) and remove remaining externalities, such as knowledge and information based externalities that justify public financing of RD and innovation (through subsidies, for example).

8.7.2 Potential to reduce or avoid crowding out

As mentioned in section 8.3, the potential for crowding out regarding public investments in the field of renewable energies is significant. In order to minimise the risk of crowding out and to optimise the overall effectiveness of the policies, OP have to be designed so as to avoid generating negative interactions with national/regional schemes and regulations regarding renewable energies and especially feed-in-tariffs. This concerns both the scope the investments (what type of energies?) and their level (what amount?), the later depending on MS level market characteristics and forecasts.

However, even if it is clearly possible and beneficial to obtain private financing for investments in renewable energies and climate change mitigation schemes, the use of private money in this way is often controversial and does not always deliver the anticipated results (e.g. private financing of carbon capture and storage facilities). Additionally, the extent to which it is possible to use private finance depends on a range of economic (e.g. market conditions and characteristics), political, legislative, ownership (e.g. energy grid ownership) and attitudinal factors that will be peculiar to different countries.

Regarding adaptation to climate change, the situation is quite different, as no or very little private investors seem to be interested in these interventions, hence a very low potential for crowding out. The question is more about finding ways and designing projects in such a way

that private investors would benefit from a positive return on their investments (see Annex 3 for more details on this).

8.7.3 Use of non-investment instruments to mitigate win-losses

The most prominent win-loss related to Cohesion Policy investments in the field of renewable energies and mitigation strategies and techniques is the funding of potentially low cost-effectiveness and/or high risk technologies such as CCS and nuclear energy. For technologies which require high capital investments and a long life-duration in order to be profitable, the risk of lock-in (path dependency) is significant.

Non-investment instruments to mitigate win-losses could relate to the increase of knowledge and information on the costs and benefits of different technologies, increase the funding to high cost-effectiveness ones and make available this information to the public and the markets in order to ensure that investment decisions are based on relevant information and reduce or limit potential adverse effects. These non-investment schemes could take the form of subsidies (to help finance research projects, for example), information and communication campaigns, training and raising business awareness, for example.

9 SUSTAINABLE CONSUMPTION AND PRODUCTION

9.1 General information

Sustainable Consumption and Production (SCP) has entered the EU policy agenda fairly recently. It extents upon the earlier concept of Integrated Product Policy (IPP), primarily by giving a greater focus to demand-side factors. SCP has been defined as "a holistic approach to minimising negative environmental impacts from the production-consumption systems in society".[56] It aims to achieve an energy and resource efficient economy in accordance with the definition of sustainable development. This is, according to the Action Plan of the European Commission on SCP and Sustainable Industrial Policy,[57] to be realised through the improvement of the overall environmental performance of products throughout their life-cycle. This should be achieved through boosting the demand for better products and production technologies and helping consumers in making informed choices.

The European Commission's policy on SCP encompasses a range of EU policies from different origins. The building blocks include:

- Integrated Product Policy (IPP):
- Thematic Strategy on the Sustainable Use of Natural Resources
- Thematic Strategy on Waste Prevention and Recycling
- Eco-Management and Audit Scheme (EMAS)
- EU Ecolabel Scheme
- Environnemental Technologies Action Plan (ETAP)
- Green Public Procurement (GPP)
- Eco-design of Energy-related Products Directive (EuP)
- European Compliance Assistance Programme - Environment & SMEs

The Action Plan consists of three parts: stimulating smarter consumption and environmentally friendly products, leaning production, and creating a global market for activities for sustainable products.

In order to support smarter consumption the following activities are envisaged:

- **Extension of EuP-Directive:** The EuP Directive (European Commission 2005a), which establishes a framework for setting eco-design requirements for all energy using products (e.g. computers, televisions, water heaters) should be extended to cover all energy-related products, except for transportation. The Action Plans considers energy related products to be "(…) those products that have an impact on energy consumption during use (European Commission 2008d: 4).[58] Two complementary measures have been announced, namely obligatory minimum requirements and voluntary advanced benchmarks.
- **Labelling of products:** The different labelling approaches of the Commission should be strengthened by an extension of the mandatory energy label to a wider range of

[56] Norwegian Ministry of Environment (1994)

[57] European Commission (2008): Action Plan of the European Commission on SCP and Sustainable Industrial Policy

[58] The Action Plan gives some examples such as window frames and water using devices.

products. This should include those belonging to an updated EuP-Directive, and by improving the performance of the voluntary European eco-label by developing it as a "label of excellence".

- **Incentives:** The Commission intends to establish a more harmonised basis of incentives, but restricts this approach to green public procurement (GPP) and state aid. For GPP, a linkage to the energy labelling is envisaged by identifying a labelling category as a reference level below which public authorities are not allowed to procure products. The same level should be used for state aid for Members States; below which incentives are not allowed to be set. In addition, it is announced that the Commission will examine options for revising the European energy taxation and other European fiscal incentives.
- **Other measures:**
    - Supplementary to the measures described above, a consistent data base and reliable methods should be prepared to assess the environmental features of products, their market dissemination and to monitor the temporal development.
    - GPP is supported by measures at European level, including guidelines provided in a communication from the Commission 2008, indicative targets and tender specifications for public procurers, common criteria for product categories not falling under the EuP Directive and indicators for monitoring of GPP[59].
    - Work with retailers and consumers: The Commission has launched a retail forum to initiate a greening of retailers[60]. Besides that, the Action Plans refers to the EU consumer policy strategy and its goal to empower consumers.

The second part of the Action Plan focuses on leaning production and aims to extend, amplify and accelerate the initiatives taken in the area of smarter consumption. Leaner production means boosting resource efficiency, supporting eco-innovation and enhancing the environmental potential of industry.

Alongside the European Action Plan on SCP, numerous European Member States have implemented their own policies for greening production and consumption (e.g., Szlezak et al., 2008).

9.2 Promoting Sustainable Consumption and Production through Cohesion Policy

The different policies under the umbrella of the EU Sustainable Consumption and Production policy encompass a broad range of voluntary and mandatory measures. In particular, the uptake and implementation of voluntary measures such as the EU Ecolabel Scheme or EMAS could be fostered through Cohesion Policy provisions such as conditionality requirements for grants or Cohesion Policy investment measures, like capacity building measures in SMEs or investments in eco-innovation development projects. Fostering the implementation of the EU SCP policy would have a considerably positive impact on all the thematic domains 'Clean Energy and Climate Change', 'Sustainable Transport' and 'Conservation and Management of Natural Resources'. Cohesion Policy investment measures would be an efficient instrument to boost the implementation of the EU SCP policy integrating core aspects of sustainable development into the Cohesion Policy.

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59 European Commission (2008): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee or the Regions. COM(2008) 400 final. Brussels 16.07.2008

60 http://ec.europa.eu/environment/industry/retail/index_en.htm, accessed June 2, 2010

9.3 Delivering win-wins through non-investment policy instruments

In this study SCP is comprehended in itself as non-investment policy instruments, which are supposed to deliver or enhance win-wins in the context of Cohesion Policy investments. Thus, this section does not apply to the discussion of the theme SCP in a Cohesion Policy context.

9.4 Summary of findings with respect to crowding out

It can be argued that a potential short-term crowding-out of private investments may exist in regard to investments to promote the uptake or implementation of Ecolabel, EMAS, etc., as private firms could have an incentive to invest in these measures. Currently, approximately 76% of registered EMAS organisations belong to the private sector, [61] indicating there is a significant incentive for private investment in the scheme. However, figures show that the uptake of EMAS and Ecolabel has been very low in new member states, indicating that there has not been significant private investment in the uptake of the EMAS scheme there. In Malta, Lithuania and Bulgaria, for example, there are no registered organisations with EMAS.[62] However, a modest ISO 14001 certification can be noted in these Member States but the available data does not reveal if registered organisations are public or private.[63]

Similarly, the statistics for the Ecolabel uptake are also low for new member states.[64] It can be argued therefore, that financing EMAS and Ecolabel uptake through cohesion policy, particularly in new member states, would not result in the "crowding out" of private sector investment.

In relation to GPP, a report by the OECD in 2003[65] warns of the potential problem of crowding out green consumption in the private sector. If the public sector introduces GPP, yet suppliers are not quick enough to meet the new demand, the private sector, who might have previously bought green, will be forced to purchase the non-green option. However, as long as GPP is introduced gradually, with warnings to suppliers, this will not be a problem.[66]

9.5 Summary of possible instruments that can reduce or remove win-losses:

The three instruments GPP, Ecolabel and EMAS all offer potential win-wins and a way to reduce win losses. Each of these will be examined in turn, followed by a conclusion on their potential together as a "policy Troika".

The EMAS scheme promotes cleaner production through environmental management standards. Through implementing the scheme, organisations can reduce their costs, improve their image and in this way enhance their competitiveness. The environmental win is the reduction in the use of natural resources, energy and waste.

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[61] Milieu et *al.*, (2009) Study on the Costs and Benefits of EMAS to Registered Organisations, p. iv.

[62] Correct as of 30 June 2010 http://ec.europa.eu/environment/emas/pictures/Stats/2010-04_EMAS_Quarterly_Graph.jpg; http://ec.europa.eu/environment/ecolabel/about_ecolabel/facts_and_figures_en.htm

[63] http://www.nagus.din.de/sixcms_upload/media/2612/survey2007.pdf

[64] http://ec.europa.eu/environment/ecolabel/about_ecolabel/facts_and_figures_en.htm

[65] OECD, (2003), The Environmental Performance of Public Procurement: Issues of Policy Coherence

[66] Commission Staff Working Document (2007), Options to improve the Uptake of Green public procurement in the EU: Impact Assessment

A similar instrument is the EU Ecolabel which is given to products that reduces the long term production costs and the life cycle costs of products. Environmentally, the products will reduce the impact on the use of natural resources. At the same time the Ecolabel is also an instrument to promote environmentally friendly products, which gives them a potential market advantage. In this way, the instrument offers a win-win for both the environment and the economy.

The third instrument, GPP, will contribute significantly to reducing the environmental impact of production and consumption. Public authorities constitute a large proportion of procurement across the EU, spending two trillion Euros annually. By requiring products to meet certain environmental standards, an incentive to develop more environmental friendly products is created. In certain areas, such as health, education and public transport, public bodies are the major procurers of these goods and services. Thus, the application of GPP will have a major impact on greening these industries and promoting the development of new environmentally friendly technologies and innovations.

All three of the aforementioned instruments can operate independently, however, if they were to be applied together, there would be a real potential for optimising the win-wins. GPP requires products to meet certain standards, and EMAS and Ecolabel are instruments that assist organisations to meet specified environmental management or product standards. The latter instruments are voluntary, and face barriers in creating a sufficient incentive for organisations to register with the scheme (see discussion below). Introducing GPP will create an incentive to join EMAS and Ecolabel. It would raise awareness of the schemes and provide an economic incentive to register. Moreover, organisations that register would enjoy long term cost savings from energy and waste reduction. An integrated implementation of these three instruments will also create a greater demand for new environmental technologies and eco innovations, boosting the EU green economy. At the same time, production and consumption will become more sustainable and overall, quality of life will be improved.

9.6 Assessment of applying Green Public Procurement

9.6.1 Current deployment in the EU, and trends in deployment, eg is its use likely to increase or decrease

GPP is gaining greater importance in the EU. In the renewed Sustainable Development Strategy from 2006, leaders of the EU Member States defined a target for the level of GPP in Member States. Furthermore, as part of the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan, the Commission pledged to further strengthen GPP in the Member States. In order to achieve this, in 2008 the Commission published the communication Public Procurement for a Better Environment (COM (2008) 400), providing guidance to public authorities and institutions "on how to reduce the environmental impact caused by public sector consumption and to use GPP to stimulate innovation in environmental technologies, products and services"[67]. Furthermore, the Commission is taking measures at the European level to promote GPP. This includes, for example, working on the harmonisation of environmental criteria for products and services in order to reduce the administrative burden for economic operators and for public

[67] European Commission (2008): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee or the Regions. COM(2008) 400 final. Brussels 16.07.2008

administrations implementing GPP.[68] Moreover, existing EU regulation also defines relevant environmental criteria. These are the EU Ecolabel regulation, the Energy Star Regulation as well as the Ecodesign Directive for energy-using products. Furthermore, the recently passed Directive on the promotion of clean and energy-efficient road transport vehicles[69] sets out requirements for public authorities when procuring public transport "to take into account the impact of these vehicles during their operational lifetime in terms of energy consumption, CO_2 emissions and other pollutant emissions".[70] The Directive on the promotion of the use of energy from renewable sources[71] is also indirectly relevant. It provides an incentive for public authorities to use public procurement to comply with the requirement, that the share of energy from renewable sources in the transport sector is at least 10 % of final energy consumption in the sector by 2020.[72]

At the national and regional level, primarily in the EU-15[73], there is a clear positive trend in the take-up of GPP. In addition, considering the emphasis on and commitment to GPP at the European level, this is likely to result in GPP receiving greater attention at the Member State level, resulting in the instrument being very relevant for Cohesion Policy in the future.

9.6.2 Type/scale of investment that might be influenced

Integration of environmental criteria in the purchasing process of projects under Cohesion Policy programmes has no decisive implications for the type or scale of investments under Cohesion Policy.

9.6.3 Regulatory basis/current instructional framework

The Council conclusions of 22nd September 2008 call on "Member States to make full use of the potential of GPP in…EU cohesion policy". In terms of integrating GPP into Cohesion Policy, there are a number of regulatory points to consider.

An important aspect when implementing Green Public Procurement (GPP) schemes through Cohesion Policy is to ensure that the schemes are in line with EU public procurement legislation, and the principles of non-discrimination and equal treatment. This means that all bidders must be treated in the same way, with comparable, measurable standards. The technical specifications used for eco-labelling and the EMAS scheme can be included in to GPP as a way to set the technical requirements of the scheme. In this way, local authorities, for example, can procure goods from companies that have signed up to EMAS or a similar scheme, or procure products meeting the standards of EU Ecolabels. This was the case, for example, in Spain where a number of city councils introduced the requirement to have registered with EMAS or something equivalent as in order to bid for a GPP tender.[74]

However, bidders cannot be required to register with a specific Eco-label or environmental management scheme as a form of compliance. It is important that the bidder has the option to

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[68] Ibid

[69] EC(2009) 33, published on 23 April 2009

[70] EC(2009) 33 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:120:0005:0012:EN:PDF

[71] EC(2009) 28, published on 23 April 2009

[72] EC(2009) 28

[73] Cutting-edge countries are: Austria, Denmark, Finland, Germany, Netherlands and United Kingdom (PricewaterhouseCooper 2009: 5)

[74] See, Ecoprocura (2006), Best Practices in Green Public Procurement: Local Experience, Barcelona 20-22 September 2006, pp. 15.

prove that the environmental specifications have been met in an equivalent way. The bidder must also have the technical capacity to monitor the environmental credibility. The challenge here, when implementing GPP through Cohesion Policy, is to ensure that there is appropriate legal guidance on how to include environmental considerations into GPP, and for bidders on how to meet the GPP conditions[75]. The European Commission has published guidelines on the definition and verification of environmental criteria, tools for stimulating GPP and examples for a number of product groups, as well as legal and operational guidance[76]. However, there may be a need for country specific guidance alongside awareness raising and capacity building within Member States. This is where Cohesion Policy could play a role. This could include, for example, funding under the priority axis 'technical assistance' in Member State Operational Programmes to be allocated to capacity building and institutional development to support the adoption of GPP in public (and semi-public) organisations.

Another aspect is that a number of Member States have implemented GPP schemes, with slightly different approaches and requirements. It could be useful to have a harmonised approach to GPP across the EU. This is important, for example, for SME's operating in several Member States who have a lesser capacity to meet varying conditions across different GPP schemes.

9.6.4 Benchmarks/indicators to determine where instrument might be used

GPP, EMAS and the EU Ecolabel are relevant for all sectors and regions across the Member States.

9.6.5 Impacts from the use of the instrument

Impacts

Public procurement is worth about 16% of EU-GDP[77] and consequently makes up a substantial share of all consumption in the European economy. As a result, GPP is a potential driver for the promotion of a more sustainable development. A rise in demand for innovative and sustainable solutions could transform the market and make it more likely that green products more readily available and more affordable, for both citizens and the business sector. Furthermore, this will also provide incentives for companies to develop environmental technologies[78].

The EU-renewed sustainable development strategy stated that by 2010 the EU-average level of GPP should equal the performance of the "greenest" Member States at this date (Council of the EU 2006: 12). The European Commission called upon its Member States to develop

[75] In Spain, for example, a hurdle faced in implementing GPP schemes at the local level was the lack of knowledge about the legal requirements for greening procurement. See, Ecoprocura (2006), Best Practices in Green Public Procurement: Local Experience, Barcelona 20-22 September 2006.

[76] See Communication (COM (2008) 400) "Public procurement for a better environment" and 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, and Directive 2004/18/EC 18 of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts.

[77] European Commission (2008): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee or the Regions. COM(2008) 400 final. Brussels 16.07.2008

[78] Ibid.

national action plans for GPP, to establish objectives and benchmarks and to offer their purchasing administrations the necessary know-how[79].

The integration of Green Public Procurement into Cohesion Policy measures offers a win-win. Firstly, the requirement for public and semi-public institutions to apply GPP standards and targets as a condition of spending the Cohesion Policy grants (e.g. by the renovation of public facilities) will have a positive outcome on the environmental performance of Cohesion Policy measures. Secondly, Cohesion Policy investment measures to establish institutional infrastructure for coordinated public procurement and capacity building will have a positive outcome on the implementation of GPP by regional and local public institutions.

Either way, this will "shape production and consumption trends and […] will create or enlarge markets for environmentally friendly products and services. By doing so, it will also provide incentives for companies to develop environmental technologies"[80]. This will have a particularly positive impact on the environmental domains 'Climate and Sustainable Energy' and 'Conservation and Management of Natural Resources' (e.g. uptake of energy and resource efficient products and buildings and increased recycling and reuse), whereas the expected short-term impact in the domain transport is less significant. However, GPP could very well have a considerable medium to long-term impact as an important driver for the development and diffusion of e-mobility.

Another driver for the promotion of GPP is the use of life-cycle costs calculations (or Life-Cycle Costing (LCC)). A study from 2008 reveals, that in the best performing Member States, the average financial impact of GPP from LCC perspective was -1%[81]. i.e. the application of environmental performance standards like energy efficiency standards led to an overall 1% cost reduction when including all associated costs for the consumer.

Hence, from a Cohesion Policy perspective, GPP is likely to both reduce (life-cycle) costs, to mitigate environmental impacts of Cohesion Policy investments as well as to promote the development and diffusion of environmental friendly technologies and products.

Moreover, especially for new Member States, Cohesion Policy assistance for institutional and capacity development regarding (green) public procurement could potentially lead to short-term cost reductions too. The establishment of appropriate institutional infrastructure and coordination (for example, the establishment of agencies facilitating co-operative public procurement) considerably reduces transaction costs (for example through a pool of expertise, including expertise on applying environmental standards and the use of GPP as an instrument for promoting eco-innovations and environmental technologies) and would help exploit economy of scale potentials of public procurement. Conceptualising GPP in the context of Cohesion Policy not only as the application of environmental standards but also as an

[79] So far, 12 Member States have prepared national action plans, seven are preparing drafts, and two integrated GPP into the national sustainability strategies. Other Member States (e.g. Germany, Luxembourg) appear to have no intention to elaborate such documents, but instead concentrate on specific activities considered as being the most urgent. See the overview http://ec.europa.eu/environment/gpp/pdf/national_gpp_strategies_en.pdf (accessed June 1, 2010).

[80] European Commission (2008): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee or the Regions. COM(2008) 400 final. Brussels 16.07.2008

[81] PricewaterhouseCooper (2009): 69

institutional an capacity issue, which should Cohesion Policy be addressed by Cohesion Policy interventions, can furthermore lead short-term cost reductions to green – as well as conventional – public procurement.

Knock-on effects

GPP is already acknowledged as an important demand-side driver for the promotion of environmental technology development and eco-innovations. This is due to, on the one hand, the sheer volume of public procurement, and on the other hand, the potential of a coordinated demand for better products. In fact there is reciprocal influence between environment-friendly technology development and GPP: the technological development and eco-innovations by the industry allows public bodies continuously to demand more environment-friendly products and services and the demand of public bodies for green products guaranties a market and stimulates industries to invest and develop environmental technologies[82]. GPP could be combined with other Cohesion Policy action such as the promotion of the uptake of ecolabels or EMS, as well as funding for R&D in environment-friendly technology and the development of eco-innovations. This would create synergy-effects based on the coordination of demand- and supply-side drivers for environment-friendly technology and eco-innovations.

The coordination of public procurement (joint procurement) can potentially have significant economy of scale effects leading to short-term and long-term cost savings for public institutions.

9.6.6 Initial thoughts on implications for the design of the Operational Programme

GPP capacity building and guidance through Cohesion Policy

Analysis of the barriers to implementing GPP in Section 9.6.7 indicates that better, Member State specific, guidance and capacity building could help to overcome this. Cohesion Policy could contribute by providing funding under the priority axis 'technical assistance' in Member State Operational Programmes to be allocated to capacity building and institutional development to support the adoption of GPP in public (and semi-public) organisations

Introducing GPP as a condition of CP funding (and implicitly, Ecolabel & EMAS)

Another way in which GPP can be integrated into the OP is to require organisations to apply GPP in order to receive funding under the ERDF programme(s), or as a complementary measure. For example, public bodies would have to have a scheme in place which, when appropriate, integrates environmental criteria into all stages of their procurement process. This would create a clear incentive for GPP and target local authorities who are the main beneficiaries of structural funds.

In order to integrate GPP into Cohesion Policy funding in this way, the National Managing Authorities in each Member States would have to be trained into order to facilitate this and in turn provide training and guidance to local authorities to introduce GPP.

For Member States without an already existing programme for GPP at national, regional or local level, will incur additional costs as appropriate organisational infrastructure, personal

[82] Bouwer, M. *et al* 2005: 17

capacity, etc. may not be in place. This could disadvantage applicants in these Member States. Therefore, the OP's should be designed to enable funding (eventually under the priority axis technical assistance) to support public bodies that are lacking the necessary preconditions for implementing GPP. Compared to the barriers (below) to GPP, Cohesion Policy programmes could support administrative measures (for example. dissemination of information, practical training, the development and dissemination of tools for GPP) as well as the creation of a supporting organisation and institutional infrastructure.

It will most likely be necessary to add new provisions to the EU regulations of the relevant funds if Cohesion Policy investment measures should be applied to foster the implementation of GPP in regional and local public and semi-public institutions.

Harmonisation of GPP, ensuring market access for SME's

Another aspect is that a number of Member States have implemented GPP schemes with slightly different approaches and requirements. It could be useful to have a harmonised approach to GPP across the EU, particularly as more Member States introduce GPP. Harmonisation is especially important, for example, for SME's operating in several Member States who have a lesser capacity to meet varying conditions across different GPP schemes. The European Commission could provide guidance on the OP's and GPP to ensure that GPP is harmonised across the EU.

9.6.7 Barriers, both the nature of these and how they might be overcome

There are a number of barriers to implementing GPP. The most common barrier among local authorities is the perception that introducing GPP would be very expensive[83]. Although the best performing Member States have experienced long term savings from GPP from a Life Cycle Costing (LCC) perspective, due to the upfront costs of products there is still perception that green purchasing is more expensive. This can be overcome by training procurement officers in local authorities to consider the LCC as well as the upfront costs of products and raising awareness about the benefits of GPP. It may be valuable, also, to provide training to the suppliers in order to holistically promote a change in mindset on environmental issues[84].

A second barrier is the lack of knowledge and expertise on how to integrate environmental standards as criteria into tenders, which results in lack of detail or clarity of tender criteria. Bouwer *et al*, in their study on GPP in the EU-25, found that while about two thirds of respondents to the study questionnaire thought they were integrating environmental criteria into procurement, in reality just over one third of all analysed tender documents of all 25 Member States contained environmental criteria, which would ensure an actual environmental positive outcome (Bouwer et al 2006: 10). This means, that a significant amount of "green" tenders are in fact ineffective from an environmental perspective. Furthermore, there is also a lack of understanding on how to comply with EU legislation and implement GPP, in particular regarding EU competition law.

Another barrier has been securing managerial support, both in terms of time and money, for GPP. Without an organisational policy on GPP, it is difficult to implement. This indicates that greater importance should be given to GPP at the national level.

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[83] Bouwer, M. *et al* (2006): 12

[84] H. Walker *et al.*, "Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors", (2008) Journal of Purchasing and Supply Management, pp. 69-85, p. 82

Two further barriers cited by local authorities were the lack of practical tools, handbooks and internet resources to assist them, and the lack of training for public procurement officers,

Finally, it is worth noting that some SME's might be disadvantaged by GPP as they may not have the capacity to meet the green requirements. For example, they may not have capital to invest in the new production methods to green their products[85]. This could be overcome by using CP funds to assist SME's satisfy the environmental requirements.

Overall, the barriers to GPP can be overcome by greater awareness raising, training and guidance on how to implement the scheme and comply with legislation. The Commission has already published guidance documents, a training toolkit and has established a GPP helpdesk. However, there may be a need for guidance and training that is Member State specific.

9.7 Assessment of the application of the EU Environmental Management and Audit Scheme (EMAS)

9.7.1 Current deployment in the EU, and trends in deployment

The EU Eco-Management and Audit Scheme (EMAS) is a voluntary management tool consisting of a number of standardised procedures and measures established with the purpose of providing tools to evaluate, manage and ensure continuous improvements in environmental performance by companies and private and public organisations. The scheme has been available for participation by companies since 1995[86] and was originally restricted to companies in industrial sectors. Since 2001 EMAS has been open to all economic sectors including public and private services[87].

In 2009, the scheme regulation was revised through the passing of the new EMAS III regulation (EC(2009) 1221, published on 22 December 2009).

In order to join the EMAS scheme, an organisation must comply with six steps.[88] First, organisations should adopt an environmental policy detailing the company's overall aims and commitments to comply with environmental legislation and to improve their performance. Next, the organisation should conduct an environmental review of the environmental impact of the organisation's activities. The third step is to then create an environmental management system that addresses these impacts. It sets out the responsibilities, training and actions to achieve the reduction of environmental impacts. In the fourth stage, an environmental audit is carried out to assess the management scheme. Next, the organisation should make a statement of environmental performance detailing the extent to which the environmental objectives have been met and the future actions to be taken to improve performance. Lastly, the EMAS Competent Body reviews all of the aforementioned documents, and if they are approved then the organisation has the right to use the EMAS logo.

[85] Ibid., p. 80

[86] Council Regulation (EEC) No 1836/93 of 29 June 1993

[87] Regulation (EC) No 761/2001 of the European Parliament and of the Council of 19 March 2001

[88] EC Regulation No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

9.7.2 Type/scale of investment that might be influenced

The possibility for financial assistance to SMEs for registration under EMAS is already provided by the current Cohesion Policy regulation and some programmes already exist in Member States (for example in Malta). If EMAS is made a conditionality requirement for Cohesion Policy funding by companies the scope of Cohesion Policy investments influenced by this requirement potential include all kind of interventions targeted at SMEs.

9.7.3 Regulatory basis/current instructional framework

The EMAS scheme is a thorough process, however for some organisations, particularly SME's, the conditions are quite onerous and expensive. There are some special provisions for SME's. Renewal of EMAS registration is easier for smaller organisations, for example[89], and the verification and validation takes into account the specific characteristics of small organisations. There are also reduced participation fees. However, there are still difficulties getting SME's to register with the scheme. This raises the question of how EU cohesion policy could contribute to creating an incentive for organisations, particularly SMEs, to register with the scheme and how to raise awareness and undertake capacity building.

9.7.4 Benchmarks/indicators to determine where instrument might be used

GPP, EMAS and the EU Ecolabel are relevant for all sectors and regions across the Member States.

9.7.5 Impacts from the use of the instrument

Impacts

The management tool has a broad range of positive economic, social and environmental impacts. Among others, the implementation of the tool includes: contributions to environmental risk management of the organisation, resource savings and lower costs, reduction of financial burdens due to reactive management strategies such as remediation, clean-ups and paying penalties for breach of legislation, financial benefits through better control of operations, incentives to eco-innovate production processes, compliance checking with environmental legislation by EMAS verifier, new business opportunities, added credibility, improved relations with the local community, improved quality of workplaces, employee morale and incentive to team building as well as improved company image[90]. Also, EMAS, as a policy instrument, reduces costs for companies and organisations, who want to implement Environmental management systems (EMS).

There exists a strong causal relation between the implementation of EMAS in companies and organisations and their environmental performance with a significant positive impact especially in the domains 'Climate and Sustainable Energy' and 'Conservation and Management of Natural Resources'. EMAS has an important role to play in stimulating environmental improvement in participating companies and organisations, particularly in relation to facility-related aspects of waste, water and air pollution. The scheme provides a useful tool for improving environmental performance both in the short and long term[91].

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89 Article 7 EC Regulation No 1221/2009

90 http://ec.europa.eu/environment/emas/about/summary_en.htm, accessed June 1, 2010

91 IEFE – Università Bocconi et al 2005: Evaluation of EMAS and Eco-label for their Revision, see http://ec.europa.eu/environment/emas/pdf/eversummary.pdf, accessed June 1, 2010

There is a clear connection between management of GPP and EMAS. Environmental management systems are steadily gaining recognition among public authorities especially at local level in Europe[92]. Here, any comprehensive EMS also covers the organisation's procurement activities. Notable, the EMS not only encompasses procurement activities, also the synergies between the two are relatively clear. Both seek to challenge the way that things have been done so far and attempt to adapt the organisation's approach to optimise the environmental impact. Furthermore, many of the people involved in applying both systems will also be the same[93].

Integrating EMAS into Cohesion Policy would lead to an increase in enterprises and organisations implementing EMAS, hence leading improvements of the environmental performance of companies and private and public organisation supported. Furthermore, evidence shows improved economic and social performance by participating enterprises and organisations.

Knock-on effects

Besides the direct effect of improving the environmental performance of the company's or organisation's processes the uptake of EMAS generates a range of indirect effects. These are:

- A number of EMAS participants adopt a green procurement policy
- 77% of EMAS participants support their suppliers in the adoption of measures and initiatives for environmental improvement
- 72% declare that the environmental management system influences product performance in other phases of its life-cycle and/or in the supply chain[94]
- EMAS activities in companies also to some extent lead to product-related innovative activities[95].

9.7.6 Initial thoughts on implications for the design of the OP

The instrument is already implemented under some Operational Programmes (for example. as co-financing measures to support the uptake of EMAS in SMEs). Such measures are easily implemented as EMAS already exists as a Europe wide established scheme, however, the actual uptake of EMAS depends eventually on the capacity, interest and knowledge of the participating companies or organisations of EMAS. For instant, up to now, very little interest has been given to EMAS in the new Member States. Implementing EMAS into the Cohesion Policy as complementary or conditional instrument (e.g. as conditionality requirements in the Operational Programmes for direct grants to enterprises) combined with the provision of financial support (for SMEs) would inevitably improve the uptake of EMAS especially in the new Member States. This would only have minor implications for the Operational Programmes through changes of investment types regarding direct grants to enterprises.

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92 European Commission, DG Environment (2008): Linking the Comprehensive GPP Management Cycle to Environmental Management Systems, Fact sheet, http://ec.europa.eu/environment/gpp/pdf/toolkit/module1_factsheet_gpp_and_ems.pdf, accessed June 1, 2010

93 Ibid.

94 IEFE – Università Bocconi et al (2005): Evaluation of EMAS and Eco-label for their Revision, see http://ec.europa.eu/environment/emas/pdf/eversummary.pdf, accessed June 1, 2010

95 Hoffmann, Esther et al (2006): Product Innovation Impacts of EMAS: Results of Case Studies and a Survey of German Firms Validated according to the EU Environmental Management and Auditing Scheme, Journal of Sustainable Product design, Vol. 3, Nr. 3-4

EMAS can be implemented in all relevant Operational Programmes in all Member States.

9.7.7 Barriers, both the nature of these and how they might be overcome

A study from 2009 concludes that some of the most important barriers to registration under EMAS are[96]:

- Unclear benefits: Many organisations and competent bodies have experienced a lack of clarity about the concrete benefits of EMAS. Organisations often do not recognise the benefits when these are not clearly quantified into monetary terms and included in a cost benefit analysis. However, providing such an analysis can be very difficult.
- Legislative compliance: In the new Member States, the costs imposed on organisations and competent bodies to comply with new legislation can be a disincentive to join EMAS.
- Costs of implementation: The costs of implementation of the scheme compared to the perceived potential benefits are posing a key barrier to registration. A key problem is the bias in the cost benefit analysis because implementation costs are relatively easy to assess in monetary terms, whereas the monetary benefits are more complex to quantify.
- Lack of awareness: There is a lack of awareness amongst the public and clients about the environmental statement associated with the registration under EMAS. In other words, the registration (costs) does not benefit the organisation in terms of improved image (added value).
- Lack of incentives: For micro and small organisations, a lack of clear financial benefits is an important barrier to registration. For medium and large organisations, however, financial incentives are less relevant.

It would be too early to assess the impact of the revised EMAS III regulation on these challenges for the uptake of the scheme. However, the revised regulation does address the barriers identified above. Thus, environmental core indicators have been identified, with which environmental performance can be thoroughly documented. Moreover, does the revised regulation put emphasis on strengthening EMAS's visibility and outreach and, hence, improve added value of the scheme as a market instrument for registered companies and organisations[97]. However, it is reasonable to assume that the revised regulation alone will be able to overcome the barriers completely. Therefore, in order to overcome these barriers, Cohesion Policy funding could be used for measures to assist micro and small organisations when assessing the costs and benefits of adopting EMAS. Also funds can be given to micro and small organisations (including SMEs) to co-finance costs associated with the registration to EMAS. This type of funding is already available in some Member States and will be analysed in the case study on Malta.
Allocation of funding to the adaptation of GPP could promote the creation of local/regional market incentives, especially SMEs to adopt EMAS. Although still not widespread, among

[96] Ganzleben, C. *et al* (2009): Final Report. Study on the Costs and Benefits of EMAS to Registered Organisations, p. 91ff

[97] Cf. http://ec.europa.eu/environment/emas/about/summary_en.htm

other things, the Commission's policy on the greening of public procurement has led to an increasing recognition in the Member States of EMAS as a criterion for evaluating tenders[98].

9.8 Assessment of the application of Ecolabel

9.8.1 Current deployment in the EU, and trends in deployment

The EU Ecolabel was established in 1992 and is a voluntary scheme that registers products and services meeting specified environmental standards. The schemes objective is to encourage producers to manufacture more environmentally friendly products for public and private consumers. The EU Ecolabel covers groups such as cleaning products, paper, appliances and tourist accommodation. The scheme is always gradually expanding, adding new product groups.

The criteria meeting the ecolabel standard are devised at the European level using a life cycle analysis. To begin with, the uptake of the EU Ecolabel was relatively slow. However, when the scheme was reformed in 2000 and 2009 the assessment and verification procedures were streamlined. Since, the number of products and product groups with the EU Ecolabel flower logo has grown.

9.8.2 Type/scale of investment that might be influenced

The EU Ecolabel is already well established and hence can be implemented easily into Operational Programmes as a Europe wide.. Furthermore, no substantial changes to the type of investment type are needed.

9.8.3 Regulatory basis/current instructional framework

Ecolabels could be integrated into Cohesion Policy by assisting producers and companies selling products to register with the EU Ecolabel scheme, or equivalent. The procedure for applying for the EU label involves a number of stages. In the first stage the applicants must decide on the product group and apply to the Competent Body who will analyse needs and provide technical support. Member States have designated Competent Bodies, independent national bodies that run the Ecolabel scheme. They process the applications, conclude contracts and deal with any queries. In the second stage, the Competent Bodies inform the applicant which test results must be provided and how the testing should be carried out. The testing must be conducted by certified laboratories. In the third stage, the Ecolabel is awarded and the producer has to show that he/she is in continuous compliance. It should be noted, though that the Ecolabel is currently being revised in light of the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan 2008. The proposal includes creating more product groups, simplifying the assessment procedure and focusing on the most significant environmental impact of products[99].

9.8.4 Benchmarks/indicators to determine where instrument might be used

The EU Ecolabel currently covers 26 product groups with more to be added. These are determining in what areas the EU Ecolabel can be used as an instrument under CP. Moreover, national or regional ecolabels may cover additional areas, which may be addressed in the

[98] cf. Ganzleben, C. *et al* (2009): 98

[99] EC Regulaton no. 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel

relevant national or regional OPs. Hence, the EU Ecolabel can be applied for all sectors and all regions across the Member States.

Impacts

The European eco-labelling scheme was established in 1992. It is a voluntary environmental labelling scheme for consumer products, except for food, drinks or pharmaceuticals, and aims at encouraging the production of products of high environmental quality and giving consumers in Europe clear and easy guidance on greener products. Criteria for each product group are developed taking into account the entire life cycle. The scheme covers the whole European market intending to support business in its market dissemination of eco-efficient products and services.

Environmental criteria are being developed for a wide range of everyday products. Requirements are available for 26 product groups (June 2010). The most important product categories according to number of Ecolabel licences are tourist accommodation services, all purpose and sanitary cleaners, textiles products, paints and varnishes[100].

An evaluation has shown that the EU Ecolabel has a positive environmental effect among product producers. The Ecolabel scheme is used by participants as a tool to help improve environmental performance (both in terms of the product and the process) frequently resulting in actually improvements in environmental performance. Furthermore, the EU Ecolabel is also able to induce an improvement in the performance of other companies in the supply chain of the participants (e.g. providers of intermediate goods and services)[101].

Different criteria are formulated for the different product groups, thus the expected environmental impacts vary for each product group. The criteria for tourist accommodation services include: energy consumption, water consumption, waste production, favours the use of renewable resources and of substances which are less hazardous to the environment as well as the promotion of environmental education and communication[102]. Hence, as an example, in this product group, the EU Ecolabel promotes positive environmental impacts in the domain 'Climate and Sustainable Energy' as well as in "Conservation and Management of Natural Resources'. More generally from the perspective of Cohesion Policy, promoting the uptake of the EU Ecolabel by producers through investment measures, – depending on the product group –will likely reduce material and energy demand by companies affected by the Ecolabel. This will not only mitigate the environmental impact of a broad range of products and services but also reduce costs including eventual environmental tax cost savings.

Knock-on effects

A study has identified a number of indirect effects by the EU Ecolabel. These are:

- a strong market-related effect improving environmental performance of competitors, insofar as the EU Eco-label is used also by non-participants as a benchmark.

100 http://ec.europa.eu/environment/ecolabel/about_ecolabel/facts_and_figures_en.htm, accessed June 1, 2010

101 IEFE – Università Bocconi et al (2005): Evaluation of EMAS and Eco-label for their Revision, see http://ec.europa.eu/environment/emas/pdf/eversummary.pdf, accessed June 1, 2010

102 http://www.eco-label.com/detail_category/tourist_accommodation_service.html

- policy-related effects, insofar as the Eco-label is supporting policy making, as a selection criteria in green procurement, in setting industry objectives for environmental improvement, etc.[103]

9.8.5 Initial thoughts on implications for the design of the Operational Programme

Registering under the EU Ecolabel scheme can be more difficult for SME's as they may not have the capacity to meet all the conditions such as product testing. In light of this, the EU Ecolabel scheme offers a reduced registration fee for SME's. Furthermore, Article 12 of EC Regulation no. 66/2010 provides that, "Member States and the Commission shall…agree on a specific action plan to promote the use of the EU Ecolabel…by encouraging the uptake of the scheme, especially for SMEs"[104]. Cohesion policy could play a role in providing capacity building for SMEs through technical assistance.

9.8.6 Barriers, both the nature of these and how they might be overcome

In 2005, the EVER Report (Evaluation of EMAS and Ecolabel for their Revision)[105] found that there were a number of barriers to implementing and continuing with the Ecolabel scheme.

For non-participants in the Ecolabel scheme, the barriers were:

- A lack of competitive rewards and advantages from public institutions (such as through green public procurement), customers, consumers and retailers.
- Lack of knowledge and recognition of the EU Ecolabel by public institutions, customers, retailers, consumers and the public.
- Lack of economic incentive to join the scheme
- Administrative barriers such as providing all the required documents, implementing the requirements in criteria and getting the relevant documents from suppliers.

For existing participants of the EU Ecolabel scheme, the barriers to implementing the scheme were:

- Meeting the degree of formality/documentation required
- Difficulties in getting the documentation from suppliers
- The extra costs of meeting the requirements

Cost is the most significant barrier for potential applications to the Ecolabel scheme, alongside the lack of recognition by public purchasers, private consumers and retailers. The 2009 revision of the EU Ecolabel regulation addresses these issues. Especially regarding SMEs the regulatory revision aims at reducing the costs associated with registration under the scheme. In a comment, UEAPME assesses that "fees should no longer be a major obstacle for SMEs"[106], but points out that other costs "remain for the tests and private consultation to

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[103] IEFE – Università Bocconi et al 2005: Evaluation of EMAS and Eco-label for their Revision, see http://ec.europa.eu/environment/emas/pdf/eversummary.pdf, accessed June 1, 2010

[104] EC Regulaton no. 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel

[105] IEFE *et al*, (2005) EVER Report (Evaluation of EMAS and Ecolabel for their Revision), Report 2: Research Findings.

[106] New regulation lowers annual fees to maximum EUR 1.500 instead of EUR 25.000, EUR 750 for SMEs and EUR 350 for micro-enterprises. Furthermore, application fee shall be no higher that EUR 600 for SMEs and

comply with the scheme can still be a barrier for SMEs."[107] This is true, but should be considered in relation to the added value of the Ecolabel for the company. The new regulation will foster dissemination and growth of the Ecolabel scheme to improve demand and, hence, added value of the label as a market instrument. It is worth noting that promoting the uptake of GPP, e.g. through CP regulation or programmes, would most likely improve the added value of the Ecolabel. Fiscal incentives through CP assistance would further contribute to overcome barriers for SMEs.

EUR 350 for micro-enterprises. In addition, applicants registered under EMAS or certified under ISO 14001 get a 20% reduction in the application fee (EC Regulaton no. 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel).

[107] http://webcache.googleusercontent.com/search?q=cache:s6GxjWe6RTcJ:www.ueapme.com/spip.php%3Frubrique153+eu+ecolabel+reform+2009+barriers&cd=1&hl=de&ct=clnk&gl=de&client=firefox-a (accessed on November 24, 2010)

10 WATER

10.1 General introduction

Good water quality is a key element in ensuring that the development of new and existing Member States (MS) can proceed without adverse environmental, social or economic impacts. A significant proportion of Cohesion and Structural funds have been spent to improve water quality in MS, and similarly there are several pieces of European legislation intended to improve water quality across Europe.

The Water Framework Directive (WFD) 2000/60/EC seeks to improve water quality across the EU, and requires that MS achieve continuous improvements in biological and chemical water quality, with a goal of all water bodies in Europe achieving "good ecological status" by 2015. The Urban Waste Water Treatment Directive (UWWTD) 91/271/EEC, which is central to the objectives of the WFD, seeks to protect the environment from the adverse effects of urban waste water discharges from certain industrial sectors, including domestic waste water. The Directive requires that waste water is collected and processed to specified standards in all agglomerations of over 2000 population equivalents[108,109] and meeting the WFD objective of "good ecological status" by 2015 will require full implementation of the UWWTD. However significant amounts of waste water are still not being treated adequately before discharge into surface waters in the EU-15[110].

The demands of the WFD may be considerably more difficult for new MS (and some older MS, e.g. Greece) to meet and as such a significant proportion of Cohesion funds related to water policy have been spent on improving water treatment and access to clean and safe water supplies in MS. For example, € 9 billion was allocated to the EU-15, and € 5.6 billion for the EU-10 in the period 2000 – 2006. For the new EU-12 Member States, it is estimated that approximately € 35 billion will be needed over the next 10 years to comply with the UWWTD[110]. A summary of planned and allocated Member State water related investment spending from Cohesion and Structural funds is provided in Table 5 and Table 6 (overleaf). In summary they indicate that as a share of total investment, the direct investment in water supply and wastewater treatment is greatest in Romania and Bulgaria, the Baltic States and Spain.

The fact that both Cohesion and Structural fund investments *and* European Directives are seeking to deliver water quality benefits indicates that there may be opportunities for improving the effectiveness of Cohesion Policy investments and potentially reduce the amount of Cohesion Policy funding required by the coordination of funding and regulatory actions. For example, if MS achieve higher levels of compliance with existing Directives, this may help to improve the effectiveness and efficiency of Cohesion Policy investments, through better allocation of support. In addition, under the specific terms of the legislation there may also be opportunities for other instruments to deliver improved water quality and increase effectiveness of investment, e.g. investment in water infrastructure generated by

[108] The organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60 g of oxygen per day

[109] The degree of treatment required by the Directive increases with an increase in the size of agglomeration

[110] EC(2007): Towards sustainable water management in the European Union – First stage in the implementation of the Water Framework Directive 2000/60/EC : COM(2007)128 final, Brussels 22.3.2007, available at: http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0128en01.pdf

market-based instruments such as water pricing. The potential for improving the effectiveness of Cohesion and Structural fund investment using existing regulation and market-based instruments is likely to vary considerably across MS, as many MS may not have the capacity to comply with legislation due to lack of funds, or may not have the institutional capability or political will to introduce such measures. For these reasons it is necessary to determine when non-investment instruments may be applied and how they might function in practice.

Table 5: Allocated Spending (Water vs Overall) by Member State*

MS	Total Water Spending (Allocated) in €m	GRAND Total of Allocated Spending (Across All Categories) in €m	Allocated Water Spending as % of Overall Allocated Spending
AT	6.6	247.2	3
BE	135.3	1,260.9	11
BG	279.9	1,348.9	21
CB	236	1,882.3	13
CY	85.3	258.7	33
CZ	2,098.3	5,615.8	37
DE	1,012	4,919.8	21
DK	0	153	-
EE	600.5	1,779.7	34
ES	3,421.8	10,099.8	34
FI	12.4	505.8	2
FR	181.2	3,501.4	5
GR	970.7	2401	40
HU	2,872.3	11,388.5	25
IE	99.4	388.6	26
IT	1,439.7	1,0634	14
LT	879	2,396.3	37
LU	0	14.5	-
LV	836.5	1673	50
MT	146.6	409.5	36
NL	49.2	926.4	5
PL	4,157.4	12,683	33
PT	1,211.5	8,136.2	15
RO	1,627.7	2,712	60
SE	18.0	788	2
SI	377	1,731.6	22
SK	484.4	2,106.3	23
UK	90.3	3,482.9	3
Total	**€23,322**	**€93,445**	**100**

*Note: Figures are rounded to the nearest whole per cent or € million. Water spending is the traditional items of water supply and wastewater treatment. GRAND total includes all ERDF expenditure categories that relate to activities that use or impact on water resources

Table 6: Planned Spending (Water vs Overall) by Member State*

MS	Total Water Spending (Planned) in €m	GRAND Total of Planned Spending (Across All Categories) in €m	Planned Water Spending as % of Overall Planned Spending
AT	31	1,204.5	3
BE	178.6	2,063.5	9
BG	2,337.8	6,673.6	35
CB	1,005.1	7,831.5	13
CY	83.3	612.4	14
CZ	6,882.5	26,302.6	26
DE	4,047.5	25,488.6	16
DK	0.00	509.6	-
EE	909.9	3,403.5	27
ES	8,042.9	34,657.7	23
FI	33.7	1,596	2
FR	1,098.3	13,449.2	8
GR	6,286.2	20,210.3	31
HU	7,101.5	24,921.2	29
IE	83.5	750.7	11
IT	3,395.5	27,965.3	12
LT	1,528.5	6,775.5	23
LU	1.3	50.5	3
LV	1,429.2	4,530.5	32
MT	252.1	840.1	30
NL	126.6	1660	8
PL	21,288.2	65,221.9	33
PT	3,319.9	21,411.6	16
RO	7,222.6	1,9213	38
SE	34.3	1,626.1	2
SI	982.4	4,101.1	24
SK	3,332.1	11,360.6	29
UK	524.6	9,890.9	5
Total	**€81,559**	**€344,222**	**100**

*Note: Figures are rounded to the nearest whole per cent or € million. Water spending is the traditional items of water supply and wastewater treatment. GRAND total includes all ERDF expenditure categories that relate to activities that use or impact on water resources

10.2 Identification of potential win-wins and win-losses

Investment interventions which seek to improve water quality generally lead to win-wins, with win-losses restricted to limited circumstances. Investment in water supply and waste water treatment infrastructure can improve the attractiveness of a location, for example by reducing the presence of untreated sewerage in water bodies. The capacity of a water body to cope with increased economic activity or population growth could also be enhanced. The environmental wins of investment in water supply and waste water treatment are related to

possible improvements in the quality of water resources, for example by decreasing pollution discharged to water resources, or improved distribution of existing water resources to avoid over abstraction in a particular locality. Sustainability is therefore an integral win-win in relation to water investments. Possible environmental losses in investments in water supply and waste water treatment infrastructure are related to the potential for over abstraction of surface and ground water resources, leading to decreased water quality and groundwater volumes, or the negative environmental impacts from human activity to harness water resources or protect land from flooding and coastal erosion (i.e. in the construction of dams, reservoirs, flood protection infrastructure, etc.) Such infrastructure will also have potentially important impacts on energy consumption required to pump and treat water, with associated negative consequences for carbon emissions, depending on the energy generating source.

Investment interventions in flood risk management measures, such as the construction of hard flood defences, are essentially a win-win, as improved resilience to floods, the avoidance of damage and disruption costs of a flood and the risk to human life are complemented by the avoidance of damage to sensitive eco-systems and the maintenance of the floodplain functions. There are some potential environmental losses, such as negative impacts to the environment from construction and maintenance, but these are relatively small in comparison to the overall economic, social and environmental benefits. It should be noted that flood defences cannot provide absolute protection and that some element of risk remains. If the construction of flood defences leads to increased development in the floodplain, failure of the defences can lead to disastrous environmental, social and economic impacts. In addition, the construction of flood defences in one area can increase risks elsewhere, potentially offsetting wins in one area for losses in another.

Expenditure on inland waterways and water borne freight is essentially a win-win, as it can lead to reduced costs associated with the transport of certain goods (e.g. aggregates) and eco-system improvements in rivers/canal systems. If the improvements to river and canal systems are aimed at facilitating an increase in water freight there is the possibility of a negative impact to the functioning of the river (e.g. increasing the depth of a river could alter its flow), with consequent negative impacts to biodiversity. However these potential losses could be minimised / avoided through the design process. In addition, increasing water based transport as an alternative to road transport has the potential to generate further climate change, air pollution and other such benefits by reducing road congestion.

When discussing the potential impacts of water resources, consideration should be given to climate change which can alter the capacity of river systems to supply water and to absorb waste water, potentially reducing river levels and increasing the severity and frequency of heavy rainfall events. These effects could potentially lead to negative impacts for biodiversity too. Thus investment decisions which appear to offer substantial win-wins should be evaluated in the context of a changing climate and its associated impacts.

These win-wins and win-losses are summarised in Annex 1.

10.3 Delivering win-wins by non-investment policy instruments

There are two principle non-investment policy instruments which could be used to deliver some elements of the win-wins and win-losses (where losses are minimal) described above; improved ways of implementing existing EU legislation (through better assessments of need and subsequent targeting and improvements in cost effectiveness) and water pricing. However the ability of new MS, where the need is greatest for investments in water quality,

to meet the requirements of legislation or to introduce water pricing is limited by several important factors, and in some MS (such as the Baltic States) it is likely that Cohesion and Structural fund investment will be largely unaffected by non-investment policy instruments.

Improved needs assessment for water investment under the Water Framework Directive (esp in relation to UWWTD)

The UWWTD, as noted in Section 10.1 above, stipulates the extent of wastewater treatment in areas of population and economic concentration (agglomerations). If an agglomeration is meeting the conditions of the Directive, it is an indication that a sufficient amount of wastewater treatment is installed and that the level of investment is appropriate at present. Conversely if an area is not meeting the standards outlined in the Directive it may indicate that investment may not be sufficient, and Cohesion Policy or other investment may be required. The European Environment Agency provides some information on the degree of compliance with the UWWTD[111] across Europe[112], and this provides general information that could be used to ascertain which countries or regions may require investment in their waste water treatment infrastructure. In addition, indicators of compliance with the broader WFD could be applied in a similar manner to identify areas in most need of CP funds.

The specific appraisal of water investment needs by MS, in preparation of any bid for structural or cohesion funds, has been based on analysis of compliance and continuing gaps in compliance. This approach essentially takes an output rather than outcome based approach, comparing levels of infrastructure (such as WWT capacity for particular populations required with that provided. This was required in the past because of the specification of particular Directives. However, the WFD (Art.5) allows increased flexibility to assess the need for investment through River Basin Management Plans, based on the actual levels of water quality, and taking into account the need to avoid investments considered to represent disproportionate costs. This in turn means greater scope to improve the cost-effectiveness of water investment across River Basins and allows improved assessment and design of water investment programmes (see section 10.5 below).

Increased use of water pricing

The appraisal and design of new or expanded cost recovery for water requires data on water pricing structures, including current payments, willingness to pay, ability to pay, and the potential investment this may deliver. The EU WFD introduces economic principles and methods for the management of Europe's waters, with the aim of ensuring that water users pay for the full costs of the water services they receive, and the application of economic analysis in the management of water resources across MS. The Directive also states that water pricing should create incentives for the efficient use of water resources, which should improve economic efficiency, reduce the financial burden on public authorities and improve the environment (by providing an incentive to reduce demand). While funding investments in water supply and wastewater treatment infrastructure could facilitate the expansion of economic activity and demographic growth, it is likely that the introduction of water pricing as a non-investment policy instrument may be more difficult in some MS than others.

[111] See EEA online http://www.eea.europa.eu/themes/water/interactive/uwwt-plants, accessed 23 09 10

[112] Specifically related to Article 15 of the Directive which stipulates that "discharges from urban waste water treatment and amounts and composition of sludges disposed to surface waters must be monitored to verify the compliance with specific provisions of the Directive".

A paper by the European Bank of Reconstruction and Development (EBRD)[113] found that although household expenditure on water in Central Eastern Europe (CEE) and the Baltic States, was generally quite low at approximately 1.5 per cent of total household expenditure (compared to average international benchmarks of between 3-5 per cent), the non-payment of utility bills was generally high in some countries in CEE. Clearly the scope for achieving greater cost recovery through water pricing potential existing in a number of regions.

Using the power sector as an example of how collection rates vary with affordability, (as it is the only sector for which systematic information on collection rates is available) the paper notes that there is a direct, linear relationship between collection rates and affordability: a one per cent increase in the affordability ratio results in an equivalent increase in payment. Thus moving from the current payment record to full payment would be likely to alter affordability ratios for low-income households. These nuances are important when considering the potential of water pricing as a non-investment policy instrument, but nevertheless it is likely that at least some reduction in Cohesion Policy investment could be delivered through increased cost recovery from users, even in new MS where the constraints of affordability are likely to be greatest.

There are also other Cohesion Policy investments related to water (energy, flood defence, inland freight):

Cohesion Policy investment in energy sectors leading to increased demand for use of water supplies would be expected to be reflected in water charges depending on the level of cost recovery operating.

Cohesion Policy investment in flood defence is not likely to be significantly affected by these non-investment instruments as no 'flood framework directive' exists to set compliance criteria from which similar instruments to the one described above could be linked. However, at risk land covered/not covered by national insurance guarantee schemes, could identify where Cohesion Policy funding might be needed in order to reduce flood risks to levels where affordable insurance is provided by the private sector and guaranteed by governments. As each national flood insurance framework is different[114], and coverage is often determined on a case by case basis following a risk assessment, this is not judged to be a practically or economically feasible as a Cohesion Policy non-investment instrument. Improved strategic and spatial planning has also previously been identified as a potential means of minimising flood defence investment.

In the case of inland water freight, the scope to increase cost recovery through user charges provides another option for a non-investment instrument (see the Transport theme for more discussion on this topic)

[113] EBRD (2005) Can poor consumers pay for energy and water? An affordability analysis for transition countries. Working Paper No. 92

[114] EC(2007): Insurance Guarantee Schemes in the EU: Comparative analysis of existing schemes, analysis of problems and evaluation of option, study by Oxera for the European Commission Directorate-General Internal Market and Service, November 2007, available at: http://ec.europa.eu/internal_market/insurance/docs/guarantee_schemes_en.pdf

These potential win-wins by non-investment policy instrument are summarised in Annex 3.

10.4 Cohesion Policy water interventions and crowding out private investment

Investment in the water sector is necessary to ensure that clean, safe and reliable supplies of water are distributed to households and businesses. Similarly, investments are also required to treat waste water once used by households and business, to ensure the sustainability of this important resource. Effective water treatment is also important in preserving the quality of the environment and maintaining good public health, as many diseases and infections are water borne. As populations grow and densities increase in urban areas (particularly in fast growing and developing economies) investment in infrastructure can be substantial and last many years.

Critical to our understanding of water and the investments needed to preserve this important resource, is the public good characteristics of water supply and its subsequent treatment. As discussed above, everyone benefits from water availability and quality in terms of health, wellbeing and quality of their local environment. If left to the market, available water supplies and the level of treatment could be sub-optimally provided, as these important positive externalities are not sufficiently accounted for in pricing. For these reasons, water utility services are provided by the public sector in most Member States. The exception is the UK, which has a privatised water sector. Nevertheless, the public sector still has significant control over the water sector's activities through a range of regulatory mechanisms, such as pricing, capital investment requirements, water quality standards and placing public service obligations on the water sector. The role of the private sector in the water sector is therefore constrained across Europe and is reinforced by a number of trends:

- a move away from privatisation back to public ownership (Paris, France and Pecs, Hungary)[115] and a less favourable view of Private Finance Initiative (PFI) schemes (UK), suggest that private sector involvement is likely to remain subdued in the foreseeable future, regardless of whether this refers to private funding or financing. However, given the current fiscal restraint on public expenditure, investment for compliance purposes may necessitate some private sector involvement in the near future; and
- returns on investment in the water sector are generally low, restricted by price and/or affordability limits introduced by regulators in the various Member States. To the investor, private sector involvement is consequently relatively unattractive.

Equally, investments in flood management and inland waterways as public assets are also undertaken by the public sector in all Member States, as it is argued that if left to the market, an under provision of flood protection would occur (i.e. protection would only cover land of high property values covered by insurance, but not land of high historical, cultural or natural value). Public waterway investments in canals and rivers are similarly publically funded.

Given the above characteristics of the water sector relying as it does on public funding and on cost recovery from water charges placed on users, it is highly unlikely that substantial win-loss investments due to crowding out would occur.

[115] PSIRU (2010): Water Companies in Europe in 2010, published by the Public Services International Research Unit (PSIRU) at the University of Greenwich UK, September 2010, available at: http://www.psiru.org/

10.5 Improved appraisal of needs leading to more cost-effective use of existing regulatory instruments that can reduce or remove win-losses

Each of the instruments (improved appraisal under WFD, especially with respect to UWWTD) and water pricing, proposed in this document contain elements to ensure that win-losses are removed or at least minimised when implementing Cohesion Policy funding for water related investments.

Implementation of the Water Framework Directive is phased in order to spread the costs over time and allow for innovative and least cost solutions to emerge[116]. Derogations from the water quality standards established in the Directive, applied for by national competent authorities, are intended to ensure that any measure adopted is technically feasible and does not incur disproportionate costs. In such cases the competent authority must demonstrate from human health, environmental and social perspective that the alternatives generate greater costs than benefits[117]. These derogations are issued for specific environmental quality standards and are limited in scope to individual river basins, where disproportionality can be adjusted to occur. For example, contamination of old tin mines in Cornwall, UK or of similar metals naturally occurring in other river basins, may require a derogation in any Member State, assuming an appropriate case can be made.

To summarise the requirements of the WFD, it contains two leading Articles of relevance regarding the evaluation of infrastructure costs and water pricing:

- Article 5 requires each Member State to conduct an analysis of the characteristics, impacts of human activity and an economic analysis of water use for each river basin district. This forms the basis for later analysis, specifically relating to the technical feasibility and economic disproportionality of any proposed investments to improve water quality. The economic analysis should contain enough information in sufficient detail in order to:
  a) make relevant calculations necessary for taking into account under Article 9 including taking account of long term forecasts of supply and demand for water in the river basin district (i.e. estimates of relevant investments, forecast investments, prices and volumes of water)
  b) make judgements about the most cost-effective combination of measures in respect of water uses to be included in the programme of measures under Article 11 to achieve the water quality standards based on estimates of the potential costs (i.e. the choice of technology to be adopted).
- Article 9 on the recovery of costs for water services requires that for those measures proposed under each River Basin Management Plan (RBMP), that water pricing policies are established in 2010:
  a) to ensure full cost-recovery, including environmental and resource costs
  b) to ensure adequate contributions of water users to these costs, adhering to the polluter pays principle
  c) to ensure that prices give incentives to sustainable water use; and
  d) take account of regional, climate and socio-economic issues.

[116] Directive 2000/60/EC (29), available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDF

[117] Directive 2000/60/EC, Article 4(3) available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDF

Combined, the above articles of the WFD and its associated daughter Directives (e.g. UWWTD) guarantee that any measures implemented in each river basin district is technically feasible, not disproportionately costly and socially beneficial, accounting for human health, environmental, social and economic impacts. The measures should also ensure that cost recovery is accounted for in water pricing as fully as possible, including the introduction of incentives to reduce water consumption and therefore ensure sustainability. Consequently, it is assumed that sufficient measures have been taken to ensure that any potential win-losses do not occur in relation to Cohesion Policy funding supporting the achievement of the WFD's objectives.

The affordability of higher water prices for households is however omitted. This therefore presents a potential win-loss situation, as by increasing the proportion of household expenditure on water, will reduce disposable income for expenditure in other sectors of the economy, in addition to some negative social and health impacts within the household (i.e. reduced water usage) in extreme cases. Win-loss outcomes therefore have the potential to be significant, specifically in low income and vulnerable households, which also have the highest marginal propensities to consume. Where industry is required to pay higher water prices, consideration should also be given to any competitiveness implications, especially in high water consuming sectors. The instrument required to prevent such win losses is water price regulation, currently established in each Member State but which may be reviewed in response to the WFD.

Overall, the above discussion suggests that adequate instruments exist within water policy legislation and the regulatory powers of competent authorities to ensure that win-losses do not occur from revenue driven and/or Cohesion Policy funded investments in water supply and treatment. The remaining challenge is how to use the information collected through these regulatory mechanisms to improve the allocation and effectiveness of Cohesion Policy funded investments.

10.5.1 Current deployment in the EU, and trends in deployment

The legislative framework encompassing the WFD and its associated daughter Directives has been agreed and legislated at the EU level. The WFD then has a series of implementation deadlines which stretch to December 2015, to which each Member State competent authority must periodically report on progress. The key milestones for WFD implementation are detailed in Table 7 below:

Table 7 Key deadlines for the implementation of the Water Framework Directive

Year	Issue	Reference
2000	Directive entered into force	Art. 25
2003	Transposition in national legislation Identification of River Basin Districts and Authorities	Art. 23 Art. 3
2004	Characterisation of river basin: pressures, impacts and economic analysis	Art. 5
2006	Establishment of monitoring network Start public consultation (at the latest)	Art. 8 Art. 14
2008	Present draft river basin management plan	Art. 13

2009	Finalise river basin management plan including programme of measures	Art. 13 & 11
2010	Introduce pricing policies	Art. 9
2012	Make operational programmes of measures	Art. 11
2015	Meet environmental objectives First management cycle ends Second river basin management plan & first flood risk management plan.	Art. 4
2021	Second management cycle ends	Art. 4 & 13
2027	Third management cycle ends, final deadline for meeting objectives	Art. 4 & 13

At this present time, Member States are in the process of finalising their river basin management plans, which are used to characterise water resources in each river basin (See Section 10.5 on Art.5 of the WFD), establishing if and by how much the water quality might fail any of the chemical or biological criteria set out in the Directive, and including the development of plans to ensure compliance with the current standards is achieved by 2015. As part of this process, the case for any derogation from the Directive are developed and presented to the Commission by competent authorities, in most cases requiring a socio-economic assessment of the associated impacts. Implementation of the instrument is therefore conducted at Member State level, with reporting provided at a regional (river basin) level.

As illustrated in Table 5, the WFD will continue past 2015 (the first management cycle) proceeding to 2021 and 2027 for the second and third cycles. The Directive also stipulates that the discharge, emission or loss of named Priority Hazardous Substances (PHS) must cease or be phased out in the first cycle. As this list of PHSs ultimately changes over time, so will the requirements of the WFD in subsequent cycles, requiring potentially additional investments in water treatment technology and possible CP funding.

Compliance with each implementation stage of the WFD (including UWWTD prerequisites) and its evolving requirements in later management cycles have the potential to be used as effective CP funding appraisal tools, identifying potential gaps in investments to deal with specific pollutants and evaluating existing efforts to improve water quality independent of EU support. In short, information on regulatory compliance in this context is used to elaborate the needs of assessment of each MS/region for CP funding and to permit the continued monitoring of CP funding performance throughout the life of the investment, as one would expect compliance to increase as investment increases. Against this background, changes in the ownership and structure of the water sector are not foreseen for the reasons outlined earlier in Section 10.4.

10.5.2 Type/scale of investment that might be influenced

Cohesion Policy funding investments should be targeted where the identified gap in WFD or UWWTD compliance is greatest and/or where the investment is least affordable by the Member State. For example, failure to provide secondary treatment to an area, as stipulated by the UWWTD indicates where a lack of funding potentially exists and where future funding should be targeted (i.e. geographical and between water supply/treatment). Given the additive nature of investments, gaps in compliance could require that both secondary and

tertiary treatment are necessary. The scale of investment could be substantial depending on the complexity of technology required, the natural background water quality and the composition of effluent discharges in a particular area. Similarly, in fast growing urban areas, installing infrastructure to ensure that clean and safe water supplies reach businesses and households is a costly exercise, partially attributable to the geography of a region. These characteristics are likely to drive continuous investment over a sustained period of time (i.e. for up to 10-20 years or longer) adding to the cost of such investments and the potential need for Cohesion Policy funding.

In order to indicate where the Cohesion Policy funding may be required, Figure 8 reproduced from the European Environment Agency (EEA) interactive data centre[118], indicates that no water treatment or only primary water treatment exists in some areas within the New Member States in 2006 (particularly in Bulgaria and Romania), but also some older Member States such as Italy and Ireland. On this basic evidence, it is expected that the largest proportion of Cohesion Policy funding for water policy is likely to be invested in Bulgaria, Romania, Latvia and Lithuania for the foreseeable future.

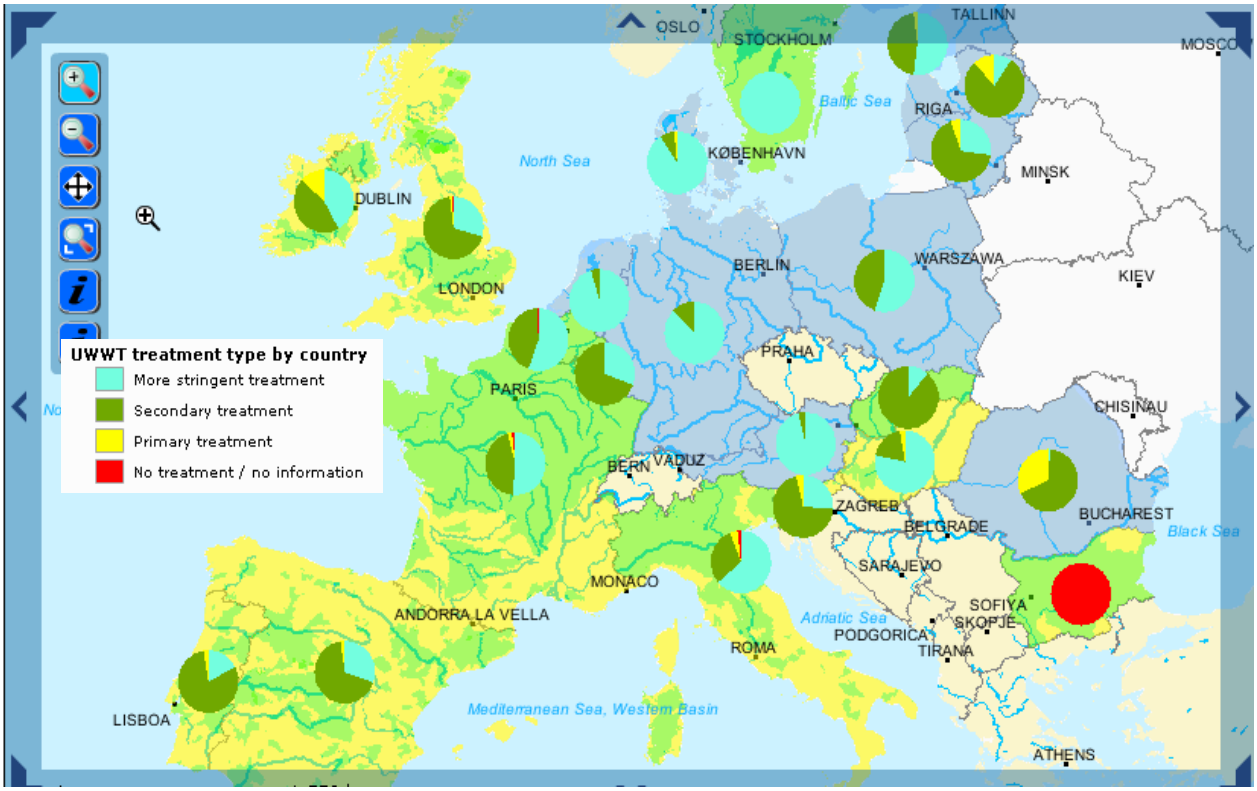

Figure 8: Percentage UWWT Treatment Type by Member State (EEA, 2010)

Another more recent body of evidence[119] that has tried to assess MS needs for water related investments in UWWT is presented in Table 8 and Table 9, summarising the estimated financing gap that exists in new and old Member States. These tables reflect the substantial investments that the new MSs have to cope with and at the same time shows the investments that the old MSs are still due to undertake to update old infrastructure.

[118] http://www.eea.europa.eu/themes/water/interactive/uwwt-plants

[119] EC(2010): Compliance Costs of Urban Wastewater Treatment Directive, final report for DG Environment, by COWI, September 2010.

Table 8: New MSs Financing gap (million €)

MS	Financing gap 2007-2013 (without reinvestments)	Financing gaps 2007-2013 (with reinvestments)	Financing gap 2014-
Czech Republic			-1524
Bulgaria	-2166	-2166	-2020
Latvia	-170	**-288**	-116
Malta	-15	-15	0
Poland	-8678	-8678	-1300
Romania	-2328	**-2997**	-6338
TOTAL	**-13600,**	**-14,144**	**-11298**

Table 9: Old MSs Financing gap (million euro)

MS	Financing gaps 2007-2013 (with reinvestments)
Austria	-2449
Denmark	-1965
Finland	-892
France	-9580
Germany	-15312
Italy	-10654
Netherlands	-2125
Spain	-4086
Sweden	-1086
UK	-3683
TOTAL	**-51,832**

The above results generally support the earlier findings and provide an additional source of evidence from which to assess the funding needs of Member States.

10.5.3 Regulatory basis/current institutional framework

The regulatory basis for this instrument is well established under the WFD and its supporting daughter directives (i.e. UWWTD). Competent authorities must report compliance at each stage implementation to the European Commission, while the level of treatment installed at each urban waste water treatment work is also collected and reported by the EEA. Therefore it is sensible to assume that the institutional capability and capacity within each Member State exist to implement this instrument.

In terms of the two instruments (WFD and UWWTD compliance) examined here, both can be regarded a mutually supporting as each reinforces the other to appraise the most cost effective allocation of Cohesion Policy funding.

The limitations of these instruments are however significant as data availability and quality of reporting by the Member States is often inconsistent and sometimes difficult to access. Where it is reported, a distinct lack of disaggregation (to river basin level) of the data prevents the use of this instrument to accurately assess Cohesion Policy funding needs from WFD implementation reporting. Information on the level of water treatment currently installed at each wastewater treatment works is contained in the European Environment Agency's Waterbase database[120], last updated in March 2010 and relating to the 2005-06 period, is much more useful in this regard, as gaps in treatment by region/plant can be evaluated in each Member State. The difficulty is that as only past data is recorded in such databases, it is difficult to accurately evaluate current water treatment needs.

10.5.4 Impacts from the use of the instrument

It is envisaged that the use of this instrument will not necessarily affect the total amount of Cohesion Policy funding available as this may already be budgeted, but rather the allocation of these funds across Europe might be expected to change to ensure the more cost-effective use of funding and releasing funding for other projects which otherwise would not be funded. As discussed, the instrument should be able to identify where the potential gaps in the level of infrastructure are greatest and therefore where the funding is going to make the biggest difference to water quality and associated win-win impacts. Cohesion Policy funding should consequently be deployed more cost effectively than might otherwise be the case. The exact magnitude of these impacts is however difficult to quantify without a more detailed understanding of individual Cohesion Policy funded investments.

In terms of the total Cohesion Policy funds available, improvements in the efficiency and effectiveness could lead to savings in the next funding period. A noticeable percentage reduction in future funding needs may therefore be possible as the needs of a particular locality for CP funds are better characterised and targeted, reducing overall funding needs; however, this would depend partially on the stringency of standards imposed in the next WFD management cycle.

10.5.5 Environmental and economic impacts

The integration of the WFD and its daughter directives in Cohesion Policy offers the potential to realise a variety of win-win impacts from the perspective of the environment, human health, sustainability, economics and social benefits. Using the WFD as an instrument from which to better allocate funds to where the needs are greatest, should ensure that the following range of impacts are not only achievable, but can be maximised through the improved targeting and cost effectiveness of Cohesion Policy investments:

- **Economic** – Cohesion Policy funding should be allocated more efficiently to focus on those areas of greatest need, therefore the cost-effectiveness of the mechanism should increase, generating greater Cohesion Policy attributed benefits, if not direct cost savings. At the margin, the improved cost-effectiveness and targeting could yield improvements in water quality beyond that achieved without the targeting of Cohesion Policy funds.

[120] http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive

- **Sustainability** - Improved water resource efficiency and cost effectiveness of CP investments should lead to additional decoupling of resource use from economic growth, improving economic and environmental sustainability.

The summary presented above suggests that the win-wins are significant and global in scope as the benefits do not exclusively fall on European countries or its citizens.

10.5.6 Barriers, both the nature of these and how they might be overcome

The most substantive barrier to the use of this instrument is the availability of data from which to accurately and reliably assess the needs of each Member State/region for Cohesion Policy funding. Significant primary research is required as part of the preparation of River Basin Management Plans and is therefore already being prepared in many MS. What is unclear is how regularly this information is to be updated and is likely to be available to OP implementing bodies.

10.5.7 Benchmarks/indicators to determine where instrument might be used

The range of indicators potentially applicable to this application, are best highlighted in the information reported by the European Commission regarding the WFD and UWWTD in each Member State. Although some of the information provided by Member States is incomplete and can be rather dated, this represents the best currently available information. The indicators produced in the first WFD implementation report[121] in 2007 are as follows:

i. Performance indicator per Member State regarding the implementation of the administrative set-up – Article 3 WFD – including the EU-27 average (based on the assessment of Member States' reports);
ii. Percentage of surface water/ groundwater bodies at risk of failing WFD objectives per Member, classified as 'at risk', 'insufficient data', 'not at risk';
iii. Performance indicator per Member State regarding the overall implementation of the environmental and economic analysis – Article 5 WFD – including the EU-27 average (based on the assessment of Member States' reports);
iv. Performance indicator per Member State regarding Article 5 – analysis of characteristics - including the EU-27 average (based on the assessment of Member States' reports);
v. Performance indicator per Member State regarding Article 5 — pressures and impact analysis and risk assessment for surface waters/groundwater - including the EU-27 average (based on the assessment of Member States' reports);
vi. Performance indicator per Member State regarding Article 5 — economic analysis, and
vii. Indicator per Member State regarding its reporting performance and the EU-27 average (based on Member States' reports).

In addition to the above data reported for the WFD, data collected and reported by the European Environment Agency (EEA) in its Waterbase database, includes the following details relating to each Waste Water Treatment Plant (WWTP):

- Geographical location
- Capacity

[121] EC(2007): Towards Sustainable Water Management in the European Union 'First stage in the implementation of the Water Framework Directive 2000/60/EC - COM(2007) 128 final [SEC(2007) 363] http://ec.europa.eu/environment/water/water-framework/implrep2007/pdf/sec_2007_0362_en.pdf

- Level of treatment installed (primary, secondary, other)
- Treatment technologies installed (chlorination, sand filters, ozonation, UV, phosphorus removal, etc.)

Indicators reporting the characteristics of the river basin (i.e. risk of failure) and of potential water quality as indicated by the level of water treatment technology deployed should provide symptomatic evidence of any 'gap' in water quality which might require Cohesion Policy funding to support necessary investments. Comparisons between similar capacity WWTPs in other Member States can be used in such circumstances to benchmark investment needs.

However, given the infrequency of reporting under WFD and the information gaps that exist, this is likely to be the least advantageous instrument for use in the allocation of Cohesion Policy funding, without prior planning and conditionality that such plans be used in the design of future OPs. The information held by the EEA is also likely to be useful given the detail of the information reported and its applicability to Member States and regions. The comparability of this information across Europe is also a distinct advantage.

10.5.8 Initial thoughts on implications for the design of the Operational Programme

Formally incorporating the above instrument in the design of the OP would require making River Basin assessments an appraisal tool, if not a condition of funding. By ensuring that regions/Member States fulfil these conditions, funds should be allocated more cost effectively to where the investments are most needed and consequently where the benefits are expected to be greatest.

The improved availability of information also opens up some possibility of relating future funding to recognised achievements, for example, based on the degree of compliance with the WFD that can be demonstrated by the applicant. This could be applicable to both water treatment and supply investments, as an indicator institutional capability within each Member State. The attraction of Cohesion Policy funds to support investment would therefore act as an incentive for MS to more rapidly comply with the WFD.

The reported information could be used to stipulate what investments are required by the Member State, before Cohesion Policy funding is provided, in other words indicating the proportion of the gap which should be met by Cohesion Policy funds/cost recovery from water pricing. For example, it could be stipulated that Member States should install a basic level of treatment at all WWTPs as required under the UWWTD, with Cohesion Policy funding only being provided in cases where the capacity of the plant is low (i.e. where large fixed investments may be disproportionately costly), or where the water quality standards require the Member State to go beyond these minimum treatment levels or adoption of Best Available Technologies (BAT) as stipulated in BREF guidance documents in relation to IPCC[122](i.e. due to high background and diffuse source concentrations). This should help ensure that any disproportionate costs are not incurred by the Member States, and that investments achieve the most cost-effective win-win outcomes. The difficulty with adopting this instrument is that it does not account for the affordability of investments made by

[122] See http://eippcb.jrc.es/reference/

Member States through increased water pricing. A supplementary instrument may therefore be beneficial in order to ensure that CP funding is not only allocated cost effectively, but is affordable to households and industry in the Member States.

10.6 Assessment of the effect of applying Water Pricing to Cohesion Policy

Water pricing as an instrument of cohesion policy can be an effective mechanism to generate revenue for investment in water quality improvement and supply measures. The contribution of this revenue to total investment costs should therefore increase relative to Cohesion Policy funding. Adhering to the polluter-pays-principle, forcing those who use water to pay more towards its supply and treatment should also encourage those users to conserve its usage. Thus, higher prices should reduce water consumption by households and businesses alike.

The objective of full cost recovery is stated as a goal of the WFD, however it is highlighted in the implementation reports produced by the Commission, that full cost recovery has not yet been achieved in many of the Member States and that progress is slow[123]. Linking water pricing to cohesion policy may therefore provide the right incentives for increased cost recovery. The difficulty is in determining the level of prices likely to achieve greater cost recovery, while maintaining the affordability of water to low income households and the competitiveness of industries dependant on large quantities of water.

10.6.1 Current deployment in the EU, and trends in deployment

The Strategic Evaluation[124] of environmental programmes (2007-13) under structural and cohesion funds considered the prospect of meeting investments needs from higher charges for water supply, wastewater treatment and waste management over the next programme period.

The evaluation acknowledges that a general trend for real price rises will contribute substantially to capital costs. However, these increases have also generated a wider concern over the affordability of basic environmental services for lower income households. This places a political limit on Member States wishing to increase pricing significantly, with only Poland formally identifying the need to conduct an assessment of financial requirements in future price increases. An analysis of the potential revenue from future increases in charges, where charges are limited to a benchmark of 5% of average household income for the lowest decile of household incomes (taken to be 30% of average household income for all households), to cover all environmental services, suggests (Table 10) that Cyprus, Malta and Greece could meet their investment needs by raising charges to a benchmark of 5% of average income for the 10% of lowest income households.

[123] EC(2007): Towards sustainable water management in the European Union – First stage in the implmentation of the Water Framework Directive 2000/60/EC : COM(2007)128 final, Brussels 22.3.2007, available at: http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0128en01.pdf

[124] Strategic Evaluation on Environment and Risk Prevention under Structural and Cohesion Funds for the Period 2007-2013, Synthesis Report, GHK Consulting et al, 2006 for Directorate General Regional Policy

Table 10: Current User Charges as % of Household Income and Potential for Additional Revenue[125]

Member State	Average HH Disposable Income (2003) Euro / Yr	Household Charge for WS, WWT, MSW (c 2003) Euro / HH / Yr	Charge as % HH Income (Average) %	Charge as % HH Income (Lowest) %	Additional Revenue from 5% Charge of HH Income (Lowest) Euro / HH / Yr	Contribution of Additional Revenue to Needs (WS, WWT,MSW) % of Needs / Yr
Greece	25,500	288	1.1%	3.8%	94	96%
Portugal	22,484	280	1.2%	4.2%	57	36%
Spain	33,022	480	1.5%	4.8%	15	15%
Hungary	15,932	269	1.7%	5.6%	0	0%
Poland	10,245	254	2.5%	8.3%	0	0%
Slovenia	15,696	328	2.1%	7.0%	0	0%
Czech	9,819	222	2.3%	7.5%	0	0%
Slovakia	7,854	138	1.8%	5.9%	0	0%
Bulgaria	3,253	115	3.5%	11.8%	0	0%
Malta	19,105	147	0.8%	2.6%	140	202%
Cyprus	26,385	104	0.4%	1.3%	292	161%
Estonia	7,404	85	1.1%	3.8%	26	18%
Latvia	6,790	89	1.3%	4.4%	13	3%
Lithuania	7,516	47	0.6%	2.1%	65	40%
EU14 - Average	**15,072**	**203**	**1.6%**	**5.2%**	**50**	**41%**

In the case of Portugal, Spain, and possibly the Baltic states (depending on the shortfall in revenue for operating costs), additional contributions to meeting their needs from increased charges (political constraints aside) up to the benchmark level could be achieved. In the other MS, the benchmark has already been reached and suggests only very limited scope to secure

[125] Sources: Eurostat data for average household incomes plus data from National Reports. Charge data from National Evaluation Reports – see original source in the Strategic Evaluation

Notes:

1. Lowest based on an assumption that the average income of the lowest 10% of households is 30% of the average income of all households
2. A benchmark of 5% of household expenditure has been taken against which to consider affordability. This is essentially arbitary – the political debate in each MS will determine what is considered the maximum level of affordability. The current average charge across the 14 MS for the lowest decile of household income is 5.2%. It is these households where national reports highlight emerging concerns over affordability as charges increase, especially in Eastern European MS, where the current level of charges generally exceeds 5%. The analysis can be rerun with different benchmarks
3. No data for Romania
4. Because of difficulties in standardising data to a common year and to constant prices, and because many MS do not have average national charges (they vary by location and volume), the analysis should be regarded only as indicative.

additional revenue (which may still be required in part at least to cover operating costs) to meet investment needs.

To the extent that incomes of the lowest income households rise faster in real terms than investment costs over the next programme period (2007-2013), then it is possible that contributions to capital costs will increase. The majority of MS envisage real increases in charges, prompted in large part by the full cost recovery provisions of the Water Framework Directive. One interesting approach to affordability, from Malta, is in the design of tariff structures such that lower usage attracts a lower charge and ensures lower income households are able to afford minimum levels of usage (See Box 2).

Box 2: Malta Water Pricing and Social Aspects

Maltese water pricing uses a 'rising block' system where at lower levels of water use for households the rate per m3 is significantly lower than for higher use. As shown in the Malta country report, in 2000 there were nearly 13,000 accounts that fell under the social assistance category. This group represented around 4% of total water use in Malta and around 6% of domestic use. Total water used in 2000 was 715,000m3. The average consumption charge for the social assistance tranche was 0.56 EUR/m3, while for the general residential sector it was 0.79 eur/m3. Rates are higher for the tourist sector and commercial sector (bars and restaurants) where it is 1.98 EUR/m3, and highest for government (at 2.59 EUR/m3). Importantly water used by the tourist sector and also bars and restaurants, where affordability is higher, is charged at higher rates.

Details of the rising block: rates

- For 0 to 5.5m3/person per year there is no charge.
- For 5.5 to 11 m3/person per year the charges is 0.16 LM/m3 (0.37EUR/m3)
- For levels above 11 m3/person per year the charge is 0.27 LM/m3 (0.63EUR/m3)

Source: Malta National Report

It is possible to design tariffs to protect lower income households. No MS currently have charges approaching 5% of average household income. If the levy was set at this level (and protection was provided for lower income households) all MS could raise charges and associated revenue significantly. If the levy was set at this benchmark, then all MS could (assuming the revenue was fully committed to capital expenditure) finance their annual investment needs in these three fields identified in Table 10, with the exception of Bulgaria, Romania and (marginally) Latvia.

The future intent to move to full capital and operating cost recovery means that by the end of the programme period, substantially larger shares of capital costs will (political concerns over affordability aside) be funded by users. Box 3 provides some additional reflections on the move to full cost recovery.

Box 3: Full Cost Recovery

According to the full cost recovery principle all the capital and operating costs of the provision of environmental goods and services should be fully recovered from the entity benefiting from the service. In short, users should pay for the cost of the water provision and waste water and waste collection, transport, treatment and disposal and also the full costs of electricity supply. The high capital cost of new infrastructure, combined with the cost of replacing obsolete infrastructure means that generally current user charges are only sufficient to cover operating costs.

As regards prices for resource use, the full cost recovery principle does not fully take into account the scarcity of the resource or its depletion, and a price is needed to reflect this. This can be done either via the introduction of a charge (eg water abstraction charge that goes on top of infrastructure cost repayment fees). This would lead to a more efficient use of resources. However, in practice even securing full financial cost recovery represents a major challenge.

Key insights from the national evaluations:

- There is a general move towards full cost recovery - for provision of water, electricity, waste services, and in other spheres too – for example in permitting/regulatory provision. This can be welcomed from an environmental point of view and also from an economic efficiency point of view.
- Note however that support for full cost recovery has to go hand in hand with efforts at making the provision of the goods and services cost-effective otherwise full cost recovery simply funds inefficiencies in service delivery
- Full cost recovery generally deals with the cost of the service provision (Eg water abstraction and supply infrastructure) and less with the value of the resource itself.
- The rate of progress towards full cost recovery is a sensitive political issue in most MS because of the concern over affordability of higher charges, especially for low income households.
- In some cases the reluctance to pay higher charges reflects a perception that the provision of certain services is a duty of the government and their access to it is a right for which they should not pay, or already pay via general taxes. This is especially the case with sewerage and domestic waste services which have traditionally been provided under a collective municipal or local tax. These issues need to be understood and addressed in any policy moving towards full cost recovery.
- In the new Member States and Cohesion countries the average household incomes have been and still are generally increasing quickly and it is important not to take past limits of affordability as indicative of future levels. Hence, in many cases the possibility for full cost recovery is greater than would appear from using historic data and affordability surveys.

Source: Strategic Evaluation on Environment and Risk Prevention under Structural and Cohesion Funds for the Period 2007-2013, Synthesis Report, GHK Consulting et al, 2006 for Directorate General Regional Policy

10.6.2 Type/scale of investment that might be influenced

Consistent with the previous discussion relating to regulatory instruments, the investments affected by this measure are expected to be substantial, demanded mostly in water supply and treatment infrastructure. Unlike the regulatory instruments proposed earlier which were expected to influence the allocation of Cohesion Policy funding much more strongly than their magnitude, water pricing should not only affect the distribution of funds, but should be much more important in determining the Cohesion Policy funding needs of the Member States. Absolute decreases in Cohesion Policy funding demand may therefore be possible in the next funding period.

Although dated, the information provided in Table 10 indicates that in a number of Member States including Greece, Portugal, Malta, Cyprus, Estonia and Lithuania the potential exists to increase water pricing to the benchmark level of 5% of household income for the lowest decile group of households. The Table indicates that the revenue generated from such increases could be significant and could be used to offset current Cohesion Policy funding.

10.6.3 Regulatory basis/current institutional framework

The regulatory foundations for the introduction of this instrument can be found in Article 9 of the WFD which requests that in each River Basin Management Plan (RBMP), water policies are introduced to ensure full cost recovery (including environmental and resource costs) and that uphold the polluter pays principle. The regulatory framework for the introduction of this instrument should therefore already be established in each of the Member States.

From an institutional perspective, the fact that water charges do apply in each of the Member States, composed of a fixed charge and/or a variable charge dependant on water use, difficulties in the implementation of this measure are not foreseen. Where water is priced differently depending on the amount consumed, for example, if the first m^3 is more expensive

than the second, this could add to the unaffordability of water amongst poorer households. If the opposite applies and/or low income groups are supported through the tariff structure so that low water consumption is affordable and higher volume users pay more (the polluter pays principle) the introduction of water pricing could create greater win-wins and may become more politically acceptable. In conclusion, pricing structures are likely to be just as important as the level of water pricing in determining affordability and acceptance of this instrument.

10.6.4 Impacts of the use of the instrument

The introduction of water pricing could generate a range of positive environmental and economic impacts, achievable by improving the efficiency of water use and reducing demand by metering[126] and charging for water accordingly. A reduction in consumption could in-turn reduce abstraction levels from water resources, potentially improving the quality of water resources and reducing the environmental losses, which could arise from increased investment in water supply and waste water treatment infrastructure. Reducing demand and abstraction could also reduce the amount of start-of-pipe and end-of-pipe water treatment required. The need for reduced water treatment could also offer positive economic impacts due to, for example, a reduction in energy requirements leading to lower treatment costs and thus lower costs for consumers. The introduction of water pricing could also provide an on-going source of investment in, and improvement to, water supply and treatment infrastructure, thereby reducing the pollution of water bodies and thus reducing the cost of treatment necessary for drinking water. Consequently, it could be expected that waste water entering water resources would be treated to a higher standard, and thus water abstracted downstream would require less treatment in the first instance.

Although the introduction of water pricing could reduce several of the losses associated with investment in water infrastructure, it could also have negative economic impacts as water pricing has to be applied to all water users to be effective and equitable (i.e. including domestic, business and agricultural users). Thus farms and businesses which consume significant amounts of water could face an increase in costs, potentially threatening their competitiveness. If these negative economic impacts are large enough there could be knock-on effects to employment and the price of the goods produced (e.g. it is likely that higher water charges would increase the price of water intensive crops).

There is the possibility that these negative economic impacts could be offset by potential positive economic impacts, for example due to an increase in development capacity in the geographic are under consideration. Conversely, an increase in development and population growth in a geographic area due to improvements in the water infrastructure could also lead to environmental losses due to an increase in demand for water, with consequent pressures on

[126] This is based on the assumption that charging for water reduces demand, which is supported by EBRD (2005) *Can poor consumers pay for energy and water? An affordability analysis for transition countries. Working Paper No. 92* which shows that in Romania where the price of water is closest to full-recovery cost that demand is lower. However this assumption would have to be tested more carefully prior to the introduction of any pricing mechanism as the inverse could easily be true too: that paying for unmetered water could lead to an increase in demand.

water supply and quality, e.g. due to increased abstraction or increased discharges of waste water.

10.6.5 Impacts on the Operational Programme

Using the WFD and the UWWTD in a gap analysis to identify those Member State regions where the need for investment in water infrastructure is highest may have a positive impact on the OP by helping to ensure that investment is directed where it is needed most. This may not reduce the amount of investment required, but could deliver the largest net improvement in water quality by identifying areas where it is most in need and thus ensuring that the OP is as effective as possible. Targeting areas by the degree of compliance may result in the most costly projects being identified at the expense of potentially cheaper projects which could result in superior cost-benefit outcomes. For example, investment in secondary treatment for an urban area that services a large amount of people could offer a better value investment (in terms of number of people benefiting) compared to investment in primary treatment for a smaller urban or rural population identified through the gap analysis introduced above. In addition, to ensure investments are effective over the long-term, a gap analysis based on WFD and UWWTD compliance should be combined with economic and population growth projections, to ensure that the most beneficial investment are carried out.

The introduction of water pricing could offer a complementary source of investment, potentially benefiting the OP by reducing the amount of Cohesion and Structural investment required. If water pricing was introduced in a manner that induces a reduction in the demand for water, the level of Cohesion Policy investment required maybe lower than it would otherwise have to be (i.e. the scale of the treatment facilities required may be lower if demand is reduced).

The introduction of water pricing combined with some de-regulation/privatisation of water assets, could also decrease the amount of Cohesion Policy investment, as water prices and revenue would be allowed to more closely follow consumption patterns. However, as noted in Section 10.4 above, privatisation of the water industry has been unpopular in European countries and may be especially difficult in new MS with poor quality assets, large investment requirements and little experience of the regulatory oversight potentially required.

10.6.6 Barriers, both the nature of these and how they might be overcome

Water pricing as an instrument to fund water investments and improve the allocation of Cohesion Policy funds could potentially suffer from a number of barriers to its implementation and functioning as an effective instrument in the Cohesion Policy field. Barriers have been identified which relate to institutional capabilities to implement the instrument, the governance required and the acceptance of the instrument, both politically and within society. Each is summarised as follows:

- **Institutional -** Effective water pricing consistent with the polluter pays principle, requires the regular monitoring of water use (i.e. through metering) and accurate billing based on the collected information. Installation and maintenance capabilities may also be required (i.e. introduction of smart metering). These capabilities

described can be generally found in each Member State, the difficulty may therefore lie in setting affordable water prices, that society accept and therefore ultimately willing to pay. The gradual introduction of smart metering in many countries such as Sweden, the UK, France and Germany that allows for real time pricing and monitoring or consumption, linked to billing could however help mitigate such barriers, as the necessary capabilities should exist.

- **Governance –** The ability to pay is likely to be important if the instrument is to prove successful in achieving full cost recovery. Systems for the collection of monies and enforcement are important as the need for measures to ensure the affordability of water prices for lower income households. If additional water charges are perceived by citizen to be similar to taxation, then society's willingness to pay those prices might diminish.
- **Political Pressure** – opposition could emerge from those groups dependant on water supplies at affordable prices, such as the agricultural sector. Those that currently apply for water discharge permits and/or are supplied by water utilities which may be adversely affected and exercise political pressure. Measures to ensure the affordability of water should however ensure that this pressure is mitigated over time. For industries that abstract and treat water themselves, no price change should occur under this instrument.

10.6.7 Benchmarks/indicators to determine where instrument might be used

The previous discussion makes it clear that the effective implementation of water pricing as an instrument to improve OP is highly dependent on the affordability of increased water charges and consequently the willingness and ability of households to pay these prices. The indicators that can be used to define affordability are summarised in a recent discussion paper by the Public Utilities Access Forum (PUAF)[127], reproduced below in Table 11.

Table 11: Indicative Indicators of Water Price Affordability

Consumption Indicators - Per capita equivalent consumption of/ expenditure on water. If below some adequacy threshold, points to unaffordability - Percentage of total household expenditure devoted to water, revealing the percentage of expenditure going on essentials and is the most frequently adopted - Either of the above expressed as a percentage of the 'norm' or average, representative of the benchmark. Useful as a yardstick or as a measure of equity
Price Indicators - Unit price paid for the commodity (taking account of standing charges), usually high for

[127] PUAF(2009): Towards defining and measuring affordability of utilities – a discussion paper, available at:http://www.antelope.org.uk/affordability/PUAF_affordability_discussion_paper.pdf

low water users - Unit price as a percentage of a 'norm' unit price, useful for assessing differences in prepayment and post payment methods - Total bill size trend for fixed consumption, as unavoidable increases can upset a previously balanced budget, particularly relevant for water
Equity Indicators - Expenditure (or % of expenditure) on water as a % of an average level - A Gini coefficient or similar measure of inequality in normalised consumption. Useful in the case of water because the bulk of domestic consumption is related to physical needs
Payment Indicators - Available alternative payment schemes, and percentage of people choosing prepayment and frequent payment options - Arrears statistics such as percentage of people in arrears, average amount, and current outgoings devoted to paying arrears, etc. - Take-up of any provisions intended to help with affordability(e.g. special tariff schemes)
Direct Indicators - Survey or questionnaire responses to questions such as do you find X affordable? Do you buy as much as you think your household needs?
Durables Indicators - Ownership of a fixed or mobile phone, internet, sky TV, etc. - Dwelling SAP rating, fuels used

Although each of the above indicators is applicable to solving the issue of affordability amongst households, the practicalities of each are quite different as many require the collection of substantial primary data on an annual basis in order to calculate accurate and reliable indicators. The human resources involved in collecting and processing the necessary information may therefore be prohibitively costly, for all but the simplest of indicators already published and in need of updating.

Several governments and institutions have adopted ad hoc rules on what constitutes an acceptable level of household expenditure on utilities. Although no universal benchmark has been adopted, the figures suggest that an acceptable threshold may be between 3% and 5% of household expenditure on water supply and waste water services, referred to in earlier text (see Table 12).

Table 12: Benchmarks used in measuring affordability of water supply and services (EBRD, 2005)

Source	Per cent of total household income / expenditure
World Bank (2002)	3-5%

UK Government[128]	3%
US Government	2.5%
Asian Development Bank	5%

According to this benchmark, Eurostat figures on consumer expenditure indicate that water was affordable in all the EU-15 in the late 1990s for which the most recent data is available. Values range from 0.3% in the UK and Ireland, to 3.6% in Austria (see Table 13).

Table 13: Mean consumption expenditure and structure of household expenditure in the EU-15 on water supplies and services, 1999 (Eurostat, 2007)

	EU-15	BE	DK	DE	EL	ES	FR	IE	IT	LU	NL	AT	PT	FI	SE	UK
MEAN CONSUMPTION EXPENDITURE (PPS PER HOUSEHOLD)																
Water, electricity, gas and other fuels (1)	1 397	1 519	2 220	1 632	1 101	1 074	1 523	1 233	1 684	1 796	1 512	2 216	882	700	681	888
Water supply and services	379	312	616	548	337	401	392	89	334	503	607	951	205	104	334	78
Water supply	158	142	110	329	108	5	174	41	137	41	159	75	127	33	167	41
Refuse collection	86	25	140	165	89	132	0	0	99	143	326	50	16	23	2	0
Sewerage collection	12	0	194	0	23	22	0	0	0	167	0	48	14	33	0	29
Other services relating to the dwelling n.e	123	146	171	55	116	243	219	48	99	152	121	779	48	16	166	7
STRUCTURE OF EXPENDITURE (% of TOTAL HOUSEHOLD EXPENDITURE)																
Water, electricity, gas and other fuels (1)	5.6	5.5	9.4	6.9	4.7	5.3	6.2	4.1	6.2	4.2	5.9	8.4	4.8	3.9	3.1	3.2
Water supply and services	1.5	1.1	2.6	2.3	1.4	2.0	1.6	0.3	1.2	1.2	2.4	3.6	1.1	0.6	1.5	0.3
Water supply	0.7	0.5	0.5	1.4	0.5	0.0	0.7	0.1	0.5	0.1	0.6	0.3	0.7	0.2	0.8	0.1
Refuse collection	:	0.1	0.6	0.7	0.4	0.7	:	:	0.4	0.3	1.3	0.2	0.1	0.1	0.0	:
Sewerage collection	:	:	0.8	:	0.1	0.1	:	:	:	0.4	:	0.2	0.1	0.2	:	0.1
Other services relating to the dwelling n.e	0.5	0.5	0.7	0.2	0.5	1.2	0.9	0.2	0.4	0.4	0.5	2.9	0.3	0.1	0.8	0.0

More recent figures are available from an EBRD report published in 2005 on the affordability of utility services in transition countries (the analysis being based on actual utility payments) (EBRD, 2005). The EBRD finds that household expenditure on water accounts for less than 3% in all but three of the countries analysed. They find a typical spend on water services similar to that of the Eurostat report mentioned above, namely between 1 and 2%. Nonetheless, in some countries expenditure is closer to the affordability threshold. In Romania for instance, the expenditure comes to 3.1% of household income, and in Hungary as much as 4.1% (see Table 14). The EBRD notes that the average affordability ratios for water are higher in countries whose water prices more closely reflect cost recovery levels.

Table 14: Charges for Water Services as % of Average Household Expenditure

Country	% of total household expenditure
Czech Republic	1.2
Estonia	1.0
Hungary	4.1
Latvia	0.8
Lithuania	1.1
Poland	2.0

[128] The UK government set 3 per cent as a burden threshold for the lowest income decile (see http://www.sustainable-development.gov.uk/sustainable/quality04/maind/04j06.htm and http://www.scotland.gov.uk/library5/environment/sfps.pdf)

Country	% of total household expenditure
Slovak Republic	1.3
Slovenia	1.3
Bulgaria	2.5
Romania	3.1

Source EBRD, 2005

The EBRD report takes a specific interest in the affordability of utility services for low-income households. They find that poorer households spend more on water services than the average consumer, with water affordability being most problematic in Hungary and the Slovak Republic (see Table 15) where affordability ratios are close to the threshold as a consequence of aggressive tariff reform.

Table 15: Charges for Water Services as % of Average Household expenditure for the bottom decile of households

Country	% of total household expenditure
Czech Republic	1.5
Estonia	2.4
Hungary	4.0
Latvia	0.9
Lithuania	0.7
Poland	1.8
Slovak Republic	4.3
Slovenia	2.6
Bulgaria	2.7
Romania	0.7

Source: EBRD, 2005

Overall it seems that, according to the above data, most new Member States can still afford increased cost recovery through increased water prices, even for low income households. The EBRD also assesses future affordability for low income households in the case of tariffs being adjusted to reach full cost recovery levels[129]. The analysis finds that income growth is expected to more than compensate for the increase in utility prices, with the affordability ratio for water decreasing slightly over time, therefore indicating the potential for water pricing as an instrument of . However in some MS, steep increases in affordability ratios were observed, given that prices are generally furthest away from cost recovery and larger adjustments were needed. In this scenario, households in the lowest income decile would have to pay more than the 5% of household expenditure for water. In Romania for instance, water expenditure is expected to increase to as much as 10.4% of household income by 2010 under EBRD's scenario (see Table 16).

[129] The indicative cost recovery level for water was set at US$ 1.40 per cubic metre (m3) of piped water

Table 16: Projected Charges for Water Services for Cost Recovery for the Bottom Decile of Households (in % of total household expenditure)

Country	Projected 2007	Projected 2010
Czech Republic	1.2	1.1
Estonia	3.1	2.8
Hungary	4.5	4.1
Latvia	2.3	2.1
Lithuania	1.3	1.2
Poland	4.6	4.1
Slovak Republic	5.0	4.7
Slovenia	3.3	3.2
Bulgaria	4.7	4.3
Romania	9.8	9.1

Source: EBRD, 2005

It should be highlighted that since the publication of the EBRD study, the economic recession has reduced average earnings in many of the countries assessed, therefore the projected 2010 charges may well be higher than those reported in Table 16. Without better information provided periodically, it is therefore difficult to reliably assess affordability of water prices in the Member States.

10.6.8 Initial thoughts on implications for the design of the Operational Programme

The objective of full cost recovery is something which is already required under the WFD. However, the progress of Member States towards achieving this objective is mixed, as highlighted in the Commission's own implementation reports. Incorporating cost recovery as a prerequisite to Cohesion Policy funding in the design of the OP could generate important policy win-wins from both water and cohesion perspectives. This is obviously dependant on the ability to maintain the affordability of any price increases amongst low income households.

This in turn would suggest that MS seeking funds for water should provide evidence on the current levels of cost recovery (adjusting for hidden subsidies between groups of users as a result of tariff structures), the levels of cost to low income households and sensitive industries and proposals from implementing more fully the WFD (Art 9), especially the tariff structures proposed to minimise the burden on low income households

10.6.9 Concluding Summary

Alternative means of delivering win-wins

In the field of water policy, the analysis clearly shows the potential for the introduction of indicators of WFD compliance and of water pricing to collectively support the delivery of win-wins in the achievement of economic, environmental, human health and sustainability policy objectives. As a caveat to the introduction of these instruments, the analysis illustrates that reliable and accurate primary evidence is required for the relevant OPs to deliver these desired policy outcomes.

Specifically, it is expected that the use of regulatory compliance indicators will improve the implementation of Cohesion Policy funding based on a better needs assessment, targeting of support to MS/ regions and ultimately improve the cost-effectiveness of water investment. In contrast, it has been shown that water pricing as an instrument could not on achieve similar improvements in cost-effectiveness, but also reduce the need for Cohesion Policy funding in many cases, while also incentivising the reductions in water consumption through the polluter pays principle.

Potential to reduce or avoid crowding out

Crowding out of private sector investments is not expected to occur in the w-+ater sector due to the need for public ownership in many Member States and the stringent regulatory controls in others.

Use of non-investment instruments to mitigate win-losses

The review of the literature and analysis of legislation in the water sector suggests that sufficient conditions are contained within water policy legislation (namely the UWWTD and WFD) to avoid disproportionate costs, therefore significant win-losses in the water sector are not foreseen. However, this is based on the assumption that water prices charged to lowest income households and high water dependant businesses are affordable and do not result in adverse competitiveness impacts.

ANNEX 1: IDENTIFICATION OF POTENTIAL WIN-WINS AND WIN-LOSSES

Win-wins and win-losses by theme: Transport

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
16. Railways	Investment in regional and national rail infrastructure	Enabling mobility and trade, improving accessibility at the national and regional level	Enabling mobility using potentially less CO_2 intensive modes	Land take; resource use; impacts on biodiversity (habitat severance and loss); impacts on water and soil resources from run-off; stimulating increased demand for use, thus increasing fuel use and CO_2 (and other) emissions; increased noise levels; CO_2 (and other) emissions from resource extraction, construction and maintenance	From the perspective of GHG emissions, railways are considered to be a preferable to roads, as they have the potential to be less carbon-intensive. However, this depends on a range of factors, including the level of utilisation of cars and the potential for railways to provide a service equivalent to a road in the location concerned.
17. Railways (TEN-T)	Investment in trans-European rail infrastructure	Enabling mobility and trade, improving accessibility at the European level			
20. Motorways	Investment in national, major road infrastructure	Enabling mobility and trade, improving accessibility at the national and regional level	Improving traffic flow, thus reducing unnecessary fuel use and emissions		The development of high capacity national or trans-European road networks enables trade and mobility of a type different to that which rail provides. However, there is a range environmental issues that need to be taken into account. On these longer routes, rail (which is potentially less carbon-intensive) has the potential to compete for many passenger
21. Motorways (TEN-T)	Investment in trans-European road infrastructure	Enabling mobility and trade, improving accessibility at the European level			

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
22. National roads	Investment in national road infrastructure	Enabling mobility and trade, improving accessibility at the national level			journeys and some freight journeys.
23. Regional/ local roads	Investment in regional and local road infrastructure	Enabling mobility and trade, improving accessibility at the regional and local level			Rail is less able to compete for passenger and freight trips on many regional and local roads, due to the lower volumes of travel concerned.
24. Cycle tracks	Investment in cycling infrastructure	Enabling mobility and trade, improving accessibility at the local level	Enabling mobility using potentially less CO_2 intensive modes	Land take; resource use; CO_2 (and other) emissions from resource extraction, construction and maintenance	Within urban areas in particular, and between some urban areas, cycle trips have the potential to replace car trips, and therefore provide a less carbon-intensive form of travel.
18.* Mobile rail assets	Investment in rail rolling stock for regional and national networks	Enabling mobility and trade, improving accessibility at the national and regional level		Resource use; CO_2 (and other) emissions from resource extraction, manufacture, maintenance and disposal; CO2 (direct and/or indirect) (and other) emissions from use; increased noise levels	Investment in rolling stock enables travel on railways, and thus enables a potentially less carbon intensive form of travel. The rolling stock itself could also be more or less energy efficient (and carbon intensive) depending on its design and energy source.
19.* Mobile rail assets (TEN-T)	Investment in rail rolling stock for international networks	Enabling mobility and trade, improving accessibility at the			

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
		European level			
25. Urban transport	Investment in infrastructure (and vehicles) for public transport, cycling and walking in urban areas	Enabling mobility and trade, improving accessibility	Enabling more efficient use of limited urban space for the purpose of transport; enabling mobility using potentially less CO_2 intensive modes; potential to be cleaner and quieter	Land take; resource use; CO_2 (and other) emissions from resource extraction, manufacture, construction and maintenance; CO_2 and other emissions from use	Investment in urban infrastructure for modes other than the car has the potential to improve the efficiency of the use of limited urban space of mobility. Infrastructure for cyclists and pedestrians enable less carbon-intensive modes well-suite for urban travel. Probably the closest to a win-win, if it delivers more efficient transport systems with less pollution.
26. Multimodal transport	Investment in infrastructure to stimulate inter-modality for both passenger and freight transport at the regional and national level	Enabling mobility and trade, improving accessibility at the national level	Enabling transport using potentially less CO_2 intensive modes	Land take; resource use; CO_2 (and other) emissions from resource extraction, manufacture, construction and maintenance; CO_2 and other emissions from use	The development of multi-modal transport potentially enables passenger and freight trips to be undertaken on the most suitable modes for each section of their respective journeys, thus potentially enabling the use of lower carbon intensive modes.
27. Multimodal transport (TEN-T)	Investment in infrastructure to stimulate trans-European inter-modality for	Enabling mobility and trade, improving accessibility at the European level			

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
	both passenger and freight transport				
28. Intelligent transport systems (ITS)	Investment in ITS to improve the efficiency of use of the transport system	Improving the efficiency of the transport system, thus enabling more transport on the same infrastructure.	Reducing adverse environmental impacts by minimising "wasted" journeys and improving utilisation.	Effectively increases the capacity of the transport network, thus increasing use and associated environmental impacts, including increased GHG emissions.	ITS has the potential to enable more travel to be undertaken on the same amount of infrastructure, but does this by increasing use, which could increase environmental impacts.
29. Airports	Investment in airport infrastructure	Enabling mobility and trade, improving accessibility	Increases capacity for long-distance travel, so potentially improves flows by reducing congestion (in other modes)	Land take; resource use; impacts on water and soil resources from run-off; stimulating increased demand for use, thus increasing fuel use and CO_2 (and other) emissions; impacts of releases in the higher levels of the atmosphere; increased noise levels; CO_2 (and other) emissions from resource extraction, construction and maintenance	Air transport has a range of adverse environmental impacts in use, not least its higher per passenger and tonne kilometre CO_2 emissions. Additionally, aviation has additional climate change effects due to the fact that it emits pollution in the upper atmosphere. Land take is relatively localised, but there are potential impacts on wildlife, particularly birds.
30. Ports	Investment in port infrastructure	Enabling mobility and trade, improving accessibility	Enabling transport using potentially less CO_2 intensive modes	Land take; resource use; impacts on biodiversity (habitat loss); impacts on water and soil resources, including from run-off; stimulating increased	Ports have the potential to enable a relatively less carbon-intensive form of long-distance freight transport. However, depending on the location of the port

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
				demand for use, thus increasing fuel use and CO_2 (and other) emissions; increased noise levels; CO_2 (and other) emissions from resource extraction, construction and maintenance	development, there are potential impacts on marine wildlife through the destruction of, and interference with, habitats.
31. Inland waterways (regional and local)	Investment in port and inland waterway infrastructure at the regional and local levels	Enabling mobility and trade, improving accessibility at the national and regional level	Enabling transport using potentially less CO_2 intensive modes	Land take; resource use; impacts on biodiversity (habitat severance and loss); impacts on quality of water resources; stimulating increased demand for use, thus increasing fuel use and CO_2 (and other) emissions; CO_2 (and other) emissions from resource extraction, construction and maintenance	The development of infrastructure for the inland waterways has the potential to enable a mode of transport that is generally less carbon-intensive than roads, but perhaps more carbon-intensive than some other modes, e.g. rail and maritime transport.
32. Inland waterways (TEN-T)	Investment in trans-European port and inland waterway infrastructure	Enabling mobility and trade, improving accessibility at the European level			
52. Promotion of clean urban transport	Investment in infrastructure and vehicles for public transport in urban areas that use less carbon intensive sources of energy	Enabling mobility and improving accessibility at the local level	Enabling transport using potentially less CO_2 intensive modes	Resource use; CO_2 (and other) emissions from resource extraction, manufacture, construction and maintenance; (potentially) CO_2 and other emissions from use	Investment in clean urban public transport has the potential to improve the efficiency of the use of limited urban space of mobility. Additionally, as the modes promised are cleaner, they will be less carbon-intensive than conventional public transport.
1. R&TD	Investment in	Stimulates	Potentially, in the	Potentially, depends on the	The extent of any win-win or win-

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
activities in research centres **4. Assistance to R&TD**	R&TD to deliver less carbon-intensive transport	employment, thus improving human capital, which delivers economic and social improvements for the beneficiaries	longer term, R&TD activities could lead to less carbon-intensive and otherwise environmentally-damaging activities	results of the R&TD and how this is applied	loss depends on the outcome of the R&TD and the way in which it is applied.
6. Assistance to SMEs for the promotion of environmentally-friendly products and production processes **7. Investment in firms directly linked to research and innovation**	Investment in firms/SMEs that develop less carbon-intensive products and services, e.g. promoting inter-modality, co-modality and alternative business models for transport, e.g. car sharing and other mobility services	Stimulates employment, this improving human capital, which delivers economic and social improvements for the beneficiaries	Potentially, in the longer term, if assistance and support contributes to the development of products or services that contribute to decreasing the carbon-intensity of transport, or otherwise reducing its environmental impact	Potentially – it depends on the type of product/service developed and the net environmental impact associated with its implementation	The extent of any win-win or win-loss depends on the outcome of the assistance and support and the way in which it is applied.
Infrastructure for alternative transport energy carriers	Investment in infrastructure for less carbon intensive sources of energy, e.g.	Development of infrastructure will deliver jobs and contribute to the development of	Enabling the use of potentially less carbon-intensive energy sources for transport.	Resource use; potential impacts on biodiversity (habitat severance and loss); CO_2 (and other) emissions from resource extraction, construction and	The extent of the win-loss will depend on the way in which the infrastructure is implemented and the materials that are used. Overall, there is likely to be a

CP activity	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain
	electrical charging points, hydrogen distribution networks	manufactured and human capital.		maintenance	direct win-loss, but in the longer-term there should be (relative) environmental wins from decarbonising transport's energy supply.

* Moved so that all infrastructure activities are grouped together.

Win-wins and win-losses by theme: Biodiversity

CP activities* & Operational Programme (OP) Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain**
Environmental Infrastructure				
Mitigation and adaption to climate change (49)	Maintaining stable socio-economic conditions in changing climate, preventing negative impacts of climate change to business and society	Support to ecosystem-based mitigation and adaptation strategies (e.g. protection of forests' carbon storage, protecting / restoring natural ecosystems to mitigate flooding / droughts / fires)	Mitigation activities (e.g. biofuel production, wind farms) can have negative impacts on biodiversity. Infrastructure for adaptation (e.g. risk prevention) can results in negative impacts on biodiversity, ecosystems & ecosystem services.	If taken up, potentially very significant "win-win" If biodiversity not considered, clear risk of being "win-loss"
Water supply (45)	Protection and sustainable management of natural capital, such as clear water resources and the ecosystem / ecosystem services providing them, underpinning socio-economic welfare.	Protection of environmental quality and the quality of ecosystems and ecosystem services (e.g. related benefits to biodiversity)	Without due consideration of biodiversity, man-made infrastructure to maintain water supply / quality might have negative impacts on biodiversity. E.g. dams & dikes are	If taken up, potentially very significant "win-win" If biodiversity not considered, clear risk of being "win-loss"

			known to distract migration of fish.	
Water treatment (waste water) (46)	See above		See above	If taken up, potentially very significant "win-win"
Rehabilitation of industrial sites and contaminated land (50)	Restoration of natural capital underpinning socio-economic welfare (e.g. ecosystem services), creating possibilities for future socio-economic activities on previously contaminated areas.	Restoration of ecosystems and their services (e.g. related benefits to biodiversity)	Some restoration methods might be very intrusive and therefore cause negative impacts on biodiversity at / at the vicinity of the target area (e.g. increased erosion and leaching of nutrients from the disturbed soil).	Potential "win-win" If biodiversity not considered, clear risk of being "win-loss"
Promotion of biodiversity and nature protection (including Natura 2000) (51)	Protection and sustainable management of natural capital underpinning socio-economic welfare (e.g. ecosystem services)	Conservation of biodiversity (e.g. effective implementation of Natura 2000), ecosystems and ecosystem services	N/A	If taken up, potentially very significant "win-win" If biodiversity not considered, clear risk of being "win-loss"
Environmental risk management (53)	Protection and sustainable management of ecosystems ability to prevent / mitigate environmental risks (e.g. flooding, drought, intensity of wild fires) underpins socio-economic welfare.	Protection of environment / ecosystems & their services, i.e. aiming to maintain the natural capacity of ecosystems to prevent / mitigate the impacts of environmental risks	Infrastructure for risk prevention can results in negative impacts on biodiversity, ecosystems & ecosystem services (e.g. destruction of important habitats, fragmentation)	If taken up, potentially very significant "win-win" If biodiversity not considered, clear risk of being "win-loss"
Tourism & Natural assets				
Promotion of natural assets & heritage, e.g. for tourism (55-57)	Promotion of sustainable tourism & recreation,	Sustainable ecotourism can support financing the	Degradation of ecosystems and their services (e.g.	If taken up, potentially very significant "win-win"

	maintenance of cultural & heritage values → increased revenues from tourism	management of protected areas (e.g. Natura 2000)	negative impacts on biodiversity) due to unsustainable tourism activities / development of tourism infrastructure.	If biodiversity not considered, clear risk of being "win-loss"
Transport				
Development of transport systems (16-32)	Development of transport systems supporting further socio-economic development	Planning new transport networks so that they also bring benefits to biodiversity (e.g. development of ecologically functioning green corridors along cycling routes etc.)	Transport infrastructure / networks can results in negative impacts on biodiversity, ecosystems & ecosystem services (e.g. destruction of important habitats, fragmentation)	Traditional "win-loss" If biodiversity taken into due consideration the losses could try to be minimised.
Energy				
Support to renewable energy (39-42)	Improving energy sustainability via development of biofuels	When sustainably managed, biofuel production could bring some benefits to biodiversity, ecosystems and their services compared to previous intensive land use practises.	If not carefully considered, renewable energy production (e.g. biofuel production, wind farms) can have negative impacts on biodiversity, ecosystem and their services.	Traditional "win-loss", if synergies found can be turned into a "win-win"
Urban development / Housing infrastructure				

Integrated projects for urban and rural regeneration (61)	Sustainable socio-economic development (long-term) underpinned by sustainable use of natural capital / ecosystems & their services	Urban development taking into consideration / promoting protection & sustainable use of ecosystems and their services (e.g. development of green infrastructure in urban areas)	Badly planned urban development can lead to degradation of ecosystems & their services	Traditional "win-loss", if synergies found can be turned into a "win-win"
Education & capacity building				
Information society (11)	Development of information systems to support further socio-economic development	Support monitoring ecosystems' status (e.g. data collections & transfer) to maintain their quality	N/A	Potential "win-win"
Support for self-employment and business start-up (68)	Supporting diversification of economic activities in an area to increase sustainability	Promoting sustainable ecotourism, agriculture & forestry (e.g. producing, labelling and marketing biodiversity-friendly certified products)	Without due consideration of biodiversity, ecosystem & ecosystem services: unsustainable use and over-exploitation of natural assets, leading to degradation of ecosystems & loss of biodiversity	Potential "win-win" If biodiversity not considered, clear risk of being "win-loss"
Social inclusion & rehabilitation (71)	Supporting the inclusion / rehabilitation of unemployed, immigrants, ex-criminals etc.	Linking rehabilitations activities to nature conservation (e.g. management of Natura 2000 or eradication of invasive alien species etc.)	N/A	Potential "win-win"
Improving human capital (72-74)	Supporting education	Supporting links	N/A	Potential "win-win"

	underpinning socio-economic welfare	between education, biodiversity and conservation of ecosystems (e.g. increasing awareness on the value of biodiversity & ecosystem services)		
Investment in social infrastructure (75)	Support to social capital	Seeking to support education linked to / supporting conservation and sustainable use of ecosystems and biodiversity (e.g. education initiatives linked with Natura 2000 areas)	N/A	Potential "win-win"
Strengthening institutional capacity (81)	Improving regional / local governance to support socio-economic development	Support to environmental / biodiversity governance (e.g. increasing awareness on / integration of the value of biodiversity, supporting cooperation between relevant sectors)	N/A	Potential "win-win"
Support to transnational / cross-border cooperation & networks (all OP on European Territorial Cooperation)	Improving transnational cooperation to support socio-economic development at broader regional level	Supporting efforts to protect transnational protected areas, ecosystems and ecosystem services (e.g. river basins)	N/A	Potential "win-win"

Notes: * All of these should be taken from the table in Annex III of the Methodology Report, which lists the potential CP activities
** Reflect type of win-win or win-loss (see revised Task 4); focus on climate change and biodiversity

Win-wins and win-losses by theme: Climate change and energy

Win-Wins

CP activities & Operational Programme (OP) Investment Measure	Economic and Social Wins	Environmental Wins
1. R&TD activities in research centres	Improves regional competitiveness Provides highly qualified employment Potential for finding effective solutions to reduce the economic impacts of climate change (e.g. better adaptation) Various co-benefits: - better research quality due to stronger links between research centers, private and public - better use of public funds thanks to a better understanding of the drivers of climate change, their interactions, and consequently the size of the potential impacts of climate change	Increases energy efficiency and reduces GHG emissions on the long-run Potential for finding effective solutions to reduce the environmental impacts of climate change
2. R&TD infrastructure and centres of competence in a specific technology		
3. Technology transfer and improvement of cooperation networks ...		
4.Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)		
5.Advanced support services for firms and groups of firms		
6.Assistance to SMEs for the promotion of environmentally-friendly products and production processes (...)		
7.Investment in firms directly linked to research and innovation (...)		
8.Other investment in firms		
9.Other measures to stimulate research and innovation and entrepreneurship in SMEs		

39. Renewable energy: wind	Generates activity and employment in eco-industries Increase in the purchasing power of households due to reduction of the energy burden Reduces dependency of energy supply on external sources and reduces vulnerability to price shocks Reduces the diffusion in the economy of fossil fuel price shocks (which lead to higher inflation, price/wage spiral, etc.)	Reduction in energy consumption, increased energy efficiency and reduced GHG emissions Encourages modal shift from car to less energy intensive modes Increase of renewable energies in the energy mix
40. Renewable energy: solar		
41. Renewable energy: biomass		
42. Renewable energy: hydroelectric, geothermal and other		
43. Energy efficiency, co-generation, energy management		
53. Risk prevention	Reduction of financial exposure to climate change related impacts Co-benefits linked to sustainable planning: better structuration of economic activities throughout the regions and potential benefits in terms of productivity, more efficient use of infrastructure	Reduces vulnerability to climate change impacts Reduction of emissions from transportation due to polices aiming at densifying habitat
54. Other measures to preserve the environment and prevent risks		
55.Promotion of natural assets	Increase in the attractiveness of areas and related benefits linked to tourism On the long-run, economic benefits associated with increased agricultural yields (linked for e.g. to increased soil diversity and better structure) and reduced costs (e.g. less need for irrigation water)	Increased storage of CO2 due to conservation of wetlands and forest ecosystems Reduction of vulnerability and increased resilience to CC impacts due to protection services provided by ecosystems in terms of protection to natural hazards / catastrophes (e.g. flooding)
56.Protection and development of natural heritage		
57.Other assistance to improve tourist services		
58.Protection and preservation of the cultural heritage		
59.Development of cultural infrastructure		
60.Other assistance to improve cultural		

services		
61.Integrated projects for urban and rural regeneration		
51. Promotion of biodiversity and nature protection (including Natura 2000)		
26.Multimodal transport	Decrease in transport costs due to more efficient use of transport infrastructure Productivity gains due to higher connectivity and reduced time spent in travelling Co-benefits: positive impact on the diffusion of innovation due to increase in linkages.	Reduction of fossil fuel energy consumption and related GHG emissions
27.Multimodal transport (TEN-T)		

Win-losses

CP activities & Operational Programme (OP) Investment Measure	Economic and Social Wins	Environmental Losses
1. R&TD activities in research centres	Same as above	Investment in lock-in technologies with low cost-effectiveness (e.g. carbon capture and storage, biofuels) Excessive focus on energy efficiency (which is subject to high rebound effects) might not bring the foreseen environmental benefits
2. R&TD infrastructure and centres of competence in a specific technology		
3. Technology transfer and improvement of cooperation networks ...		
4.Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)		
5.Advanced support services for firms and groups of firms		
6.Assistance to SMEs for the promotion of environmentally-friendly products and production processes (...)		
7.Investment in firms directly linked to research and innovation (...)		
8.Other investment in firms		
9.Other measures to stimulate research and innovation and entrepreneurship in SMEs		

Win-wins and win-losses by theme: Sustainable Consumption and Production

Cross-cutting activities integrated into CP	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Integrates into the Environmental domains:
	Production			
Environmental Management System	Promoting cleaner production (e.g. promoting the uptake of European and international environmental management standards (EMAS, ISO))	Potential to reduce costs, improve image and enhance competitiveness	Reduced use of natural resources and energy; reduced generation of wastes	– Climate und Energy – Conservation and management of natural resources
	Promoting process-related eco-innovations to increase resource and energy efficiency in production through (e.g. investment in R&D or promoting innovation clusters)	Potential of reduced long-term production costs, improved image and enhanced competitiveness	Reduced use of natural resources and energy; reduced generation of wastes	– Climate und Energy – Conservation and management of natural resources
	Product			
	Promoting product-related eco-innovations to increase resource and energy efficiency of consumer products (e.g. through investment in R&D or promoting innovation clusters)	Improved image and improved competitiveness	Improved resource and energy efficiency	– Climate und Energy – Conservation and management of natural resources
	Retail			
	Promoting regional value chains (e.g. through marketing or labelling initiatives)	Higher regional value creation, increasing employment opportunities in regional businesses, enhanced competitiveness of regional suppliers	Lower transport intensity	– Climate and energy – Sustainable transport

	Consumption			
	Promoting sustainable energy consumption in buildings (e.g. demonstration projects: Insulation, smart metering, solar, district heating, etc.)	Reduced long-term costs for individuals and businesses; additional employment opportunities in local handicraft business	Reduced energy consumption and GHG emissions	– Climate und Energy
	Promoting sustainable patterns of private consumption (e.g. through consumer information centres, consumer advice or campaigns,)	Demand-side promotion of the development and diffusion of eco-innovation; may enhance the competitiveness of green suppliers higher quality of life	Possible improvement of resource and energy efficiency	– Climate und Energy – Transport – Conservation and management of natural resources
	Promoting modal shift in transportation (e.g. improving infrastructure for bikes and public transport and limit accessibility for cars in urban areas)	Improved living conditions in urban areas, improved attractiveness of location, improved public health and decreased health expenses	Reduced GHG emissions and decrease in seriously injured due to traffic accidents	– Climate und Energy – Transport
	Promoting sustainable patterns of public procurement (e.g. green public procurement schemes)	reduced life cycle costs; Promoting the development and diffusion of eco-innovation; may enhance the competitiveness of green suppliers	Reduced use of natural resources and energy	– Climate und Energy – Transport (acquisition of motor vehicles) – Conservation and management of natural resources
	Disposal			
	Waste prevention & recycling (e.g. capital grants for related infrastructure; take-back schemes)	Reduced negative external costs	Reduced use of natural resources and reduction of wastes	– Climate und Energy – Conservation and management of natural resources

Win-wins and win-losses by theme: Water

CP activities	Operational Programme Investment Measure	Economic and Social Wins	Environmental Wins	Environmental Losses	Type of win-win or win-loss – explain**
	Environmental Infrastructure				
Water supply (45)	Water supply (e.g. capital grants for improved treatment, supply grids)	Improved attractiveness of location, capacity for population growth Resource for new / expanded economic activity	Possible improvements in water resources	Possible deterioration in water resources	Depending on scale of investment / capacity increase large or small economic & social wins. Environmental gains from investments in water bodies supporting supply (e.g. reservoirs) Environmental losses from over abstraction and impacts of new investment (e.g reservoirs, pumping stations))
Wastewater treatment (46)	Wastewater treatment (e.g. capital grants for improved sewage treatment, networks)	Improved attractiveness of location / capacity for population growth Resource for new / expanded economic activity	Improvements in water quality	Possible deterioration in water resources	Depending on scale of investment / capacity large or small economic & social wins. Environmental gains from improved water quality Environmental losses from additional treatment activity (energy use), possibly from over abstraction, increased flood risk downstream of STWs
Flood risk management (53)	Flood risk management (e.g. capital grants for flood defence)	Improved resilience to floods, avoidance of related damage and	Avoidance of damage to sensitive eco-systems Maintenance of	Possible impacts from construction and maintenance	Depending on risk reduction large or small economic & social wins Environmental gains from avoidance of damage / maintenance of eco-system

		disruption costs. Avoidance of risks to human life	floodplain functions		services Environmental losses (relatively small) from construction & maintenance
	Transport				
Water freight (31 & 32)	Investment in inland waterways and water borne freight	Reduced costs where delivery times allow	Improvements in river / canal systems		Essentially a win-win
Road Investment (20-23)	Investment in roads	Improves mobility and access Increased agglomeration		Pollution impacts from water run-off	Essentially a win-loss
	Energy				
Renewable Energy (Hydro) (42)	Expansion of hydro power plants	Increased capacity for economic and social development	Reduced emissions depending on substitution	Possible adverse effects on river systems	Essentially a win-win, but with the potential (especially in large schemes) for adverse effects on river systems and communities that rely on them
Conventional electricity generation (cooling) (33, 34)	Expansion of conventional power plants requiring cooling	Increased capacity for economic, social development		Increased discharges Potential adverse effects on river quality / damage to eco-systems	Essentially a win-loss
	Urban development / Housing infrastructure				
Integrated projects for urban and rural	Modernisation & expansion of economic development and	Increased economic activity, employment Development of		Increased demand for water supply Increased	Essentially a win-loss unless associated with investment in natural capital e.g. as part of investment in water treatment, or

regeneration (61) Housing infrastructure (78)	related population	agglomeration benefits		sewage discharges Increased use of river flow for abstraction / dilution. Possible impacts on quality. Amenity impacts from expanded STWs	environmental improvements as part of urban & rural regeneration

ANNEX 2: IDENTIFICATION OF POTENTIAL INSTRUMENTS BY DOMAIN

Transport

Policy instruments:	Type of measure	Implementation level		
		EU	MS	Region
Regulatory Instruments				
Product standards	Emission limit values for vehicles; regulation of CO_2 emissions or energy efficiency of vehicles; recycling standards for vehicles; fuel quality standards for transport fuels	√		
Product labelling	Labelling of a vehicle's CO_2 emissions, fuel efficiency and other emissions standards	√	√	√
Environmental Assessments (SEA & EIA)	SEAs of transport strategies, plans and programmes; EIAs of transport projects	√	√	√
Planning controls	National, regional and local spatial planning to reduce transport demand; sustainable transport strategies; traffic and demand management in favour of particular modes; restrictions on more polluting vehicles and modes; traffic assessments		√	√
Green public procurement	Favouring cleaner and more fuel efficient vehicles in public procurement; procuring construction materials in a sustainable manner	√	√	√
Market Based Instruments				
Environmental taxes and charges on use	Duties and VAT on fuel; differentiating fuel duty to stimulate less carbon intensive or cleaner fuels; road pricing, tolling and congestion charging	√	√	√
Environmental taxes and charges on vehicle purchase and ownership	Taxes on vehicle purchase, registration and ownership (potentially differentiated)	√	√	√

Policy instruments:	Type of measure	Implementation level		
Reform of subsidies	Removal of economically inefficient and environmentally harmful subsidies; reform of company car taxation and treatment of business travel	√	√	
Investment	Investment in infrastructure, particularly for less carbon-intensive modes, to stimulate co-modality, in intelligent transport systems	√	√	√
Stimulating technological innovation and development	Support for research and development, fleet tests and demonstration programmes; support for purchase of cleaner vehicles	√	√	√
Voluntary mechanisms				
Provision of information on inter-modal and alternative transport	Integrated ticketing and information for public transport; awareness campaigns on climate change, alternative travel	√	√	√
Fuel efficient driver training	Training to improve fuel efficiency of driving		√	√
Construction (voluntary) standards or codes of practice	Sustainable construction and management		√	√
Training	Training for SEA and EIA practitioners; training in sustainable transport for decision makers; training in sustainable construction methods		√	√

Biodiversity

Policy instruments:	Type of measure	Implementation level		
		EU	MS	Region
Regulatory Instruments				
Regulations for implementing protected areas	EU and national regulations to establish networks of nature conservation areas (e.g. Habitats and Birds Directives) are / can be increasingly supported by the Cohesion Policy.	√	√	
Environmental Assessments (SEA & EIA)	Use of SEAs and EIAs to comply with the provisions of legislation for protected areas / protected areas networks and to proactively address impacts of strategies and plans on biodiversity, broader ecosystems, landscapes and ecosystem services.	√	√	√
Land use / spatial planning & planning control	Spatial / land use planning to proactively address impacts of land use activities and measures on biodiversity, broader ecosystems, landscapes and ecosystem services.		√	√
Minimum environmental standards of different sectoral policy measures (e.g. cross-compliance for payments under CAP)	Compliance with environmental standards of different sectoral polices supports the maintenance of the general quality of ecosystems (e.g. related biodiversity benefits).	√	√	
Possible upcoming regulations: IAS, Soils Directive	Regulating IAS invasions and reducing negative impacts of IAS helps to support sustainable regional development (e.g. related environmental risks & socio-economic losses). Protecting & improving soil quality in the EU would help to maintain several ecosystem services, hence supporting sustainable regional development and avoidance of socio-economic losses. This is also likely to bring benefits to biodiversity.	√	√	√
Market Based Instruments				

Policy instruments:	Type of measure	Implementation level		
Payments for ecosystem services (PES)	Payments to enhance conservation of biodiversity / quality of ecosystems & their services above the certain minimum good standards. E.g. global payments for the protection and enhancement of carbon storage and capture in forest ecosystems (REDD+).	√	√	√
Reform of subsidies	Reform of subsidies supporting unsustainable development, with harmful impacts on biodiversity and ecosystems (e.g. intensive agricultural practises, overfishing)	√	√	
Taxes and charges / tax breaks and incentives	Taxes and changes to limit unsustainable use of ecosystem / biodiversity resources and other activities harmful to biodiversity. Alternatively, tax breaks and incentives to support sustainable use of resources and encourage biodiversity-friendly activities.	√	√	√
Labelling & creation of markets	Labelling & creation of markets for biodiversity-friendly products and services (e.g. products originating from well-managed protected / Natura 2000 areas)	√	√	√
Green public procurement	Green public procurement to support environmentally sustainable and biodiversity-friendly products.	√	√	√
Voluntary mechanisms				
Provisioning of information	Provision of information on the value of biodiversity, ecosystems and ecosystem services, and supporting the integration of these values into decision-making.	√	√	√
Construction (voluntary) standards or codes	Development of codes and standards to support sustainable, biodiversity-friendly / “aware” practises.	√	√	√
Training & capacity building	Raising awareness and building on the value of biodiversity, ecosystems and ecosystem services, and supporting the integration of these values into decision-making. Also, sharing information on good practises for sustainable land use and the management of protected / Natura 2000 areas.	√	√	√

Clean Energy and Climate Change

Policy instruments:	Type of measure	Implementation level		
		EU	MS	Region
	Regulatory Instruments			
Environmental regulations	Energy efficiency standards, production standards			
Planning controls	Urban planning, risk zoning		√	√
Green public procurement	Energy efficiency of vehicles and appliances (heating, lighting)		√	√
Product standards and labelling	White goods, vehicles (gCO2/km), housing (thermal insulation)	√	√	
Energy efficiency standards	White goods, vehicles (l/km); domestic appliances (heating, lighting)	√	√	
	Market Based Instruments			
Environmental taxes & charges and recycling of revenues	Charges on energy and fuels, CO2 taxes, recycling through "green checks" to households, recycling through tax rebates (on labour, etc.) for businesses	√	√	
Trading schemes	European union emissions trading scheme	√		
Green certificates	Renewable energies		√	
Reform of subsidies and tax rebates	Agricultural tax rebates on energy, energy tax rebates for business transportation	√	√	
Feed-in tariffs	Renewable energies			

Policy instruments:	Type of measure	Implementation level		
	Voluntary Agreements			
	Energy efficiency, CO2 emissions	√	√	
	Public investment			
Green fiscal stimulus	Sectoral demand and supply management (energy mix, etc.)		√	√
Energy	Renewable energies, nuclear energy, energy grids, research	√	√	√
Transport	Combined road-rail transport, research	√	√	√
Skills and training programmes	Carbon proofing tools for region officials		√	√
Innovation programmes	New technologies – production processes (aviation, etc), renewable energies, energy efficiency	√	√	√
Enterprise support	Agricultural & Tourism sectors		√	√

Sustainable Consumption and Production

Policy instruments:	Type of measure	Implementation level		
		EU	**MS**	**Region**
Regulatory Instruments				
Product and production norms and standards	Norms and standards for emissions, waste and resource and energy efficiency	√	√	
Environmental liability	Liability by unpermitted environmental damage	√	√	
Sustainability reporting	Public disclosure of information about an organisation's 'non-financial performance. Energy and resource efficiency.		√	**(√)**
Eco-labelling	Also a voluntary instrument. White goods. Promote sustainable consumption.			
Economic/Market Based Instruments				
Environmental taxes	Meet polluter pay principle. Covering a broad range of medias		√	
Fees and user-charges	Meet full cost recovery principle. Water, waste water, electricity, access to city centres, etc.		√	√
Tradable permits/certificate trading	Energy and resource efficiency. Covering GHG emissions and energy efficiency/use. Also meeting the polluter pay principle	**(√)**	√	**(√)**
Green public procurement	Energy efficiency. Demand-side promotion of eco-innovation		√	√
Voluntary Agreements				
EMAS	Energy and resource efficiency, risk prevention		√	√
Promoting CSR	Awareness-raising and improving knowledge, building competencies to mainstreaming CSR.		√	√
Other voluntary agreements	Packaging, food waste, energy efficiency, green procurement, etc.		√	√

Policy instruments:	Type of measure	Implementation level		
Eco-labelling	Broad range of products and services		√	√
Information centres and consumer advisory centres	Promoting sustainable consumption patterns		√	√
Campaigns	Promoting sustainable consumption patterns		√	√
Public investment				
Subsidies	Energy efficiency in houses and commercial buildings. Development of sustainable products, services or product service systems.		√	√
Eco-loan	Promoting energy efficiency measures		√	√
Research & development	Eco-innovation		√	√
Education and training	Public environmental awareness. Capacity building to foster implementation of EMS in businesses and organisations		√	√
Infrastructural planning	Reduce accessibility for cars in urban areas. Transport modal shift.		√	√

Water

Policy instruments:	Type of measure	Implementation level		
		EU	MS	Region
Regulatory Instruments				
Environmental regulations	Abstraction limits, Metering, Catchment management, Discharge / quality standards	√	√	√
Planning controls	Water use in domestic, commercial developments, Green roofs, surface run-off, SUDS, flood management		√	√
Green public procurement	Water reuse/recycling in public buildings		√	√
Product standards and labelling	White goods	√	√	
Market Based Instruments				
Environmental taxes & charges and recycling of revenues	Water charges, waste water charges – meeting full cost recovery principle and polluter pays principles		√	
Reform of subsidies	Agricultural subsidies, capital allowances for resource efficiency	√	√	
Capital allowances	Resource efficiency		√	√
Informational Instruments				
Agri-environment schemes	Set-aside compensation		√	√

ANNEX 3: IDENTIFICATION OF WHETHER WIN-WINS COULD BE DELIVERED BY NON-INVESTMENT POLICY INSTRUMENTS[130]

Biodiversity

CP activities	Is there an alternative EU instrument in place (other than CP) that could deliver the "win-win" investment?	Could another policy instrument (other than public financing) deliver the "win-win" investment?	If public financing is required, could this be funded at the national (or regional) level rather than by the EU?	Does the funding of the "win-win" intervention contribute to economic, social and territorial cohesion?	Assessment of whether "win-win" investment could be delivered by non-investment policy instruments (note any potential differences between EU MSs)
Mitigation and adaption to climate change (CC) (49)	No.	Private / semi-public financing (e.g. market based instruments) could be used to create incentives & payments schemes to encourage biodiversity friendly CC mitigation measures / ecosystem-based adaptation to CC → create "win-wins". Improved regulation of the negative impacts of CC adaptation & mitigation activities could prevent "win-loss" situations (e.g. via SEA and EIA)	Yes, but continued co-financing considered justified (given EU-level policy priorities / goals) and also a requirement for broader uptake of "win-win" opportunities at national / regional level.	Yes, "win-win" investment supports sustainable socio-economic growth by ensuring the maintenance of ecosystems' quality & resources / services in long-term.	Improved regulation and private / semi-public financing (e.g. market based instruments) could support but not replace public investment → to guarantee effective uptake of "win-wins".

[130] Note that this section is not relevant for transport (no win-wins) and sustainable consumption and production (SCP in itself is understood as a non-investment policy instruments, which is supposed to deliver or enhance win-wins in the context of Cohesion Policy investments).
themes. For biodiversity the focus is on key win-wins, due to the large amount of win-wins.

Water supply (45) **Water treatment (waste water) (46)**	WFD, nature Directives, SEA and EIA, CAP cross-compliance / agri-env measures etc. can indirectly contribute to maintaining the quality of ecosystems (e.g. their ability to maintain & purify water). However, these instruments are <u>not</u> targeted to this purpose.	<u>Private / semi-public investment</u> could be used to create incentives & payments schemes to encourage biodiversity friendly water supply / purification measures and encourage maintenance / restoration of ecosystem's own water retention / purification capacity → create "win-wins". <u>Regulation</u>: targeted implementation of WFD, nature Directives, SEA and EIA could be used to create more "win-wins" <u>Reform of subsidies</u>: removing subsidies that support unsustainable / over-exploitation of water resources would help to prevent short term "win-losses" and long-term "loss-losses". Furthermore, subsidies could be re-targeted to support "win-wins" for biodiversity.	See above	See above	Improved regulation, reform of subsidies and private / semi-public financing (e.g. market based instruments) could <u>support but not replace</u> public investment → to guarantee effective uptake of "win-wins".
Promotion of biodiversity and nature protection (including Natura 2000) (51)	EU nature Directives (with support from other regulatory instruments) support maintenance of ecosystems and their services → indirectly / directly contribute to creating "win-wins" between biodiversity conservation & sustainable development. However, these instruments	<u>Private / semi-public financing (e.g. market based instruments)</u> could be used to create incentives & payments schemes to encourage active links between management of Natura 2000 & sustainable regional socio-economic development → create "win-wins". <u>Regulation (e.g. better implementation) & subsidy</u>	Co-financing already in place.	See above	Improved regulation, reform of subsidies and private / semi-public financing (e.g. market based instruments) could <u>support but not replace</u> public investment → to guarantee effective uptake of "win-wins". Also, support to EU biodiversity goals

	are not targeted for "win-wins" but to biodiversity conservation only.	reform could be used to prevent "win-losses" or even targeted to actively seek more "win-wins".			foreseen in the nature Directives.
Environmental risk management (53)	Flood Risk Directive aims to mitigate flooding, however it is not targeted to "win-wins" between mitigation of risks and biodiversity conservation. WFD, nature Directives, SEA and EIA, CAP cross-compliance / agri-env measures etc. can indirectly contribute to maintaining the quality of ecosystems (e.g. their ability to prevent / mitigate environmental risks). However, these instruments are not targeted to this purpose.	Private / semi-public investment could be used to create incentives & payments schemes to encourage biodiversity friendly / ecosystem based env. risk management → create "win-wins". Regulation: targeted implementation of Flood Risk Directive, WFD, nature Directives, SEA and EIA etc. could be used to create more "win-wins". Reform of subsidies: removing subsidies that support unsustainable land use practise (i.e. lead to increased environmental risks) would help to prevent short term "win-losses" and long-term "loss-losses". Furthermore, subsidies could be re-targeted to support "win-wins" for biodiversity.	Yes, but continued co-financing considered justified (given EU-level policy priorities / goals) and also a requirement for broader uptake of "win-win" opportunities at national / regional level.	See above	Improved regulation, reform of subsidies and private / semi-public financing (e.g. market based instruments) could support but not replace public investment → to guarantee effective uptake of "win-wins".
Promotion of natural assets & heritage, e.g. for tourism (55-57)	EU nature Directive provide for the establishment of EU-wide Natura 2000 Network. This network also creates opportunities for nature / ecotourism. There are also Community-level policy initiatives to enhance tourism in the EU (e.g. Commission	Private / semi-public financing (e.g. market based instruments) could be used to create biodiversity-friendly public-private partnerships between tourism sector and conservation → create "win-wins". Improved regulation of the negative impacts of tourism could prevent "win-loss"	Yes, but continued co-financing considered to be required to guarantee broader uptake of "win-win" opportunities at national / regional level.	See above	Improved regulation, reform of subsidies and private / semi-public financing (e.g. market based instruments) could support but not replace public investment → to guarantee effective uptake of "win-wins", at least in short-term.

	Communication on future framework for EUI tourism policy COM/2010/352). However, none of these existing initiatives / policies explicitly target "win-wins" between sustainable tourism and biodiversity.	situations (e.g. via SEA and EIA). Reform of subsidies: removing subsidies that support unsustainable tourism / land use practise for tourism would help to prevent short term "win-losses" and long-term "loss-losses". Furthermore, subsidies could be re-targeted to support "win-wins" for biodiversity.			
Support to renewable energy (39-42)	EU policies on renewable energy aim to ensure that the production of renewable does not have negative impacts on environment / ecosystems / biodiversity, i.e. prevent "win-losses". However, the effectiveness of this policy principle and its uptake in practise remains uncertain.	Private / semi-public financing (e.g. market based instruments) could be used to support biodiversity-friendly production of renewable energy → create "win-wins". Improved regulation of the negative impacts of renewable energy production could prevent "win-loss" situations (e.g. via SEA and EIA). Reform of subsidies: removing subsidies that support non-biodiversity friendly means for renewable energy production would help to prevent short term "win-losses" and long-term "loss-losses". Furthermore, subsidies could be re-targeted to support "win-wins" for biodiversity.	Yes, but continued co-financing considered justified (given EU-level policy priorities / goals) and also a requirement for broader uptake of "win-win" opportunities at national / regional level.	See above	Improved regulation, reform of subsidies and private / semi-public financing (e.g. market based instruments) could support but not replace public investment → to guarantee effective uptake of "win-wins", at least in short-term.
Support for self-employment and business start-up	No	Private / semi-public financing (e.g. market based instruments) could be used to create	Yes, but continued co-financing considered justified (given EU-level	Supporting sustainable / "green" diversification of economic activities in an	Private / semi-public financing (e.g. market based instruments) and

(68)		biodiversity-friendly public-private partnerships between economic diversification, "green jobs" and conservation → create "win-wins".	policy priorities / goals) and also a requirement for broader uptake of "win-win" opportunities at national / regional level.	area increases sustainability	public-private partnerships could <u>support but not replace</u> public investment → to guarantee effective uptake of "win-wins".

Clean Energy and Climate change

CP activity	Is there an alternative EU instrument in place (other than CP) that could deliver the investment?	Could another policy instrument (other than public financing) deliver the investment?	If public financing is required, could this be funded at the national (or regional) level rather than by the EU?	Does the funding of the intervention contribute to economic, social and territorial cohesion?	Assessment of whether investment could be delivered by non-investment policy instruments (note any potential differences between EU MSs)
39. Renewable energy: wind **40. Renewable energy: solar** **41. Renewable energy: biomass** **42. Renewable energy: hydroelectric, geothermal and other**	Yes, the EU ETS is contributing to the emergence of a price-signal on carbon emissions that is leading to an increase in the demand for less GHG emitting energies and fostering investment in this sector.	No, or indirectly, through upstream policies that could attract private finance, such as the creation of research centers, etc.	Yes, although the nature of the impact of GHG emissions (global impact) makes supra-national funding more relevant and effective. In addition, the level of national public finance depends on national resources available and national political and economic priorities.	Unlikely, even though these types of investments are a way to put the focus on regional assets and needs.	It is unlikely that these investments, which require the involvement of public stakeholders and often require high amount of capital investments (related for example to an upgrading/adaptation of the energy grids) would be possible and profitable without some degree of public finance
43. Energy efficiency, co-generation, energy management	Yes, National and regional eco-innovation and research strategies focused on optimisation of supply chains, energy efficiency directed innovation, etc.	Yes, norms and standards concerning on production processes and material use (especially intermediary goods) can lead to a certain extent to improvements in energy efficiency; investments likely to attract private investors, such as research and innovation programs (which attract private	Yes, depending on national resources available	No, this is unlikely. However, research and development actions might foster local and regional competitiveness, increase the amount and the quality of jobs available and lead to higher economic growth. But this positive effect is indirect and not specific to energy	Yes, however differences between MS/regions in incentives and regulations lead to different levels of investments in energy efficiency, co-generation and energy management. CP funding could focus on compensating these imbalances, at least during the harmonisation phase of climate change and energy policies among MS

		donors through the financing of research projects for example)		efficiency	
53. Risk prevention	No, the work done at the EU level on the payments for ecosystem services might lead to actions in this field, but these are not yet operational at the EU or at the MS level	Yes, the improvement of local and regional risk mapping, coupled with awareness raising, knowledge sharing and training are key policy measures that require minimal public financing and that are key to improving risk prevention and limiting/reducing vulnerability	Yes, however given the nature of these investment (usually high amounts, as destruction/re-construction are often involved as well as expropriations, etc.), mixed EU/national/regional financing is relevant, especially for MS with less available ressources	Yes, it contribute to put the emphasis on regional risks and assets and push to restructure the mapping of economic and social activities	Yes, through price-signal based schemes such as the modulation of insurance premiums in order to take into account differences in risk exposure, the use of financial instruments in order to improve the edging of risks (weather derivatives, etc.), index-based insurance, etc. However these schemes need to be completed by other (public) policies in order to be fully effective, reduce exposure and increase resilience.
54. Other measures to preserve the environment and prevent risks					

Water

CP activities*	Is there an alternative EU instrument in place (other than CP) that could deliver the investment?	Could another policy instrument (other than public financing) deliver the investment?	If public financing is required, could this be funded at the national (or regional) level rather than by the EU?	Does the funding of the intervention contribute to economic, social and territorial cohesion?	Assessment of whether investment could be delivered by non-investment policy instruments (note any potential differences between EU MSs)
Water supply (45) **Wastewater treatment (46)**	EU Water Framework Directive (WFD) provides for water pricing, such that service providers should seek to recover costs through water charges on users of water and wastewater treatment services	Cost recovery by public and private utilities could be used, subject to constraints posed by the affordability of charges by low income households	Match funding is already provided. The need for investment is accelerated by the existence of EU legislation, beyond MS capacity to fund.	Funding allows for the expansion of economic activity and demographic growth whilst maintaining social cohesion (by ensuring affordability) and respecting environmental standards	At least some of the investment could be delivered through cost recovery from users. Note that this investment is largely restricted to cohesion and new MS; where the largest constraints of affordability are greatest
Flood risk management (53)	No – spatial plans would set the context but would not deliver	In some limited circumstances could be funded through development gains, but generally no	Match funding is already provided. The need for investment is accelerated by increasing risks, beyond MS capacity to fund.	Funding provides enhanced protection for economic and social development, avoiding the costs, disruption and dislocation from flooding	Unlikely that investment could be delivered by non-investment policy instruments, at least in short term. In the long-term
Water freight (non-	No – TEN-T or national and regional spatial plans would	In some limited circumstances could	Unlikely for TEN-T, as priority for	Improves trade between and within	Difficult to deliver infrastructure without

CP activities*	Is there an alternative EU instrument in place (other than CP) that could deliver the investment?	Could another policy instrument (other than public financing) deliver the investment?	If public financing is required, could this be funded at the national (or regional) level rather than by the EU?	Does the funding of the intervention contribute to economic, social and territorial cohesion?	Assessment of whether investment could be delivered by non-investment policy instruments (note any potential differences between EU MSs)
TEN-T, 31) & (TEN-T, 32)	set priorities, but would not deliver the investment	be funded through development gains, but generally no	national-level investment would probably be national infrastructure. Level of national public finance depends on national resources available	EU countries, thus enables economic development. Provides substitution opportunities to lower impact modes	some degree of public finance (see Step 4); all infrastructure has the potential to contribute to cohesion. In MS with developed transport infrastructure, non-EU public finance would fund new infrastructure ….
Renewable Energy (Hydro) (42)	Yes – REF TO EU POLICY	Yes – Feed in tariffs	Level of national public finance depends on national resources available	Improves sustainability of development	Feed-in tariffs or similar could replace investment subject to issues of affordability.

ANNEX 4: IDENTIFICATION OF WHETHER FUNDING EXISTING INTERVENTIONS ARE LEADING TO THE CROWDING OUT OF POTENTIAL PRIVATE INVESTMENT[131]

Transport

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
16. Railways	In order to attract private money, there would need to be a means of delivering return on the investment, which could be through user charging or other form of partnership with the private sector.	Depends on existing ownership structures of railways; difficult where ownership of infrastructure and operations are separate	The potential for private finance to fund infrastructure development depends on national politics, the attitude of relevant governments to using private finance for this purpose and the availability of private sector companies that have the confidence to invest.	Possibly, as some private finance has been found to date in some countries, e.g. for rolling stock and engines in the UK. Perhaps the potential for more private finance in the longer-term, if the ownership and administrative structures allow for this and investor confidence can be maintained.
17. Railways (TEN-T)				
18. Mobile rail assets				
19. Mobile rail assets (TEN-T)				
20. Motorways	In order to attract private money, there would need to be a means of delivering return on the investment, which could be through user charging or other form of partnership with the private sector.	Road construction firms; specialised infrastructure operators.	The potential for private finance to fund infrastructure development depends on national politics, the attitude of relevant governments to using private finance for this purpose and the availability of private sector companies that have the confidence to invest.	Possibly, as private companies operate roads in different EU countries and private investment has been used to construct road infrastructure. Hence, there is probably potential to use more private finance to fund road investment.
21. Motorways (TEN-T)				
22. National roads				
23. Regional/local roads				

[131] Not applicable for biodiversity "win-wins" as public and private funding / investments are commonly considered as complimentary, not exclusive, to one another. Especially, funding under Cohesion Policy is foreseen to be essential to help to initiate private support to biodiversity.

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
24. Cycle tracks	Cycle infrastructure is probably not a candidate for user charging, as it would be difficult to enforce for example. Private financing could be used to contribute to the cost of cycle tracks, e.g. through sponsorship.	Sponsorship might be provided by benevolent, environmentally-aware local companies.	Unlikely to be significant. Would depend on local circumstances and the willingness of local companies to support cycle schemes.	Unlikely, as potential is probably not that great.
25. Urban transport	User charging for roads in urban areas could be used to fund improvements to other urban transport infrastructure and services, more generally.	Not clear what type of organisation would invest in developing transport in urban areas. Probably best left to local authorities, but could be funded by user charging. Some support, at least in kind, could come from developers of clean vehicles.	The potential to apply user charging to raise money to fund other urban transport developments depends on a number of factors, including the local legal framework, local and national politics and the extent and type of charging scheme being considered.	Possibly, although the arrangements would be more complicated than that focusing on single modes, due to the need for an integrated cross-modal approach in many cases. If public transport operators are privately-operated, there might be some scope.
52. Promotion of clean urban transport				
26. Multimodal transport	User charging, or other forms of forms of partnership with the private sector, could be used to fund multi-modal transport. It might be possible to obtain contributions	Companies that might potentially benefit from the provision of the multi-modal infrastructure.	As with other types of infrastructure, the potential for private finance to fund infrastructure development depends on national politics, the attitude of relevant governments to using private finance for this purpose and the availability of	Possibly. There is probably potential to use private finance to fund investment in such infrastructure, possibly if accompanied by user charging or other support from the private sector.
27. Multimodal transport (TEN-T)				

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
	from private companies that would benefit from the new infrastructure.		private sector companies that have the confidence to invest.	
28. Intelligent transport systems	User charging could be used to cover such costs, e.g. congestion charging in urban areas, tolls on inter-urban roads or universal charging. Funding of ITS would probably be a secondary rather than primary reason for the charge.	Not clear.	As with other infrastructure, it depends on various local and national circumstances.	Unlikely that crowding out has occurred much to date, as it is not clear where private money might come from.
29. Airports	Airport charges, or other forms of partnership with the private sector, could be used to cover the costs of infrastructure. Additionally, it might be possible to obtain contributions from companies that benefit from the improved infrastructure.	Airlines, local freight operators; airport operators, where airports are privately operated.	As with other types of infrastructure, the potential for private finance to fund infrastructure development depends on national politics, the attitude of relevant governments to using private finance for this purpose and the availability of private sector companies that have the confidence to invest.	Possibly, as although ports and airports are often funded through public finance, there are examples of private finance being involved, particularly where the operation of ports and airports is in private hands. There might be the potential to use more private finance to fund such investment, particularly if accompanied by some form of user charging.
30. Ports	Port charges, or other forms of partnership with the private sector, could be used to cover	Shipping companies, national freight operators; port operators, where ports		

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
	the costs of the infrastructure. Additionally, it might be possible to obtain contributions from companies that benefit from the existence of the infrastructure.	are privately operated.		
31. Inland waterways (regional and local)	Port charges and user charges, e.g. of canals and locks, as well as other forms of partnership with the private sector, could be used to cover the costs of the infrastructure. Additionally, it might be possible to obtain contributions from companies that benefit from the existence of the infrastructure.	Shipping companies, local freight operators; port operators, where ports are privately operated.		
32. Inland waterways (TEN-T)				
Infrastructure for alternative transport energy carriers	User charging, as well as other forms of partnership with the private sector, could be used to fund infrastructure for alternative energy carriers, but significant	Privately-operated utility companies, vehicle manufacturers.	As with other types of infrastructure, the potential for private finance to fund infrastructure development depends on national politics, the attitude of relevant governments to using private finance for this purpose and the availability of	Unlikely so far, as little extensive development of such networks. Potential in the future.

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
	upfront investment would be required. Some contributions might come from private companies that would benefit from the new infrastructure.		private sector companies that have the confidence to invest.	

Clean Energy and Climate Change

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
39. Renewable energy: wind **40. Renewable energy: solar** **41. Renewable energy: biomass** **42. Renewable energy: hydroelectric, geothermal and other**	In order to attract private money, there would need to be a means of delivering return on the investment, which could be through incentive schemes such as feed-in-tariffs and/or taxes on non-renewable energies (to increase demand for renewables).	Depends on existing structure of the energy market (liberalised or not) and the ownership of the energy grid; historic public utilities or private utilities (such as POWEO in France, for example) or both may invest depending on the conditions	The potential for private investors to finance the development of renewable energies depends on institutional factors, such as the attitude of governments to private involvement in strategic investments, and market factors, such as the availability of private sector companies that have the confidence and the capacity to invest.	Possibly, as private finance is generally significant in this field throughout the EU. Given the price signals and the structure of incentives, the private sector is likely to be more and more involved in the renewable energy industry. Market and ownership structures as well as the administrative framework should allow for this and facilitate private investment.
43. Energy efficiency, co-generation, energy management	In order to attract private money, all the measures aiming at increasing the price of energy and limiting energy consumption are likely to foster private sector investment in these areas.	Any enterprise for which energy consumption represents a significant share of its variable costs.	The potential for private investment in these fields depends on local energy prices, general knowledge relating to these areas/techniques as well as research efforts. It also depends on the incentives (information campaigns, sensitisation, etc.) of public authorities	Possibly, as private finance is generally significant in this field throughout the EU. However, concentrating public interventions upstream on research and innovation efforts can maximize the overall cost-efficiency of actions in this field.
53. Risk prevention **54. Other measures to preserve the**	Private investors could find an interest if these measures are coupled with a	Depends on the nature of the project/investment; most likely groupings	The potential for private investment in these field depends on the local context, especially the environmental,	Unlikely, as very few private investors have taken part in these type of interventions and because these still lack an integrated approach, combining environmental and

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
environment and prevent risks	rehabilitation/valorisation of landscapes, touristic sites and more generally a dynamisation of economic activity, in relation to eco-tourism, for example	of enterprises with a diverse portfolio of activities (small transport companies, activities related to tourism, etc.)	cultural and economic assets of the region/MS.	economic dimensions.

Sustainable Consumption and Production

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
6. Assistance to SMEs for the promotion of environmentally-friendly products and production processes	In order to attract (more) private money, the potential economic incentives need to be more comprehensive. Better methods to conduct cost-benefit-analysis. More information about the economic benefits of environmentally-friendly products and production processes would have a positive influence.	SMEs.	There is a clear statistic discrepancy between EU-15 and EU-12. Uptake and registration to EMAS or EU Ecolabel is much lower in the new Member States.	Statistic data indicates that Cohesion Policy investments do not crow out private investments in the new Member States. However, it is less clear, if this would be the case in the old Member States.
Technical Assistance	They could not.	None	This basically only applies to new Member States where GPP is still on an early stage.	Rapid increase GPP may exceed possible supply, which might force private companies who might have previously bought green to purchase the non green option. This, however, is a very hypothetical risk.

Water

CP activity	How could private money be used for the investment?	What type of private enterprise would potentially invest?	To what extent would this assessment vary between Member States and regions?	Assessment as to whether current interventions are leading to a crowding out of potential private investment
Water supply (45) **Wastewater treatment (46)**	Private sector investment would require the transfer of assets from the public sector and the ability to levy (and probably increase) user charges. Public-private partnerships do exist in some MS but caps on returns because of affordability limit private sector interest	Utility companies do exist in some MS, notably the UK, but in other MS, privatised water utilities have now been taken back into public ownership (eg France). It is unlikely that there will be any major new privatisation	The interest in privatisation is likely to be less in those MS where CP funding is greatest, simply because these MS are the ones facing the greatest constraints of affordability	It is unlikely that the current interventions are crowding out potential private investment. The lack of private sector interest relates to the low returns to be expected, in turn due to limits on levels of user charges
Flood risk management (53)	In some limited cases it may be possible to secure developer contributions to flood defences to enable development to proceed. Otherwise there is no scope to secure returns	Major construction firms might be in a position to invest were there to be any possibility to secure a return	The ability to secure private investment is likely to be extremely limited in all MS	Unlikely that there has been any crowding out of investment.
Water freight (non-TEN-T, 31) &	Inland waterways are public assets.	There is very little new construction.	There is unlikely to be much variation	Unlikely that there has been any crowding out of investment

(TEN-T, 32)	Investment is part funded by user charges through licenses. Higher license fees could contribute to investment.	Investment is in modernisation and maintenance by public authorities. Some specialised facilities (eg boat lifts) might secure investment from operating companies if specific charges could be levied	between MS. Some variations may occur in the willingness to pay of users for licences, depending on the returns to users from access	
Renewable Energy (Hydro) (42)	See separate section on renewable energy			

ANNEX 5: HIGH LEVEL ASSESSMENT OF POTENTIAL TO USE NON-INVESTMENT POLICY INSTRUMENTS AS CONDITIONAL OR COMPLEMENTARY INSTRUMENTS[132]

Transport

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
Regulation							
Product standards	For transport vehicles and fuels are developed at the EU level and applied across all MSs and regions	Not on its own, but could be used to inform purchasing decisions (see GPP below)	Could increase costs, if less environmentally damaging products are more expensive	Potentially lower emissions (of conventional pollutants and/or GHGs) resulting from the use of the vehicle	Not directly, but could be if used to inform GPP (see below)	Only to assist GPP (see below)	No, as developed at EU level as part of a separate process; could be used to inform GPP (see below)
Product labelling	Yes, there are many examples of, for example, energy efficiency labelling at the EU level; also national and regional labels	Not on its own, but could but could be used to inform purchasing decisions (see GPP)	Could increase costs, if encourages purchase of less environmentally damaging products that are more expensive	Aims to change buyer's behaviour to increase the purchase and use of lower emitting or less energy intensive products	Not directly, but could be used to inform GPP (see below)	Only to assist GPP (see below)	No, as labelling best developed outside of CP; could be used to inform GPP (see below)

[132] Table for Clean Energy and Climate Change to be added.

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
Environmental Assessments (SEA & EIA)	Yes, can be mandated at the EU level; minimum requirements can also be set	SEA could be applied to all plans and EIA to all projects funded under any OP	Potentially increases costs, as increases administrative requirements	No impacts are directly mitigated, but environmental benefits should result from undertaking the assessments	It should improve the overall operation of the OP from perspective of the environment	Already a requirement of the OPs, i.e. a conditional instrument	No, as should be applied to all OPs anyway
Planning controls	Planning controls can be applied across all MSs and regions at different levels, e.g. national, regional and local	Relevant to all types of OP, as development should be consistent with local planning controls. Of particular importance to transport OPs.	Potentially increases costs, as increases administrative requirements	No impacts are directly mitigated, but environmental benefits would result if planning controls are consistent with environmental improvement.	It should improve the overall operation of the OP by making sure that this is consistent with wider regional development frameworks	If planning controls in the location concerned are consistent with environmental improvement, then ensuring that OP measures are consistent with this framework is likely to be beneficial	Potentially, although difficult to identify how it could be used as a complementary or conditional measure that to deliver environmental benefits, as impact will depend on national, regional and local approaches to planning
Green (public) procurement	Yes, as EU legislation explicitly allows GPP	Of relevance where products or services are procured with for the purpose of delivering OP projects. From the	Likely to increase costs, as less environmentally damaging products are	Should mitigate any impacts associated with the extraction of raw materials, e.g. aggregates, and	Potential to improve the environmental performance of the OP projects	EU funds could be used to cover increased any costs associated with the purchase of less environmentally	Include on the short-list, as could relatively easily be used as a conditional instrument

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
		perspective of transport, this applies to raw materials and other products purchased for use on infrastructure, and potentially vehicles where these are purchased.	often more expensive	the manufacture and use of products, e.g. lighting, street signs, vehicles, etc.		damaging products	
Market Based Instruments							
Environmental taxes and charges on use	Framework, including minimum rates, for fuel duty and a framework for certain tolls and user charges are set at EU level. However, there might be barriers in MSs to the use of such instruments.	From the perspective of transport, these could be applied across any OP that has a transport element.	Not directly, but could generate revenues depending on design. These revenues could be used to reduce the net costs of the OP, but again there might be some barriers in MSs to using taxes or charges in this	Potentially, if increases in use are limited, or use declines as a result.	Has the potential to improve the environmental and economic performance of OPs if economic inefficient consumption is prevented.	Has the potential to improve the economic and environmental performance of the projects funded within the OP.	Include on the short-list, particularly as many of the transport investments are about enabling demand, and so this demand must be kept to economically and environmentally efficient levels.

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
			way				
Environmental taxes and charges on vehicle purchase and ownership	Framework and minimum rates could be set at EU level. However, barriers may exist within MSs to the use of these instruments.	Difficult to see how the instrument could be used in conjunction with OPs.	If differentiated on the basis of the environmental performance of a vehicle could reduce OP costs.	Potentially, if proportion of more fuel efficient or less polluting vehicles increases	Indirect potential to improve environmental performance of the OP.	Difficult to see how the instrument could be used as a conditional instrument, although could be used as a complementary instrument.	No, as would generally be a national measure and only has indirect impacts on the OP.
Reform of subsidies	Potentially, as EU rules exist that aim to limit the use of subsidies, but these still exist	The reform of subsidies could be linked to any OP that focuses on an area where subsidies are still applied.	Unlikely to have any effect on the net costs of an OP	Potentially, if more environmentally-beneficial behaviour results.	Reforming inefficient subsidies could contribute to ensuring that an OP is more economically and environmentally efficient.	The removal of any subsidies could be made a condition of funding, and would ensure that CP funds economically efficient projects.	Potentially, but would need to be identified and addressed on a case-by-case basis
Stimulating technological innovation and development	Funding can be attained from the EU level, which can be	More relevant to those OPs that focus on R&TD.	No direct impacts other than the funds allocated to the	Potential, long-term benefits.	No direct impact on the operation of an OP.	Some OPs already focus on R&TD; little to be gained from requiring that	No, little to be gained from requiring that all OPs and projects stimulate

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
	supplemented by national funds and applied in all MS and regions.		technological innovation and development.			all OPs and projects stimulate technological innovation and development.	technological innovation and development.
Voluntary Instruments							
Provision of information on inter-modal and alternative transport	Framework or requirements could be set at EU level, but more relevant at national and local level	Potentially applicable to any OP that has a transport element.	No direct impacts on OP costs	Potentially, if less environmental damage results from changes in behaviour	Important if different or alternative modes supported in OP.	Only relevant to some OPs that focus on inter-modal or alternative modes; likely to be part of such projects anyhow	No, as should be an important element of any measure for inter-modal and alternative modes
Fuel efficient driver training	Framework or basic requirements could be set at EU level, but implementation needs to be national or local.	Any driver would potentially benefit from training, but such training is unlikely to be part of an OP and is probably best addressed in other policy processes	No impact on OP costs.	Potentially lower fuel consumption and thus emissions if changed driving behaviour results.	Potential to deliver environmental benefits on small number of projects where vehicles will be driven.	Could be required on the (probably) small number of relevant projects.	No, as only likely to be relevant to a small number of projects.

Instrument	Potential to be applied across all potential MS and regions	Impacts on the costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential complementary or conditional instrument
Market Based Instruments					
Environmental taxes & charges and recycling of revenues	NO – Energy taxes are set by MS. EU wide legislation only concerns minimum tax rates for energy. The revision of the directive on energy taxation is aiming to lift these and introduce a minimum taxation of carbon emissions.	Indirect savings due to reduction of energy consumption and increase in energy efficiency. However, these gains are likely to materialize on the medium to long-term. On the short-term, with limited and costly substitution possibilities, an additional cost is generally observed.	reduces greenhouse gas emissions	LIKELY - due to changes in behavior and investments in cleaner technologies, that facilitate substitution	NO

Emissions trading schemes	YES – the European trading scheme (EU-ETS) operate sat the EU level (installations from different countries can trade allowances, as defined by Directive 2003/87/CE)	Carbon pricing is the most cost-effective way to reduce CO2 emissions. Cost savings will be achieved by reduced energy consumption and increased energy efficiency. Cost savings can be significant on the long-term	emissions reductions are certain due to the explicit cap in emissions	LIKELY - due to changes in behavior and investments in cleaner technologies, that facilitate substitution	YES - it covers 50% of European CO2 emissions
Green certificates	NO – These schemes operate at MS level. It is not applied by all MS and significant differences exist between national schemes.	these certificates are likely to increase investment costs on the short-term but the overall impact depends on the scope of the scheme	reduced emissions of greenhouse gases due to an increase of the share of renewable in the energy mix; the overall effect depends on the scope of the scheme	UNLIKELY – not enough widespread and demanding	NO
Reform of subsidies and tax rebates	NO – The scope of these reforms will vary among countries; subsidies and tax rebates are defined at the MS level; EU legislation only aims at giving a common legal framework for such actions.	Sectors concerned (e.g. agriculture, transport) will be affected on the short-term.	reduction of market imperfections will lead to more virtuous behaviors on the medium to long-term in terms of energy consumption and use of polluting substances.	YES – reforms will reduce the negative incentives that offset the effects of sustainable investments	NO - reforms are not in their implementation phase

Feed-in tariffs	NO - These schemes operate at MS level. The type of renewable energy sources concerned and the levels of guaranteed prices vary considerably from country to country	Feed-in tariffs generate cost savings for those who sell renewable energy. The effect is uncertain at the aggregate level, in relation to the impact of these schemes on energy prices	promotes the deployment of renewable energy sources and contributes to reduce greenhouse gas emissions	LIKELY- indirectly, through awareness raising among consumers and energy producers alike	YES - Feed-in tariffs are widely used among MS
Voluntary agreements					
Energy efficiency and CO2 emissions schemes	NO – The design of these agreements is made at the MS level; No common EU framework.	they can allow participating companies to achieve objectives with increased cost-effectiveness than mandatory requirements; there has to be a clear incentive to participate otherwise adoption will be low and cost savings negligible	Possible environmental gains hrough the adoption of CO2 emission targets for example. However, emissions can be transferred from the participating sector to the non-participating one, through reallocation of economic activity, if the scheme is badly designed	UNLIKELY - local actions which do not enhance Cohesion Policy	NO
Public investment					
Green fiscal stimulus	YES – Green economic packages are designed at the MS level but are consistent with EU environmental targets (e.g. 3x20). Fiscal stimulus packages benefit from EU funding aiming at helping MS achieve their objectives and fulfill EU ones.	can lead to a rebalancing of fiscality from productive capital to polluting sources, reduce market failures and increased cost-effectiveness of environmental policies	depending on the priorities of the package; main objectives usually are an increase of renewable energies in the energy mix, increased energy efficiency and consequently a reduction of greenhouse gas emissions	LIKELY – enable a more favorable ground for CP investments in terms of incentives	NO

Energy	YES and NO – EU can promote investment in energy infrastructure, renewable and clean energies; however, national objectives may widely differ among countries (e.g. nuclear energy)	Depending on the nature of the investments (clean energy vs. fossil energy, nuclear vs. other non-CO2 energy). Securing a diverse and less fossil intensive energy mix and upgrading energy grids and infrastructure can lead to costs savings. However, investments in lock-in and costly infrastructures (e.g. nuclear, carbon capture and storage) can lead to increased long-term costs	if public investment leads to higher energy efficiency and lower energy consumption	POSSIBLE	NO
Regulation					
Energy efficiency standards, production standards	YES – eco-design requirements for energy-related products are set up at the EU level. Standards will be defined in the near future	although it will lead to additional investments for companies, cost savings (lower electricity expenses) for final users can be achieved by increased energy efficiency	Energy savings will be generated for a large range of products	NO - not directly linked to the Cohesion Policy	NO – major tool but not related to Cohesion Policy

Urban planning, risk zoning	NO - Urban planning and risk zoning are established at the central and local levels in MS	Might entail public investments in the short-term but will generate costs savings in the mid-term due to an optimization of land use and reduced exposure to natural hazards	not directly but will reduce pollution and energy consumption related to inappropriate land use	NO - but could be used as a complementary/conditional measure	NO – no EU-wide scheme
Green procurements : Energy efficiency of vehicles and appliances (heating, lighting)	YES – requirements are set at the EU level	Will not result in immediate costs saving for contracting authorities but could generate indirect cost savings due to energy savings	The use of cleaner vehicles and less energy-consuming appliances will lead to a reduction of energy consumption and a reduction of CO2 emissions	NO – not directly but could be used as a complementary measure by requiring public authorities to adopt them within OP Operations	NO - could be used as a complementary measure
White goods, emissions from vehicles, housing (thermal insulation)	YES - Energy labelling for energy-related products is set up at the EU level; standards for new passenger cars and on energy performance of buildings as well	Will generate immediate costs savings for users, due to energy savings	these measures will reduce pollution caused by heat loss, CO2 emissions and will limit energy consumption	NO - but could be used as a complementary measure	YES (housing - thermal insulation)
domestic appliances (heating, lighting)	YES - energy efficiency standards set in several sectoral directives, labelling of tyres	Costs savings linked to energy and fuel savings for users	electricity savings, fuel savings for users	NO - but could be used as a complementary measure	NO -

Biodiversity

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
Regulation							
Regulations for implementing protected areas	YES Already used as complementary or conditional measure to some extent (e.g. Natura 2000 network)	YES, when OP has links to the use of natural resources / land use	Existing instrument → already forms environment standard for CP. May lead to higher net costs to avoid any deterioration in env. quality / ecosystems & their services	Protection of valuable species & ecosystems → protection of wider ecosystems & their services	Activities with negative impacts on biodiversity / ecosystems / ecosystem services avoided explicitly / made ineligible for funding Also, could be targeted to actively seek opportunities for "win-wins" for biodiversity and socio-economic development (via support to ecosystem services).	More formal recognition of the "win-wins" between biodiversity & CP helps to encourage take-up of these opportunities	YES, it is an existing EU-wide instrument with concrete potential to deliver "win-wins" for biodiversity & CP.
Environmental Assessments (SEA & EIA)	YES Already used as complementary or conditional f or CP activities	See above	See above	Protection of environmental quality → support to conservation of biodiversity & maintenance of ecosystem	Activities with negative impacts on biodiversity / ecosystems / ecosystem services avoided explicitly / made ineligible for funding. Also, could be targeted	More formal / targeted recognition of the "win-wins" between biodiversity, ecosystem services & CP and better prevention of	YES, it is an existing EU-wide instrument with concrete potential to be better targeted to avoid any further damage to biodiversity, ecosystem and their services.

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
				services	to actively focus on avoiding any damage to ecosystems and their socio-economically important services.	damage to ecosystem services	
Land use / spatial planning & planning control	NO, as the EU has no "direct" competence in land use planning, only indirect competence via some sectoral policies (e.g. agriculture)	See above	May lead to higher net costs when having to come up with alternatives for land use to avoid any deterioration in env. quality / ecosystems & their services	Protection of environmental quality via improved land use planning → support to conservation of biodiversity & maintenance of ecosystem services	Biodiversity benefits / "win-wins" could be created if national planning processes were used to target OPs & their objectives (e.g. to biodiversity rich areas)	National / regional land use plans could be used to target funding under EU Cohesion, in order to avoid any possible damage to biodiversity, ecosystems & ecosystem services in identified fragile areas.	NO, as the EU has limited competence in land use planning. However, national / regional land use plans could be used to target funding under EU Cohesion
Minimum environmental standards of different sectoral policy measures (e.g. cross-compliance for payments under CAP)	YES Already used as complementary or conditional measure under different EU funds.	See above	See above	Protection of environmental quality → support to conservation of biodiversity & maintenance of ecosystem services	Activities with negative impacts on biodiversity / ecosystems / ecosystem services avoided explicitly / made ineligible for funding. Also, could be targeted to actively focus on avoiding any damage to important ecosystem services	More formal / targeted recognition of the "win-wins" between biodiversity, ecosystem services & CP and better prevention of damage to ecosystem services	No, as should be applied to all OPs automatically.
Possible upcoming	YES, EU-wide instruments if /	See above	May lead to higher net	Protection of biodiversity /	Activities with negative impacts on biodiversity /	Further improving safeguards for	No, as at these instruments moment only in the

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
regulations: IAS, Soils Directive	when adopted		costs when having to come up with alternatives, apply to additional permitting procedures, (e.g. use of alien species) or to avoid any deterioration in env. quality / ecosystems & their services Also, restrictions on the use of alien species may lead to opportunity costs	environmental quality → support to conservation of biodiversity & maintenance of ecosystem services	ecosystems / ecosystem services avoided explicitly / made ineligible for funding. Also, could help to actively focus on avoiding any damage to important ecosystem services and seeking opportunities for "win-wins" for biodiversity and socio-economic development (via support to ecosystem services).	environmental protection → maintenance of ecosystem services	pipeline
Market Based Instruments							
Payments for ecosystem services (PES)	YES, a framework could be set at the EU level	YES, when OP has links to the use of natural resources /	More sustainable use of natural resources → in longer term, decreased need	Support to sustainable use of natural resources → reduced degradation of ecosystem	No impact on the operation of OP – but increases complementarily between biodiversity measures	Increased complementarily & coordination if measures supporting biodiversity	YES, interest in developing PES schemes for biodiversity are increasing and therefore it would be important to ensure that PES & CP investment

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
		land use	for CP intervention to support sustainability → possible costs savings.	quality & their services		Possible cost reduction in long-term	complement one another
Reform of subsidies	YES, the EU rules should already aim to remove / retarget subsidies, but these still exist	See above	Reform of subsidies → <u>in longer term</u>, decreased need for CP intervention to support sustainability (e.g. env. restoration / treatment of damage, water treatment) → possible costs savings. On the other hand, possible need for greater CP intervention if reduced subsidies (e.g. agriculture) reduce social	Reduced degradation of ecosystem quality & their services Also, reform could be targeted to actively encourage sustainable use of natural resources / ecosystem services	No significant impact on the operation of OP	Improved sustainable use of natural resources. Increased complementarily & coordination if measures supporting biodiversity	YES, reform of subsidies in the EU is ongoing and it should be do with due consideration to / complementary with biodiversity investments under CP

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
			cohesion in short term				
Taxes and charges / tax breaks and incentives	YES, a framework could be set at the EU level	See above	More sustainable use of natural resources → in longer term, decreased need for CP intervention to support sustainability → possible costs savings.	See above	No impact on the operation of OP – but increases complementarily between biodiversity measures	Increased complementarily & coordination if measures supporting biodiversity Possible cost reduction in long-term	Possibly, as considered to have potential to support further conservation of biodiversity in the EU
Labelling & creation of green / sustainable markets	YES, the framework can be set at the EU level	See above	See above Also, cost savings could be targeted to further enhance the update of green labelling etc. schemes	Support to sustainable use of natural resources → reduced degradation of ecosystem quality & their services	See above	See above Also, could be specifically targeted to measures / products promoting biodiversity conservation.	Possibly, as considered to have potential to support further conservation of biodiversity in the EU
Green public procurement	YES, as requirements can be set at the EU level	See above	See above Also, cost savings could be targeted to further enhance the	Support to sustainable use of natural resources → reduced degradation of ecosystem quality & their	See above	See above Also, could be specifically targeted to measures / products promoting biodiversity	Possibly, as considered to have potential to support further conservation of biodiversity in the EU

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
			update of green labelling etc. schemes	services		conservation.	
Voluntary Instruments							
Provisioning of information	YES, framework or requirements could be set at EU level, but more relevant at national and local level.	YES, when OP has links to the use of natural resources / land use	No impact on OP, unless OPs might also be aligned to actively support / complement the complementary or conditional measure	Support to sustainable use of natural resources → reduced degradation of ecosystem quality & their services Also, targeted actions to actively encourage sustainable use of natural resources / ecosystem services	No foreseen impacts	Improved sustainable use of natural resources. Increased complementarily & coordination if measures supporting biodiversity Also, could be specifically targeted to promote biodiversity conservation.	No, as not considered the most effective complementary or conditional measure
Construction (voluntary) standards or codes	YES, framework or basic requirements could be set at the EU level	See above	See above	See above	No foreseen impacts	See above	No, as not considered the most effective complementary or conditional measure
Training & capacity building	YES, framework or basic requirements could be set at the	See above	See above	See above	No foreseen impacts	See above	No, as not considered the most effective complementary or conditional measure

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
	EU level						However, training and capacity building needed to support uptake of "win-wins" for biodiversity under CP

Sustainable Consumption and Production

Case/Media	Instrument	Potential to be applied across all potential MS and regions	Potential to be applied across all types of OP	Impacts on the costs of an OP	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
Regulation								
	Norms and standards							
Cleaner Products	Product standards	Are currently developed at EU level and applied across on MS and regions	Potentially, as could be used to inform purchasing decisions (see also GPP)	Could increase costs, if less environmentally damaging products are more expensive	Lower resource and energy consumption	Not directly	Will allow programme and project design to more clearly take account of cleaner products. Provides supportive measures	NO
Cleaner Production	Sustainability reporting obligations	Can be applied across all MS and regions	MS measure for Public disclosure of information about an organisation's non-financial performance	Creates incentives to improve resource and energy efficiency, hence potentially reduces long-term costs	Improves resource and energy efficiency	Not directly	Will allow programme and project design to more clearly take account of cleaner production. Provides supportive	NO

							measures. Will increase transparency and gives additional incentive to fulfil OP requirements	
Sustainable consumption (and cleaner products)	*Public Procurement*							
	Green public procurement	GPP can be implemented in all regions and Member States	MS schemes and regulations to promote sustainable consumption and – to some extent – promote better products	Yes, will reduce negative external costs and life-cycle costs	Yes, improves resource and energy efficiency and reduce waste generation	Could have an impact on the operation of the OP when made a flaking measure for CP investments	Yes, will allow programme and project design to more clearly take account of sustainable consumption. Provides supportive measures. Provides demand-side instrument for promoting technology innovation and better products	YES
Market Based Instruments								
	Environmental taxes und charges							
Sustainable	Environmental	Yes	Schemes only	Possible, gives	Yes, gives	Not directly	Possibly,	NO

consumption and cleaner production	tax on fossil fuels		exist on national level	economic incentives for investments in efficiency measures in energy production, hence leads to long-term cost savings on fuel. Would reduce negative external environmental costs.	economic incentives for investments in efficiency measures in energy production, investments in alternative fuel sources as well as reduces demand for conventional produced energy, hence lowers GHG emissions from energy sector		provides an economic incentive to comply with environmental targets possibly consistent with OP priorities	
Sustainable consumption	Environmental tax on electricity	Yes	NO – Schemes only exist on national level	POSSIBLE – increases energy prices and reduces demand and gives incentive for energy efficiency measure by consumers, hence possible long-term cost savings. Also reduces negative external environmental costs.	YES – reduces energy consumption, hence reduces GHG emissions.	Not directly	POSSIBLE – provides an economic incentive to comply with environmental targets possibly consistent with OP priorities	NO
	User-charges on water and	Yes	Water pricing is a major instrument	Increase in water prices would	Give an incentive to	Not directly	Economic and social concerns	NO - because already short-

	waste water		and used throughout the EU. Price levels vary, influenced by concerns of affordability for low income HH and impacts on competitiveness of water using sectors	reduce demand for water. revenues would also fund investments currently paid for by OPs	reduce consumption, hence lower absolute level of resource use and pollution		will limit price rises in those MS where substantial OP investment in water supply and wastewater treatment	listed under domain water
Waste reduction	Landfill tax	Yes	NO – MS scheme to create incentive for reuse and recycling and providing funding for research into sustainable waste management	POTENTIALLY – gives incentives for investments in waste management, which potentially can reduce long-term costs	YES – decreases in 'inactive' material landfilled as well as increases reuse and recycling, hence reduces the environmental impact of waste discard	Not directly	POSSIBLE – provides an economic incentive to comply with environmental targets possibly consistent with OP priorities	NO
	Tradable permits/certificate trading							
	White certificates	Yes	MS scheme to give economic incentive to companies and public authorities for actions to improve energy efficiency and to identify potential	YES – through improved energy efficiency, which will lead to long-term cost reductions relative to absolute demand	YES – improves energy efficiency	Not directly	POSSIBLE - provides an economic incentive to comply with environmental targets possibly consistent with OP priorities	NO

			for least costly energy savings (France)					
	Subsidies							
	Environmental Superior Products (ESP)	Yes	NO – MS scheme to increase the development of sustainable products, services or product service systems (PSS). Includes advisory and financial support regarding designing more sustainable products and services	YES – reduces developing costs, increases resources and energy efficiency of product, hence potential reduces life-cycle costs	YES – increases resources and energy efficiency of product, hence lowers level of pollution	Not directly	POSSIBLE – when integrated into the CP	NO
Voluntary Instruments								
Cleaner production	EMS	Developed at EU level and applied across MS and regions	EU EMAS (eventual ISO 14000)	Reduces long-term costs, improve image and enhance competitiveness	Reduces use of natural resources and energy; reduces generation of wastes	Could have an impact on the operation of the OP when made a flaking measure for CP investments	Will allow programme and project design to more clearly take account of cleaner production. Provides supportive measures	YES - EU wide scheme which can complement CP investment instruments very well
Cleaner Products	EU Eco-Label Scheme	Developed at EU level and applies to all MS and regions	EU Eco-Label Scheme Regulation (EC/2010/66) to promote better	Through improved products, which will lead to reduced negative	Better products reduce use of natural resources	Could have an impact on the operation of the OP when made a flaking	Will allow programme and project design to more clearly take account of	YES - EU wide scheme which can complement CP investment instruments very

			product and hence product-related eco-innovations	external costs. Reduces life-cycle costs		measure for CP investments	cleaner products. Provides supportive measures	well
	Information Instruments							
	Information centres	Can be applied in all MS and regions	MS, regional or local measures to promote the concept of resource and energy efficiency in private companies (ex. Effizienz-Agentur NRW, D).	Reduces long-term costs, improve image and enhance competitiveness	Reduces use of natural resources and energy; reduces generation of wastes	No	POSSIBLE – enhancing capacity of companies to deal with sustainability requirements in CP. Could be integrated into CP authorities or programme	NO – is, however, a very interesting advisory instrument

Water

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
Regulation							
Water Supply & Treatment: Abstraction limits, Metering, Catchment management, Discharge / quality standards	Water Framework Directive (WFD) regulates water bodies across EU. Will enhance / mitigate env. impacts in most W-W, W-L	Can be applied in all types of OP where there is water use	Already frames environment standards. May lead to higher net costs to avoid any deterioration in quality	Requires improvement in water bodies. Promotes responses to various economic pressures through River Basin Plans	Will allow programme and project design to more clearly take account of impacts on water resources. Provides advice and support on appropriate enhancement/mitigation measures	More formally acknowledges the policy framework for water investment.	A major EU wide instrument framing management of water resources would complement CP. WFD encouragement for user charges is considered below.
Water use in domestic, commercial developments, Green roofs, surface run-off, SUDS, flood	Detailed activities that could be implemented through WFD River Basin Plans, or adopted	Can be applied in all types of OP where some scope to improve water	Could increase net costs if higher development costs are more than savings in	Improves water efficiency and reduces risks of flooding and related environmental damage	Allows development projects to build in improved water management measures	Integrates water resource efficiency into the design of other interventions	Although would add value it is suggested that since River Basin Plans and WFD would promote these measures that

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
management	voluntarily in development planning	efficiency	water charges and reduced flood damage				not considered as a separate complementary or conditional instrument
Water reuse/recycling in public buildings						Sets a benchmark for CP funded construction	
White goods (washing machines, dishwashers)	Implemented through eco-labelling standards. No EU wide scheme		Lower net costs through improved water efficiency leading to lower demand		No impact on the operation of an OP	Added value through demand management measure	A relatively modest instrument in absence of EU wide scheme, and does not have the potential to be a complementary or conditional measure
Market Based Instruments							
Water charges, waste water charges –	Water pricing is a major instrument and used	Can be applied in all types of OP where	Reduce net costs - increase in water prices	Reduces use of water resources and lowers levels of	Economic and social concerns of affordability will limit price rises in those MS	Increase awareness and incentives for improved water	Major EU wide scope as a complementary or conditional or

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
meeting full cost recovery principle and polluter pays principles	throughout the EU. Required under the WFD (Art 9). Price levels vary, influenced by concerns of affordability for low income HH and impacts on competitiveness of water using sectors	there is water use	would reduce demand for water. Revenues would fund investments currently paid for by OPs	pollution	where substantial OP investment in water supply and wastewater treatment is needed. However, scope in most MS to make cost recovery more transparent and OP can stimulate greater awareness and use of the instrument	efficiency; reduces demand for water; and moves some of the CP investment burden to users.	complementary measure in context of the WFD
Removal of harmful subsidies (esp. agriculture)	EU agricultural subsidies lead to higher levels of water demand and agricultural inputs that generate water pollution.	Reform of EU subsidies would influence all types of OPs esp those covering areas with	Lower demand for water and reduced pollution would reduce supply and treatment costs.	Reduces use of water resources and lowers levels of pollution, especially diffuse pollution	Increases complementarity between Cohesion Policy and agricultural policy but would have little effect on OPs except those with large agricultural areas	Improves efficiency of markets and should reduce net costs to CP unless major impacts on social cohesion	Major scope as a complementary measure – but unlikely due to political obstacles to subsidy reform

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
		agriculture	Possible need for greater CP intervention if reduced agricultural activity reduces social cohesion				
Capital allowances for resource efficiency	NO EU wide scheme to allow business investment in water saving / treatment techniques to be offset against business taxes	Could be applied to businesses in all OP areas	Would lower net costs through reduced demand for water from businesses	Reduced demand for water. Reduced water pollution.	Would not affect operation of OP	Reduced costs as a result of improved efficiency by businesses	No scope to introduce as a complementary instrument. Could be part of a package of measures to be encouraged by OPs
Informational Instruments							
Agri-	No EU wide	Could be	Reduces net	Water related	No impact on the	Added value	No scope to

Instrument	Potential to be applied across MS and regions	Potential to be applied across different types of OP	Impacts on the net costs of an OP?	Environmental impacts mitigated	Impact on the operation of the OP	Added value of using the instrument to complement OP measures	Assessment and conclusion as to whether the instrument should be included on the short-list as a potential conditional or complementary instrument
environment schemes	scheme – MS schemes to encourage farmers to allocate land for environmentally beneficial use. Also voluntary schemes on pesticides reduction	applied in OPs with large agriculture sector	costs through reduced water supply and pollution treatment costs	but also wider eco-system benefits	operation of OP – but increases complementarity between Cohesion Policy and agricultural policy	from the wider environmental benefits as well as encouragement to change behaviour leading to lower net costs	introduce as a complementary instrument. Could be part of a package of measures to be encouraged by OPs

ANNEX 6: RELEVANCE OF THE SHORT-LISTED NON-INVESTMENT POLICY INSTRUMENTS FOR COHESION POLICY ACTIVITIES

Transport: Green Public Procurement

CP activity	Will the instrument operate at the appropriate scale?	Will the instrument operate across all types of OP?	Will the instrument generate cost savings for the OP?	Will the instrument generate environmental benefits?	Will the instrument improve OP operation?	What is the added value of using the instrument as a conditional or complementary instrument?	Is its use as a conditional or complementary instrument relevant to the activity?
16 and 17. Railways (TEN	Yes, as could potentially be applied to the construction of infrastructure anywhere for any mode.	It could potentially apply to any OP that funded the development of transport infrastructure.	Unlikely, as will require additional elements to make infrastructure less damaging to biodiversity and less GHG intensive; any "greener" products are likely to be more expensive	Yes, as objective is to reduce environmental damage resulting from the construction of the infrastructure and the impact its presence has on wildlife and habitats	Yes, as resulting developments should be environmentally-less damaging and thus economically more efficient overall	Added value is two-fold: i) would align CP with objectives of other policies, particularly those relating to environment; and ii) CP could be used to cover additional costs an instrument that would otherwise increase public spending	Yes, as should help to reduce environmental impact of infrastructure construction, operation and maintenance
20, 21, 22 and 23. Roads (TEN-T, motorway, other national, regional and local)							
24. Cycle tracks							
26 and 27. Multimodal transport (TEN-T and other)							
29. Airports							
30. Ports							
31 and 32. Inland waterways (TEN-T and other)							
18 and 19. Mobile rail assets (TEN-T)	Yes, as could be applied to the purchase of any rail or urban public transport	Yes, as it could potentially be applied to any OP that might fund	No, costs will increase due to the higher costs of more fuel-efficient vehicles	Yes, as would result in earlier purchase and use of cleaner, more fuel efficient vehicles, thus	Yes, as could ensure that any subsequent rail (and other public) transport is undertaken		Yes, as should ensure that any subsequent transport by rail or that public transport in
25. Urban transport							
52. Promotion of clean urban transport							

	vehicle operated by any operator	the purchase of vehicles.		resulting in lower total emissions of GHGs	using cleaner and more fuel efficient trains and carriages		urban areas is more fuel efficient

Transport: Charges on the use of transport

CP activity	Will the instrument operate at the appropriate scale?	Will the instrument operate across all types of OP?	Will the instrument generate cost savings for the OP?	Will the instrument generate environmental benefits?	Will the instrument improve OP operation?	What is the added value of using the instrument as a conditional or complementary instrument?	Is its use as a conditional or complementary instrument relevant to the activity?
16 and 17. Railways (TEN-T and other)	Yes, pricing could theoretically be used on any piece of transport infrastructure to discourage its use (e.g. congested roads in urban areas), manage demand or limit use to economically-efficient levels (generally), or to stimulate its use, depending on the relative environmental benefits of the use of the infrastructure concerned.	It could potentially be applied to any OP that funded the development of transport infrastructure	Not directly, but could be used for cost recovery or revenue generation	Potentially, if set at appropriate levels and designed appropriately, i.e. to discourage, manage, limit or stimulate use depending on relative environmental impacts	Potentially, as could ensure that, for example, OP delivers projects that are economically efficient and consistent with wider environmental policy objectives.	Added value is two-fold: i) ensures that OP delivers economically efficient levels of activity; and ii) ensures that CP is consistent with other EU policy goals, particularly those relating to the environment	Yes, as is important to ensure that CP does not stimulate economically-inefficient levels of (transport) activity, particularly given this sectors potentially high adverse environmental impact.
20, 21, 22 and 23. Roads (TEN-T, motorway, other national, regional and local)							
26 and 27. Multimodal transport (TEN-T and other)							
29. Airports							
30. Ports							
31 and 32. Inland waterways (TEN-T and other)							

Biodiversity: Regulation

CP activity	Will the instrument operate at the appropriate scale?	Will the instrument operate across all types of OP?	Will the instrument generate cost savings for the OP?	Will the instrument generate environmental benefits?	Will the instrument improve OP operation?	What is the added value of using the instrument as a conditional or complementary instrument?	Is its use as a conditional or complementary instrument relevant to the activity?
Sustainable management & promotion of biodiversity (e.g. Natura 2000), natural heritage and natural assets / resources	YES, they are EU-level regulatory instruments.	Applicable to all OPs	DIRECTLY & INDIRECTLY, through ensuring protection of biodiversity / improvement of environmental quality & maintenance of different ecosystem services (i.e. savings via avoiding costs of replacement)	YES, by ensuring improved biodiversity conservation, env. protection & sustainable use of natural capital.	Yes, improved OP performance re: overall environmental sustainability	Improved "quality control" of CP measures and further reduction of their negative impacts on biodiversity, ecosystems and their services Also, possible to try to actively increase "win-wins" between biodiversity conservation & support to CP objectives by exploring to also target the Regulations to support maintenance and delivery of ecosystem services.	YES, significant potential to better complement CP objectives at EU-level (e.g. by exploring more targeted use of these instruments to also deliver biodiversity and CP "win-wins")
Prevention of environmental risks (e.g. flooding, unnatural wild fires, draught)	See above	See above	See above	See above	See above	See above	See above
Mitigation & adaption of climate change (via ecosystem based	See above	See above	See above	See above	See above	See above	See above

measures)							
CP activities with traditional "win-losses", e.g. energy, transport, urban development, socio-economic diversification, new business opportunities, man-made infrastructure for risk prevention	YES, they are EU-level regulatory instruments.	Applicable to all OPs	DIRECTLY & INDIRECTLY, through ensuring protection of biodiversity / improvement of environmental quality & maintenance of different ecosystem services (i.e. savings via avoiding costs of replacement)	YES, by ensuring improved biodiversity conservation, env. protection & sustainable use of natural capital.	Yes, improved OP performance re: overall environmental sustainability	Improved "quality control" of CP measures and further reduction of their negative impacts on biodiversity, ecosystems and their services	YES, significant potential to ensure long-term, overall sustainability of CP measures at the EU-level

Biodiversity: Subsidy Reform

CP activity	Will the instrument operate at the appropriate scale?	Will the instrument operate across all types of OP?	Will the instrument generate cost savings for the OP?	Will the instrument generate environmental benefits?	Will the instrument improve OP operation?	What is the added value of using the instrument as a conditional or complementary instrument?	Is its use as a conditional or complementary instrument relevant to the activity?
Sustainable management & promotion of biodiversity (e.g. Natura 2000), natural heritage and natural assets / resources	YES, number of subsidies operate at the EU-level	Applicable to all OPs	DIRECTLY & INDIRECTLY, through ensuring protection of biodiversity / improvement of environmental quality &	YES, by ensuring more sustainable use of natural capital → improved env. protection → maintaining ecosystems & their services	Yes, as removal of harmful subsidies will ensure that no perverse incentives are at place to jeopardise CP	Improved complementarily across the EU funds → removal of harmful subsidies will ensure that no perverse incentives are at place to jeopardise CP OPs operation & goals	YES, removal of harmful subsidies will ensure that no perverse incentives are at place to jeopardise CP OPs operation & goals

			maintenance of different ecosystem services (i.e. savings via avoiding costs of replacement)		OPs operation & goals		
Prevention of environmental risks (e.g. flooding, unnatural wild fires, draught)	See above	See above	See above	See above	See above	See above	See above
Mitigation & adaption of climate change (via ecosystem based measures)	See above	See above	See above	See above	See above	See above	See above
CP activities with traditional "win-losses", e.g. energy, transport, urban development, socio-economic diversification, new business opportunities, man-made infrastructure for risk prevention	Subsidy reform can help to complement the efforts within CP to ensure that no support is given to activities harmful to biodiversity & natural capital (e.g. in long term)						

Biodiversity: Payments for Environmental/Ecosystem Services (PES)

CP activity	Will the instrument operate at the	Will the instrument operate across	Will the instrument generate cost	Will the instrument generate	Will the instrument improve OP	What is the added value of using the instrument as a conditional or	Is its use as a conditional or complementary

	appropriate scale?	all types of OP?	savings for the OP?	environmental benefits?	operation?	complementary instrument?	instrument relevant to the activity?
Sustainable management & promotion of biodiversity (e.g. Natura 2000), natural heritage and natural assets / resources	YES, a general framework(s) for PES can be developed at the EU level, and then implemented at the national / regional level (taking into consideration different specific conditions).	Applicable to all OPs	DIRECTLY & INDIRECTLY, through ensuring protection of biodiversity / improvement of environmental quality & maintenance of different ecosystem services (i.e. savings via avoiding costs of replacement)	YES, by ensuring more sustainable use of natural capital → improved env. protection → maintaining ecosystems & their services	YES, by complementing OPs objectives / activities and therefore ensuring general cost-saving and "win-wins"	PES schemes can complement OPs objectives / activities / operation and therefore create synergies, general cost-saving and "win-wins" → ensure increased benefits for money invested	YES, PES are considered a promising new instrument to complement the existing instruments for protecting biodiversity / ecosystems / ecosystem services, supporting risk management and helping to mitigate / adapting to climate change
Prevention of environmental risks (e.g. flooding, unnatural wild fires, draught)	See above	See above	See above	See above	See above	See above	See above
Mitigation & adaption of climate change	See above	See above	See above	See above	See above	See above	See above
CP activities with traditional "win-losses", e.g. energy, transport, urban development, socio-economic diversification, new business opportunities, man-made infrastructure for	PES schemes can be used to promote & incentivise sustainable use of natural capital → they can provide pioneering examples / support to abolishing CP support to any activity with negative impacts on biodiversity & natural capital.						

risk prevention	

Clean Energy and Climate Change: Feed-in-tariffs

	Will the Instrument operate at the appropriate scale?	Will the Instrument generate cost savings?	Will the Instrument generate environmental benefits?	Will the Instrument improve OP Operation?	Is it relevant?
Win-Win					
39. Renewable energy: wind	YES – implemented at MS level with strong implication of local authorities	UNCERTAIN – Feed-in tariffs generate cost savings for those who sell renewable energy. The effect is uncertain at the aggregate level, in relation to the impact of these schemes on energy prices	YES – increase of the share of renewable and non-CO2 emitting energies in the global energy mix	LIKELY- through increased investments in renewable energies and spill-over effects	YES
40. Renewable energy: solar					
41. Renewable energy: biomass					
42. Renewable energy: hydroelectric, geothermal and other					
49. Mitigation and adaption to climate change	YES – implemented at MS level with strong implication of local authorities	UNCERTAIN – Feed-in tariffs generate cost savings for those who sell renewable energy. The effect is uncertain at the aggregate level, in relation to the impact of these schemes on energy prices	YES - promotes the deployment of renewable energy sources and contributes to reduce greenhouse gas emissions	LIKELY- through increased investments in renewable energies and spill-over effects	YES
Win-Loss					

Infrastructure construction	YES – local stakeholders are closely associated in the decision process	UNCERTAIN – construction of new infrastructure and updating of existing ones will translate into higher costs on the short-term; these costs may be reduced by optimization of energy infrastructure	NO – increased demand for raw materials for the construction of new infrastructure	NO	YES
Security of energy supply	YES – local stakeholders are closely associated in the decision process	UNCERTAIN – additional costs due to upgrading of energy grids in order to adapt to decentralized energy supply; supply disruptions might be covered by imports, usually at a higher cost.	UNLIKELY – Likely to lead to more energy losses and an increased gap between primary energy production and final consumption.	NO	YES

Clean Energy and Climate Change: Norms for the thermic insulation of buildings

	Will the Instrument operate at the appropriate scale?	**Will the Instrument generate cost savings?**	**Will the Instrument generate environmental benefits?**	**Will the Instrument improve OP Operation?**	**Is it relevant?**
Win-Win					
49. Mitigation and adaption to climate change	YES – implemented through MS according to local norms for the insulation of buildings	YES – insulation of buildings is a cost-effective way to mitigate global warming compared to carbon capture and storage or reforestation, in some	YES – will reduce GHG emissions and therefore contribute to global warming mitigation	YES – Will simplify alignment of OP measure with GHG emissions targets	YES

		cases			
47. Air quality	YES – air quality standards are currently already set at EU level and implementation and monitoring is taking place both at MS at local level	YES – In the long run, the reduced number of diseases and premature death linked to these emissions will override the initial investments	YES – emission of pollutants into the air will be reduce the occurrence of respiratory diseases/premature death	LIKELY – Will simplify alignment of OP measure with air quality policies	YES
48. Integrated prevention and pollution control					
43. Energy efficiency, co-generation, energy management	YES – authorities at all levels of governance are in charge of buildings and may contribute to making these more efficient	YES – The reduction of energy used to heat buildings will result in cost reduction	YES – Reduced energy used will generally result in less fossil fuel extraction and less emissions	YES – The OP will contribute to achieving increased energy efficiency	YES
Investments in insulation	YES – Investment in insulation can take place at different levels of governance	YES – The investments in insulation are considered cost-effective over the long run	LIKELY – investments in insulation will result in reduced GHG and air pollutant emissions but the retro-fitting of buildings might also have adverse environmental impacts at the stage of production and installation of the insulating materials	YES – By triggering green investments and local job creation, in line with the Lisbon Agenda	YES
Transformation of certain wastes into insulation materials for buildings	YES – Local authorities are often the primary level of governance responsible for the implementation of	LIKELY – Although using recycled materials might generate some additional costs compared with primary	YES – less waste might need to be land-filled and incinerated and the insulation of buildings will not require additional extraction of the	YES – Will simplify the mainstreaming of the EU Thematic Strategy on Waste in OPs	YES

	waste policy and recycling	materials it can be cost-effective if appropriate technologies are developed and economies of scale are achieved	necessary raw materials		
Win-Loss					
Construction of new buildings	YES – will be implemented through MS according to local norms for the insulation of buildings	UNLIKELY – at the stage of construction the instrument is likely to create additional costs. The norm will however result in falling prices for the insulation of buildings due to economies of scale.	NO – As new buildings will be constructed because retro-fitting old buildings is very costly, additional construction and demolition waste and land sealing might be observed	NO – it will further compromise a number of objectives in EU's nature conservation policy and contribute to urban sprawl	YES
Renovation of old buildings	YES – will be implemented through MS according to local norms for the insulation of buildings	UNLIKELY– Renovation of old buildings to reach thermal insulation norms – cost savings might occur in the long run but these are unlikely in the	UNLIKELY – Renovation of old buildings may result in adverse environmental effects, such as production of construction and demolition waste	YES – Ops to increase resource efficiency may very well complement norms for the thermal insulation of buildings	YES
Increased demand for raw material for insulation	YES – will be implemented through MS according to local norms for the insulation of buildings	UNCERTAIN	NO – Although some of the materials for insulation might be from recycling it is likely that part of it will be produced with primary resources, including biotic resources. It is therefore likely that more biomass will be produced to cover	UNCERTAIN – OPs could ensure that research and innovation leads to efficient materials which require only a minimum amount of material input.	YES

			this additional demand.		

Sustainable Consumption and Production: Green Public Procurement

	Will the Instrument operate at the appropriate scale	**Will the Instrument generate cost savings?**	**Will the Instrument generate environmental benefits**	**Will the Instrument improve OP Operation**	**Is it relevant**
Win-Win					
SCP	YES – implemented through MS, regional and local schemes and/or regulations	YES – through product life-cycle cost savings	YES – will lead to more sustainable consumption patterns	LIKELY – will simplify alignment of OP measure with policies of scp	YES
Climate and energy	YES – implemented through MS, regional and local schemes and/or regulations	YES – will increase energy efficiency and reduce long-term energy costs	YES – will have a positive impact on energy efficiency and energy use	LIKELY – will simplify alignment of OP measure with climate and energy policy	YES
Sustainable transport	YES – implemented through MS, regional and local schemes and/or regulations	LIKELY – requirements for new cars and transport services will reduce energy consumption and reduce medium and long-term costs	LIKELY – through procurement of energy efficient cars or transport services and investments in e-mobility	LIKELY – will simplify alignment of OP measure with climate and energy policy	YES
Conservation and management of natural resources	YES – implemented through MS, regional and local schemes and/or regulations	YES – will reduce use of certain natural resources, increase recycling and reuse, hence leading to reduced negative external costs	YES – will have a positive environmental impact	LIKELY – will simplify alignment of OP measure with environmental policy	YES

Sustainable Consumption and Production: Environmental Management and Audit Scheme (EMAS)

	Will the Instrument operate at the appropriate scale	**Will the Instrument generate cost savings?**	**Will the Instrument generate environmental benefits**	**Will the Instrument improve OP Operation**	**Is it relevant**
Win-Win					
SCP	YES – the instrument can complement/be complemented by CP measures	YES – through long-term cost savings and reduced negative external costs	YES – through improvements in improve environmental performance in production	YES – will provide measure to promote sustainable production with CP investments	YES
Climate and Energy	YES – the instrument can complement/be complemented by CP measures	YES – energy efficiency measures in production lead to long-term energy cost savings	YES – will lead improved energy efficiency in production	YES – provides measures to promote energy efficiency in production	YES
Transport	NO – transport not encompassed in the scope of the scheme	UNLIKELY – not in the scope of scheme	UNLIKELY – not in the scope of scheme	NO – transport not included in the Ecolabel scheme	NO
Conservation and management of natural resources	YES – the instrument can complement/be complemented by CP measures	LIKELY – reduced use of natural resources leads to reduced resource and disposal costs	YES – will lead to reduced resource use and waste generation	YES – provides measures to promote resource efficiency in production	YES

Sustainable Consumption and Production: EU Eco-Label Scheme

	Will the Instrument operate at the appropriate scale	**Will the Instrument generate cost savings?**	**Will the Instrument generate environmental benefits**	**Will the Instrument improve OP Operation**	**Is it relevant**
Win-Win					
SCP	YES – can complement/be complemented by CP	LIKELY – 1) through long-term cost savings by the consumer, and 2)	YES – will promote sustainable consumption as well as environment	YES – 1) makes implementing and executing of green	YES

	measures	through reduced negative external costs	friendly products, hence will generate environmental benefits	procurement measures more easy, 2) provides measures to promote sustainable products and services	
Climate and Energy	YES – can complement/be complemented by CP measures	YES – more sustainable consumption and more energy efficient products and services will reduce energy consumption and hence GHG emissions	YES – will increase energy efficiency	YES – provides measures to promote energy efficient products and services	YES
Transport	NO – transport not included in the Ecolabel scheme	UNLIKELY – transport not included in the Ecolabel scheme	UNLIKELY – transport not included in the Ecolabel scheme	NO – transport not included in the Ecolabel scheme	NO
Conservation and management of natural resources	YES – can complement/be complemented by CP measures	LIKELY – more sustainable consumption and environmental friendly products and services reduces negative external costs	YES – more sustainable consumption and better products and services will reduce pressure on natural resources	YES – provides measures to promote resource efficient products and services as well as recycling and reuse	YES

Water: Water Framework Directive

CP activity	Will the instrument operate at the appropriate scale?	Will the instrument operate across all types of OP?	Will the instrument generate cost savings for the OP?	Will the instrument generate environmental benefits?	Will the instrument improve OP operation?	What is the added value of using the instrument as a complementary or conditional/complementary instrument?	Is its use as a complementary or conditional or complementary instrument relevant to the activity?
Water Supply	YES EU wide – implemented through MS and sub-national River Basis Plans	Applicable to all OPs	UNLIKELY – will require management of abstraction levels. May require compensation payments	LIKELY – investment in water supply will be required to respect the WFD	LIKELY – will simplify alignment of OP measure with water policy	More formally acknowledges the policy framework for water investment.	YES - A major EU wide instrument framing management of water resources would complement CP. WFD encouragement for user charges is considered below.
Wastewater Treatment			UNLIKELY – will require investment in WWT in most River Basins.	LIKELY – investment in WWT will be required to respect the WFD			
Flood Risk Management	YES EU wide – implemented through MS and sub-national River Basis Plans and	Applicable to OPs with a flood risk	UNCERTAIN – will require management of risk levels. May require investment – WFD may lead to more	LIKELY – investment in flood risk management will be required to respect the WFD		Integrates water resource efficiency into the design of other interventions	Although would add value it is suggested that since River Basin Plans and WFD would promote these measures that is not

	captures flood risk areas		efficient choices				considered as a separate complementary or conditional instrument
Water Freight	UNCERTAIN – water freight investment may or may not be aligned with OPs	Applicable to OPs with inland waterways	LIKELY – investment in canals/ rivers in support of freight should help reduce direct maintenance costs	UNCERTAIN – depends on investment proposals, but WFD should not allow any loss of water quality / eco-system service		Formally aligns water freight investment with provisions of WFD	WFD would be relevant to water freight investment
Hydro-energy plant	YES – implemented through MS and sub-national River Basis Plans	Applicable to all OPs with hydro investment	UNLIKELY – will require management of river flows.	LIKELY – investment in power plant will be required to respect the WFD		Formally aligns hydro-energy investment with provisions of WFD	WFD would be relevant to hydro-energy plant
Conventional energy plant		Applicable to all OPs with conventional energy plant investment	UNLIKELY – will require management of abstraction levels. May require compensation payments	LIKELY – investment in power plant will be required to respect the WFD		Formally aligns conventional energy investment requiring water cooling with provisions of WFD	WFD would be relevant to conventional energy plant
Industrial / urban development		Applicable to all OPs	UNLIKELY – will require management	LIKELY – investment in new		Formally aligns urban / industrial investment with provisions of WFD	WFD would be relevant to urban/industrial

			of abstraction / discharge levels.	development will be required to respect the WFD			development
Transport		Applicable to all OPs	NO – will not influence use of infrastructure – may influence cost of new roads	POSSIBLE – pollution run-off will require treatment		Formally aligns transport investment with provisions of WFD	WFD would be relevant to transport

Water: Water Pricing

CP activity	Will the instrument operate at the appropriate scale?	Will the instrument operate across all types of OP?	Will the instrument generate cost savings for the OP?	Will the instrument generate environmental benefits?	Will the instrument improve OP operation?	What is the added value of using the instrument as a complementary or conditional/complementary instrument?	Is its use as a complementary or conditional or complementary instrument relevant to the activity?
Water Supply	YES – implemented through MS / Utilities and sub-national River Basis Plans	Applicable to all OPs	LIKELY – will increase income from users to finance water supply investment and also reducing demand	POSSIBLE – reductions in demand could improve water resources	LIKELY – will simplify alignment of OP measure with water policy	Increase awareness and incentives for improved water efficiency; reduces demand for water; and moves some of the CP investment burden to users.	YES - Major EU wide scope as a complementary or conditional or complementary measure in context of the WFD
Wastewater Treatment			LIKELY – will increase income from users to finance WWT investment	POSSIBLE – if user payments allow OP investment in WWT to go further			
Flood Risk Management	YES – implemented through MS / Utilities and sub-national River Basis Plans and captures	Applicable to OPs with a flood risk	UNCERTAIN – depends if prices seek to capture any risk management costs	POSSIBLE – if water prices allow increased investment in flood risk management and reduce		Maybe some limited scope to move some of the CP investment in flood defence to MS and municipalities	

	flood risk areas			potential damage costs			
Water Freight	UNCERTAIN – water freight investment may or may not be aligned with Utilities	Applicable to OPs with inland waterways	UNLIKELY – water pricing unlikely to affect freight investment in canals/ rivers	UNLIKELY – water pricing unlikely to affect freight investment in canals/ rivers		Little added value	Not relevant
Hydro-energy plant	YES – implemented through MS / Utilities and sub-national River Basis Plans	Applicable to all OPs with hydro investment	UNCERTAIN – will depend on whether the pricing regime will apply	UNCERTAIN – will depend on whether the pricing regime will apply			UNCERTAIN
Conventional energy plant		Applicable to all OPs with conventional energy plant investment	LIKELY – energy sector will be required to pay for water use – reducing demand /funding	POSSIBLE – if pricing leads to improved water efficiency		Reductions in net costs possible, depending on the scale of investment moved from CPO to users, and reductions in demand	Relevant, but unlikely to be a major factor
Industrial / urban development		Applicable to all OPs	LIKELY – will increase income from users to finance water supply investment. Also reduces demand	POSSIBLE – reductions in demand could improve water resources, revenue may allow further mitigation measures			

Transport		Applicable to all OPs	NO – will not influence provision or use of infrastructure	UNLIKELY – not possible to levy prices on users		Little added value	Not relevant