Exploring potential demand for and supply of habitat banking in the EU and appropriate design elements for a habitat banking scheme
Annexes submitted to DG Environment
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Exploring potential demand for and supply of habitat banking in the EU and appropriate design elements for a habitat banking scheme

Annexes submitted to DG Environment

A report submitted by ICF GHK in association with BIO Intelligence Service
Date: 28 January 2013
Job Number 30258994

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Annex 1  Summary note of the Workshop

A1.1  List of Participants

Table A1.1  List of Participants

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A1.2 Introduction

The workshop was organised around four main themes: legislative instruments, demand and supply, costs and benefits and design elements. For each, a presentation by the project team was followed by invited contributions by participants, to provide specific illustrations. The floor was opened to discussion. The last two themes were presented together before opening the discussion to all.

The workshop was introduced by Alexandra Vakrou who welcomed the participants and explained the context of the study. The study follows on from the research needs identified in the 2010 EC's study on Habitat Banking. Its purpose is to collect more information on this issue and define avenues of policy development in this area. As such, the study aims to support the implementation of the EU 2020 Biodiversity Strategy, and, in particular, its No Net Loss (NNL) initiative. One goal of this study is to perform a gap analysis by examining the legislative framework in the EU and the MS and the extent to which it requires compensation for biodiversity losses. The study also examines the implications for the demand and supply of offsets and habitat banking, considers the costs and benefits, and examines key design elements, including issues such as additionality, metrics, long-term sustainability, land availability, and the different circumstances and approaches in different MS.

Laure Ledoux presented the recent policy developments in the field of biodiversity, with references to recent Council conclusions. She also updated the participants on the work that is being carried out in the recently established Expert Group on No Net Loss. She indicated that the experts have not yet reached a conclusion that the NNL initiative should focus on areas outside the Natura 2000 network. She also indicated that the discussion is complicated when other issues are also taken into account, for instance, with regard to the kind of compensation being delivered (i.e. like-for-like and like-for-unlike). She also pointed out the importance of setting definitions for this work, including not only defining NNL, but also defining instruments (habitat banking, offsets, etc.) and other issues, such as compensation requirements, and principles of offsetting.

A1.2.1 Definitions

Matt Rayment firstly presented definitions and the scope of the study. The study examines biodiversity offsets in general, and the role of habitat banking as a mechanism/instrument to deliver offsets.

The question of definition of habitat banks was raised, to distinguish between banks that are physical banks of habitats (which may be established by developers for their own purposes) and those that are designed with the purpose of trading offset requirements through the exchange of credits. The main focus of this study is the role of habitat banking as an innovative financial instrument designed to facilitate biodiversity offsetting. For the purpose of this study, the definition of habitat banks that will be used is broad enough to encompass these various types of habitat banks.

The point was made that habitat banking can be based on both like-for-unlike and like-for-like compensation, while banks can also include species banks or a combinations of habitats and species (see, for instance, the 2010 Commission study).

A1.2.2 Scope

It was clarified that marine biodiversity is out of the scope of this work. This will be made clearer in the report. [NB: At EU level a new proposal from the Commission for a maritime strategy and integrated coastal management is being prepared, with proposals to take account of good ecological status. However, there will be no explicit requirements for environmental and ecosystem compensation, within these proposals.]
A1.3 Legislative framework

Sandra Berman presented the findings of the analysis focused on EU policies and policies in 13 selected MS. Presentations followed from Marita Böttcher and Jaime Muñoz Igualada on the German and Spanish policy frameworks, respectively. These presentations raised the issues of spatial planning, and the identification of corridors, that both can help to make the most of offsets. The importance of benefiting the people being affected by development (i.e. proximity) was also raised as a particular issue.

The question of accessing private land for compensation was raised as an important one, as in many countries this land is key for delivering conservation goals (e.g. Spain). In some circumstances, (e.g. the US) biodiversity, rather than being a constraint (i.e. placing restrictions on the management of land) can become an asset (with credits that may be sold to developers).

It was clear that there is considerable scope for learning and the sharing of experiences from the USA and Australia. Some Member States are already making considerable progress in establishing links and developing relationships (e.g. Spain).

A1.3.1 Voluntary vs. Legislative requirements

A finding in Sweden is that since the framework currently does not require mandatory offsets, what compensation there is tends to be voluntary. A question was raised whether there is a risk that legislative requirements undermine voluntary offsets. For instance in Germany, where the framework is strongest in the EU, little voluntary compensation occurs because developers already have a legal requirement to compensate for biodiversity loss.

It was noted that there are three key drivers of voluntary compensation. The first would be CSR (Corporate Social Responsibility). The second, and arguably more enduring, is linked to core business strategies, including the license to operate and access to markets. Lastly, is the case of access to finance through lenders. Some lenders, for instance, (e.g. the EIB, EBRD, and EIF) have specific criteria / performance standards to be met regarding the environment / biodiversity. For instance, updated FCIPS6 requirements under the Equator principles have had a significant impact. Lenders are now increasingly requiring avoidance, mitigation and compensation, which will be a strong driver for compensation, especially in developing countries.

It was argued that these criteria should be incorporated and taken into account at EU level to ensure harmonisation.

It was noted that voluntary compensation happens most often in countries with weak existing policy frameworks (e.g. Madagascar). Voluntary compensation is much less likely to occur where there is an existing compliance framework (e.g. the EU), as businesses are less likely to see the benefits of going beyond compliance.

A1.3.2 Policy review and policy options

The WFD and ELD are important pieces of legislation. There is a question of how to link the favourable status in the WFD with that in the HD – i.e. how “good ecological status” (WFD) and “favourable conservation status” (HD) could be linked to NNL. This would however need to be clarified. For example when physical modifications are made for navigation, flood defence, etc. purposes the WFD stops short of requiring compensation, and the available guidance only requires mitigation.

In France, habitat banking is recognised as a possible tool for organising compensation for cases in the context of the ELD.

The review of the EIA was mentioned, but there is no real legislative requirement for compensation within the EIA, neither could such a requirement be included given its current scope. Indeed, the aim of the Directive is to inform decision-making; it has not been developed as a tool for delivering NNL. The EIA cannot therefore be relied upon to drive
biodiversity compensation: another policy tool would be needed to require biodiversity compensation outside of Natura 2000 sites.

A new study will be launched in 2012 to specifically identify policy options for the NNL initiative.

A1.3.3 Species and habitats

It was also noted that it is important to consider not just habitats, but also species. In some cases the latter may be a higher priority. The HD explicitly requires compensation in certain cases. However, the BD in its Article 3 requires protection of all birds, which could be used to require compensation and therefore warrants further exploration. It is therefore important to consider not only habitats and Natura 2000 sites, but also requirements linked to species protection, that also trigger compensation, and are often taken into account later (habitats are easier to map than species).

A1.4 Demand and supply

Mavourneen Conway presented the interim findings of the study on demand and supply. Anders Entjam then presented some thoughts on the situation in Sweden. In Sweden, compensation is not currently used as widely as it might be, and a conference on the topic concluded that clearer guidance and greater awareness would be necessary to stimulate demand. However, more businesses seem to be looking to offset their impacts, driven by a number of different reasons (see above, including CSR, Regulatory requirements, access to project finance, etc.). A concern that compensation might lead to a license to trash has made some people cautious; the mitigation hierarchy and ensuring additionality are therefore key. In northern EU countries, not only developments such as mining, windfarms etc. should be considered, but also changes in biodiversity quality when for instance natural forests are converted into intensively logged and/or planted forests. In addition, a lot of biodiversity is outside of Natura 2000 and still needs protection. Two studies from the UK examining the demand/supply and costs of compensation schemes were presented by Andrew Dodd. In terms of demand, it was noted by one participant that demand for compensation of losses resulting from natural disasters cannot be uniformly applied across the EU; forest fires in northern countries (e.g. Sweden) are ecologically important and even prescribed when necessary, and should not be counted as causing damage. It was also noted that the significant losses of agricultural land provide a significant opportunity for trading up, although it was made clear that “not all agricultural land is created equal” – i.e. it should not be assumed that agricultural land has little value.

One participant highlighted that, in the framework of NNL, there should be clarification on whether offsets are only required for “significant” losses, or whether the requirement would be applied to all losses. In the case of the former, there is a risk that opportunities will be lost and that small, but possibly cumulative, impacts on biodiversity may go uncompensated. With regard to supply, it was clear that one of the most significant issues is the availability (i.e. the amount) and accessibility (e.g. due to ownership) of land that can be used for compensation. Nonetheless, issues of demand still clearly outweigh issues of supply.

A1.5 Costs and benefits

Matt Rayment presented the interim findings of the study. Guy Duke then presented how costs can be distributed among stakeholders. He identified four groups of stakeholders, and discussed the costs and benefits to each: developers, landowners (those selling land to developers but also those providing offsets), authorities, and society. This is summarised in the accompanying paper to this workshop prepared by Guy Duke. Developers will try to internalise offset costs by reducing the price paid for land. Habitat banking, for them, means a streamlined process and the potential for the long-term burden to be reduced, by discharging the responsibility to someone else (although in some cases they may still remain liable for delivery of the offsets). Offsets can be expected to benefit
some land-owners by increasing demand for land of high or potentially high conservation value (and therefore with potential to supply offsets); on the other hand, land with development potential may fall in price as buyers may negotiate discounts as a result of additional offset requirements that they will have to bear. Governments and authorities can organise compensation in different ways: if they negotiate and regulate offsets on their own, administrative costs will be high, but if they chose to use leases or certification of third parties, the costs can be relatively low.

Impacts on land prices depend on the supply and demand for land for offsets. Where land is constrained, land prices are likely to increase as offsetting becomes another competing land use. The impact on land prices may also be influenced by whether and how offset requirements are announced in advance of schemes being introduced, as well as the scarcity of the habitats required. There is evidence mainly in Australia that these price signals can strengthen implementation of the mitigation hierarchy, as there are increased incentives to reduce the impact to avoid the need to purchase expensive land. Another possibility is to not require land ownership – other measures such as leases or management agreements may avoid the need for transfer of land, although landowners will require compensation for income foregone from restrictions on the use of that land. It was also noted that a formal habitat banking system may ease some of these pressures as it would allow more coordinated delivery of compensation. This was, for instance, evident in Germany where land prices were higher before the HB system was put into place.

A1.6 Design elements

Matt Rayment and Mavourneen Conway presented the interim findings of the study, which split elements into two groups, those linked to determining offset requirements and those linked to implementation issues. Fabien Quétier presented some scientific and technical challenges to offsetting (see supplementary paper), followed by a presentation by Kerry ten Kate covering a range of design issues for offsets. Several key issues were discussed.

A1.6.1 Transboundary offsets

There was some discussion of the potential benefits of designing a system that will allow for transboundary (e.g. cross-MS) offsets, as long as there is an ecological rationale for doing so and as long as the gains are related in some way to the losses (e.g. only like-for-like or like-for-better). This means that offsets could be planned within the same bio-geographical zone. Links could be drawn, for instance, to the Birds Directive. It was noted that this approach could contribute to ecological coherence (especially where ecosystems cross national borders) but may raise questions about compensation for the people in the area who are affected by the development (which may affect the political acceptability of a development project with a lot of negative impacts). Cases have been reported that like-for-like is preferable, How this approach may be reflected in a transboundary context (France) is currently being explored.

There are also potential issues relating to control and regulation; one participant noted for instance that enforcement / monitoring of offsets at a local level is already difficult, and would be much more difficult at transboundary or EU level. Existing examples exist however, including between Belgium and Holland (where transboundary compensation is under discussion) and between the Dominican Republic and the USA, where breeding grounds in Dominican Republic were restored as the most effective way to regenerate bird populations in the USA.

A1.6.2 Knowledge, experience and skills

It is important to ensure that it is possible to deliver any goal that is set, i.e. by ensuring that there are the necessary skills, knowledge and experience. For instance, an example was highlighted from the UK, where it has become clear that efforts to restore coastal habitats have not been as successful as had first been hoped. However, efforts cannot be put on hold whilst this knowledge develops. An iterative learning process and adequate systems for sharing existing knowledge and best practice are therefore key.
There needs to therefore be an understanding of the distinction between what is irreplaceable and what is feasible to restore/recreate. Often, since feasibility is uncertain, multipliers are used, but a robust scientific rationale for these is generally still lacking. A feedback mechanism is therefore crucial, so that knowledge can be fed back into the approach so that multipliers and/or metrics can be adjusted based on new experience. In order for this system to be effective, monitoring is needed to gather further knowledge that can be fed back into the process.

It was also noted that a useful exercise would be to develop a tool for mapping of species and habitats as biotope types (as in Germany). In the EU a team is currently mapping ecosystems and results are expected for 2014. It is recognised that ecosystem mapping would be a good first step for implementing offsets (to have a baseline). There was a debate about whether offset requirements needed to be determined through specific local analyses or whether it would be possible to use generalised tools, such as mapping of biodiversity, to aid decision making. One option could be to map biodiversity in general, to establish baselines, but also to identify those areas that are less sensitive. In these areas compensation requirements could be identified at a coarser level, with a potential for trading up. A layered system could be implemented for this. However, concerns were expressed that developing generalised mapping tools would be impractical and time consuming, as well as presenting risks that important impacts could be missed. Gathering information from EIA and other literature to identify where species are present and what lands are sensitive would be an important step forward. Furthermore, there is a need to collect information on the type of ecosystems services provided, as frequently legislation requires that their loss should also be compensated for (like in ELD). While the NNL definition is still open, it may also apply to ecosystem services.

A1.6.3 Adopting a differentiated approach and the need to consider thresholds

Many participants believed that there would be considerable merit in adopting a differentiated approach to offsetting. It was proposed that a "simpler" approach (e.g. using standard, off-the-shelf metrics such as average ratios) be adopted for habitats of less value or for impacts that are not as significant in order to facilitate offsetting. A more complex and in-depth process (e.g. one that is bespoke) could then be applied to impacts that are more significant or to habitats which are of greater value. With an adequate monitoring system in place, the results from the more complicated and detailed approach could then be fed back into improving the simpler approach. However, it was noted that a "simpler" approach should still be able to hold up to scrutiny by other stakeholder groups.

If this approach was adopted, the issue of thresholds would become very important (i.e. deciding what impact is significant/what biodiversity is of high value). Moreover, this approach does carry some risks, in that without adequate assessment, some habitats may be mistakenly assumed to be of low value. There could therefore be a legal risk to developers further down the line if this turns out to be false. This approach could therefore be useful at planning stage, with stricter, more detailed requirements being adopted at project level.

Importantly, it was highlighted that NNL is, by definition, not simple and requires robust measurement and accounting to determine gains and losses. Furthermore, any decision in the framing of NNL in the context of the EU initiative will determine different approaches to be followed and possible thresholds.

A1.6.4 Equivalency

There was extensive discussion about whether offsets should be "like-for-like" or whether it is acceptable to offset damage by providing compensation in a different form to the losses incurred. What is considered as like-for-like will have an impact on the feasibility and design of habitat banks. It was also clear that there are a range of possibilities regarding what counts as "like-for-like", e.g. whether it requires the exact same habitat, or the same habitat type, or the same biotope. The situation varies in different countries. In Germany, for
instance, like-for-unlike is allowed (including between different biotopes), as a last resort and as long as compensation is implemented in the same region.

In general, it was agreed that, to achieve no-net-loss, there should be a requirement for like-for-like or like-for-better, i.e. like-for-unlike should only be permissible if it involves trading-up, not trading down. It was made clear that like-for-unlike compensation is therefore not necessarily a “weaker” requirement than like-for-like, as long as it is based on a rigorous evidence base and scientific rationale. It is agreed that some flexibility in the requirements may be beneficial, provided that the mitigation hierarchy has been respected and fully implemented.

One participant stressed that in focusing on like-for-better, habitats of arguably less value shouldn’t be neglected in favour of higher value habitats, as all habitats have value, they form the overall foundation for biodiversity as a whole and are needed when networks and functionality/connectivity of sites are considered. There is a risk therefore, that in focusing on higher value habitats, lower value habitats deteriorate or are damaged to the extent that they become rare enough to be considered high value. It is important therefore to ensure that all existing habitats are considered for offsets and appropriately maintained.

A1.6.5 Metrics and other issues

The types of metrics to be used were discussed, and it was determined that it is crucial to include considerations of the condition of the habitat, not just its area. Basic systems rely on area-based ratios.

However, caution is needed in applying simple ratios (e.g. 2:1, 3:1 or 5:1) without reference to measurable ecological gains and losses. A large ratio much greater than 1:1 does not automatically mean NNL – gains and losses need to be examined on a case by case basis and with reference to scientific evidence. A huge range of ratios are evident from different examples of compensation. In some cases ratios of up to 259:1 have been applied. Ratios can also be used for different reasons, including dealing with risk and uncertainty. It was pointed out that larger ratios can act as an incentive for developers to invest in a more rigorous and detailed assessment in the hope that the evidence indicates that a lower ratio may be sufficient.

More advanced systems use metrics such as “quality hectares”, whereby the condition of the habitat that is lost and gained is also taken into account. Participants highlighted that any compensation requirement should be measured against the baseline of the habitat / area (i.e. considering both its current status / quality and its potential status / quality).

It was noted by one participant that “good conservation status” is not a sophisticated enough metric to measure losses and gains. It was also mentioned that the UK offset pilot scheme adopts a relatively simple approach and therefore should be assessed with caution. However, it was noted that this may be a result of the fact that the majority of land that is developed in the UK is not of particularly high biodiversity value, which somewhat justifies the use of a simpler approach (see above).

One of the most advanced systems in place is that of Victoria in Australia, where policymakers have developed over 750 different credit types associated with different habitats. The system was developed relatively rapidly, taking only roughly 2 years to put into place.

One key issue that was discussed was also what kind of measures would be able to be used for compensation. It is clear that a range of options exist, including restoration, the halting of further degradation, recreation, protection as well as improvements to existing Natura 2000 sites. Throughout however, the issue of additionality is key to determine whether an offset is actually delivering any benefits.
A1.6.6 Need for regulatory approach

There was broad consensus amongst participants that a mandatory framework is needed in order for offsetting / compensation to occur at scale across the EU. Whilst compensation can be delivered voluntarily, it was noted that voluntary approaches only work if stakeholders are engaged, and will not be sufficient to deliver NNL. Currently, it does not seem as though there is the kind or level of engagement necessary to drive biodiversity offsets forward on the basis of voluntary action alone. It is unlikely therefore, that voluntary action is going to be sufficient to deliver NNL, given that voluntary action tends to be ad-hoc, uncoordinated and limited to certain ‘hot spots’.

However, it was also clear that participants felt that the most important step would be to make implementation of the mitigation hierarchy mandatory, to avoid issues such as a ‘licence to trash’ and so that compensation is only considered for unavoidable residual losses. Mandatory requirements would also drive and facilitate discussions around metrics, ratios, like-for-like/unlike, etc which would improve and develop the knowledge and evidence base on how to implement offsets in an EU context.

Mandatory requirements specified through regulation would create a more level playing field, be more manageable and fairer, and would create more consistent and transparent rules. All these factors will help to more rapidly drive the development of a market in offsets. All sectors and land-users should be considered, but not necessarily in the same way. Some attention should be given to how compensation could work alongside restoration and protection requirements and policy goals set in the EU Biodiversity Strategy and other legislation (related to Natura 2000).

A regulatory approach may also provide the mechanisms for ensuring that the benefits are secured into the future (preferably in perpetuity). Currently there are few safeguards available to ensure that benefits from compensation are maintained and protected into the future.

It was proposed that the EU level provides a framework for compensation, including guidelines and key principles, which would then be developed at national or local level so that specific metrics are designed which suit different contexts and different habitats. Guidelines would need to cover issues such as common definitions, the mitigation hierarchy, metrics, additionality, ecological performance standards, etc.

Lastly, it was noted than any offsetting or habitat banking scheme has to:

■ Be relevant to conservation priorities in an area
■ Be measurable (against a robust baseline)
■ Be realistic / cost effective
■ Be appropriately funded
■ Ensure long term protection
■ Include a mechanisms for sharing best practice, knowledge and experience
Annex 2  Notions of Biodiversity offsets, ‘no net loss’ and compensation in EU policies

A2.1  2020 EU Biodiversity strategy and its targets

The 2020 EU biodiversity strategy includes as its Target 2: Maintain and restore ecosystems and their services - By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems. To implement this target, three actions are foreseen, among which the most relevant to biodiversity offsets and habitat banking is Action 7: Ensure no net loss of biodiversity and ecosystem services with 7b) The Commission will carry out further work with a view to proposing by 2015 an initiative to ensure there is no net loss of ecosystems and their services (e.g. through compensation or offsetting schemes).

Additionally, the cross-cutting section on mobilising resources states that the potential of biodiversity offsets will be looked into as a way of achieving a ‘no net loss’ approach.

The impact assessment of the 2020 Biodiversity strategy proposes three options, not necessarily mutually exclusive to achieve no net loss:

- A clear decision-making framework, to ensure degradation is avoided wherever possible before compensation is envisaged. Avoiding damages to biodiversity and ecosystems is already included in the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) directives, and these elements could be further strengthened. There should be better guidance on how to apply this in practice in light of biodiversity objectives, similar to current practice for climate change. To avoid damages to biodiversity, the Commission will develop a methodology for the assessment of the impact of EU investments by 2014.

- An overall non-binding framework at EU level providing guidance and exchanges of best practices for Member States who have adopted voluntary or mandatory biodiversity offset policies. This could involve for example guidance on the scale at which no net loss should be measured, on the equivalency methodology and the time scale for compensation, and using a prioritisation framework to ensure overall no net loss at EU level.

- An EU level legal framework for no net loss of ecosystems, which could make some of the above elements mandatory.

The strategy thus does not provide any scheme yet or explain how the no net loss policy will be implemented, but it does propose compensation or offsetting schemes to be implemented.

A2.2  Council conclusions

In June 2011, and following the publication of the EU 2020 Biodiversity strategy by the European Commission, the council STRESSED the importance of further work to operationalise the ‘no net loss’ objective of the Strategy for areas and species not covered by existing EU nature legislation and of ensuring no further loss or degradation of ecosystems and their services. The Council specifies in a footnote that a preliminary definition of no net loss is that conservation losses in one geographically or otherwise defined area are balanced by a gain elsewhere provided that this principle does not entail any impairment of existing biodiversity as protected by EU nature legislation.

In December 2011, the Council added that it AGREES that a common approach is needed for the implementation in the EU of the "no net loss" principle and INVITES the Commission to address this as part of the preparation of its planned initiative on 'no net loss' by 2015 taking into account existing experience as well as the specificities of each Member State, on the basis of in-depth discussions with Member States and stakeholders regarding the clear definition, scope, operating principles and management and support instruments in the
context of the common implementation framework of the Strategy. The only change to the
preliminary definition included in June is the addition of the word biodiversity, in
conservation/biodiversity losses.

Through these conclusions, the Council: (1) confirms the interest of implementing a ‘no net
loss’ principle, (2) requires the Commission to consult MS and stakeholders on the issue,
and (3) provides a preliminary definition of the concept. This provides a strong push towards
further investigation of the concept and gives a starting point for discussing the definition to
be used.

A2.3 European parliament resolution

The European Parliament adopted a resolution in April 2012 in which it Urges the
Commission to develop an effective regulatory framework based on the ‘No Net Loss’
initiative, taking into account the past experience of the Member States while also utilising
the standards applied by the Business and Biodiversity Offsets Programme; notes, in this
connection, the importance of applying such an approach to all EU habitats and species not
covered by EU legislation.

The Parliament thus underlines the fact that gaps exist in habitats and species that are
currently covered by a compensation requirement, that should be filled to achieve no net
loss.

A2.4 Nature Directives

The Birds and Habitats Directives aim for the protection of biodiversity, including some
compensation requirements for specific cases, and create the Natura 2000 network. The
Birds Directive\(^1\) requires that MS must preserve, maintain or re-establish a sufficient diversity
and area of habitats for all the species of birds (Article 3, applying to species of naturally
occurring birds in the wild state in the EU, as defined in Article 1). MS are also obliged to
take appropriate steps to avoid pollution or deterioration of the habitats or any disturbances
affecting the birds in Special Protection Areas (SPA), but also outside the SPAs (Article
4(4)). Similarly, the Habitats Directive requires, under Articles 6(1) and 6(2), that MS
establish the necessary conservation measures for listed habitats and species; and take
appropriate steps to avoid, in the special areas of conservation, the deterioration of natural
habitats and the habitats of species as well as [significant] disturbance of the species for
which the areas have been designated. The requirements only apply in special areas of
conservation, i.e. on Natura 2000 sites.

Going further in requiring not only conservation measures to be taken, but also mitigation
and compensation in certain cases, the Habitats Directive acknowledges the principles of
sustainable development and need for certain developments. Article 6(3) requires
appropriate assessment of any plan or project likely to have a significant effect on a Natura
2000 site. Falter and Scheuer (2005) suggest that the importance and role of the
Environmental Impact Assessment (EIA) and Strategic Impact Assessment (SEA) was
strengthened by Article 6 of the Habitats Directive, since it provides for real legal impacts
and the possibility to complain to the Commission.\(^2\) Article 6(4) is a derogation under Article
6(3) where conditions are met, and specifically deals with offsets for the loss of habitats and
species, by requiring compensatory measures and informing the European Commission of
the measures taken. In case of a site hosting a priority natural habitat type and/or a priority
species, more stringent measures apply.

In order to ensure that appropriate measures are taken and help developers and MS
adequately compensate for developments, the Commission developed guidance documents

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of wild birds (codified version of Directive 79/409/EEC as amended)

Environmental Legislation, edited by Stefan Scheuer, European Environmental Bureau

ICF GHK with BIO Intelligence
on these articles. The most recent and relevant guidance on compensation is the Guidance document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC published in January 2007. The guidance develops interpretation of terms (e.g. definition of compensatory measures, overall coherence, etc.) and criteria for the designation of compensation measures, as well as describing who bears the costs, issues of communicating with the Commission and of priority habitats/species. In particular, the guidance states: The compensatory measures constitute measures specific to a project or plan, additional to the normal practices of implementation of the “Nature” Directives. They aim to offset the negative impact of a project and to provide compensation corresponding precisely to the negative effects on the species or habitat concerned. The compensatory measures constitute the “last resort”. They are used only when the other safeguards provided for by the directive are ineffectual and the decision has been taken to consider, nevertheless, a project/plan having a negative effect on the Natura 2000 site.

The mitigation hierarchy “avoidance, mitigation, compensation” is thus required to be followed in the HD, through articles 6.2 (avoidance and mitigation), 6.3 and 6.4 (mitigation and compensation). The Birds Directive mentions avoidance as the first step, and articles 6.3 and 6.4 of the HD apply for sites designated under the former Directive.

In addition, Articles 12 and 16 of the Habitats Directive and the Birds Directive, include derogation schemes to the system of protection of species and guidance on Articles 12 and 16 underlines the role of compensation in such derogations. The guidance recommends that compensation measures are in place and effective before the negative effects occurs. It recognises that “compensation measures are not mentioned in Article 16, and are as such not obligatory”, but they “may be considered to provide better justification of a derogation if there is a risk that the derogation might have a detrimental effect.” However, as in the case of the HD requirements, the implementation of compensation measures “does not replace or marginalise” the need to properly assess the need for a derogation, the absence of a satisfactory alternative, and the impact of the derogation. Similar to the mitigation hierarchy, the implementation of compensation measures can only be envisaged once it is agreed that such measures are taken only for the unavoidable negative effects, to ensure efficient protection of biodiversity.

A2.5 EIA and SEA Directives

The Environmental Impact Assessment (EIA) Directive applies to certain development projects. The goal of the Directive is to identify possible environmental impacts of the projects in order to inform authorities and improve decision-making through providing objective information subject to consultation and assessment. The decision whether or not to grant approval should be made taking into account such information. The Directive refers to environmental impacts, and is not per se a Directive that aims to protect biodiversity (note Article 3 refers to fauna and flora and the proposition to amend the Directive includes an explicit reference to biodiversity). Article 5(3) and Annex IV of the EIA Directive details the information needed in an EIA. This information includes mitigation or compensatory measures:

- a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects (Article 5(3));


5 Directive 2011/92/EU of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. The types of projects for which an EIA is mandatory are listed in Annex I. Projects requiring EIA only in certain circumstances are listed in Annex II (selection made on the basis of criteria in Annex III).

a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment (Annex IV).

The Strategic Environmental Assessment (SEA) Directive\(^7\) applies to a wide range of public plans and programmes (e.g. on land use, transport, energy, waste, agriculture, etc.) and is more recent (transposition by July 2004). Similarly to the EIA Directive, its objective is to provide information to authorities, in order to improve decision-making and base decisions to grant approval on objective (and complete) information:

- Article 5 requires an environmental report to be prepared, in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated;

- Annex I details the content of the environmental report, which should include (point g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.

### A2.6 Environmental Liability Directive (ELD)

Environmental liability is the term used for the process through which responsibility for the cost of damaging the environment is transferred back to those that cause the damage. The key to the operation of environmental liability is the assignation of a charge for the environmental damage caused. Directive 2004/35/EC or the Environmental Liability Directive (ELD) provides the legal framework for introducing environmental liability and the “polluter-pays” principle in EU business activities. It was adopted by the European Parliament and Council on 21 April 2004 and the deadline for its transposition in the Member States was 30 April 2007. The ELD covers:

- Species and natural habitats protected under the Birds and Habitats Directive;
- Water (covered by Community Water legislation); and
- Direct or indirect contamination of land.

It is remarkable that ELD defines environmental damage in a way that covers species and habitats protected by Natura 2000, thus innovatively protecting biodiversity. ELD, being a Directive allows Member States to transpose it in an even stricter manner, thus 8 Member States have so far extended damages to biodiversity to a wider range that this covered from their Natura 2000 sites. However, the damage to biodiversity is only relevant if it “has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats or species”, thus establishing a threshold that must be met.

Two schemes depending on the occupational activity are implemented. “Strict liability” means that it is sufficient that there is a causal link between the occupational activity and the environmental damage. No fault or negligence on behalf of the operator of the occupational activity is necessary to trigger liability. Strict liability covers all forms of environmental damage, i.e. damage to water resources and land, as well as damage to protected species and natural habitats. Fault-based liability, on the other hand, means that the operator of the occupational activity, through a deliberate action or omission, or negligence, has caused the environmental damage. It applies automatically to damage to protected species and natural habitats from all other occupational activities, but not to water and land damage.

The Directive has also a strong element of prevention. So in the case of an imminent threat, the liable operator is responsible for acting to prevent or minimise the environmental damage. Still if damage happens the operator remains liable to develop remediation measures in case the damage has already occurred (or follow the prescribed remediation

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\(^8\) ELD, article 2.1.(a)
suggested by the competent authority in charge of the case). Regarding remediation measures, the ELD differentiates between:

- primary remediation, which implies the remediation necessary to restore the baseline condition of the affected site;
- complementary remediation, which implies the creation of an alternative site in cases where primary remediation is not possible; and finally
- compensatory remediation, which implies providing financial compensation for any interim loss suffered by the general public (e.g. loss of amenity, biodiversity services).

Importantly, no monetary limit of liability has been set for the costs of these remediation measures. Neither the operator can provide monetary compensation to resolve its liability, thus a remediation action/scheme has to be carried out in agreement with the competent authority.

Under the ELD, the operator together with MS authorities have to assess, evaluate and agree upon all types of remediation, but more importantly on complementary remediation (at an alternative site if not possible on the original site) and compensatory remediation measures (compensation for interim losses until primary remediation has been achieved). This may be a difficult task to achieve, as comparability of sites may need to be assessed.

A difference in the ELD from the Habitats Directive, relevant for offsets, is that compensation actions are (necessarily) required ex-post, i.e. after the damage has occurred, while the Habitats Directive requires them ex-ante (or at least requires their planning ex-ante), i.e. when the impacts of the future development are assessed and after mitigation measures have been applied. This could impact the demand for habitat banking schemes, as buying credits may be a way to deliver prompt and more certain results than restoration works after damages have occurred (depending on the damages and habitat types).

A2.7 Water Framework Directive a Blueprint to safeguard Europe’s water resources and the Floods Directive

The Water Framework Directive or WFD\(^9\) is the most substantial and comprehensive piece of EU water legislation and requires all surface, groundwater and coastal waters to reach “good status” by 2015\(^10\). Article 4.1 introduces the principle of preventing any further deterioration of status. It is expected that the 2015 objective of ‘good ecological status’ for water may substantially support and raise the state of sites under Natura 2000, many of which are dependent on the services delivered by their aquatic component. It is also expected that the WFD objective must have a strong influence on the improvement of nature and biodiversity status outside designated areas\(^11\).

The Directive clearly mentions that the objective is to avoid any damages, diminution in the ecological status, etc. as being the objective (Articles 2 and 7). Preventive and remedial measures to achieve the objectives of the Directive are mentioned (Article 9).

The Commission published the Blueprint in November 2012, as a tool to tackle the obstacles that currently avoid the achievement of the objectives of the WFD and contribute to protect water resources. The Blueprint includes explicit reference to the achievement of the EU Biodiversity strategy: “The Blueprint strives to achieve widespread improvement in aquatic ecosystems, which will contribute positively to the EU Biodiversity Strategy goal of halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible.” It also refers to the role of green infrastructures in

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\(^10\) WFD. Article 4.1: it is important to notice that there are a number of exemptions to the general objectives that allow for less stringent targets, extension of deadline beyond 2015, or the implementation of new projects, provided a set of conditions are fulfilled.

\(^11\) ec.europa.eu/environment/water/water-framework/
delivering ecosystem services. The Floods Directive refers to the prevention and mitigation of the effects of floods, including through the restoration of flood plains (the latter in the recital). None of these documents explicitly refer to compensation, but the role of biodiversity in delivering services, and the need to not lose such services for a sustainable future clearly appear.

**A2.8 Common Agricultural Policy (CAP)**

As part of the CAP (in the process of being modified) and in particular its rural development pillar and cross-compliance elements, the role of farmers in managing areas for the enhancement of biodiversity can be encouraged. Such activities may also play a role in ensuring no net loss of biodiversity at overall EU level, especially in the case of habitats that need to be managed (e.g. open meadows), as well as provide a means to support and/or increase financing of such activities. Positive actions funded by CAP thus have potential to contribute to no net loss of biodiversity at EU level, but some investments in farm modernisation etc. may also impact and damage biodiversity. There are however no mechanisms to require compensation for adverse changes and intensification in agriculture, and therefore no formal requirements ensuring no net loss of biodiversity from such changes.

The legislative proposal for a new CAP (released on 19 October 2011), on support for rural development by the European Agricultural Fund for Rural Development (EAFRD), states:

- **Article 5: Union priorities for rural development** - The achievement of the objectives of rural development, which contribute to the Europe 2020 strategy for smart, sustainable and inclusive growth, shall be pursued through the following six Union priorities for rural development, which translate the relevant Thematic Objectives of the CSF:(4) restoring, preserving and enhancing ecosystems dependent on agriculture and forestry, with a focus on the following areas: (a) restoring and preserving biodiversity, including in Natura 2000 areas and high nature value farming, and the state of European landscapes; and

- **Article 18 Investments in physical assets** 1. Support under this measure shall cover tangible and/or intangible investments which: (d) are non productive investments linked to the achievement of agri- and forest-environment commitments, biodiversity conservation status of species and habitat as well as enhancing the public amenity value of a Natura 2000 area or other high nature value area to be defined in the programme.

**A2.9 Cohesion policies and EU funds**

The environment and biodiversity are acknowledged as being important for rural development and cohesion. Funds (EAFRD, EFRD, ESF) can be used to finance biodiversity-related projects, in particular for restoring or implementing action plans. This will benefit biodiversity and may have a role in a no net loss objective at overall EU level by indirectly compensating for impacts that do not need formal compensation. The funds can also be used to (co)finance infrastructures or other developments that impact biodiversity. In that case, nothing is required through the funds themselves in terms of compensation, but the Habitats Directive, EIA and/or SEA will apply and may request compensatory measures. In those cases, a part of the financing of the project (including funds from EFRD, EAFRD or ESF) will be used for avoidance, mitigation and compensatory measures. The contribution from these funds may thus be net gain, where biodiversity-related projects are implemented, non net loss, if compensatory measures are funded as part of a funding a development activity, or net loss, if the development leads to net losses that do not have to be compensated for.

Biodiversity protection is amongst the investment priorities for the ERDF proposal for 2014-2020 (Article 5), but no mention of offsets, compensation or restoration is available. The proposal for the Cohesion fund does not only mention protection, but also restoration of biodiversity (Article 3). The proposals for ESF, EGF and European Union Programme for Social Change and Innovation do not mention anything linked to biodiversity or nature.

The LIFE+ programme is the main instrument for co-funding biodiversity protection in the EU. Under that programme many projects for restoring habitats, and protecting/reintroducing
species are undertaken. Again, such projects are not linked to compensatory measures, but may indirectly contribute to an objective of no net loss at EU level through net gains by LIFE+ funded actions that balance net losses from developments which do not require compensation measures.

**A2.10 Roadmap to a Resource Efficient Europe**

The Roadmap explicitly refers to biodiversity in the section on Natural Capital and Ecosystem Services. The related milestone reads “By 2020 the loss of biodiversity in the EU and the degradation of ecosystem services will be halted and, as far as feasible, biodiversity will be restored”. This echoes the 2020 headline target of the EU Biodiversity strategy (see A1.1). While the roadmap does not refer to compensation and offsets, they are mechanisms that have a role in reaching this milestone.
Annex 3  Legislative framework relating to compensation for biodiversity loss in EU Member States

A3.1  Germany

A3.1.1  Compensatory measures/offsets required at national (or lower) level

In Germany, the practice of compensation/offsets is well established and takes place in the context of the mitigation hierarchy. Article 13 of the Federal Nature Conservation Act (Bundesnaturschutzgesetz) requires that “Intervening parties shall primarily avoid any significant adverse effects on nature and landscape. Unavoidable significant adverse effects are to be offset via compensation measures (‘Ausgleichsmaßnahmen’) or substitution measures (‘Ersatzmaßnahmen’) or, where such offset is not possible, via monetary substitution”. In this annex, the term ‘compensation’ refers to both compensatory measures and substitute remediation.

Figure A3.1 below represents this mitigation hierarchy although it should be noted that since 2009 compensatory measures are no longer a compulsory priority to substitute remediation (please see Q9 below for more details). Furthermore, offsets can be undertaken in the context of habitat banks, so called compensation pools or eco-accounts (‘Öko-Konten’) (please see Q13 below for more details).

Figure A3.1  Mitigation hierarchy

Source: Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
Can an impact neither be avoided nor compensated for, it is subject to a deliberation process. In the past, if the deliberation process decided in favour of the undertaking but the developer was not able to implement the necessary compensation, that would have been the end of the matter. Compensatory payments were therefore introduced and have been regulated since 2002.  

A3.1.2 Reference to the goal of no net loss

The fundamental goal of the German Impact Mitigation Regulation (‘Eingriffsregelung’) is the nationwide conservation of the status quo (or no net loss) of nature and landscape. This is done by avoiding any impairment of nature and landscape. Where this cannot be achieved, unavoidable impacts have to be compensated for.

What is defined as an impact is detailed in the Federal Nature Conservation Act as changes to:

- the shape or usage of an area or
- the ground water level in relation to the soil layer

that can substantially damage the performance capacity and productivity of the ecosystem or the overall appearance of the landscape. The goal of conserving the status quo does therefore refer to all areas, not only protected ones.

Farming, forestry and fisheries enjoy certain privileges.


In relation to European law, the Impact Mitigation Regulation enlarges species and regional protection by the notion of project-related deterioration prevention, which means that it remains ahead of European law.

The German Impact Mitigation Regulation differs from the European Environmental Impact Assessment (EIA) Directive in its definition of the protection subject. In the German regulation, it is triggered in case of predicted damage to the natural environment and where the shape and/or the utilisation of the land surface will be changed. EIA procedures, on the other hand, are only triggered for certain kinds of projects listed in the Annexes.

While the transposition of the Environmental Liability Directive into German law (Environmental Damage Act – ‘Umwelschadensgesetz’) requires the compensation of interim losses in line with the original Directive, the Impact Mitigation Regulation does not require this kind of compensation (please see Q7 below for more details).

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12 Fischer-Hueftle, Peter, 35 Jahre Eingriffsregelung – eine Bilanz, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
13 Fischer-Hueftle, Peter, 35 Jahre Eingriffsregelung – eine Bilanz, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
14 Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
15 Lau, Marcus, Die naturschutzrechtliche Eingriffsregelung (Teil 1), Natur und Recht October 2011, p.680-684, SPRINGER Verlag, Heidelberg
16 Fischer-Hueftle, Peter, 35 Jahre Eingriffsregelung – eine Bilanz, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
17 COUNCIL DIRECTIVE of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (85/337/EEC) Annexes I and II
18 Lau, Marcus, Die naturschutzrechtliche Eingriffsregelung (Teil 2), Natur und Recht November 2011, p.762-771, SPRINGER Verlag, Heidelberg
A3.1.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

Compensatory measures/offsets are regulated by the Impact Mitigation Regulation. It was introduced in the first version of the Federal Nature Conservation Act from November 1976. Since then it has been changed and reworked, sometimes considerably so, several times.\textsuperscript{19} The fundamental aim of the Impact Mitigation Regulation is a nationwide conservation of the status quo (or no net loss) of nature and landscape.\textsuperscript{20} Avoidance is the very first step of the German ‘Eingriffsregelung’. Responsibility for these measures lies with the originator of the damage, who will need to pay for mitigation and/or compensation. The act therefore implements two important principles in environmental law: the precautionary principle and the polluter-pays principle.

Municipalities are the competent authorities for the implementation of the Impact Mitigation Regulation.

A3.1.5 The areas over which the requirements are applied

The Impact Mitigation Regulation aim to conserve the status quo (or no net loss) of nature and landscape, thus referring to all types of biodiversity, not only protected biodiversity. Since 1979, mitigation measures applied not only in the open landscape, but explicitly “in both settled and non-settled areas” (Article 1 of Federal Nature Conservation Act).

The originator of the damage is responsible for compensation and it is therefore he and not the competent authority that is in charge of providing suitable private or public areas for these measures.

In practice, suitable areas are often not available, in which case habitat banks can be of help (please see Q13 below for more details).

A3.1.6 The stage of the damage at which compensation is required

The Environmental Damage Act requires the compensation of interim losses but does not state when the damage needs to be compensated for. Competent authorities have to be notified as soon as the damage can be foreseen/occurs, measures must be undertaken immediately to stop the damage and then measures to compensate for the loss have to be proposed to the competent authority which then decides on a timeline.

According to the Federal Nature Conservation Act (Art. 15 (5)) unavoidable impacts have to be compensated or substituted for within a reasonable period of time. In practice, it is often argued that this means within the quickest possible timeframe or at least within a few years. Case law, however, suggests that the reasonable period of time has only expired once the damage occurred can no longer be fully compensated or substituted for. Experts generally draw this limit at 25 years.\textsuperscript{21}

A3.1.7 Consideration of interim losses

The Impact Mitigation Regulation does not require the offset of interim losses, i.e. the time-lag between the damage incurred and the full compensation or substitute remediation.\textsuperscript{22} In practice, however, interim losses are often compensated for by a quantitative plus in compensation. In cases where the lack of suitable areas for compensation already poses a

\textsuperscript{19} Lau, Marcus, \textit{Die naturschutzrechtliche Eingriffsregelung (Teil 1)}, Natur und Recht October 2011, p.680-684, SPRINGER Verlag, Heidelberg

\textsuperscript{20} Fischer-Hueftle, Peter, \textit{35 Jahre Eingriffsregelung – eine Bilanz}, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg

\textsuperscript{21} Lau, Marcus, \textit{Die naturschutzrechtliche Eingriffsregelung (Teil 2)}, Natur und Recht November 2011, p.762-771, SPRINGER Verlag, Heidelberg

\textsuperscript{22} Darbi, Marianne and Tausch, Christian, \textit{Loss-gain calculations in German Impact Mitigation Regulation}, Forest Trends, March 2010
problem, this is aggravated by the additional need of land to compensate for the interim loss. It has therefore been recommended to make use of compensatory payments for the interim loss. 23

A3.1.8 Baseline and methodology for determining the level and type of compensation

Municipalities are obliged to map habitat types (biotopes) in nature conservation development plans ("Landschaftsplan") on a regular basis. Mapping of biotopes is standard practice but habitats are specific to a single species, which results in a high amount of work. 24

There is no commonly agreed method at federal level that specifies which evaluation approach to use to determine the compensation required. According to Darbi and Tausch (2010) at least 40 published evaluation methods exist in Germany. 25 There is no commonly agreed classification of these evaluation methods, but according to Darbi and Tausch (2010) they can be differentiated between the four following groups: 26

A3.1.9 Biotope valuation procedures

Biotope valuation procedures are the most commonly used among the evaluation methods, representing almost 70% of the quantitative methods used by compensation pools (i.e. habitat banks) (more than 80% of which use quantitative methods instead of more qualitative ones).

Biotope valuation procedures aim at assessing the quality of different biotopes. On the basis of existing mapping of biotopes, they are grouped according to their types ("Biotopentypenlisten") and eco-points are assigned to these biotopes according to their ecological value. This procedure allows for the comparison of different biotopes of the same type. 27 As discussed above, there are no national guidelines defining how eco-points have to be assigned, which means that there might be regional variations. Figure A3.2 below provides an example of a simple biotope valuation procedure in Thuringia (2005). This shows that the value loss is the difference between the values of the biotope before and after the impact. The value gain, on the other hand, is the difference between the values of the biotope before and after the compensation. Complete compensation is therefore reached when the value gain after the compensation equals the value loss after the impact.

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23 Lau, Marcus, Die naturschutzrechtliche Eingriffsregelung (Teil 2), Natur und Recht November 2011, p.762-771, SPRINGER Verlag, Heidelberg
24 REMEDE, Compensation in the form of Habitat Banking. Short - Case study Report, 2008; Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
25 Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
26 Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
27 Quetier, Fabien and Lavorel, Sandra, Assessing ecological equivalence in biological offset schemes: Key issues and solutions, Biological Conservation, Volume 144, December 2011, p. 2991-2999; REMEDE, Compensation in the form of Habitat Banking. Short - Case study Report, 2008
Figure A3.2  Example of simple biotope valuation procedure

![Figure A3.2](image)

Source: Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010

This method can be enhanced by taking into account variations in quality in a biotope such as the presence of certain species or their abiotic functions, such as their usage. Figure A3.3 below provides an example of an enhanced biotope valuation procedure taking into account the function of a specific area, both for the impact as well as for the compensation.

Figure A3.3  Example of enhanced biotope valuation procedure

![Figure A3.3](image)

Source: Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010

Nevertheless, biotope valuation procedures are often criticised as they only allow taking into account abiotic factors such as soil, water, air, climate as well as the complex visual perception of landscape in simple cases.  

A3.1.10 Compensation area coefficients or ratios

Compensation area coefficients emphasise the main resource for compensation, which is land. They express the relation between impacted and compensated area in a coefficient or ratio. In doing this, the coefficient is generally related to the value of the affected area. They are therefore considered less as a valuation method in itself but more as part of other valuation methods, such as the enhanced biotope valuation procedure discussed above.
A3.1.11 Cost-of-restoration approaches

Cost-of-restoration approaches are based on estimating the costs required to restore an impaired area to a comparable state or condition before the impact. It has to be differentiated between costs-of-restoration, which are the fictive costs to restore the state or condition before the impact and costs-of-production, which are the actual costs of the compensation. An offset is achieved when these two costs are equal. In the simplified example of Figure A3.4 below the compensation of 2.5 ha semi-arid grassland is not feasible and the cost-of-restoration approach is used to determine the required area size if an orchard meadow is planted as an offset.

Figure A3.4 Example of simple cost-of-restoration approach

Source: Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010

A3.1.12 Verbal argumentative methods

Verbal argumentative methods are simpler than the ones discussed above and are based on a case-by-case expert judgement taking into account the distinctive features of the site in question including its functions and possible interactions. This can be a useful method when data is scarce or the impact is very complex. However, it does not necessarily allow for transparency neither for comparability.

A3.1.13 Level of compensation required

In order to discuss the required compensation in Germany, it is important to differentiate between compensatory measures (‘Ausgleich’) and substitute remediation (‘Ersatz’). According to the Federal Nature Conservation Act, an impact is compensated for when the impaired function of the ecosystem has been restored in a similar fashion and the landscape has equally been restored or newly designed. The original state does therefore not have to be replicated one to one but it has to be ensured that over time similar conditions can develop. While the compensatory measure has to be implemented at the location of the impact (in-site), substitute remediation can take place at a different location (off-site). The choice of location can, however, not be random but has to be taken within the same landscape type (‘Naturraum’) as the affected one. In order to facilitate this, Germany is divided into 73 different landscape types. Figure A3.5 below provides an overview of these landscape types.

Biodiversity offset requirements can potentially be met through actions to create, restore or enhance habitats, or to conserve species. There are also examples of offsets being met through alternative measures (such as recreational improvements and ranger services in Germany).

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29 Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010

30 Lau, Marcus, Die naturschutzrechtliche Eingriffsregelung (Teil 2), Natur und Recht November 2011, p.762-771, SPRINGER Verlag, Heidelberg
Figure A3.5  Landscape types in Germany

Source: German Environment Ministry, Das neue Bundesnaturschutzgesetz, March 2010

In the past compensatory measures were a compulsory priority to substitute remediation but in 2009 the legislator decided to accept these measures on an equal basis. The damage originator has to consider both options and decide, taking into account the no net loss goal of...
the regulation. In certain cases larger substitute remediation might be preferable to smaller and scattered compensatory measures.\textsuperscript{31}

In case where the impact cannot be compensated or restored for within a reasonable period of time, but the intervention is being permitted anyway, compensatory payments have to be undertaken. This measure was introduced to avoid that particularly impairing interventions with unavoidable and uncompensable damages would be preferable to the damage originator to interventions that are less impairing but compensable. It should be noted that the coalition agreement of the current German government features a new idea of equalising compensation with compensatory payments. The use of these compensatory payments would be discretionary. This could mean that even if compensation would be feasible, impacts of all kinds could be ‘bought’ by compensatory payments, which might prove controversial.\textsuperscript{32,33}

\textbf{A3.1.14} Financing of compensation requirements

In line with the polluter-pays principle, the responsibility for remediation measures (both compensatory measures (‘Ausgleich’) and substitute remediation (‘Ersatz’)) in the Impact Mitigation Regulation lies with the originator of the damage, who will need to pay for such remediation measures.\textsuperscript{34} He will be responsible for the implementation as well as maintenance of the measures. The damage originator is not allowed to use measures that are either originated or financed by a third party as part of the compensation. What is allowed, though, is the use of measures that serve another goal at the same time.\textsuperscript{35}

\textbf{A3.1.15} Long-term measures taken to ensure that the compensatory measures last

According to the Federal Nature Conservation Act, compensatory measures and substitute remediation have to be maintained and ensured over time. How long this period of responsibility will last is determined by the competent authority. The compensation goal has to be clearly defined by the competent authority so that at the end of the project it can be evaluated whether this goal has been achieved.\textsuperscript{36} Furthermore, some federal state (Land) regulations state that additional measures can be decided on while measures are already in place when it is believed that those measures will not lead to the compensation goal.\textsuperscript{37}

\textbf{A3.1.16} Pilot initiatives and other examples of how offsets are implemented

As an example of avoidance, over- and underpasses for wild fauna are mitigation measures in the German context of avoidance, as they avoid fragmentation of e. g. migration corridors. Indeed, functional under- and overpasses allow continued migration from the very beginning of a project. The next step is the mitigation of impacts, ensuring the maintenance of certain functions, e. g. migration corridors. However, the fragmentation of a big area, together with other impacts (e.g. noise), requires more compensation measures to be implemented.

\begin{footnotesize}
\begin{enumerate}
\item Fischer-Hueftle, Peter, \textit{35 Jahre Eingriffsregelung – eine Bilanz}, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
\item Louis, Professor Hans-Walter, telephone interview October 2011
\item Fischer-Hueftle, Peter, \textit{35 Jahre Eingriffsregelung – eine Bilanz}, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
\item Fischer-Hueftle, Peter, \textit{35 Jahre Eingriffsregelung – eine Bilanz}, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
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\item Lau, Marcus, \textit{Die naturschutzrechtliche Eingriffsregelung (Teil 2)}, Natur und Recht November 2011, p.762-771, SPRINGER Verlag, Heidelberg
\end{enumerate}
\end{footnotesize}
A good example of the implementation of the German Impact Mitigation Regulation is the restoration (renaturation) of the Spree wetlands (‘Spreeauë’) in Brandenburg. Until 2012 Vattenfall Europe Mining & Generation is restoring this area as a substitute remediation measure for the laying in of the ponds of Lakoma (Lakomaer Teiche) that are part of the mining area of north Cottbus (the lakes and river Cottbus are designated under Natura 2000). Indeed, during the permitting procedure it was decided that taking into account the imperative reason of overriding public interest and lack of alternatives, the laying in of the ponds should be permitted. As compensation, the renaturation of the Spree wetlands was chosen.  

Source: German Environment Ministry, Das neue Bundesnaturschutzgesetz, March 2010

North of Cottbus the Spree is a straight and even river heavily modified by humans over the centuries. Out of 37 fish species there are only eight left. The goal of the current renaturation is to create an area with similar interactive effects to those of the ponds of Lakoma. The total compensation area covers 400 ha with a length of eleven km and is divided into nine compensation sub-areas. A total of 49 single compensation measures will be implemented until 2012. Examples of these are the integration of little islands and tributaries and the river, as well as the creation of different river depths as well as widths. Eight new ponds as well as structural measures around these ponds are to provide the habitat for more than 50 species and a large number of vegetative ecotypes.

A3.1.17 Evidence of habitat banking at national (or lower) level

Habitat banking (compensation pools or eco-accounts) was introduced in Germany in 1993 for remediation measures under the German Federal Building Code. Through amendments to the Federal Nature Conservation Act in 2002 and 2009, the spatial as well as functional relation between impact and offset was loosened (‘Flexibilisierung’) and federal states were allowed to introduce habitat banking for any impact under the Impact Mitigation Regulation.

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40 REMEDE, Compensation in the form of Habitat Banking. Short - Case study Report, 2008
41 Rhineland-Palatinate Ministry of the Environment and Forestry Rhineland, Das Oekokonto in der Gemeinde, 2001
Compensation pools or eco-accounts are the bundling/aggregation of offsets, mostly substitute remediation. There is no standard definition and no consistent use of these words and of this concept in Germany, which can have two meanings 42:

■ Grouping of measures on one coherent site;
■ Catalogue/register of biodiversity offsets available in a certain area or via a certain organization.

There have been several reasons for the emergence of habitat banking. First of all, there were many shortcomings and failures of the standard offset procedure, especially the lack of long-term stewardship, so that sometimes offsets were not realised. Offsets should also be implemented where they make sense, not where sites or opportunities are available by chance and under time pressure (‘Coherence instead of coincidence). Habitat banking also enhances the contribution of offsets to overall aims such as habitat connectivity. Moreover, one of the main problems of the German Impact Mitigation Regulation was the lack of responsibility for the success of offsets in the standard procedure. In the contrary, offset agencies provide one responsible stakeholder for a habitat bank.

Eventually, the idea is that offsets are implemented independently of an impact. Only once an impact has occurred, impact and offset are put in relation. This helps with the widespread problem of the lack of appropriate offset areas surrounding the impacted area. Research had shown that without habitat banking many remediation measures had not been successfully undertaken because of a lack of suitable areas and/or the fragmentation of areas. In these cases, habitat banking offers the opportunity of a more coherent nature conservation planning. 45

Several federal states (Länder) have enacted ordinances in support of habitat banking and professional public and private compensation providers have developed. Today, habitat banking is widespread in Germany. Most habitat banks are managed by municipalities who are charge of the implementation of the Impact Mitigation Regulation but many inter-municipal schemes exist that cover large areas. 46

In order to successfully loosen the spatial as well as functional relation between impact and offset it becomes ever more important to be able to compare areas. Within the practice of habitat banking in Germany, the biotope valuation procedures approach with its concept of eco-points is considered as the most practical (please see Q9 above for more details). However, as discussed above, there is no single methodology for this kind of evaluation and eco-points are thus not necessarily comparable. 49

A3.1.18 Barriers and lessons learned

The German Impact Mitigation Regulation is not unproblematic as available land is limited and land used for compensation is therefore taken from agriculture or woodland. This can lead to delays in the planning process as well as over-priced land purchases or, in some cases, to compensation simply not being feasible. Regarding land requirements, the legislator tried in the newest amendment of the German Federal Nature Conservation Act

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44 Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
45 REMEDE, Compensation in the form of Habitat Banking. Short - Case study Report, 2008
46 Darbi, Marianne and Tausch, Christian, Loss-gain calculations in German Impact Mitigation Regulation, Forest Trends, March 2010
47 REMEDE, Compensation in the form of Habitat Banking. Short - Case study Report, 2008
48 REMEDE, Compensation in the form of Habitat Banking. Short - Case study Report, 2008
through the Revision of the Law of Nature and Landscape Conservation (‘Gesetz zur Neuregelung des Rechts des Naturschutzes und der Landschaftspflege’) of 27 July 2009\textsuperscript{50} to decouple compensation and land requirements. Compensation do now not necessarily exclude the use of the land. In line with the overall goal of the Impact Mitigation Regulation, the cultivation of the area does, however, need to lead to a long-term increase in quality of the soil, flora or fauna. This increase in quality has to provide a functional relation to the impact, e.g. the destruction of a wetland cannot be compensated for by any form of cultivation. In addition it should be noted that a long-term increase in quality will in most cases require that at least part of the area will be excluded from any cultivation. \textsuperscript{51}

In a wider context, it should be noted that the German Impact Mitigation Regulation is a useful tool to compensate for impacts discovered through an EIA. Furthermore, the Impact Mitigation Regulation can be useful in avoiding damages according to the Environmental Damage Act (German transposition of the ELD), especially regarding damage to species and habitats outside of Natura 2000 areas and to avoid environmental liability.

\textsuperscript{50} Coming into force on 01 March 2010

\textsuperscript{51} Fischer-Huefle, Peter, 35 Jahre Eingriffsregelung – eine Bilanz, Natur und Recht November 2011 (please note that this is a draft version – the final version to be published in November might differ), SPRINGER Verlag, Heidelberg
A3.2 Spain

A3.2.1 Compensatory measures/offsets required at national (or lower) level

In Spain, any plan, programme or project that could affect Natura 2000 areas, individually or together with other plans, programmes, or projects should be subject to an impact assessment. Both the national legislation and the regulations of the Autonomous Communities define the framework of the impact assessment. The impact assessment should be undertaken taking into account the conservation objectives of the given area.

In the case that a plan, programme or project which affects negatively the Natura 2000 area or endangered species listed in the Annexes II or IV of the Law 42/2007 of natural heritage and biodiversity should be implemented for reasons related to public interest (as defined by the Ministries Council) and because there is no alternative solution, **compensatory measures are required to ensure that the global coherence of Natura 2000 is still protected**. The Public authorities are in charge of taking as many compensatory measures as needed.

On the other hand, according to Real Decreto Legislativo 1/2008, related to Environmental Impact Assessment for certain type of projects, an Environmental Impact Study is required (Article 7 and Annex). This EIS should content information regarding prevention, mitigation and compensation measures.

A3.2.2 Reference to the goal of no net loss

Law 42/2007 of December 13th related to natural heritage and biodiversity, which establishes the legal framework of the conservation, sustainable use, improvement, and restoration of natural heritage and biodiversity makes no explicit reference to “no net loss”.

"Not less loss" (i.e. “no pérdida neta”) is presented as one of the main principles of the Strategic Plan for natural heritage and biodiversity 2011 – 2017 ("Plan estratégico del patrimonio natural y de la biodiversidad 2011-2017") adopted by the Real Decreto 1274/2011 on September 16th 2011. The formula covers biodiversity and natural heritage. The Plan underlines that specific mechanisms should be implemented to achieve “no net loss” of biodiversity and natural heritage.

A3.2.3 Transposition into national legislation of the requirements in the EIA, SEA, Habitats Directive, Water Framework Directive and Environmental Liability Directive


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Through Law 42/2007 on the natural heritage and biodiversity, which requires compensatory measures, the national legislation is in line with the requirements of the Birds and Habitats Directives. These directives oblige MS to take appropriate steps to avoid pollution or deterioration of the habitats or any disturbances affecting the birds in Special Protection Areas (SPA), but also outside the SPAs and in the case of the Habitats Directive, to take compensation measures. Furthermore, the Habitat directive requires appropriate assessment of any plan or project likely to have a significant effect on a Natura 2000 site. The requirement of elaborating an appropriate assessment is also included in Law 42/2007.

Nonetheless, the Working Group n°6\textsuperscript{56} in the VII National Congress on Environment (2004) underlined that the definition of the Natura 2000 network was incomplete in the national framework. Over the last eight years, the Natura 2000 Network in terrestrial areas in Spain has been completed.

The national legislation is also in line with the EIA Directive\textsuperscript{57} which applies to development projects and requires an assessment of their impacts on the environment; this is mentioned in Law 42/2007. According to article 45.5 of the Law 42/2007, competent authorities must ensure that there are no alternative solutions before project approval, or approve the project because of imperative reasons of overriding public interest.

The Environmental Liability Directive was transposed through Law 26/2007\textsuperscript{58} on October 23d, related to Environmental Liability.\textsuperscript{59} This law states the obligations of a project operator to prevent, avoid and restore the environmental damages of a project, and consequently assigns a charge for the environmental damage caused. Thus, the national framework is in line with the Environmental Liability Directive but does not go beyond.

\textbf{A3.2.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level}

The compensatory measures towards the Natura 2000 network are required in the Habitats Directive (article 6) that was transposed through the Real Decreto 1997/1995 (article 6) and in Law 42/2007 on the natural heritage and biodiversity (article 45). It is worth noting that compensatory measures should not be considered as part of a project, but should only be envisaged once all alternative solutions have been studied and discarded.

Other texts make reference to compensatory measures without requiring them explicitly.

First, the Spanish Forest Plan, adopted in July 2002, which is the basic tool for the management of the forestry activities in Spain, mentions the necessity to establish compensatory measures for a better conservation of forestry landscapes.

Second, Law 26/2007 on October 23\textsuperscript{th}, related to Environmental Liability states the obligations of a project operator to prevent, avoid and restore the environmental damages of a project.\textsuperscript{60} In this context, any project operator should prevent and avoid environmental damages caused by his operations and activities. In the case environmental damages occur, measures of restoration are mandatory. The law does not require compensatory measures but uses the terminology “Compensatory restoration” as one of the measures to ensure the restoration of the environmental damages.


\textsuperscript{57} Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment as amended. The types of projects for which an assessment is required are listed in Annex I. Projects requiring assessments only in certain circumstances are listed in Annex II.

\textsuperscript{58} Ley 26/2007, de 23 de octubre, de Responsabilidad Medioambiental. Available at: \url{http://noticias.juridicas.com/base_datos/Admin/l26-2007.html#c3}

\textsuperscript{60} Ley 26/2007, de 23 de octubre, de Responsabilidad Medioambiental. Available at: \url{http://noticias.juridicas.com/base_datos/Admin/l26-2007.html#c3}
Finally, the Real Decreto 1131/88 related to environmental impact assessment (EIA) makes reference to measures to reduce, neutralise or compensate the negative environmental impacts. An issue in terminology arises, with difficulties by promoters to understand what is required as mitigation or compensation or other measures.

A3.2.5 The areas over which the requirements are applied

The compensatory measures apply for projects, plans and programs that are implemented on Natura 2000 areas, as required by the Habitats Directive, as soon as the area is included in the list of Sites of Community Importance validated by the European Commission or granted “Special Protection Area” status. In theory, compensation measures could be considered for projects outside Natura 2000. However, in practice, this rarely happens, as measures proposed for reducing or neutralising impacts are commonly implemented to render the impacts non significant.

A3.2.6 The stage of the damage at which compensation is required

The compensatory measures should be adopted during the environmental assessment of the plans, programs and the EIA of projects. Such measures will be applied at the stage of the planning and implementation that the environmental assessment determines. In the case of environmental damages occurring due to the activities, restoration measures should be undertaken as soon as the damages occur according to the Liability law.

A3.2.7 Consideration of interim losses

Law 26/2007 on environmental responsibility and its decree 2090/2008 does not explicitly refer to ‘interim losses’. However, the legal obligation for repairing interim losses is covered.

A3.2.8 Baseline and methodology for determining the level and type of compensation

There is no specific information related to the methodology for determining the offset required at national level. Project operators have access to the EC guidance documents however. Information was found on how responsibilities are shared for the implementation of compensatory measures.

The person in charge of drafting the EIA is in charge of proposing the compensatory measures and the authority decides whether or not to approve the project and to require the measures. Then, the physical process of implementing the compensatory measures can be undertaken by the project promoter of the EIA.

The Autonomous Communities are in charge of validating the compensatory measures proposed under the conditions that they respect the requirements presented in Law 42/2007. For projects promoted or authorised by the Central Administration, the compensatory measures related to Natura 2000 are taken by the Ministry of Environment although the opinion of Autonomous Community is required.

The implementation of compensatory measures is responsibility of the project promoter. Compensatory measures are usually managed and piloted by the environmental structures of the Autonomous Communities.

A3.2.9 Level of compensation required

The Working Group N° 6 on Natura 2000 and compensatory measures expressed in the VII National Congress of Environment (2004), that the amount of compensation should be analysed on a case by case basis since there is no mathematic formula which allows calculating how much and to what extent an impact on an element of Natura 2000 should be compensated. Currently, the amount of area affected is considered when assessing the compensation.

A3.2.10 Financing of compensation requirements

The financing of the compensation measures fully depends on the project promoter.
A3.2.11 Long-term measures taken to ensure that the compensatory measures last

Since compensatory measures are a long term process, the budget availability has to be ensured through the process. The Autonomous Communities are in charge of ensuring the correct implementation of the measures in a long term perspective.

A3.2.12 Pilot initiatives and other examples of how offsets are implemented

The implementation of compensatory measures under EIA procedures in the context of the first private airport authorised in Spain, finished in 2007 and located in Ciudad Real, Central Spain, in the vicinity of a Natura 2000 Special Protection Area for birds (SPA) was analysed by Oñate and al. (no date)61 (see box 1).

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**BOX 1 - Compensatory measures for the private airport located in Ciudad Real in the vicinity of a Natura 2000 SPA (Oñate and al. (no date).**

The project as it was designed initially was invading a SPA area. Due to its unacceptable impacts, the project was rejected in May 2001. A second project, not invading the SPA, was then presented. The project obtained a positive impact statement (EIS) in December 2002, and it was declared of overriding public interest. Its construction commenced. However, in 2003, after complaints by environmental NGOs, the European Commission required a better appraisal of impacts on birds’ habitats. Consequently, construction was stopped and a new impact report was prepared. In February 2006 a positive EIS was issued, establishing the following compensatory measures:

- Enlargement of the SPA “Campo de Calatrava” to 2,200 ha and elaboration of a management plan;
- Declaration of a new SPA on a site 130 km north of “Campo de Calatrava”;
- Permanent acquisition of hunting rights in both sites;
- Habitat enhancement measures to be implemented on 3,690 ha during the life-time of the airport, including:
  - Construction of 2 breeding towers for *Falco naumanni* and 4 drinking sites for *Pterocles* species;
  - Incentives to be voluntarily adopted by cereal farmers in the area willing to undertake any of the following agri-environmental measures: adaptation of harvest date to birds’ breeding calendar; extension of traditional fallow; restoration of field boundaries; conversion of arable crops to permanent pastures; and establishment of no-harvest crops;
- Acquisition of 1,100 ha in the area, in order to guarantee a minimum level of the measures’ implementation;
- Constitution of a financial endorsement for the total yearly budget of the compensatory programme.

Five main issues emerging from this case study are highlighted:

1) Location for compensatory measures: the authors questioned the relevance of implementing compensatory measures far away from the site where the operational project or program has impacts. Furthermore, the area and time-frame considered to assess the environment impacts of a given project in the framework of an EIA are limited whereas the impacts might occur in a wider area and in a longer time-frame.

2) Measures exceeding the competences of the promoter: the enlargement of an...
existing SPA and the declaration of a new SPA go beyond the promoter’s ability. These measures involve administrative decisions and consequently should not be considered in an EIA.

3) Viability of incentive schemes as effective measures: compensatory measures for which viability depends on the willingness of third parties should be considered with caution (e.g. required agri-environmental measures);

4) Evaluation of the schemes’ effects: there might be difficulties to value the effectiveness of some compensatory measures (e.g. the agri-environmental measures for biodiversity conservation);

Appropriateness of EIA instead of “Strategic-level” cumulative effects assessment in these complex cases: the project-EIA did not consider the cumulative impacts of the project and of the induced development of the airport activity. Therefore, a “strategic-level” cumulative effects assessment could be undertaken to considered larger areas, longer time periods and a wider range of cumulative effects.

The EIA of the Project REMO of the Red Electrica de España for the electrical interconnection between Spain and Morocco established compensatory measures in 2005. In March 2009, several compensatory measures that aim at ensuring the integrity of the Natura 2000 network had not been implemented. Several environmental associations express concerns about this delay.

Other examples of how offsets are implemented are linked to projects dealing with the development of the road infrastructure network which affect Natura 2000 areas, for example:

- Project affecting the Natural Park of Sierra de Aracena and Picos de Aroche
- Project affecting the « Topillo de la cabrera » site

Case studies gave cost estimations of compensatory measures. During the Seminar on compensatory measures for lineal infrastructures: assessment, funding and cost held in 2006, some examples of the cost of compensatory measures of projects were presented (e.g. the development of the Madrid-Barajas airport or projects for the development of the rail network). The cost of compensatory measures represented between 1.8% and 4.5% of the total cost of the project. In the case study of the private airport in Ciudad Real presented earlier, the promoter constituted a EUR 386,000 financial endorsement, corresponding to the 2008 budget for the compensatory program. Therefore, the implementation of compensatory measures has an impact on the economic feasibility of the project.

In 2006, 576 projects with environmental impact (i.e. Declaracion de Impacto Ambiental (D.I.A.)) were followed by the Ministry for Environment, of which 187 projects which submitted compensatory measures were analysed. The results are available in the final “Bases para la aplicacion de medidas compensatorias en el marco de la Directiva 92/43/CEE” elaborated by Aranzazu Castell.

A3.2.13 Evidence of habitat banking at national (or lower) level

The Strategic Plan for Natural Heritage and Biodiversity 2011-2017 mentions that no habitat banking currently exists in Spain. It refers to the EU Green Paper on market-based instruments for environment and related policy purposes (COM(2007) 140 final) that

proposes to study the opportunity to introduce market-based instruments for biodiversity at EU level, including "habitat banking" and explains that these systems have been successfully implemented in various countries in a context of environmental responsibility. Such habitat banking systems are seen as innovative and flexible means to avoid "no net loss" of biodiversity. However, the Strategic Plan highlights that habitat banking cannot be considered as a substitute or an equivalent of the compensatory measures towards the Natura 2000 network.

A3.2.14 Barriers and lessons learned

The Strategic Plan for Natural Heritage and Biodiversity 2011-2017 highlights that the compensatory measures for projects, plans or programmes as defined in the Ley 42/2007 (article 45) are generally not designed properly and do not satisfy the principles of compensating for the damages produced on habitats and species. It would be relevant that the managers of Natura 2000 and the persons in charge of the biodiversity conservation participate in designing the compensatory measures.

Project operators in charge of implementing projects on Natura 2000 areas (e.g. infrastructure projects) express several difficulties in 2010 to identify alternatives and to what extent projects affect Natura 2000. The difficulties are related to:

- The definition of the Natura 2000 area;
- Determining whether the impact is significant or affects the global consistency of Natura 2000;
- Establishing clear differences between compensatory measures and avoidance and mitigation ones.

Furthermore, the definition of a project which is in line with public interest is not clear.

Based on feedbacks on implementation of compensatory measures, the Working Group n°6 on the Natura 2000 network and compensatory measures revealed the following difficulties in the VII National congress on Environment in 2004:

- Lack of environmental information to value the level of impact on Natura 2000 and difficulty to access existing information,
- Confusion between compensatory measures as defined under the Habitats Directive and compensation measures in general,
- Implementation of compensatory measures as an additional source of funding for project promoters who find synergies with other activities and thus a benefit in implementing these measures;
- Implementation of measures which are not contributing to the respect of the global consistency of Natura 2000.

A3.3 Finland

Compensation shall be paid for a loss defined in the Act on Compensation for Environmental Damage (737/1994, entered into force in 1995) as environmental damage, caused by activities carried out in a certain area and resulting from pollution of the water, air or soil; noise, vibration, radiation, light, heat or smell, or other similar nuisance (section 1 of the Environmental Damage Act).

Regarding prevention and remediation of damage to protected species and natural habitat, the Nature Conservation Act (1096/1996) states (Section 69) that protection of a Natura 2000 site can be lifted or weakened only under certain specific conditions (national interest etc.). If the decision leads to deterioration of the overall coherence of the Natura 2000 network or its ecological value, the Ministry of the Environment shall take immediate action needed to compensate (ecologically, through actual measures) for said deterioration. The law specifies that the operator of an activity which could potentially cause damage has the duty to inform the competent authority of his/her intention. Once notified, the authority shall require that the operator takes measures to prevent any adverse effects or limit them to the minimum and, if necessary, require that the operator take remedial measures. The operator also has to provide the information which may be needed by the authorities to decide on appropriate action.

The Environmental Liability Act includes provisions on remedial measures related to the remediation of significant environmental damage. ‘Significant environmental damage’ means damage that has significant adverse effects on protected species and natural habitats and on water and land. The environmental damage is defined in dedicated laws (e.g. Water Act, Nature Conservation Act, Environmental Protection Act) and can be divided into four groups, according to what is damaged and partially according to the cause of the damage: damage to water bodies and groundwater; damage to protected species and natural habitats; damage to land; and damage caused by genetically modified organisms (GMOs). Where environmental damage has occurred, the operator must, without delay, inform the competent authority and describe the damage in as much detail as possible. The principal aim of primary remediation is to restore the environment to the state in which it would be if no environmental damage had occurred. If this is impossible, complementary and compensatory remedial measures should be taken.

All in all, the requirements for any compensation exceeding the requirements already set in EU or national laws does not exist. Breaches of law must be compensated.

A3.3.1 Reference to the goal of no net loss

One of the aims of the Nature Conservation Act is to maintain biological diversity (chapter 1, section 1), although the exact terms of no net loss or net gain were not used. This Act states that, in order to achieve this aim, nature conservation shall focus on attaining and maintaining the favourable conservation status of natural habitats and of wild fauna and flora (chapter 1, section 5). The conservation status of a natural habitat shall be taken as favourable when its natural range and the areas it covers within that range are stable enough.

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66 Conditions referred to in Section 65, Paragraphs 1 And 2, And Section 66, Paragraphs 2 And 3  
67 Section 57 a (22.12.09/1587) on Prevention and remediation of damage to protected species and natural habitats  
68 Centre For Economic Development, Transport And The Environment  
to ensure the long-term maintenance of said habitat and of the structure and functions of its ecosystem, and when the conservation status of its typical species is deemed favourable (chapter 1, section 5). The conservation status of a species shall be taken as favourable when the species proves capable of maintaining itself on a long-term basis as a viable component of its natural habitat (chapter 1, section 5).

A3.3.2 Transposition into national legislation of the requirements in the EIA, SEA, Habitats Directive, Water Framework Directive and Environmental Liability Directive

The Environmental Protection Act (86/2000) obliges all operating businesses to conduct Environmental impact assessments (EIA) wherever activities listed in Section 6 of Finland’s EIA Decree (268/1999) are practiced. Actors whose activities lead to a risk of pollution are legally obliged to prevent, minimise, remediate and compensate for any harmful environmental impacts (according to the Polluter Pays Principle).

In Finland, the Environmental Liability Directive has been implemented by the Act on the Remediation of Certain Environmental Damages (383/2009) that entered into force on 1 July 2009, i.e. the Environmental Liability Act, and the related changes introduced into the Nature Conservation Act (1096/1996), the Environmental Protection Act (86/2000), the Water Act (587/2011), the Gene Technology Act (377/1995) and the Act on Transport of Dangerous Goods (719/1994). Based on the Environmental Liability Act, the government has also issued a Decree on the Remediation of Certain Environmental Damages (713/2009), or the Environmental Liability Decree.

A3.3.3 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

Claims on compensation payable for environmental damage are covered by the act on Compensation for Environmental Damage (737/1994). This means compensation can be claimed from the operator of a project/facility for environmental damage, and also for e.g. ground water pollution or damage. Compensation claims for environmental damage should first be addressed directly by the claimant to the company or organisation responsible; secondly the question may be solved in court. Statutes relating to compensation for environmental damage in connection with transportation are included in the Traffic Insurance Act (279/1959), the Act on Liability in Rail Transport (113/1999) and the Finnish Maritime Code (674/1994). Compensation is paid for environmental damage if it is shown that there is a probable causal link between the activities and the loss.

Furthermore the Environmental Damage Insurance Act (81/1998) guarantees cost coverage for compensation measures taken to prevent or limit the damage and to restore the environment to its previous state. The scheme is financed by a special insurance scheme which is compulsory for the companies whose activities cause risk to the environment. There similarly is a specific Oil Pollution Compensation Fund from which compensation for oil spills is paid.

A3.3.4 The areas over which the requirements are applied

The legislation applies to all types of land covers including water, groundwater etc.

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72 Finnish Ministry of the Environment webpage www.ymparisto.fi/default.asp?node=18315&lan=en
74 Certain damages impacting water bodies are covered by the Water Act.
75 Environmental damage occurring in connection with transportation, which could include noise, pollution etc
A3.3.5 The stage of the damage at which compensation is required

The requirement to pay for compensation regards mitigation, prevention and remediation. Interestingly, advance compensation, i.e. compensation for future environmental damage (for example for a factory starting its activity with expected environmental damage during construction and/or operation) is described in the Act on Compensation for Environmental Damage. If the future environmental damage resulting from a nuisance can be assessed in advance, compensation for it shall on demand be pre-set either as a lump sum or as an annual payment (section 9). If there is later an essential change in circumstances, or the assessed loss is otherwise essentially different from that actually resulting from the nuisance, the compensation set in this manner may be adjusted to a reasonable extent considering the circumstances (section 9).

Also, the claimant for environmental damage may resort to the courts at any time up to ten years after the damage is incurred.

A3.3.6 Consideration of interim losses

In the context of the Environmental Liability Act, if the recovery of the environment to the baseline condition cannot occur through natural recovery within a reasonable time, the competent authority must impose remedial measures. Possible primary remediation measures are assessed first. Next, the authority assesses whether the primary measures need to be complemented in the damaged area or elsewhere (complementary remediation). Eventually, irrespective of whether the recovery of the environment to the baseline condition occurs through natural recovery or remedial measures, the competent authority must assess whether compensation for interim losses of natural resources and services is required until the natural resources and services recover to their baseline condition (compensatory remediation). Interim losses are losses from the time the environmental damage occurred to the time it has been remedied. This is achieved through additional measures taken to immediately improve the quality of the damaged natural resource or service.77

No other legislation sets forth provisions on the remediation of environmental damage in the broad sense intended under the Environmental Liability Act. Generally, restoration of environmental damage mainly refers to restoration of the damaged site to its baseline condition. Thus, restoration does not cover the remediation of interim losses.78

A3.3.7 Baseline and methodology for determining the level and type of compensation

See below.

A3.3.8 Level of compensation required

According to the Act on Compensation for Environmental Damage, reasonable compensation shall be paid for environmental damage (section 5). In the determination of this compensation, due consideration shall be given to the duration of the nuisance and the loss, and to the chances of the person suffering the loss avoiding or preventing this loss (section 5). It is mainly authorities who can claim environmental damage which can trigger a requirement for compensation in monetary terms, covering the costs of reasonable measures taken to prevent or limit environmental damage and for clean-up and restoration of the environment to its previous state. The definition of ‘reasonable’ is at the heart of discussions, and can be in respect to the financial situation of the one bearing responsibility, and/or to the ecological damage itself. Measures could include covering costs that a private person has already had for avoiding or remediating damage.

79 In monetary terms, reasonable relative to the nuisance or the threat thereof
The Act on Compensation for Environmental Damage (737/1994) requires restoration of the environment to its previous state. According to Section 6 on Costs of prevention and reinstatement, costs shall be paid for investigations; the costs of the measures needed to prevent environmental damage, or to reinstate a damaged environment, which had to be paid by a person subject to the damage, and; the costs, incurred by authorities, of measures to prevent a threat or to reinstate a polluted environment to its original state, if the costs are reasonable relative to the nuisance or the threat thereof, and to the benefit gained by the measures (‘original state’ is not defined in the Act).

In the context of the Environmental Liability Act, primary remediation includes measures such as removing the substance causing pollution or the structure causing environmental damage. In addition to restoration, primary remediation may include other measures, such as plantings and stocking (e.g. fish), construction of fish passes, restrictions on the use of an area or monitoring of the state of the environment.

The additional natural resources and services resulting from the complementary remedial measures should be of the same type, quality and quantity as those that were damaged. If this is not possible on the damaged site, then alternative natural resources or services must be provided elsewhere in the ecosystem. If this is not possible either, complementary remedial measures can be taken to provide an alternative natural resource or service. In such a case, the extent of the necessary compensatory remedial measures may be determined through monetary valuation.

Compensatory remedial measures should provide natural resources and services of the same type, quality and quantity to compensate for interim losses. The scale of the necessary additional measures can be estimated based on the extent of the damaged site and the duration and significance of the environmental damage. The longer the period of time before the baseline condition is reached, the greater amount of compensatory remedial measures is required. If compensatory remedial measures cannot be taken to provide natural resources equivalent to those damaged, alternative natural resources should be considered, such as an equivalent type of natural resource outside the damaged area. If this, too, is not possible, the monetary value of compensatory remedial measures is determined by means of monetary evaluation. In practice, compensatory remedial measures undertaken must include additional environmental protection measures to improve or protect the state of the damaged part of the ecosystem, or the ecosystem as a whole.

Finland as well as Hungary has an indicative price list for loss of ecological values, decided by the Environment Ministry. The sums are based on a number of variables, where one is the empirical estimations of collective costs of protection of certain species, e.g. White-tailed Eagle (Haliaeetus albicilla). This facilitates the work in environmental court cases. Compensation must be paid for any damages that can be estimated in financial terms affecting people or property, as well as significant financial damages and costs incurred in preventing or repairing damage. However, money is not used for concrete compensation measures.

However, cost recovery does not regard values that cannot be given a value, e.g. reduced biodiversity, or loss of a beautiful landscape.

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A3.3.9 Financing of compensation requirements

The basic principle is that the actor causing the damage has the responsibility. Compensation must be paid for environmental damage by the party whose activities are likely to have caused the damage concerned. The causality can be hard to prove when it comes to environmental damage. This in part lays responsibility for prevention and mitigation on the action taker: Compensation claims for environmental damage should first be addressed directly by the claimant to the company or organisation responsible, secondly via authorities.

In the context of Environmental Liability Act, according to the polluter pays principle, the polluter holds the primary responsibility for the restoration of and compensation for environmental damage. In practice, some polluters are unable to pay the costs. The reasons may be that the responsible party is insolvent or unknown, or some other reason may prevent the establishment of the polluter’s liability for compensation for environmental damage. Secondary financing systems are required in such cases. Finland does not have a wide-reaching environmental fund. Instead, compensation or financing is sought from various sources. Possible sources include statutory environmental damage insurance, voluntary insurance, the oil pollution compensation fund and various funding from the state budget.

A3.3.10 Long-term measures taken to ensure that the compensatory measures last

In the context of Environmental Liability Act, in addition to the planning and implementation of remedial measures, the operator who is responsible for the damage must also monitor the effects and supervise any remedial measures. The competent authority must monitor the implementation and effects of remedial measures. Remediation ends when the imposed remedial measures have been carried out and a return to the baseline condition has been achieved. The authority can decide to end remedial measures, even if the baseline condition has not been achieved, when the risk posed by the damage to human health and natural resources has been eliminated, or when the costs of continuing remediation would be disproportionate to the environmental benefits gained.

A3.3.11 Pilot initiatives and other examples of how offsets are implemented

Not identified

A3.3.12 Evidence of habitat banking at national (or lower) level

No specific texts identified.

A3.3.13 Barriers and lessons learned

In Finland there is established policy relating to compensation from pollution. Using ecological compensation in infrastructure projects is not the practice in Finland but seems to develop.

An issue might be how to deal with damages over national borders if the methods for estimating cost for ecological damage (and extent of compensation) are different.

Pricing exercises are possibly time consuming and can provoke great debates. They need to be continuously updated since the ecological status of an area or species may change etc. Finland has not really experience on pricing exercises but price tags have been developed for species, which might give some ideas for compensation scheme work.

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A3.4 Sweden

A3.4.1 Compensatory measures/offsets required at national (or lower) level

Compensation requirements can be triggered under several legislative frameworks, e.g. for infrastructure (road and rail projects), the Environmental Code, and the Planning and Building Act.

The conditions for when compensation is required as well as the extent and type of compensation are different depending on the legal requirement. As a baseline, the general regulations on respecting the environment (Chapter 2 of the Environmental Code), in addition to the rules on resource management (Chapters 3 and 4), require the developer to take the actions possible to minimise any negative impacts on the environment. Any compensation requirements are thus additional to these basic requirements.

The Chapter 10 of the Environmental Code regulates remediation or monetary compensation for e.g. pollution damage in general on soil, water, species and habitats, defining what can be considered as ‘damage’ and how it should be compensated (see further information below under question 4).

Claims for physical compensation of ecological values can be triggered through permitting or exemption procedures. Permits for most major projects are given by the regional authorities, and it is usually at this decision making level (or higher) that compensation has been discussed in Sweden. In the Environmental Code, projects requiring permit include large infrastructure developments, large factories, or any other development that could potentially have a significant impact on the environment or human health. Examples include wind power plants, power generators and railway lines. Exemption in this context regards exemptions from fulfilling legal requirements for example the authority permission (despite legal prohibition) to undertake an activity negatively affecting protected areas (e.g. Natura 2000).

Compensation measures may thus be required:

- in case of impacts occurring in Natura 2000 areas, if permission is given despite a risk of damage on species or habitats protected under Chapter 7 section 29 of the Environmental Code. This could for example be the case when no alternative solutions for the project are available. In such cases, permission can only be granted if compensation measures are undertaken which ensure favourable conservation status for the species and habitats listed in the EU Nature Directives. In such cases, the European Commission shall be informed of the action taken.

- in case of decisions on exemption from fulfilling the requirements of the Species Protection Act (regarding protection of species reproduction areas or resting places). Exemption from the requirements of this act can only be given under specific conditions. Ecological compensation is not compulsory, but advised, in order to provide extra protection for the species. Examples of possible compensation measures include improving or extending a reproduction area.

- in case of decisions on exemption from requirements for protection of Nature reserves (Chapter 7 section 7 of the Environmental Code). If exemption from these regulations is given, and environmental values are impacted, thus the impact shall be compensated reasonably. SEPA provides some basic guidelines for how compensation measures shall be used. Compensation should primarily take place in the area affected, and address the values threatened. Secondly, an area with similar conservation values (qualitatively and quantitively) shall be used.

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89 Species Protection Act: Artskyddsförordningen (2007:845) 4 § 4 punkten: 4 § I fråga om vilda fåglar och i fråga om sådana vilt levande djurarter som i bilaga 1 till denna förordning har markerats med N eller n är det förbjudet att […] skada eller förstöra djurens fortpflaningsområden eller viloplatser.
if public common interests (including recreation or nature conservation) risk being negatively affected following permitting or exemption, compensation can be required following chapter 16 section 9 of the Environmental Code. The aim of the compensation and how it should be set up is not strict in this case; the extent and type of compensation can be decided on a case-by-case basis (considering cost of the action and value of the nature area affected).

Compensation for natural values should not influence the decision-making regarding exemptions and permits. The decision to grant a permit should be based on the rules that allow the development to be implemented (e.g. overriding public interest, limited impacts, avoidance of impacts to priority species/habitats) and not on expected positive impacts of compensation measures. Compensation measures are proposed once the development is permitted to ensure no net loss, but not as part of the permitting procedure as such. Thus, the fact that compensation can or will be undertaken, and the extent to which this might reduce negative effects, shall not be taken into account in the decision-making.

The term compensation measure (kompensationsåtgärd) is sometimes also used more freely in local municipal planning to describe actions which are part of development planning/spatial planning. In the latter case, it is often in the context of compensating for losses of recreation areas or other urban green areas, which are not necessarily of high value from a species protection perspective.

SEPA also mentions compensation as a possible tool to ensure connectivity in the green infrastructure.

There is some guidance from SEPA on how to use compensatory measures in relation to nature conservation.

A3.4.2 Reference to the goal of no net loss

The concept of biodiversity is commonly referred to, and notably included in the introductory paragraphs of the Environmental Code. The Environmental Code chapter 7 describes how protected areas will be dealt with, including those protected in the framework of the Birds and Habitats Directive. The term ecosystem services is less commonly referred to, and could not be found in the main body of text in the Environmental Code. Similarly terms for net loss or gain were not identified. In a proposed green infrastructure strategy, SEPA suggested an assessment of how ecological compensation could help counteract degradation of the landscape from exploitation projects.

Adjustments of plans and/or mitigation measures are to be discussed separately from the possibility to use (or require) compensation measures. Compensation measures should not be a part of a project proposal. Instead, compensation measures are additional measures taken to compensate for unavoidable negative effects despite mitigation and adjustments and after the project proposal has been shown to have as little impacts as possible.

There is in general a good understanding of the concept of compensation, though there have been discussions in Sweden about how to value different options/actions, how to use the terminology in the right way (mitigation, minimisation, etc.) and the fact that compensation should not be used to facilitate authorisation for a project or plan.

A3.4.3 Transposition into national legislation of the requirements in the EIA, SEA, Habitats Directive, Water Framework Directive and Environmental Liability Directive

The EIA and SEA Directives have been implemented using the Environmental Code and the Planning and Building Act as 'umbrella' frameworks. Projects listed under an annex of chapter 6 require an environmental impact assessment if they may impose significant negative impact. EIA is required for all permitting according to the Environmental Code, agricultural activities or activities affecting water bodies included (chapters 9 and 11). EIA is

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needed for projects affecting Natura 2000 areas (chapter 7 section 28 § a, referring to the sites protected according to the Birds and Habitats directives in chapter 7 section 27 §), certain protected coastal zones, industrial activities such as mining, or remediation.

The Swedish interpretation of the EIA directive 97/11/EC and SEA directive 2001/42/EC is quite extensive. SEA for plans and programmes is conducted according to the EC directive interpretation of SEA. The routines for SEA and EIA are mainly described in the Environmental Code chapter 6. In the sectorial laws (e.g. transportation) and the Planning and Building Act there are additional requirements about EIA. An overhaul of chapter 6 in the environmental code is currently underway.

The Birds and Habitats Directives are implemented in the Environmental Code chapter 7 sections 28 and 29, which also designs protected areas. Permission can generally not be given to development or activities damaging Natura 2000 values, but permission may be given under certain circumstances. In this case compensation shall be undertaken for any lost values, so that the purpose of protecting the values in the area are still fulfilled.

The ELD Directive (2004/35/EG) existed in the Environmental Code already before the ELD Directive came into force, but was extended to mitigation and remediation of substantial environmental damage or threats of such damage[91], especially regarding nature and water bodies.

A3.4.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

The opportunities are provided to use ecological compensation if it is in line with fulfilling the purposes of the legislation on protection of species and habitats.[92] Chapter 16, section 9 in the Environmental Code states that authorisation may be conditional on a requirement to fund compensation measures. As of present practices compensation is normally not « demanded » as much as agreed between the developers and the authority. Granting permits may for certain categories of projects (with major impacts) require permission from the government (Law 2001:437). Some guidelines on how to use compensation is described in texts from SEPA and other authorities.

Chapter 10 of the Environmental Code regulates compensation for e.g. pollution damage on soil, water, species and habitats. The environmental “damage” is defined as damage through pollution of land or water, groundwater, buildings or facilities that may harm human health or the environment. A severe environmental damage would be actions that pose a significant risk to human health, the quality of an aquatic environment, or a significant harm or disturbance to the maintenance of an animal or plant species or habitats.

Contaminated sites should be remediated until they no longer pose a significant risk to human health; water bodies and species/habitats should be compensated to:

- restore the environment to the condition it would have had if the injury had not occurred;
- compensate for interim loss of environmental values, and
- compensate for environmental values lost through other means, if the restoration is not possible.

A3.4.5 The areas over which the requirements are applied

There is no specified territory where compensation cannot be used, but it is most commonly mentioned in the context of biodiversity protection. The land types or coverage for which the compensation measures can be used differs depending on the reason for requiring compensation (see question 1), i.e. whether it is demanded by a local authority through the

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[91] Miljöansvarsutredningen 2006:18
[92] The County Administrative Board of Västra Götaland webpage handbook on management of protected species

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procedures under the Planning and Building Act; whether demanded by a regional authority in a case of permit decision where impact may appear on a Natura 2000 area, a nature reserve, etc.

A3.4.6 The stage of the damage at which compensation is required

The need for compensation measures should be investigated at an early stage of the project preferably connected to the EIA that will be required for obtaining the permit. Information submitted should be adequate for the competent authority to assess both the impact of the project or plan, and the adjustments, mitigation or protection measures needed. It is important that protection and compensatory measures are not confused. It is stated that if possible, the compensation measure should have shown an effect before the project or action imposing damage has been executed.

A3.4.7 Consideration of interim losses

Chapter 10 of the Environmental Code mentions compensation for the loss of environmental values ‘pending the restoration’.

A3.4.8 Baseline and methodology for determining the level and type of compensation

The guidelines for compensation of nature values in Sweden point out that the principles for compensation differ depending on policy context for the compensation requirement.

At present, compensation measures taken (if counting compensation due to legal requirement and in the broad sense through local policy action (see question 1)) can be both out-of-kind and in-kind. Examples, as observed during a conference on ecological compensation in Sweden in 2011, include:

- A housing company (HSB) undertaking (or funding) maintenance work in the old oak forest and lake shores (Örnässjön) as a compensation for loss of a certain type of riparian forest in a nearby housing area development;
- New creation of wetland by an energy provider (Fortum) in an area near Stockholm, as compensation for the construction of a heat power plant nearby;
- Protection, caretaking and increasing accessibility to the river Verkaån, in compensation for losses associated with the establishment of a logistics area.

A3.4.9 Level of compensation required

The Environmental Code requires as a baseline mitigation of any negative environmental impact, secondly damage should be “reduced”, but it is not stated as a requirement that the same environmental level/status as originally needs to be reached. The compensation effort should be proportionate to the damage. The authorities have a responsibility when it comes to motivating why more than 1:1 should be compensated. It appears that this is not always an easy task.

A3.4.10 Financing of compensation requirements

If the cost for compensation is decided in a permission, the applicant will finance the measure (chapter 7 section 29 a), unless it is seen as an unfair requirement. In the decision of what can be considered fair, as decided by the public authority, the public interests should be taken into account.

2nd chapter section 8 of the Environmental Code: Anyone who carries or has carried out business or taking an action that caused harm or detriment to the environment is responsible for remediation to the extent that can be considered reasonable. It may instead be required that the responsible pays an indemnity.

A3.4.11 Long-term measures taken to ensure that the compensatory measures last

No data available.
A3.4.12 Pilot initiatives and other examples of how offsets are implemented

Previous court cases show that compensation can be demanded of the developer, for example in the case of MÖD decision 2005:5 which demanded new wetlands to be constructed to compensate for the marine environmental impact expected from a fish farm establishment. There is at present no explicit support for ecological compensation in the planning legislation (PBL), even though it requires good resources management. Compensation has been used in Sweden in the past decade through the Environmental Code, Planning and Building Act and through local municipal planning, especially for road and railroad projects. Examples include:

- Permit according to the Environmental Code for establishment of power generators on the estates Porsön 1:3 och Porsön 1:416, Luleå. In this case, decreasing recreational values were compensated by the construction of a new walking path in the area to replace the previous one.

- Decision 1(48), 2009-12-02, permit for a wind power station in Stammåsen, Sollefteå and Strömsund, region of Västerbottensland and Jämtland. The impacts on reindeer business in the area was to be analysed during the trial period, building and running phase, and appropriate compensation action to be taken. The analysis also needed to include suggested compensation action to reduce the impact on birds of prey in the area.

- Permit 2011-08-19 according to the Environmental Code concerning a wind power plant at Fåbodliden, Vindeln municipality. The impact on the eagle *Aquila chrysaetos* was to be investigated and the need for further action evaluated.

- Permission 2011-02-18 (complementary decision) Botniabanan west link part 1, in the Natura 2000 area of the Umeälven delta and fields. For Botniabanan, the Swedish authorities have consulted the European Commission, in accordance with the Habitats Directive, in the matter of the need for compensation since the project involved an impact on a Natura 2000 area. A foundation exists with the mission of managing compensation actions (nature conservation and enhancement) required by the Botniabanan. Permission was conditioned with payments to the foundation.

A3.4.13 Evidence of habitat banking at national (or lower) level

Habitat banking is so far not used in Sweden.

A3.4.14 Barriers and lessons learned

A lack of guidelines and experience has been highlighted, despite several guiding documents from the SEPA. Case law is still scarce, especially when it comes to compensation outside protected areas. It seems that there are discussions about the extent and type of action to require. This is often solved by an introductory phase of "testing" a compensation measure to see what outcomes can be expected, combined with further investigations.

A limitation for compensation or offset as a tool is that site specific values with a long creation process cannot always be replaced. Compensation can only be one of several measures needed to ensure nature protection.

While currently the use of compensatory measures is relatively low in Sweden, several private companies are growing an interest for voluntary compensation/offsets, as a complement to carbon offsets.
A3.5 France

A3.5.1 Compensatory measures/offsets required at national (or lower) level

In France, compensatory measures are the very last step of the mitigation hierarchy: avoid, reduce and compensate. They can be suggested only for residual impacts, i.e. impacts which cannot be avoided, nor reduced.

Ex-ante compensatory measures can be required by the national legislation for:

- plans submitted to a **Strategic Environmental Assessment (SEA)**
- projects submitted to a common **Environmental Impact Assessment (EIA)**
- projects submitted to an Environmental Impact Assessment specific for **facilities classified for environmental protection**
- plans and projects with issues related to the **Natura 2000 network**
- plans and projects with issues related to **protected species**
- projects with issues related to **water**
- plans and projects with issues related to a national ecological network, the **green and blue infrastructures**
- projects with issues related to **forest clearing**

Ex-post compensatory measures can be required by the national legislation for:

- **Environmental damage** in the context of environmental liability

The legislative requirements for compensatory measures are different for each proceeding relative to the above-mentioned texts. However, among ex-ante proceedings, SEA and EIA are the two main proceedings, into which other proceedings such as Natura 2000 and ICPE are often integrated. In this case, the legislative requirements for SEA and EIA apply to the other proceedings.

Following a mitigated stocktaking of the implementation of compensatory measures, a national committee on compensatory measures was set up by the French Ministry of

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93 “Evaluations environnementales des plans, schémas, programmes et autres documents de planification”: Articles L 122-6 and R 122-20 of the Environmental Code
94 “Études d’impact - régime général”: Articles L 122-1, L 122-3, L 122-3-4, R 122-5 and R 122-14 of the Environmental Code
95 “Études d’impact - Installations classées pour la protection de l’environnement”: Article R 512-8 of the Environmental Code
96 Facilities classified for environmental protection are industrial or agricultural facilities with risks for the environment and/or the security. These facilities can be submitted to declaration or authorisation depending on the magnitude of the risks. The nomenclature of these facilities is divided into two categories: the use or storage of certain substances (e.g. toxic, radioactive, flammable) and the type activity (e.g. food, chemistry, waste). The legislation on facilities classified for environmental protection submitted to authorization has the same orientations as the IPPC Directive but is stronger. Therefore, most facilities classified for environmental protection submitted to authorisation are also submitted to the IPPC Directive.
98 “Études des incidences loi sur l’eau”: Articles R 211-6, R 214-6 and R 214-32 of the Environmental Code
99 “Trame verte et bleue”: Articles L 371-2 and L 371-3 of the Environmental Code
100 “Défrichements”: Article L 311-4 of the Forest Code
101 “Réparation des dommages, responsabilité environnementale”: Article L162-9 of the Environmental Code
Sustainable Development in November 2010. This committee includes all relevant stakeholders: State, local authorities, NGOs (e.g. environmental), enterprises (e.g. developers) and scientists. Eventually, at the request of stakeholders, the scope of this committee has been extended to the hole mitigation hierarchy avoid, reduce and compensate for impacts of plans and projects on natural environments. Its objective was to formulate an introductory non-binding national doctrine, published in 2012, and is now to formulate non-binding national guidelines, to be published at the end of 2012 or beginning of 2013, addressing all the ex-ante proceedings and sectors. The doctrine includes general principles, while the guidelines will focus on methodology. Their goal is that the practices of the developers, their providers and public structures integrate the orientations of the legislation. The doctrine and guidelines therefore aim at illustrating the orientations of the legislation, but do not correspond to an exhaustive interpretation. These documents will be broadly diffused among relevant stakeholders. The doctrine and the guidelines are also intended to evolve in the future in case of technical or legislative updates.

Moreover, a few pieces of non-binding specific guidance exist:

- National guidance on Environmental Impact Assessment.
- National guidance on Environmental Impact Assessment of photovoltaic infrastructures.
- National guidance on Natura 2000 proceeding.
- Regional guidance on compensatory measures in ex-ante proceedings.
- Regional guidance on the integration of natural environments in the Environmental Impact Assessment.
- Regional guidance on the integration of biodiversity in the Environmental Impact Assessment.
- Regional guidance on the integration of natural environments in the Environmental Impact Assessment of quarries.

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102 French Ministry of Sustainable Development, 2012. Doctrine relative à la séquence éviter, réduire et compenser les impacts sur le milieu naturel
103 As of May 2012
In the following questions, the requirements for compensatory measures are detailed first globally (according to the non-binding national doctrine) and then specifically to some or all proceedings (according to legislation or specific guidance).

Additionally, the authorising authorities, national (e.g. French Ministry of Sustainable Development), regional (e.g. DREAL) or departmental (e.g. DDT(M)) (depending on the operator, scale of the plan/project, areas impacted), can submit the compensatory measures proposed by the developers to public structures specialised in nature such as the National Nature Protection Council\(^{112}\) or the National Agency for Water and Aquatic Environments\(^{113}\). The scientific experts in these structures provide opinions on the proposed compensation measures and on the plan/project that may be used by the authorising authority when drafting the authorisation and its requirements.

A3.5.2 Reference to the goal of no net loss

**No net loss**

According to the non-binding national doctrine, compensatory measures must be at least equivalent to the impacted natural environments: they must allow recovery of the impacted natural environment’s quality, at a level at least equivalent to the initial state and if possible to ensure a net gain. Net gain applies in particular for deteriorated environments, due to their sensitivity and due to the general objectives of achieving good status of natural environments. However, it is up to the developer to decide whether it wants to go beyond equivalency and achieve a net gain. If the negative impact is related to a project of general interest which has been approved in Masterplans for water development and management\(^{114}\), the strict ecological equivalence between the residual impacts of the project on concerned water bodies and the required compensatory measures is not systematically required.

For projects submitted to an EIA, the Environmental Code states that compensatory measures must enable to maintain globally and, if possible, to improve the environmental quality of natural environments\(^{115}\). Thus compensatory measures must lead to ‘no net loss’ or if possible ‘net gain’.

For plans or projects with issues related to the Natura 2000 network, the Environmental Code states that the compensatory measures must allow a proportionate compensation with regard to the impact on the conservation objectives of the concerned Natura 2000 site(s) and the maintenance of the overall coherence of the Natura 2000 network\(^{116}\). Moreover, the non-binding national guidance on Natura 2000 states that the developer must prove that the compensatory measures enable to compensate for the negative effects in qualitative and quantitative terms. This affirms that compensatory measure must lead to ‘no net loss’.

**Scope**

The non-binding national doctrine covers terrestrial, aquatic and marine natural environments. This includes natural habitats (possibly exploited for agriculture or forestry), animal and plant species, ecological continuity, biological balances, their ecological functions, the physical and biological factors which support them and ecosystem services.

For plans submitted to a Strategic Environmental Assessment, according to the Environmental Code, compensatory measures apply to impacts on the environment and notably, where appropriate, on biodiversity, fauna, flora and landscapes\(^{117}\).

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\(^{112}\) Conseil national de protection de la nature (CNPN)

\(^{113}\) Office national de l'eau et des milieux aquatiques (ONEMA)

\(^{114}\) Schémas Directeurs d'Aménagement et de Gestion des Eaux (SDAGE)

\(^{115}\) Article R 122-14 of the Environmental Code

\(^{116}\) Article R 414-23 of the Environmental Code

\(^{117}\) Article R 122-20 of the Environmental Code
For projects submitted to an **Environmental Impact Assessment**\(^{118}\) and for **facilities classified for environmental protection**\(^{119}\), the Environmental Code states that compensatory measures apply to impact on fauna and flora, natural habitats, sites and landscapes, ecological continuity [green and blue infrastructures], biological balances, natural areas, agricultural areas, forestry areas, marine areas, as well as interactions between these elements.

The scope for procedures directly linked to protected areas and species, are those areas and species for which they were designated.

For plans or projects with issues related to the **Natura 2000** network, the compensatory measures apply to the impacts of the plan or project on the conservation state of the natural habitats and species which have justified the designation of the site\(^ {120}\). By definition, the proceeding focuses on habitats and species originally present on the affected site.

For plans or projects with issues related to **protected species**, the compensatory measures apply to the impacts on individuals of protected species and on their habitat\(^ {121}\). By definition, the proceeding focuses on protected species originally present on the affected site.

### A3.5.3 Transposition into national legislation of the requirements in the EIA, SEA, Habitats Directive, Water Framework Directive and Environmental Liability Directive

The recent EIA directive (2011/92/EC) has been implemented in December 2011 through a decree that will modify the Environmental Code. The SEA directive has been implemented since 2005 by two decrees.

The Habitats Directive has been implemented in France but incorrectly, so that France has been sentenced by the Court in 2010\(^ {122}\). Indeed, the French legislation provided generally that fishing, aquaculture, hunting and other hunting-related activities do not constitute activities causing disturbance or having such an effect. Second, it systematically exempted works and developments provided for in Natura 2000 contracts from the procedure of assessment of their implications for the site.

The Water Framework Directive has been implemented in 2000\(^ {123}\) into a law which modified the Environmental Code.

The Environmental Liability Directive has been implemented in 2008\(^ {124}\) into a law which has created a new part in the Environmental Code\(^ {125}\). It applies to damages that:

- creates a risk of serious harm to human health due to soil contamination,
- seriously affect the ecological, chemical or quantitative state or the ecological potential of waters,
- affect seriously the maintenance or restoration into a favourable conservation status of Natura 2000 sites and protected species,
- affect the ecosystem services, that is to say the functions performed by soils, waters and protected species and habitats.

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\(^{118}\) Article R 122-5 of the Environmental Code

\(^{119}\) Article R 512-8 of the Environmental Code

\(^{120}\) Article R 414-23 of the Environmental Code

\(^{121}\) Articles L411-1, L411-2 of the Environmental Code

\(^{122}\) Judgment of the Court (Second Chamber) of 4 March 2010 - European Commission v French Republic (Case C-241/08)


\(^{124}\) Loi n°2008-757 du 1er août 2008 relative à la responsabilité environnementale et à diverses dispositions d’adaptation au droit communautaire dans le domaine de l’environnement

\(^{125}\) Articles L160-1 to L165-1 of the Environmental Code
France was sentenced by the European Court of Justice in 2008\textsuperscript{126} because it has failed to transpose the ELD within the prescribed period.

Apart from these two procedures, it does not seem that France has implemented the Directives in a specifically innovative way, or going further than the EU requirements. An important step forward will be the guidance currently in preparation.

A3.5.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

See A3.5.1.

According to the non-binding guidance, in certain cases, where suggested compensatory measures are not satisfactory (e.g. not feasible), notably for major impacts, the plan/project may be refused.

In practice, it appears that there is sufficient legislative context, but that the articulation between the different proceedings is difficult. Indeed there are numerous proceedings, which have different calendars and address different issues. As a result, biodiversity issues are often taken into account late.

According to the non-binding national guidance, for a single plan or project, compensatory measures can be defined under several administrative proceedings if the measures have multi-objectives that allow meeting the different impacts. The simultaneous preparation of proceedings, where possible, while facilitate the conduct of the project by the developer, as it will allow to consider environmental issues in a coherent manner early in the project elaboration.

The French Ministry of Sustainable Development is currently elaborating a report on the articulation of proceedings related to the environment.

A3.5.5 The areas over which the requirements are applied

Some proceedings apply on the whole French territory:

- plans submitted to a Strategic Environmental Assessment,
- projects submitted to an Environmental Impact Assessment,
- facilities classified for environmental protection,
- plans and projects with issues related to protected species,
- projects with issues related to water,
- projects with issues related to forest clearing.

The proceeding for plans and projects with issues related to the Natura 2000 network only apply to projects on Natura 2000 sites.

Additionally, the recently introduced green and blue infrastructures (i.e. green and blue infrastructures) must be planned at national and regional levels; plans and projects must take account of these infrastructures at the planning stage.

A3.5.6 The stage of the damage at which compensation is required

\textit{Ex-ante, i.e. before the impact/development}

Most ex-ante proceedings require ex-ante compensatory measures (see A3.5.7).

In general, the legislation specifies that both \textit{temporary and permanent impacts} must be taken into account, which can be interpreted as being impacts from the construction and operation of the plan or project. This applies e.g. to:

\textsuperscript{126} Judgment of the Court (Seventh Chamber) of 11 December 2008 - Commission v France (Case C-330/08)
projects submitted to an Environmental Impact Assessment\textsuperscript{127} and to facilities classified for environmental protection\textsuperscript{128}. Indeed, the legislation refers to temporary and permanent impacts (including during the construction period), in the short, medium and long term.

plans and projects with issues related to the Natura 2000 network. Indeed, the legislation refers to temporary and permanent impacts\textsuperscript{129}.

\textit{Ex-post, i.e. once the impact has occurred}

The proceedings for environmental damage in the context of environmental liability requires ex-post compensatory measures, by definition.

A3.5.7 Consideration of interim losses

\textit{Ex-ante compensation}

According to the non-binding national guidance, adjustment ratios or factors include notably the time lag between the plan/project’s impacts and the effects of the compensatory measures.

For plans or projects with issues related to the Natura 2000 network, the Environmental Code states that the compensatory measures must be implemented within a calendar that enables to ensure continuity in the capacity of the Natura 2000 network to ensure the conservation of the habitats and species\textsuperscript{130}. Moreover, the non-binding national guidance on the Natura 2000 proceeding states that the compensatory measures shall be implemented if possible before the execution of the plan or project or, if it is not possible, after the execution but with implementation and monitoring methods defined before the execution of the plan or project.

In practice, the calendars for the implementation of compensatory measures are rarely rigorous: the measures are often implemented after the occurrence of the impacts.

\textit{Ex-post compensation}

For environmental damage in the context of environmental liability, the Environmental Code states that compensatory repair measures must compensate for interim losses that occur between the damage and the date on which the primary or complementary repair measures have produced their effects\textsuperscript{131}, thus including interim losses.

A3.5.8 Baseline and methodology for determining the level and type of compensation

\textit{Ex-ante compensation}

According to the non-binding national guidance, the compensation program must necessarily include ecological measures, such as habitat rehabilitation or restoration, or reinforcement of populations for certain species. There is an exception for projects with issues related to forest clearing. According to the Environmental Code, the developer who does not wish to implement himself the work of afforestation or reforestation (compensatory measure) may offer to meet its obligations either through the payment to the State of an equivalent indemnity so that the State can purchase forest lands or lands to be forested, or by the transfer to the State or to a local authority of forest lands or lands to be forested\textsuperscript{132}. In this case, financial payments alone can be regarded as compensatory measures. However, in practice, it is hardly ever done.

\textsuperscript{127} Article R122-5 of the Environmental Code
\textsuperscript{128} Article R512-8 of the Environmental Code
\textsuperscript{129} Article R414-23 of the Environmental Code
\textsuperscript{130} Article R.414-23 of the Environmental Code
\textsuperscript{131} Article L162-9 of the Environmental Code
\textsuperscript{132} Article L311-4 of the Environmental Code
It is expected that the future national guidelines on the mitigation hierarchy will state that the compensatory measures shall respect equivalency between losses and gains in its:

- ecological dimension: same biodiversity type (like-for-like), quality and quantity,
- geographical dimension: compensation site as close as possible to the impacted site, notably in terms of ecological functionality,
- temporal dimension: no temporal losses or temporal losses taken into account,
- social dimension: same people impacted and benefited and local acceptance thanks to consultation.

According to the non-binding national guidance, it is recognised that "all is not compensable." For example, impact is not compensable when, in the state of available scientific and technical data, ecological equivalence cannot be obtained, or when it is not certain that the client can assume the financial burden of the compensation or when the proposed compensatory measures are not feasible (e.g. given the surface on which they should apply), i.e. when it is not possible to obtain no net loss or net gain. If it appears that residual impacts are significant and not compensable, in principle, the project, cannot be allowed in its current state.

According to the non-binding national guidance, compensatory measures must be additional to existing or planned public actions for environmental protection. They can strengthen these public actions (e.g. reinforcing or adding measures on a Natura 2000 site), but not replace it. Accelerating the implementation of a preservation or restoration public policy related to issues impacted by the project, may be accepted as compensatory measure on a case by case basis if there is a specific programme (that describes objectives, measures and calendar for implementation) justifying its additionality.

According to the non-binding national guidance, accompanying measures (knowledge acquisition, definition of a more comprehensive conservation strategy, etc.), can be defined in order to improve the efficiency of compensatory measures or to provide them with additional safeguards for environmental success. However, they cannot replace compensatory measures.

**Ex-post compensation**

For environmental damage in the context of environmental liability, the Environmental Code states that compensatory repair measures can consist of a financial compensation. At this stage in France this law has not yet been used, thus no information on whether environmental or financial compensation is implemented in general can be provided.

**A3.5.9 Level of compensation required**

According to the non-binding national guidance, adjustment ratios or factors should not be used consistently and should not constitute an input data. When they are used for sizing a compensatory measure, they must be the result of an analytical approach in order to achieve the expected goals. They include:

- the proportionality of the compensation with respect to the intensity of the impacts,
- the functioning conditions of the areas likely to support the measures,
- the risks associated with uncertainty on the effectiveness of measures,
- the time lag between the plan/project’s impacts and the effects of the compensatory measures.

In practice, the dimensioning of the compensatory measures is rarely rigorous: there is no standard method to assess impacts. Qualitative methods are often used and surface ratios are used as input data without scientific justification.

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133 Article L162-9 of the Environmental Code
However, according to the non-binding national guidance, adjustment ratios or factors can be used consistently and constitute an input data in cases where their minimums are provided by legislation or Master plans.

As an example, for projects with issues related to forest clearing, the Environmental Code states that the compensatory measures must consist in afforestation or reforestation on a surface corresponding to the cleared surface, accompanied where appropriate by a multiplying coefficient between 2 and 5, depending on the social or ecological role of the cleared forest.

Similarly, according to the River Basin Management Plans 2010-2015 for the river basin districts Rhône-Méditerranée and Loire-Bretagne, if a project causes residual loss of a surface of wetland (and/or degradation of its biodiversity for Rhône-Méditerranée), the compensatory measures should consist of the creation or restoration of equivalent wetlands in terms of functionality and biodiversity on a surface of around 200% of the loss (Rhône-Méditerranée) or at least 200% of the loss (Loire-Bretagne).

A3.5.10 Financing of compensation requirements

The compensatory measures are financed by the authority which approves the plans in the case of plans and by the developer in the case of projects.

For projects submitted to an Environmental Impact Assessment, including facilities classified for environmental protection, and for plans or projects with issues related to the Natura 2000 network, the Environmental Code states that the description of compensatory measures in the EIA or in the Appropriate Assessment must be accompanied by the corresponding expenditure estimates.

A3.5.11 Long-term measures taken to ensure that the compensatory measures last

Engagements of the developer of a project / authority approving a plan

The elements set out in the administrative authorisation are the only compulsory elements for the developer. For example, for projects submitted to an Environmental Impact Assessment, the Environmental Code states that the authorisation must mention the compensatory measures, the arrangements for the monitoring of the measures’ implementation, and the arrangements for monitoring the effects of these measures.

More generally, according to the non-binding national guidance, the developer is responsible for the compensatory measures in terms of their conception, their implementation and effectiveness, including when implementation or management of the compensatory measures is entrusted to a provider (including habitat banks).

According to the non-binding national guidance, compensatory measures must be effective, i.e. they must include performance targets and arrangements for the monitoring of their effectiveness and their effects. The developer must engage in performance targets when proposing compensatory measures and the authorising authority must, on this basis, assess whether the proposed measures make these targets achievable.

In addition, the guidance states that the developer must justify for how long measures will be implemented based on the expected duration of impacts, on the type of natural environment

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134 Article L311-4 of the Forest Code
137 Article R 122-5 of the Environmental Code
138 Article R 512-8 of the Environmental Code
139 Article R 414-23 of the Environmental Code
140 Article R122-14 of the Environmental Code
primarily targeted by the measure, on the management arrangements and on the time necessary to achieve the targets. In practice, the duration of the commitment to management has changed significantly: before 2005, there was no mention of budget and duration. Since 2008-2009, the budget is to be adequate for a duration of up to 20, 30 or even 50 years, or at least for the duration of the authorised project.\footnote{Ministry of Sustainable Development, EnviroScop, CERE, SOGREAH, IN VIVO, 2010. Analyse de mesures compensatoires aux atteintes au patrimoine naturel - Recueil et analyse de cas.}

**Monitoring**

According to the non-binding national guidance, in order to allow for monitoring and control, the authorisation must determine with the appropriate level of detail the targets to be achieved by measures and indicate the means to be implemented in order to achieve those targets. In their redaction, the requirements must be controllable. Moreover, the monitoring programme, specified in the authorisation, must allow for adaptive management of measures and should help ensure the sustainability of their effects.

For example, the Environmental Code states that the authorisation given to projects following an **Environmental Impact Assessment** must mention the arrangements for the monitoring of the measures implementation and efficiency. The monitoring must consist in reporting on the implementation status of the measures, thanks to one or several reports, enabling to check the level of efficiency and the sustainability of these measures, during a given period. These reports are realised according to a calendar set up by the authorising authority.\footnote{Articles R122-5, R122-14 and R122-15 of the Environmental Code}

In practice, internal interim and ex-post assessments are almost systematically carried out by the developer, being most often defined in the authorisation or integrated in the compensatory programme. But the implementation of adaptation measures following the monitoring is not systematic. Monitoring by the competent authorities is less systematic: depending on the size of the compensatory measures, a monitoring committee can be required and members identified in the authorisation.\footnote{Ministry of Sustainable Development, EnviroScop, CERE, SOGREAH, IN VIVO, 2010. Analyse de mesures compensatoires aux atteintes au patrimoine naturel - Recueil et analyse de cas.}

**Control**

According to the non-binding national guidance, the appropriate authority (DREAL, DDT(M), ONCFS, ONEMA, etc.) conducts regular controls to ensure the implementation of measures and their effectiveness.

For projects submitted to an **Environmental Impact Assessment**, an enforcement authority has been created in 2010. It complements the existing environmental enforcement authorities specific to other proceedings (e.g. water).

When projects submitted to an EIA and plans submitted to a SEA have caused substantial damage to fauna and flora or the quality of air, soil or water, carrying out any activity without meeting the requirements set in the authorisation (e.g. compensatory measures) is punishable by two years imprisonment and 75 000 euro fines.\footnote{Ordonnance n° 2012-34 du 11 janvier 2012 portant simplification, réforme et harmonisation des dispositions de police administrative et de police judiciaire du code de l’environnement}

**Long-term protection**

According to the non-binding national guidance, the long-term implementation of compensatory measures can be ensured:

- by land acquisition and control of land-use,
- by land acquisition on behalf of a structure specialised in natural areas, which will manage the compensatory measures management during the commitment duration with funds provided by the developer,
in case land cannot be acquired, by contracting for a sufficient duration with the managers/users of the concerned areas.

Due to problems related to land acquisition (e.g. land consumption, conflicts with agriculture), there is no more preference for land acquisition.

Complementary to compensatory measures, and when deemed necessary to guarantee the durability of site management, involved public authorities may take regulatory measures or measures in urban planning to ensure a natural or agricultural land use.

According to the non-binding national guidance, beyond the duration of engagement of the developer indicated in the authorisation, the long-term ecological purpose of the compensation area can be anticipated by the developer, when necessary, by identifying relevant tools and actors.

For example, the compensation site can be protected by transferring ownership of the compensation site to a public structure or rarely by a long lease. In France certain bodies are specialised in ownership of certain areas and can play this role. However, in practice, the ownership is generally not accompanied by additional funds, which may result in inefficient long-term protection, especially if management measures are required to conserve the site.

Another issue is the lack of coordination between authorities. It has happened in the past that the authorising authority required that the site will be protected through official status once the management commitment period has ended (often 30 years), but the authority responsible for granting a protection status disagreed to the protection once the time had passed.

A3.5.12 Pilot initiatives and other examples of how offsets are implemented

The French Ministry of Sustainable Development published in 2010 the report “Analysis of nature offsets - Collection and case-studies”\textsuperscript{145}. It presents 14 case-studies of projects involving \textit{ex-ante compensatory measures}.

An overview on ex-ante biodiversity compensatory measures is also being carried out by the French Ministry of Sustainable Development, regarding both design and implementation, to identify practices at regional level, reveal good practices and identify the main obstacles. This overview will be based on the above-mentioned report and on surveys of regional competent authorities.

The main encountered difficulties are summarised below, if they have not been discussed above.

One of the biggest obstacles to effective implementation of the compensatory measures is the affordability and availability of land. Specialised public structures to facilitate land access exist but they have difficulty in finding adequate compensation sites. The factors behind these difficulties are:

- the local context, especially in case of a strong land pressure,
- the required ecological dimension of equivalence in type, quality and quantity (surface) of biodiversity,
- the required temporal dimension of equivalence which leads to short deadline for the implementation of the compensatory measures,
- the required spatial dimension of equivalence, which reduces the location of compensation sites to a fixed and reduced perimeter

As a result, few engagements on buying land are stated in the authorising acts until now, but the competent authorities have increasing requirements on this subject.

\textsuperscript{145} Ministry of Sustainable Development, EnviroScop, CERE, SOGREAH, IN VIVO, 2010. Analyse de mesures compensatoires aux atteintes au patrimoine naturel - Recueil et analyse de cas.
The inefficiency of compensatory measures can also be due to difficulties related to the scientific feasibility (e.g. understanding of ecosystems) and/or the technical feasibility (e.g. multiplicity of actors).

Professionals able to implement measures are currently lacking, but the profession is emerging.

Transfer and pooling of knowledge should be improved. Sector specific, regional specific and proceeding specific guidance exists but the national doctrine and guidelines are necessary to improve and streamline implementation.

Monitoring tools exist at the regional level or at the level of proceedings but a centralised tool is currently in discussions, to follow-up compensatory measures throughout the territory, for all procedures.

Regarding ex-post compensatory measures, i.e. related to environmental damage in the context of environmental liability, a report has been drafted by the French Ministry of Sustainable Development in 2010146. The various case-studies that are presented to illustrate the equivalence methods are fictitious since no practical application of these methods has been identified to date in Europe. This report will be used, thereafter, for the development of national methodological guidance targeted to the competent authorities and to industrial and economic actors concerned by this legislation. This guidance is to be published at the end of 2012 or beginning of 2013147.

A3.5.13 Evidence of habitat banking at national (or lower) level

Currently one habitat banking experiment is on-going. It was launched in 2008 by the Caisse des Dépôts Biodiversité (CDC), with the validation and support from the French Ministry of Sustainable Development and in consultation with a French environmental NGO (France Nature Environnement) and other local stakeholders. The experiment is located in Southern France (Saint-Martin-de-Crau in the department Bouches-du-Rhônes). It consists in the purchase and restoration of 357 hectares of commercial orchard into an original local ecosystem, a Mediterranean steppe. The site was breaking the ecological continuity of a steppe nature reserve. The experiment is expected to allow the return of protected species in this ecosystem (Tetrax tetrax, Pterocles alchata, etc.). It will last 30 years, with the restoration measures being followed by management through sheep grazing. After these 30 years, the site should keep its natural and pastoral vocation. Credits can be bought by developers subject to the obligation to compensate for residual impacts of development projects, or by any other economical stakeholder, public or private, wishing to engage voluntarily in an action for biodiversity. In October 2011, two developers had already bought credits. These transactions occurred when scientists observed the return of animal species on the site and start of the vegetal dynamic of the steppe. The assessment of this operation will last 8 years, from 2008 to 2016148. This operation had difficulties due to the lack of guidance related to compensatory measures in 2008, inducing a little demand in the high-quality and expensive credits offered by this habitat bank. The recent increase in requirements induced by the non-binding guidance may solve this problem.

Therefore, in order to identify more positive and negative parameters for the success of habitat banking, the French Ministry of Sustainable Development launched on 21 June 2011 a call for projects on habitat banking on a national scale149. It enabled the launch of four new

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147 As of May 2012.

148 CDC, CDC Biodiversité, MEDDTL, 2009. Communiqué de presse - La réhabilitation d'un écosystème unique dans la Crau, engagée par CDC Biodiversité, site pilote de Cossure, reconnu par Madame Chantal Jouanno, Secrétaire d'Etat chargée de l'Ecologie.


experiments, presenting a diversity of habitats and species, of geographical sectors (regions Alsace, Languedoc-Roussillon, Bretagne and Rhône-Alpes), of operators, and of types of measures (some implementing measures without owning the land and others owning the land). Selected operators will bear the cost of operations.

A3.5.14 Barriers and lessons learned

The French experience demonstrates the importance of the coherence between the different proceedings related to biodiversity applying to plans and projects. This coherence is also necessary in terms of legislation and methodological guidance related to compensatory measures between procedures.

It also highlights the need for a better integration of biodiversity issues in the elaboration of plans and in the projects design, as early as possible.

In terms of implementation efficiency, France also reveals that certain European countries might have some particularities which make the comparison with the United States inappropriate, in particular regarding the difficulties caused by the low land affordability and availability. Some legal instruments are also lacking in France for the long term protection of the compensation sites, such as environmental easements.

Currently, the procedures for requiring compensation are in place in France, but guidance to harmonise and ensure high quality compensation is implemented all over the territory and for all kinds of habitats is not yet published.
A3.6 Poland

A3.6.1 Compensatory measures/offsets required at national (or lower) level

According to Article 75 of Environmental Protection Law (2001) [150] the developer/investor carrying out a construction project is obliged to consider the protection of the environment in the area of work, and in particular the protection of soil, vegetation, natural landscape and water. When carrying out construction work, the use and transformation of natural elements of the environment is allowed only if it is necessary for the realisation of a particular investment. If protection of the natural elements is not possible, actions to remedy the damage caused must be taken, in particular by environmental compensation. This article also states that the required scope of environmental compensation, in case of projects for which there was an impact assessment carried out, is defined through a decision on environmental conditions, which is preceded by an environmental impact assessment of the project.

In Poland, compensatory measures are generally undertaken as the result of an environmental impact assessment. Taking such measures also enables to fulfil one of the objectives of Directive 92/43/EEC. Environmental impact assessments are not only required on Natura 2000 areas, but also to the whole territory of the Member State.

Imposition of compensation is a last resort measure, because first of all, it is necessary to plan the investment in a way to ensure that only the use and conversion of natural elements of the environment that is necessary for the realisation of a particular investment (Article 75). If the destruction of elements of the natural environment cannot be avoided, then compensation measures can be applied. In reality, according to law, compensation is a measure of ‘last resort’. Article 75 of Environment Protection Law applies on the whole territory and there are other, more specific requirements on Natura 2000 areas. On those areas, the Nature Conservation Act applies.

Compensation for Natura 2000 sites according to Article 34 §1 of the Nature Conservation Act (2004) [151] is subject to specific conditions: If justified by overriding public interest, including requirements for social or economic nature, and in the absence of alternative solutions, competent regional director of environmental protection office, and in maritime areas relevant maritime office director, may authorise the implementation of a plan or action that could have significant negative impact on the conservation objectives of Natura 2000 area (or areas in the list referred to in art. §27. 3, point 1), ensuring the application of environmental compensation necessary to ensure consistency and proper functioning of the Natura 2000 network.

Two major conditions of the possibility of compensation in the Natura 2000 site result from this article (if the plan or project has a significant impact on the area or protection object):

- carrying out the plan or project must be justified with requirements of overriding public interest;
- there are no alternatives to achieve the plan or project objectives.

Only when both these conditions are met can compensatory measures be considered. The fact for example that alternatives are more expensive or more difficult from a technical point of view, is not a basis for their rejection. Alternatives should nevertheless be reasonable and available. Article 34.1 clearly states in absence of alternative solutions. The European

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[150] USTAWA z dnia 27 kwietnia 2001 r. Prawo ochrony środowiska

[151] USTAWA z dnia 16 kwietnia 2004 r. o ochronie przyrody
Commission must be informed of the compensatory measures and it can happen that the Commission finds them insufficient.\textsuperscript{152}

If, however, a significant impact affects priority species or habitats, in accordance with paragraph 2 Article 34, the authorisation referred to in § 1 of article 34 may be awarded only in order to:

- protect human health and life;
- ensure public safety;
- obtain the beneficial consequences of primary importance for the environment;
- meet the necessary requirements of overriding public interest, after consulting the European Commission.

In general, all investment plans and projects are prohibited in national parks and nature reserves (Article 15, § 1 of Nature conservation Act.). However, the Minister responsible for the environment (national parks) or General Director for Environmental Protection (nature reserves) can authorise the plan or project in a protected area to an entity that guarantees environmental compensation. This authorisation is possible under following (cumulative) conditions:

- the project is a public investment,
- the project is of a linear nature (for example gas or fuel pipelines, power lines, roads, railway lines, canals, etc.),
- there are no alternatives to achieve the target,
- environmental compensation (as defined in Article 3 §8 of Environmental Protection Law) is provided – ensuring the compensation is a mandatory condition for granting authorisation for a derogation from the interdictions implemented in the national parks or natural reserves.

Some projects may also be prohibited in other protected areas, such as landscape parks, landscape protected areas or nature monuments, with no possibility for competent bodies to authorise these projects. The foregoing restrictions do not apply to investments of public interest. The Nature Conservation Act does not contain particular guidance concerning environmental compensation in other protected areas.

Articles 51 and 66 of the Act on the Provisions of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments (3 October 2008)\textsuperscript{153} introduces a requirement to present solutions aiming at preventing, reducing or offsetting, in terms of nature compensation, the adverse impacts on the environment which may result from the implementation of the draft project. In particular, solutions must be proposed for impacts on the purposes and objectives of the protection of a Natura 2000 site and the integrity of the site. These solutions must be presented respectively at the planning/programming and project stages.

All elements of the environmental report defined in article 66 of the above Act are reflected in the project conditions determined in the environmental decision. According to article 82 paragraph 1 point 2 of the EIA Act, in decision issued after an environmental impact assessment, the competent authority may oblige the developer to implement appropriate compensation measures in addition to requiring the prevention, reduction and monitoring of environmental impacts.

\textsuperscript{152} \url{http://straznicy.natura2000.pl/index_poradnik.php?dzial=2&kat=14&art=10&limit=0}

\textsuperscript{153} \url{http://isip.sejm.gov.pl/Download/getSessionId=BE76676D804757FF93183085360BC169?id=WDU20081991227&type=3}
It should be noted that the compensatory measures mentioned above are not only required for negative impacts on Natura 2000 sites, but generally on the natural environment of the concerned area.

**Act on prevention and repair of environmental damage (2007)** states in Article 9 that in case of a direct threat of environmental damage, the ‘entity using the environment’ (hereafter operator) should immediately take preventive action. If, however, the damage occurs, the entity is obliged to:

- take action to limit the damage, to prevent any further damage and negative effects on human health or further reduction of functions of natural elements, including an immediate inspection, removal or reduction of pollution or other factors,
- take restoration action.

Although this action can be perceived as a way to achieve the goal of ‘no net loss’, the above restoration measures are not compensation as such.

**A3.6.2 Reference to the goal of no net loss**

The notion of biodiversity is in particular referred to in the Nature Conservation Act (2004) where one of the aims of nature conservation is preserving the biodiversity and preserving ecological processes and ecosystems stability. None of the legislation reviewed uses the terms *net loss or gain* explicitly.


The EIA directive (85/337/EEC), the SEA directive (2001/42/EC) and the Habitats directive (92/43/EEC) have been implemented through the Environmental Protection Law (of 27 April 2001) and Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments (3 October 2008). The Habitats directive has been implemented also using the Nature Conservation Act (16 April 2004).

The ELD directive (2004/35/EC) has been implemented through the Act on prevention and repair of environmental damage (13 April 2007).

**A3.6.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level**

Please see question 1.

Environmental Protection Law (2001) defines in article 3 environmental compensation:

*Environmental compensation - a set of measures in particular the construction works, earthworks, soil remediation, reforestation, growing vegetation, which lead to restoring the natural balance or creating vegetation in the area; compensating for damage done to the environment through realisation of a project and preservation of the landscape.*

Measures similar to the compensatory measures are also taken when:

- damage to the environment is identified (according to Act of 13 April 2007) and an order to restore the environment was ordered by an official decision,
- there is a threat to populations of protected species (for example when moving population of a species threatened by the investment project, at present this most often relates to plants and amphibians). Disturbance or destruction of the habitats of plants or

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154 USTAWA z dnia 13 kwietnia 2007 r. o zapobieganiu szkodom w środowisku i ich naprawie [http://isap.sejm.gov.pl/DownloadSessionId=698B224E314719A969D0CEA263661DC3?id=WDU20070750493&type=3](http://isap.sejm.gov.pl/DownloadSessionId=698B224E314719A969D0CEA263661DC3?id=WDU20070750493&type=3)

animal species protected in the EU (Annex IV of the Habitats Directive) is also a violation of the Directive. The need to protect them and carry out compensation actions results not only from national law but also European law.

A3.6.5 **The areas over which the requirements are applied**

Regarding the compensation issue, the legislations identified make differences between Natura 2000 areas, national parks, nature reserves and the Polish territory in general. Natura 2000 areas, national parks and nature reserves are protected in similar ways. Within these areas, a plan or project may be implemented only after granting a decision of competent body and only *if justified by overriding public interest in the absence of alternative solutions*. In that case the competent authority, in its decision, imposes specific conditions for carrying out the compensation measures, which must ensure consistency and proper functioning of these areas. Some plans and projects may also be prohibited in other protected areas.

The territory in general is also protected – implementation of a plan or project is possible only if it is necessary and if protection of the natural elements is not possible, actions to remedy the damage caused must be taken, in particular through environmental compensation.

A3.6.6 **The stage of the damage at which compensation is required**

In principle, every kind of compensatory measures should always be implemented before project realisation (court rulings). However, there is no such explicit demand in regulation concerning for example reserves and national parks.

Regional Directorate for Environmental Protection or Director of maritime office informs General Directorate for Environmental Protection about the established scope of environmental compensation within 30 days from granting the authorisation for a development project that may have significant negative impacts on a Natura 2000 site, and about compensation carried out within 30 days from the date of its completion. Then, General Directorate informs Ministry for Environment which informs the European Commission about determined scope of environmental compensation before its implementation and before project realisation.

A3.6.7 **Consideration of interim losses**

No information identified.

A3.6.8 **Baseline and methodology for determining the level and type of compensation**

When issuing the authorisation for implementation of a project in Natura 2000 area, the competent body sets out the scope, location, date and method of environmental compensation, according to the scale and type of negative impact. The operator is committed to implement (complete) compensation no later than the date of start of activity causing the negative impact.\(^{156}\) Article 75 of the Environmental Protection Law also specifies the scope of compensation required.

A3.6.9 **Level of compensation required**

All damages caused by an investment project to habitats must be compensated for adequately, in all protected areas (Article 75 of the Environmental Protection Law). In particular in Natura 2000 sites, the integrity of Natura 2000 sites must be ensures (coherence of ecological structure and function across the whole Natura 2000 area or within habitats, complex of habitats and/or species populations). The aim is to preserve environmental balance, the greatest natural resistance to degradation and ability to regenerate. Compensation should correspond to presumed losses, and it is absolutely

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\(^{156}\) USTAWA z dnia 16 kwietnia 2004 r. o ochronie przyrody
necessary to justify its implementation and effectiveness taking into account the integrity of the area.\textsuperscript{157}

### A3.6.10 Financing of compensation requirements

Regarding compensation procedure in Natura 2000 areas, nature reserves and national parks, the developer supports the costs of environmental compensation (Art. 15 and 35 of the Nature Conservation Act).

According to “Guidance document of Ministry of Regional Development on the procedure for environmental impact assessment for projects co-financed from national or regional operational programmes” (5 May 2009 which takes into account national and European legislation)\textsuperscript{158}, costs of environmental compensation are supported by the developer. This applies also for projects.

Maintenance and monitoring of natural habitats, habitats of plants and animals established as part of compensation is a responsibility of the entity supervising the Natura 2000 site where the compensation was performed. However, the environmental decision can impose, for example, an obligation to monitor effects of habitat restoration for a couple years. In that case it is the developer who is responsible for monitoring (as part of compensation). If the area is out of a Natura 2000 site, maintenance and monitoring of habitats is the responsibility of Regional Directorate for Environmental Protection.

According to Article 22 of Act on prevention and repair of environmental damage\textsuperscript{159}, costs of prevention and repair actions are supported by the operator. The operator does not bear the costs of taking the prevention and remediating measures if he demonstrates that the imminent threat of environmental damage or the environmental damage was caused by another entity and appeared despite taking appropriate safety measures by the operator or appeared as a result of executing public administration order. In that case, the operator can file a claim against the operator that caused the imminent threat of environmental damage or the environmental damage or the public administration to receive reimbursement of costs incurred by taking the measures.

In this regard, the polluter pays principle is reflected in Polish legislation regarding environmental damage and compensation. It is required from the entity that causes damage by implementing a project or risks causing damage to the environment, to finance compensation.

### A3.6.11 Long-term measures taken to ensure that the compensatory measures last

Please see question 10. Long-term measures are taken by ensuring that maintenance and monitoring of natural habitats, habitats of plants and animals established as part of compensation are ensured. The maintenance and monitoring is responsibility of Natura 2000 site supervisor or of Regional Directorate for Environmental Protection.

As a result of the EIA of the project, propositions for monitoring requirements (both at construction and exploitation stage) should be included in the environmental report. The monitoring may also be carried out for assessing the effectiveness of the compensation or measures to mitigate the impacts of the project on the environment.

\textsuperscript{157} Witold Wołoszyn. „Environmental impact assessment” part of the project „Partnership for sustainable development – effective implementation of EU environmental policy in Poland” funded by PHARE program http://siskom.waw.pl/nauka/srodowisko/Material_OOS.pdf


\textsuperscript{159} USTAWA z dnia 13 kwietnia 2007 r. o zapobieganiu szkodom w środowisku i ich naprawie http://isap.sejm.gov.pl/DownloadSessionId=698B224E314719A969D0CEA263661DC3?id=WDU20070750493&typE=3
According to Article 82 of the Act on the Provision of Information on the Environment and its Protection, Public Participation in Environment, the operator can be obliged by the authority granting environmental decision to carry out follow-up analyses (the scope and timeline is defined in such decision). This analysis aims at comparing findings included in the report assessing the expected impacts of the project on the environment with the decision on environmental conditions. In particular it allows to compare findings concerning expected nature and scope of the environmental impact and planned preventive action with real environmental impacts of the project and measures taken to reduce them.

A3.6.12 Pilot initiatives and other examples of how offsets are implemented

There are no pilot projects in Poland about compensation or offsets. However two REMEDE Case Studies focus on Poland:

- Vistula river crossing by the Yamal – Europe gas pipeline case study examines the environmental damages caused by the construction of a gas pipeline. The case study focuses on calculating environmental damages to terrestrial and aquatic habitats within both the excavation area in which the pipeline was laid, and within a secondary impact zone that was affected by construction.

- Ex-ante analysis of a hypothetical international road construction project that demonstrates the use of resource equivalency method for identification and quantification of environmental damage, remediation benefits and compensatory liabilities.

A3.6.13 Evidence of habitat banking at national (or lower) level

In Poland the National Fund for Environmental Protection and Water Management is the pillar of the Polish system of financing environmental protection. It supports biodiversity projects and may include habitat banking. The funds come, among others, from monetary equivalents of environmental damages and fees for using the environment.

Biodiversity Technical Assistance Units (BTAU) have been developing bankable biodiversity business projects, called Biodiversity Finance Facility which would be dedicated to SMEs in Natura 2000 areas. It is unclear at this stage how this links to habitat banking.

No specific examples of habitat banking schemes were identified however.

A3.6.14 Barriers and lessons learned

The Polish legislative framework requires to follow the mitigation hierarchy and to compensate for unavoidable losses. The long-term (legal and administrative) responsibility from the Natura 2000 site supervisor or of Regional Directorate for Environmental Protection is interesting in that it ensures longer-term sustainability of the compensation, even if some issues with the polluter-pays principle may be mentioned (no additional funds seem to be in place for the additional burden). No information was found on the current practices around compensation in Poland.

162 http://www.nfosigw.gov.pl/
A3.7 Czech Republic

A3.7.1 Compensatory measures/offsets required at national (or lower) level

The mitigation of adverse environmental impacts is derived from the implementation of projects covered by the Act on Environmental Impact Assessments (EIA Act)\(^\text{164}\), the Act on the Conservation of Nature and Landscape (Landscape Act)\(^\text{165}\), and from the most recent Act on Prevention and Remedying Environmental Damage (Liability Act)\(^\text{166}\).

A3.7.2 Reference to the goal of no net loss

The strategic objective of the Biodiversity Strategy of the Czech Republic\(^\text{167}\) is to establish economically effective investments that value the benefits of biodiversity conservation and restoration. In addition it points out the importance of restoring habitats and species outside the protected areas, though no specific measures are proposed or promoted.


See question 4.

A3.7.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

The EIA Act provides the legal framework of the environmental impact assessment including the specific proceedings, the type of project for which impact assessments are mandatory and the criteria of the screening process. The types of projects that can have a potential impact on biodiversity include water dams and reservoirs, coal and other mineral resources, mining, transport and energy infrastructure, and several industrial sectors. A key objective of the impact assessments, as set by the legislation is the prevention, reduction, mitigation or minimisation of possible adverse environmental impacts. The EIA Act puts forth the necessity of implementing mitigation and compensatory measures for any adverse environmental effects.

The Landscape Act dictates the requirement of all stakeholders (e.g. operators, municipalities and regional authorities) to work towards the preservation and restoration of the natural balance in the landscape, to the protection of the diversity of all forms of life, the natural values and beauty, and to the economical management of natural resources. This Act transposes the EU Habitats and Birds Directives. According to this legislation, for any action that imposes a risk of damage or loss of a “landscape component” or can potentially weaken or endanger its ecological stability there is a binding requirement to request an expert opinion from a competent authority. The protection of animals, birds, plants and the respective biotopes is set as a high priority of the legislation with a special focus on protected species.

The Liability Act transposes the EU Liability Directive. It stipulates what is considered as being damage to the environment. Specifically, damage is conceived as “a measurable adverse change in a natural resource or measurable impairment of a natural resource

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service which may occur directly or indirectly. The Liability Act applies to species and habitats protected under the Landscape Act and the relevant EU legislation. In addition the act covers damage occurring to groundwater and surface waters (e.g. adverse effects on the ecological services provided) as well as land degradation and contamination.

The Traffic Law also stipulates that in cases of infrastructural projects, areas for compensation measures must be reserved.

Special attention is paid to forest management, deforestation and afforestation. For damages to woody plants (regardless of whether these are carried out under a permit issued by the authorities) operators may be held liable by the nature protection authorities to perform a compensatory planting or other measures that would compensate the harm or loss. This liability might be imposed for a period of time no longer than 5 years. The location of this activity might not be the same as that in which the damage occurred. In addition, compensation might be monetary in the form of a payment made to a municipality or to the State Environmental Fund (in the case where the damage is caused by an illegal action).

A3.7.5 The areas over which the requirements are applied

Impacts which are covered under the EIA Act include the fauna and flora, the ecological systems, the soil, the geological environment, water, air, climate and landscape, and natural resources.

A3.7.6 The stage of the damage at which compensation is required

According to the requirement of the EIA Act, environmental impacts need to be assessed during the preparation, implementation, operation and conclusion of an activity.

For bird species and areas of ‘European importance’ (including Natura 2000 sites), any potentially irreversible damage, caused by projects or policies shall be avoided. If avoidance of such damage is not possible, action must be taken to mitigate any negative effects. The assessment of the impacts imposed by an activity as well as the mitigation measures is carried out by persons or entities which are authorised by the Ministry of the Environment.

The obligations which are related to the restoration of damaged habitats is pointed out more explicitly in the Liability Act. The actions promoted by the Liability Act follow a hierarchical approach by prioritising prevention over restoration. Specifically, in the case of a threat, the operator is obliged to inform the competent authorities about the occurrence of the incident and is also required to propose and implement remediation actions. Damages are assessed through a risk analysis carried out by the authorities.

A3.7.7 Consideration of interim losses

No information found.

A3.7.8 Baseline and methodology for determining the level and type of compensation

Under the Liability Act, the baseline situation of a habitat is defined as the conservation status of a habitat and the services provided at the time of the damage. A favourable conservation status of a natural habitat and species is defined as a situation where (based on the population dynamics data and the natural range of the species) there seems to be a long-term maintenance level. Any adverse changes to the baseline condition are determined based on the measurable data such as the number and the density of affected species, their capacity for propagation, and the capacity of a habitat to achieve natural regeneration in short time and without any intervention.

The responsible authority for the prevention and remediation of environmental damage is the Environmental Damage Department of the Ministry of the Environment. Remediation activities often require the involvement of several ministries and competent authorities. For

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this reason a common Methodology has been developed which includes a list of guidelines and recommendations and serves as a platform of information exchange. However the Methodology refers mainly to the restoration of old/historically contaminated sites. It includes the development of the National Inventory of Contaminated Sites and a database; and the development of an integrated database of contaminated sites.

**A3.7.9 Level of compensation required**

The remediation measures that are required to be taken to compensate or complement losses and damages are primarily defined on the basis of a “like to like” equivalence approach (resource to resource or service to service). If this approach cannot be achieved, then alternative natural assets need to be provided. In this case, alternative valuation techniques are applied and the specific method used is defined by the competent authorities. These methods may include monetary valuation approaches.

The potential remedial actions are evaluated based on several criteria such as the cost of implementation, the probability of success and the length of time needed for a complete restoration.

**A3.7.10 Financing of compensation requirements**

According to the Landscape Act, the developers of projects carried out in protected areas might be required by the protection authorities to carry out an assessment of the impacts on plants and animals (so called “biological assessments”) at their own expense. The biological assessment is not required when the activity is subject to an environmental impact assessment in accordance to the relevant legislation. In addition, the requirement for such an assessment might be triggered not only for formally protected areas but also for “significant landscape components”, which refer to environmentally valuable parts of a landscape (e.g. a forest). The results of the biological assessments might impose a necessity to implement adequate compensatory measures such as the transfer of animals and plants. These compensatory actions need to be carried out at the expense of the operator and the exact nature and extent of these measures are decided by the nature protection authorities.

For unauthorised interventions, which consequently have a degradation or loss of a protected natural asset, there is a requirement for restoration to their original condition. If a complete restoration is not possible, the operators whose actions caused the damage, are obliged to implement adequate compensatory actions that would lead to a remediation of the damage or loss. The remediation achieved in this case does not necessarily need to be complete and equal to the damage caused. In addition, in the case of such unauthorised actions the responsible persons might be subject to other legal punishment due to the illegal nature of their actions.

According to the Liability Act, the operator who causes environmental damage is clearly legally liable for bearing all costs for the restoration of potential damages. The occupational activities which are subject to this requirement are listed in the Act and cover 15 different types of activities. For these categories of activities, the operators are obliged to obtain a financial insurance that covers the costs of potential damages and threats. The specific types of risks associated with habitats and species are identified through risk assessments. If the potential environmental damage is found to be lower than a certain amount (based on the risk assessments), the purchase of insurance is not required. Operators which are registered in the EMAS programme are also not required to obtain financial security.

If a damage or threat is linked to a protected species or habitats then the legal and financial liability falls to any operator regardless of his type of activity.


A3.7.11 Long-term measures taken to ensure that the compensatory measures last

Please refer to other questions.

A3.7.12 Pilot initiatives and other examples of how offsets are implemented

In one example, a study was carried out under the FP6 funded project REMEDE, seeking to identify how resource equivalency analysis methods can be applied in the evaluation of environmental liabilities tied to coal mining pollution in the Czech Republic. This study marked an effort to establish methodologies for the evaluation of damages to biodiversity. For establishing a full calculation of the environmental damages, different measures were used such as the vegetative cover, biodiversity and temperature amplitude. In the case of biodiversity, different factors were taken into account such as the quantity of damaged biomass and the level of importance of the damaged habitats for the survival of species.

The study estimated the environmental damages associated with coal mining developments in great detail and also tried to identify the effectiveness of complementary and compensatory remediation actions that were implemented in the case study area. In addition, remediation costs were calculated based on the Czech labour rates. For example, the cost of wetland remediation activity was calculated at approximately 7,000 Euros/ha.

A3.7.13 Evidence of habitat banking at national (or lower) level

There have been some efforts in developing methodologies on credit allocation in the context of habitat banking, but only at the level of research. In addition the EIA process in the Czech Republic does not stipulate any economical valuation of natural assets with the exception of trees, for which a price is set on the basis of specific criteria (e.g. species, height, etc).

A3.7.14 Barriers and lessons learned

Biodiversity in the Czech Republic had been facing significant degradation over the past decades due to a highly unsustainable industrial, agricultural and forest policy. After the change of the regime in 1989, the industry went through a structural reformation. Paired with the transposition of the EU policies, the environmental impacts have been reduced.

Overall, the restoration of historically contaminated sites remains a priority in the Czech Republic. For this reason, the Ministry for Environment has developed the Contaminated Sites Database System as a reference point for information about contaminated sites in the country. This database includes information on the affected sites that can be used to define the baseline situation of the contaminated sites.

The fact that individuals carrying out Appropriate Assessments are required by law to have a license can be underlined as a positive requirement, ensuring that the required expertise is used.

According to Petrik (2008), in the Czech Republic, remediation actions for loss of biodiversity have been taken in several occasions. For example a mining company is currently restoring more than 600 ha of land. However, in the relevant Czech policies biodiversity is often underestimated. This seems to be the case in the EIA Act in which a focus is given on issues related to health impacts (e.g. air and water pollution). In addition in the context of the EIA and SEA process no effort is given on the economic evaluation of ecosystems or natural assets (with the exemption of trees). This might hinder the possibility of developing habitat banking in the near future. In addition, although there is an obligation

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172 REMEDE (2008), Chronic Mining Pollution, Czech Republic, draft report, carried out under the FP6 funded project REMEDE Resource Equivalency Methods for Assessing Environmental Damage in the EU

173 See for example the FP6 funded project REMEDE, website of the project: [http://www.envliability.eu](http://www.envliability.eu)


...for decision-makers to take into account the results of EIAs, it is not mandatory for them to provide an explanation to justify their final decision. Consequently an option with diverse environmental effects can be selected.
A3.8 Greece

A3.8.1 Compensatory measures/offsets required at national (or lower) level

Compensatory measures for loss of biodiversity are triggered by the law on the "Environmental liability for preventing and remedying environmental damage" (Liability Decree)\(^ {176}\) which transposes the EU Directive on environmental liability\(^ {177}\). The law was adopted in 2009, with a delay of 2 years, after the deadline for compliance which was set by the European Commission. All measures are applied at a national level and enforced both nationally and regionally.

The law of environmental permission for projects and activities\(^ {178}\) (EIA Law) transposes the EU legislation on the Environmental Impact Assessments. This law, among other elements, sets the required contents of environmental impact assessment reports which should include the evaluation of the current state of the environment.

Compensatory measures are also required under Decree 1495/2010 and Draft Biodiversity law (see question 4).

A3.8.2 Reference to the goal of no net loss

Greek legislation does not directly put forward the notion of ‘no net loss’ of biodiversity. However the concept is promoted through the legislative requirements that entail a full compensation or remediation of damages caused by adverse activities.


The remediation of environmental damage and of the loss of natural habitats is defined as the restoration of the environment to its original state through primary, complementary or compensatory remediation (as defined in the EU ELD). The aims of remediation and the notions of offsets are all present in the Greek legislation.

A3.8.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

The Liability Decree defines environmental damage as damage which occurs on the protected species and natural habitats, or any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of these habitats or species. Liability on environmental damage is excluded in cases these damages have been foreseen and authorised through the conduction of an environmental impact assessment. The Decree also covers damages to water (e.g. adverse effects on the ecological stability of water basins) and soil (e.g. soil contamination).

According to the Draft law on protection of biodiversity\(^ {179}\) (Biodiversity Draft Law) which transposes the Birds Directive\(^ {180}\) and the Habitats Directive\(^ {181}\), in cases where there is

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\(^{178}\) Law 3010, harmonisation with the Directives 97/11/EC and 96/61

\(^{179}\) Draft law on protection of biodiversity, available at: http://www.ypeka.gr/LinkClick.aspx?fileticket=zd4%2FPbD17gk%3D&tabid=367

scientific evidence which shows that populations of one or more endangered species of flora or fauna and/or their habitats are reduced or deteriorated, the Ministry of Environment, can impose remediation measures to restore the natural assets in their initial situation. This requirement also covers Natura 2000 areas. Such measures include an immediate halt to construction work, modification of projects, the restriction or prohibition of hunting and others.

The Special Protected Areas list is established by Decree 1495/2010. This Decree states that if a project is carried out in a Special Protected Area (i.e. when there are no alternatives and the public interest is benefited) the competent authority shall take every compensatory measures necessary to ensure the overall coherence of the Natura 2000 network.

A3.8.5 The areas over which the requirements are applied

Please refer to other questions.

A3.8.6 The stage of the damage at which compensation is required

Measures for a primary restoration need to be taken as soon as possible with the aim to speed-up the process of restoration and, where possible, support natural recovery.

A3.8.7 Consideration of interim losses

No information found.

A3.8.8 Baseline and methodology for determining the level and type of compensation

The basis for the assessment of the environmental damage is the estimation of the measurable adverse effect. This is done by establishing a reference condition which refers to the initial state of the affected natural asset. The initial state is defined as the situation that prevailed at the time of the damage and is estimated on the basis of available information (i.e. through baseline studies). The criteria used in this approach are as defined by the relevant EU legislation (e.g. the Birds Directive). Essentially the assessment of the damages is based on the level of degradation of the ecological services as well as the reduction of the capacity for natural regeneration. The measurable criteria used in this assessment include the number of species (including the area covered and their density), the ability of these species to propagate, the rarity of species or affected habitats etc.

The development of effective and efficient baseline studies requires the establishment of concrete standards that would allow the simplification of the monitoring and evaluation processes. The aim of these standards would be to improve the method of evaluating the environmental damages through the enrichment of data availability to be carried out progressively over time. In Greece, a coherent and detailed process of collecting environmental information that would allow the construction of solid baselines is lacking. According to Papagrigoriou (2010), this absence is evident from the progress on the implementation of the BD and the HD, in which there are significant deficiencies in the development and implementation of monitoring schemes as well as in the establishment of relevant databases. This type of monitoring is required by the Biodiversity Draft Law.

The EIA Law does not set any standards for the evaluation of the current state of the environment in its requirements in the environmental impact assessment reports. Specifically, the evaluation is based on data, gathered from field visits in the areas where the

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182 Presidential Decree 1495/2010 on the definition of measures and procedures for the maintenance of maintaining of wild birds and habitats, available at: http://www.ypeka.gr/LinkClick.aspx?fileticket=T3r5Htyjm%2fo%3d&tabid=508

183 Papagrigoriou S. (2010), Background studies necessary for the implementation of the institutional framework for environmental responsibility, available at: http://library.tee.gr/digital/m2527/m2527_papagrigoriou.pdf
projects are planned to be implemented. According to Papagrigoriou (2010), however, the level of detail required is lower than the one required in the baseline studies.

A3.8.9 Level of compensation required

The scale of the complementary and compensatory remediation follows a specific hierarchy. First it is determined whether it is possible to define and apply approaches that would entail an equivalent level of remediation per resource or per service in terms of both quality and quantity. If this is not possible then alternative resources and services can be considered. For example, a reduction in quality could be offset by an increase of the quantity of the remediation measures. In this context, it is possible to use methods of economic valuation to determine the extent of the measures that need to be taken.

A3.8.10 Financing of compensation requirements

According to the Liability Decree the operator whose actions cause (or can potentially cause) environmental damage are fully responsible for any costs arising from prevention and remediation actions. The definition of these costs is carried out by the Ministry for the Environment, Energy and Climate Change (Ministry for the Environment), the Coordination Office for the Remediation of Environmental Damage (SYGAPEZ) and the National Advisory Committee on Environmental Damage (EAPZ). However, operators are not liable in cases where the damage could not be foreseen based on the level of scientific and technical knowledge existing at the time the harmful activity took place. Liable operators are required to bear not only the actual remediation costs but also any indirect costs that might arise from necessary actions, such as the assessment of the damages, studies for the definition of the remediation actions, or the administrative costs. The responsible operators might also be requested to pay fines which are imposed under the current environmental legislation.

As of May 2010 and by 2012 specific professional activities are required to acquire an insurance plan that covers such potential environmental damages.

A3.8.11 Long-term measures taken to ensure that the compensatory measures last

Please refer to other questions.

A3.8.12 Pilot initiatives and other examples of how offsets are implemented

Possibly the most characteristic example of a restoration action in Greece is so-called “Asopos river tragedy”. Asopos River is located north of Athens and for several years it was polluted by several industries which spilled their residues directly into the river. Eventually these activities caused serious environmental damages to surface and underground water, soil and biodiversity resources.

The industries are regarded as responsible to bear the costs for the implementation of prevention and restoration measures, as well as for implementation of laboratory tests for the establishment of pollution limits. This action also includes the assessment of the extent and the characteristics of the environmental damage, the identification of specific remediation measures and the development of an objective cost allocation system to the operators.

Currently the Ministry of Environment has completed a preliminary work on the identification and prioritisation of restoration actions and programmes. According to the Minister of the Environment these actions will be funded by programmes under the National Strategic Reference Framework.\(^\text{184}\)

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A3.8.13 Evidence of habitat banking at national (or lower) level

No example was found.

A3.8.14 Barriers and lessons learned

The development of environmental policy in Greece is based on the EU legislation and the transposition of relevant EU Directives. The Ministry for the Environment (founded in 2009), puts forth the principle of green growth, which entails the protection of natural resources. However due to the severe effects of the economic crisis in Greece, the implementation of this concept has ceased to be a priority in policy making. In this context, initiatives that move further than the EU requirements are rare. Therefore, habitat banking or other initiatives that would tackle the loss of biodiversity have not been implemented.

The need for compensating damages and loss of habitats and species is mostly covered by legislation on environmental liability. However, according to the Ministry of the Environment\textsuperscript{185}, in Greece damage regards mainly pollution caused by uncontrolled and illegal waste disposal where the responsible operator is unknown. Consequently, the cost for remediation is covered by state funds. This issue is regarded as highly significant given the effects of the current economic crisis.

To this date in Greece the focus has been in taking precautionary measures (e.g. changing planned routes of highways) and to a lesser extent remediation actions (e.g. construction of green bridges and underpasses to avoid fragmentation). In addition several projects have been developed to recover natural losses in quarries. These types of actions are put forward by the EIA legislation.

A3.9 **Lithuania**

**A3.9.1 Compensatory measures/offsets required at national (or lower) level**

Compensatory measures can be applied under the "Law on Environmental Impact Assessment of Proposed Economic Activities" (2000, as amended). According to that Law, *environmental impact means anticipated change in the environment caused by a proposed economic activity*. The Law has 2 annexes. Annex I includes the "List of the types of proposed economic activities that shall be subject to an Environmental impact assessment"; Annex II lists the activities, for which screening is required.

Compensation measures can be required by the Regional Environmental Protection Department before issuing permission for certain activities. Usually, it is applied for activities listed in Annex I, but the law does not define the procedures to perform the EIA. Compensation is not widely used in practice in Lithuania.

**A3.9.2 Reference to the goal of no net loss**

The national frameworks do not mention a goal of ‘no net loss’. Compensation can be mainly implemented for damage to nationally and internationally protected areas, but it does not apply specifically to biodiversity.

The case of Natura 2000 areas is different, because of the application of an Order issued by the Minister of Environment, called "Regulation on assessment of plans and projects significantly affecting potential and designated Natura 2000 sites" (2006). According to this regulation, Natura 2000 sites are assessed separately with respect to the significance of negative impacts. If the impacts are expected to be negative, no permission to perform economic activity is granted, or the developer is required to implement compensation measures, (e.g. to replant forests in a new area for the same surface or a larger surface). Usually, compensation measures are implemented for damage to habitats, but not to species.

If the area on which the development is proposed hosts species protected under the Habitats and Birds Directives, no permission is granted. There have been no cases when compensation measures are applied to species, e.g. to replant rare plant species. Compensation has only occurred to compensate for habitats. The Order on compensation of damaging protected animal, plant and fungi species and habitats (Order n°D1-621 of 15/07/2010) lists all protected species, including EU protected species and Lithuanian red list species. Penalties are fixes for damages to species and habitats, but habitats means breeding and resting sites (nests and their surroundings, mammal holes, etc.) rather than habitats in the sense of the HD (e.g. western taiga, wooded pastures). No data is accessible to assess the extent of the damages, but they are estimated to be relatively low due to high penalties applying.


The national legislation complies with the EIA, SEA, Habitats, and Water Framework Directive in general, but there are some gaps regarding compensation for biodiversity loss. Lithuanian environmental legislation complies with EU legislation (according to the European Commission), but certain holes exist.

First of all, the “Methodological guidelines on screening proposed economic activities” (2005), and “Guidelines on the quality control of environmental impact assessments of proposed economical activities” (2000) are not detailed enough to ensure that the effects on biodiversity are properly assessed. In practice, any negative effects are assessed by indicating whether or not the effect is expected, without further information. Such assessment could thus be done incorrectly due to low expert qualification or lack of data. Gaps also exist concerning the assessment of impacts on biodiversity and protected areas.
There are no requirements indicating that experts should have relevant qualification and/or be certified. In certain cases, biodiversity assessments could be performed by experts from other areas that do not have enough knowledge of biodiversity to evaluate the effects adequately.

**A3.9.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level**

The Law on Environmental Impact Assessment of Proposed Economic Activity requires compensation measures at national level. The Law on Environment Protection also requires compensation measures. However, no legal act prescribes the procedure for compensation. The Law on Environment Protection requires compensatory measures in case of damage to habitats. In this case, persons/firms must pay penalties and restore the damaged area. If restoration is not possible, the penalties are very high. The money received through the penalties goes to the Environmental protection support programme.

Compensation after exploitation of natural resources is obligatory. There is a methodology about restoration of sites after finishing excavation of natural resources (see question 8). The forest law makes it required to replant forest, if forest is damaged by economic activities.

**A3.9.5 The areas over which the requirements are applied**

Compensation measures can be applied in all territories, but protected areas are seen as a priority. This means that first of all, compensation measures should be performed in protected areas, to restore damaged sites, even if in theory restoration should occur throughout the whole territory. Penalties for damages occurring in protected areas are higher than elsewhere. Killing protected species induces a fixed penalty, wherever it occurs. Excavation of natural resources is not allowed in protected area, but illegal activities may occur.

**A3.9.6 The stage of the damage at which compensation is required**

Compensation measures can be prescribed before issuing permission for certain economic activities. In the case of habitats/biodiversity being damaged without permission for the activity to occur, penalties are applied and compensation is required.

**A3.9.7 Consideration of interim losses**

Interim losses are not considered.

**A3.9.8 Baseline and methodology for determining the level and type of compensation**

There are some methodologies guiding compensation for damaging species and habitats, which apply in case of damage to protected species, included on the Red Data list. If protected species are destroyed or harmed, the person responsible has to pay penalties. The penalties are required under the “Law on protected animal, plant and fungi species” (2009). Under this Law, two Orders were issued by the Minister of Environment:

- “Order on the List of protected animal, plant and fungi species and habitats”, also referred to as Red data list.
- “Order on compensation of damaging protected animal, plant and fungi species”. This order foresees penalties for certain species, with different penalties applying for different species.

These two Orders are amended by the decision of the European Commission on Red data book. Another Order relates to compensation concerning damage to unprotected species and their habitats (similarly this order applies penalties). In such cases penalties are calculated according to another methodology that takes into account e.g. landscape element types, area size. If the area also hosts protected species and habitats, the penalties add up.
These orders aim to issue penalties for killing, consuming or damaging species and habitats, but does not cover the recovery of certain species. There is a short methodology in the order about how to calculate penalties for killing individuals depending on their age and breeding stages. Penalties are updated every year.

Compensation is required after damaging habitats, but not before. There is a methodology for restoration sites after excavation (exploitation) of natural resources, like peat.

This methodology is an order of the Minister of Environment: “Methodology on damaged territories after excavation of natural resources (eg. peat, sand, etc.)”, 1998, amended 2009. Following this methodology each company should re-naturalise territory, e.g. plant forest, create grassland in the quarry area.

A3.9.9 Level of compensation required

The compensation requirement depends on the damage scope. According to the “Order on compensation of damaging protected animal, plant and fungi species and habitats” (2011), the penalties for protected species are as following:

- bison – 10 700 Euro,
- lynx – 4 600 Euro,
- otter – 1 800 Euro.

Penalties apply for the destruction of breeding sites.

A3.9.10 Financing of compensation requirements

Damage should be compensated by the persons/companies who caused the harm. In some cases it can be funded by Environmental Protection Support Programmes (through the Ministry of Environment or local municipalities).

A3.9.11 Long-term measures taken to ensure that the compensatory measures last

Compensation measures are taken to recover habitats, but no time period is defined.

A3.9.12 Pilot initiatives and other examples of how offsets are implemented

There are no pilot examples or case studies concerning biodiversity compensation measures in Lithuania.

A3.9.13 Evidence of habitat banking at national (or lower) level

There is no habitat banking scheme in Lithuania.

A3.9.14 Barriers and lessons learned

Lithuanian legislation foresees penalties for damaging, consuming, or killing protected species, but does not require recovery. If someone kills a lynx, he/she must pay a high penalty, but the legislation does not mandate recovering the lynx itself. The same applies for destroying protected plant areas: a penalty must be paid, but the restoration of the protected species habitat is not required.

A case has occurred in which a protected plant habitat was ploughed, incurring damage to the protected area. The company paid a penalty and was required to restore the grassland area, but there were no requirements to restore the harmed protected species. The fact that no requirement is explicit on restoration represents a clear gap in the current legislation. Penalty payments additionally may give a (wrong) signal that protected species have no intrinsic value.

Lithuania does not practice habitat banking. New habitats are not created when there are plans to destroy existing ones, except in forest areas. Replanting forest is required under Law on Forests and Forest use regulations, for the same surface, if not a larger area, if forest areas are destroyed by economic activities. However, replanting is not related to...
biodiversity and recreation habitats. If a forest of 50 ha is cut, the developers may be fined or obliged to replant, but not necessarily the same type of forest. In the case of EIA, companies are required to replant at least the same area of forest. In certain cases the tree species are specified in the permit (e.g. pine, spruce, or oak trees); but in other cases the area and quality of forest is not specified. If old forests are cut, penalties are higher than for young forests, but this is not directly for biodiversity-related reasons. The legislation does not aim to protect forest biodiversity, but mainly to conserve forest area and plant trees for timber.
A3.10  The Netherlands

A3.10.1  Compensatory measures/offsets required at national (or lower) level

Compensation is required in the Netherlands in Natura 2000 areas under the Nature Conservation Law (“Natuurbeschermingswet”) and is a condition for permitting developments.

Compensation is also required throughout the Network of Protected areas (EHS) in the “Structuurvisie Infrastructuur en Ruimte” (SVIR, 2011). The SVIR can be seen as the national spatial strategy, and is a note in which the Dutch government has formulated how to deal with environmental space in the Netherlands. Since 2008, with the adoption of the Law on Spatial Planning, the regional and development plans are (gradually) replaced by a ‘structure vision’ (“Structuurvisie”). This vision is developed by the national authorities, provinces and municipal authorities, each at their own level. The Law on Spatial Planning and the governmental decree on Spatial Planning provide the legal framework for the conservation of these areas. The governmental decree on Spatial Planning contains provisions about compensation.

Additionally, compensation may apply under the Forestry Law (“Boswet”), the Flora and Fauna Law, or under provincial regulations for smaller public natural areas or areas other than nature areas. The Law on Spatial Planning provides the legal framework for the conservation of these areas under provincial regulations. Further provisions on implementation and regulation of compensation are formalised in regional and local spatial and development plans.\(^\text{186}\)

A3.10.2  Reference to the goal of no net loss

There is a recent ‘no net loss’ initiative by the Taskforce Biodiversity and Natural Resources on voluntary compensation (see question 12). While not necessarily being explicitly said, compensation as required in the Dutch legislation always refers to ‘no net loss’.


The Nature Conservation Law implements the HD requirements. The steps to be followed are the same as in the HD if a development is to proceed in a Natura 2000 area. In the EHS, similarly any plan for activities is subject to assessment and permit. Mitigation is mandatory and residual impact has to be compensated. Under special conditions compensation is a preferred option above mitigation.

Biodiversity loss in EHS can indeed be compensated for through developing or designating a new area as part of the EHS, but also through financial compensation, as a labelled payment to the „Nationaal Groenfonds“ (National Green Fund). This latter option is only eligible when physical compensation is completely or partially impossible. In practice this hardly occurs despite the perception that land is not available for physical compensation.\(^\text{187}\)

A3.10.4  Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

See question 1, compensation is required through the Nature Conservation Law, “SVIR” and governmental decree on Spatial Planning, and to a lesser extent through the Forestry Law, Flora and Fauna Law and spatial planning documents.

\(^\text{186}\) Steven de Bie, Bopp van Dessel, 2011 Compensation for biodiversity loss – Advice to the Netherlands” Taskforce on Biodiversity and Natural Resources. De Gemeynt, Klarenbeek (the Netherlands). Pb2011-002

\(^\text{187}\) Steven de Bie, Bopp van Dessel, 2011 Compensation for biodiversity loss – Advice to the Netherlands” Taskforce on Biodiversity and Natural Resources. De Gemeynt, Klarenbeek (the Netherlands). Pb2011-002
A3.10.5 The areas over which the requirements are applied

In the Netherlands, compensation applies in formally protected conservation areas under Dutch laws and regulations. They include Natura 2000 areas under the BD and HD, the EHS under the Nature Conservation Law and other public natural areas under that law, e.g. Natural Monuments (Natuurmonumenten).

According to de Bie and van Dessel (2011), there are differences in the compensation requirements for Natura 2000 and EHS as regards the location of compensation measures. For Natura 2000, compensation measures have to be (1) in an area that already has formal protection, under the condition that the compensation enhances its quality, and (2) implemented in the same biogeographical region. For EHS, compensation measures should not take place in an area that already has formal protection (however some provincial policies allow to deviate from this).

A3.10.6 The stage of the damage at which compensation is required

According to de Bie and van Dessel (2011), in Natura 2000 areas compensation is required to be in place before the impact occurs; while in EHS the timing should be related to the timing of the development project.

A3.10.7 Consideration of interim losses

Interim losses are considered in the “Spelregels EHS” (EHS “Rules of the game”, 2007). Requirements for compensation amounts apply depending on time issues, see question 9.

A3.10.8 Baseline and methodology for determining the level and type of compensation

In Natura 2000 areas the conditions are stricter than in EHS, where financial compensation is required in certain cases (see question 3).

Criteria and conditions for compensation are described in “Spelregels EHS” (EHS “Rules of the game”, 2007). Key elements are: no net loss of area, quality and integrity, location of compensation has to be connected to the area that will be impacted. Compensation is not to be used to speed up achieving management objectives. Compensation within EHS is sometimes permitted but under strict conditions.

Two other approaches also apply, the “EHS Saldobenadering” (EHS Balance approach) and the “EHS Herbegrenzen” (redefining EHS). Under the first approach, projects are not assessed in terms of their individual impacts, but compensation requirements are combined, under the condition that the EHS clearly is improved qualitatively and quantitatively, and that a spatial policy is formulated.

In April 2008, the “Regiebureau” Natura2000 was established to coordinate and guide the development of Natura 2000 management plans. It is an independent bureau. Compensation has been accepted as an element of the development package for three projects: Development of the Maasvlakte-2, (further) development of the Eemshaven and a bridge over River Rijn near Nijmegen.

The main competent authorities regarding EHS compensation are the Provinces, similar to compensation related to the Nature Conservation Law and Natura 2000. Formal objection and appeal are organised following existing spatial planning procedures according to the Law on Spatial Planning. Municipalities often also initiate projects.

The competent authority for Natura 2000-related compensation is the provincial authority, and the Ministry of Economic Affairs, Agriculture and Innovation ensures compliance.

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188 Steven de Bie, Bopp van Dessel, 2011 Compensation for biodiversity loss – Advice to the Netherlands” Taskforce on Biodiversity and Natural Resources. De Gemeynt, Klarenbeek (the Netherlands). Pb2011-002
A3.10.9 Level of compensation required

Both the Natura 2000 and the EHS regimes tend to require higher than 1:1 compensation. The EHS “Rules of the game” describe the following rules:

To compensate for the qualitative loss of nature values during the time that the new area needs for development to a mature stage, a correction factor has to be applied to the area of compensation. Four categories have been identified:

- A development time of less than 5 years: no correction
- A development time between 5 and 25 years: factor 1.33 to be applied
- A development time of 25 and 100 years: factor 1.67 to be applied
- A development time above 100 years: uncertainty with respect to the development outcome vis-à-vis the original situation and a case-by-case solution has to be agreed

- If qualities that are to be lost due to the planned activity, cannot be developed again (due to a very long development time, see above, or due to absence of suitable conditions outside EHS) values of comparable quality have to be developed.

A3.10.10 Financing of compensation requirements

The developer bears the costs, in compliance with the ‘polluter-pays’ principle.

A3.10.11 Long-term measures taken to ensure that the compensatory measures last

No specific information found. EHS compensation areas should be designated and protected as EHS again.

A3.10.12 Pilot initiatives and other examples of how offsets are implemented

In February 2010, the Taskforce Biodiversity and Natural Resources (established by the Dutch government in 2009) launched the No Net Loss initiative (NNLi). A report was produced in this framework: Steven de Bie, Bopp van Dessel, 2011 Compensation for biodiversity loss – Advice to the Netherlands” Taskforce on Biodiversity and Natural Resources. De Gemeynt, Klarenbeek (the Netherlands). Pb2011-002. It provides advice on how to introduce voluntary compensation by companies and institutions, in addition to the current legal framework.

A3.10.13 Evidence of habitat banking at national (or lower) level

No information found.

A3.10.14 Barriers and lessons learned

De Bie and van Dessel (2011) report that compensation is increasingly being perceived in the Netherlands as an obstacle for development, with disproportionate costs, due to limited space availability and low awareness of the value of biodiversity. Additionally, several reports mentioned in that paper show that conservation and compensation is insufficiently implemented in the Netherlands. Two major issues identified are:

- Inadequate application of the principle that no development with negative impacts should be approved unless there are no alternatives and the project is of overriding public interest, and
- Compensation procedure is insufficient or only partly implemented.

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189 Steven de Bie, Bopp van Dessel, 2011 Compensation for biodiversity loss – Advice to the Netherlands” Taskforce on Biodiversity and Natural Resources. De Gemeynt, Klarenbeek (the Netherlands). Pb2011-002
Inadequate application was mainly due to low knowledge and information, because of insufficient ecological knowledge and expertise with local governments, use of outdated information, and fragmented local government policies; unclear and disputed evaluation of the loss of nature and thus of the need for compensation; insufficient consideration and analysis of alternative; unsubstantiated overriding public interest; low success of public appeal procedures.

Insufficient or partial implementation resulted from insufficient use of mitigation measures, poor realisation of compensation in practice due to lack of planning and integration in spatial planning, lack of options (suitability of sites, price), inadequate monitoring and enforcement, and inexperience.

Additional issues are lack of transparency, strictness and timeliness in the realisation of compensation.

In addition, the authors point out that the requirement to have compensation close to the impacted sites results in small compensation sites in which restoration is difficult to achieve, issues in restoring biodiversity more generally, and issues in using financial compensation, which may then be regarded as a tax, decoupled from the impacts.
A3.11 Italy

A3.11.1 Compensatory measures/offsets required at national (or lower) level

Three legislative frameworks include the concept of environmental compensation in Italy:

The ‘Environmental Impact Evaluation’ (VIA)\textsuperscript{190} procedure mentions environmental compensation, but only for certain infrastructures. The nature of such infrastructures is established at regional level and can vary considerably: for instance in the Lombardy region it is required even for very small buildings, i.e. residential homes. It implements EU Directive 97/11/CE.

The ‘Strategic Environmental Evaluation’ (VAS)\textsuperscript{191} procedure mentions the environmental compensation for urban planning activities. It implements EU Directive 2001/42/CE.

The Forestry legislation\textsuperscript{192} mentions environmental compensation for the forestry sector only (parcels of more than 2000 m\textsuperscript{2}). Regions decide on the criteria for compensation (depending on the forest species, age, minimal dimension, etc.) in the ‘regional forestry plan’, which does not exist for all the regions in Italy, even if it is mandatory.

The ‘Great Infrastructures’ law\textsuperscript{193} which aims at diminishing the administrative burden required by the VIA, states that 3-5% of the infrastructure’s cost should be paid for environmental compensation. In fact it authorises a monetisation of environmental compensation (see Box 1) which could also apply in protected areas.

\textbf{Box 1 : Monetisation of the environmental impact}

All texts which apply at the national level (see question 1) exclude in theory the monetisation of the environmental impact as a first step of the environmental compensation. However, in practice, and especially as a consequence of the Great Infrastructure law, monetisation is considered the easiest way to implement compensation. Thus, developers often ‘jump’ directly to monetary compensation, without taking into account the initial steps of the mitigation hierarchy.

In terms of monetisation, there is no guidance as to how it should be performed. It is assumed that the evaluator should be someone from the Ministry of Environment, but there is no clear mention of who should evaluate such impacts and therefore be capable of establishing a monetary value. In practice, the evaluator is the entity performing the work/deforestation, an approach which raises issues of legitimacy. Several legal actions have been taken to denounce this situation, with no notable results.

In general, the monetary compensation is given to the concerned city councils. However, knowledge is lacking on whether the money is actually used for environmental compensation. In addition, the city mayors often prefer to use the money for other purposes than implementing environmental compensation. This situation means that compensation is never preventive, as it should be.

As an illustration, the Lombardy region fixed the building tax at 5 percent for the amount of environmental compensation (Art. 43 of the regional law for urban planning). The amount is given to the region which distributes it back to the councils for implementing ‘green infrastructures’.


\textsuperscript{191} Decreto legislativo 3 aprile 2006, n. 152, recante “Norme in materia ambientale” modificato ed integrato dal decreto legislativo 16 gennaio 2008, n. 4 è stata data attuazione alla direttiva. \url{http://www.camera.it/parlam/leggi/deleghe/01227dl.htm}

\textsuperscript{192} http://www.camera.it/parlam/leggi/deleghe/01227dl.htm

\textsuperscript{193} Legge 443, dicembre 2001; Legge 166 del 2002
A3.11.2 Reference to the goal of no net loss

There is no environmental budget procedure required at the national level, thus biodiversity and related ecosystems services are not quantified. There is national legislation applying to protected areas, but it does not as such consider environmental compensation. Three texts implement the HD in Italy\(^{194}\). All of these texts refer to the environmental impact evaluation procedure described in question 1. In case of negative impacts having been identified, the texts mention that if the project is of overriding public interest the project may go ahead, but compensation measures should be taken by the competent authorities and communicated to the Ministry for Environment. There are no mitigation banks for environmental impacts.


The VAS and VIA legal frameworks derive from the respective EU Directives.

A3.11.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

See question 1.

A3.11.5 The areas over which the requirements are applied

They apply at the national level, but the implementation details are given at the regional level by regional laws.

A3.11.6 The stage of the damage at which compensation is required

This is not specified at national level, but in general it is done at the end of the development works. Often developers are bankrupt before having realised any environmental compensation (as a best practice, the compensation should rather be required at the beginning). In the examples provided in question 12 which refer to voluntary actions, compensation measures are taken at the same time as the development works.

A3.11.7 Consideration of interim losses

Interim losses are not considered.

A3.11.8 Baseline and methodology for determining the level and type of compensation

There are no specific baselines or guidelines provided. ISPRA (National Institute for the Environmental Protection) has developed a guideline\(^{195}\) on how to perform environmental assessment, but environmental compensation is not explicitly mentioned.

A3.11.9 Level of compensation required

The amount of compensation is not specified at national level, other than the fixed monetary compensation. Some voluntary based initiatives have established a 3:1 factor (see question 12 and the example of Cernusco sul Naviglio). In the case of the Lombardy regional law, the factors can go from 1:1 to 5:1 depending on the context.

\(^{194}\) Decreto del Presidente della Repubblica del 08/09/1997 n° 357, Decreto del Presidente della Repubblica 12/03/2003 n° 120, Criteri minimi uniformi per la definizione di misure di conservazione relative a Zone speciali di conservazione (ZSC) e a Zone di protezione speciale (ZPS). Decreto ministeriale; Gazzetta Ufficiale della Repubblica Italiana, 258, 06/11/2007; (MNE(2007)58269)

\(^{195}\) http://www.isprambiente.gov.it/site/it-IT/Temi/Valutazione_Ambientale_Strategica_%28VAS%29/Attivit%C3%A0_ISPRA_di_supporto_alla_Commissione_Tecnica_diVerifiera_dell%E2%80%99Impatto_Ambientale_VIA_VAS/
A3.11.10 Financing of compensation requirements

The executor of the infrastructure/deforestation is expected to fund the compensation.

A3.11.11 Long-term measures taken to ensure that the compensatory measures last

No long-term measures are explicitly required. In the case of deforestation, the regional agency can eventually verify the compensation (re-plantation) in the short or medium term, but there is no real follow up in the long term.

A3.11.12 Pilot initiatives and other examples of how offsets are implemented

Following the construction of the highway pedemontana lombarda between Dalmine and Varese an environmental compensation mechanism was set up, financing EUR 65 million for ecological infrastructure and EUR 35 million for green infrastructure (i.e. building cycling paths between Varese and Bergamo).196

The new urban expansion in the towns of Cornano and Navate Milanese is generating ecological credits. In practice the funding is being collected to be reinvested in the creation of a park between the two towns (parco della Balossa).197

In the town of Cernusco sul Naviglio, compensation (on a 3:1 basis) is required for any new infrastructure through the new urban expansion plan. In practice, the developer offers a part of the land to the city council which develops ecologic or green infrastructures198 on the land.

A3.11.13 Evidence of habitat banking at national (or lower) level

There is no ‘real’ experience of habitat banking at the national level. Maybe, the fondo aree verdi of Lombardy region can be considered as a preliminary experience199, but not a real habitat banking framework.

A3.11.14 Barriers and lessons learned

None of the existing frameworks define environmental compensation, nor operational guidance and criteria. A list of appropriate indicators is also missing.

At the EU level, the ELD refers to compensation, but the Directive was not exactly transposed in the Italian legislation. The alternatives and mitigation options are not mentioned by the current legislative framework. In practice, the current framework makes monetary environmental compensation applicable automatically. This is against the mitigation hierarchy, which requires considering alternatives and mitigation options first.

Environmental compensation through monetisation seems to be considered as a tool to ensure approval of the developments by the competent authorities. This is also due to a scarce environmental culture and awareness in the country.

197 http://www.comune.cornano.mi.it/download/comunicati_stampa/163.pdf
198 http://pgt.comune.cernuscosulnaviglio.mi.it/sites/default/files/Sintesi%20non%20tecnica.pdf
199 http://www.sistemiverdi.regione.lombardia.it/shared/ccurl/296/863/ART43_FondoAreeVerdi.pdf
A3.12 United Kingdom

A3.12.1 Compensatory measures/offsets required at national (or lower) level

The UK planning system provides the mechanism for which compensatory measures and offsets are required through the plan making and development application process. This is achieved through several legislative levers, such as:

- Conservation (Natural Habitats, &c.) Regulations 1994
- Conservation of Habitats and Species Regulations 2010
- Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended)
- Offshore Marine Conservation (Natural Habitats & c.) Regulations 2007 (as amended)
- Town and County Planning (Environmental Impact Assessment) Regulations 2011
- Environmental Damage (Prevention and Remediation) Regulations

The 2010 change in Government has seen the introduction of significant change in the legislative and policy environment in the UK. Of particular relevance to this study are the introduced and proposed changes to the planning system through the Localism Act.

The Localism Act’s principal objective is one of decentralisation and process streamlining. Central to this Act is the role of the community and the provision made for communities to take an active role in forming and directing policy and development. The significance of this Act to environmental protection and specifically the protection of biodiversity and habitats are the proposed changes to the planning system.

The Localism Act proposes wholesale change to the planning system – abolishing regional planning strategies and planning guidance set out in planning statements. Currently, the UK is in a transitional period whereby those policies and statements that historically provided guidance and support to decision makers are to be abolished and replaced. Currently however, decision makers must give some weight to these principles but the stated intention of the Government is the introduction of significantly reformed planning policy albeit yet to be adopted. The proposed replacement takes the form of a National Planning Policy Framework (NPPF). For the purpose of this case study and review the time will be spent examining the proposed new policy and guidance and its relationship to legislation and the potential impacts on biodiversity and requirements to provide compensatory habitat.

Table A3.1 below provides a summary of how European Directives have been related and reflected in UK legislation.
### Table A3.1 UK Legislation Summary

<table>
<thead>
<tr>
<th>European Directive</th>
<th>Transposition to UK Legislation</th>
<th>Guidance</th>
<th>Proposed</th>
<th>Comments</th>
<th>Compensa-</th>
<th>tion required</th>
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<tbody>
<tr>
<td>Habitats Directive</td>
<td>Conservation (Natural Habitats, &amp;c.) Regulations 1994&lt;br&gt;The Regulations came into force on 30 October 1994, and have been subsequently amended several times. They apply to land and to territorial waters out to 12 nautical miles from the coast. Conservation of Habitats and Species Regulations 2010&lt;br&gt;Consolidate all the various amendments made to the 1994 Regulations in respect of England and Wales. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations.</td>
<td>Planning Policy Statement 9 (2005) 2010 consultation on draft PPS 9 currently on hold and will be replaced by National Planning Policy Framework Circular 06/2005</td>
<td>Draft National Planning Policy Framework Natural Environment –minimising impacts on biodiversity and providing net gains in biodiversity where possible</td>
<td>PPS9 states SPA, SAC, pSPA, cSAC, Ramsar should all be afforded the same protection and SSSI should receive high degree protection. This remains unchanged but worded differently in NPPF – reference made to circular&lt;br&gt;Triggers need for Appropriate Assessment. Section 21 requires assessment of implications for European sites to determine conservation objectives Precautionary principle&lt;br&gt;Circular 06/2005 – details compensatory measures – seeks to maintain coherence</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Conservation (Natural Habitats, &amp;c.) Regulations (Northern Ireland) 1995 (as amended)</td>
<td>Transpose the Habitats Directive in relation to Northern Ireland.</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
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<tr>
<td>Offshore Marine Conservation (Natural Habitats &amp; c.) Regulations 2007 (as amended).&lt;br&gt;UK offshore waters (ie from 12 nautical miles from the coast out to 200nm or to the limit of the UK Continental Shelf Designated Area).</td>
<td></td>
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<td></td>
<td></td>
<td>Yes</td>
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</table>
**European Directive** | Transposition to UK Legislation | Guidance | Proposed | Comments | Compensation required
---|---|---|---|---|---
**Birds Directive 2009/147/EC** | The provisions of the Birds Directive are implemented through the Wildlife & Countryside Act 1981 (as amended), the Conservation (Natural Habitats, & c.) Regulations 2010 (as amended); the Wildlife (Northern Ireland) Order 1985; the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985; the Conservation (Natural Habitats, &c.) (Northern Ireland) Regulations 1995 (as amended) the Offshore Marine Conservation (Natural Habitats & c.) Regulations 2007 as well as other legislation related to the uses of land and sea. A range of other statutory and non-statutory activities also support the implementation of the Birds Directive in the UK. This includes national bird monitoring schemes, bird conservation research, and the UK Biodiversity Action Plan which involves action for a number of bird species and the habitats which support them. | Good Practice Guides and Explanatory Notes DCLG | Schedule 1 and 2 details those types of development that require EIA. | Yes


**EIA Directive** | The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 | Good Practice Guides and Explanatory Notes DCLG | Sustainability Appraisal required to be undertaken for any proposed policy programme. | Yes


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<tr>
<th>European Directive</th>
<th>Transposition to UK Legislation</th>
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<th>Comments</th>
<th>Compensation required</th>
</tr>
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<tbody>
<tr>
<td>Regulations (Northern Ireland) 2004 (Statutory Rule 2004 No. 280)</td>
<td>The Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 (Scottish Statutory Instrument 2004 No. 258), and The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (Welsh Statutory Instrument 2004 No. 1656 (W.170))</td>
<td>Defra guidance note <a href="http://archive.defra.gov.uk/environment/policy/liability/pdf/quick-guide-regs09.pdf">http://archive.defra.gov.uk/environment/policy/liability/pdf/quick-guide-regs09.pdf</a></td>
<td>N/A</td>
<td>Applicable to SSSI and EU habitats and species <strong>Primary remediation</strong> which is measures to resort the damage itself <strong>Complementary remediation</strong> which is measures, including at alternative sites, to compensate for where primary remediation does not fully restore the damage <strong>Compensatory remediation</strong> which is measures to compensate for the losses of natural resources while the damage is being restored.</td>
<td>Yes</td>
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A3.12.2 Key points to note re: proposed changes

The NPPF is underpinned by a presumption in favour of sustainable development. The NPPF sets out broadly what is considered ‘sustainable’ and explicitly states that the document must be read as a whole and that when done so; this is what represents sustainable development. The NPPF is a shorter document that sets out high level policy direction that LGA/community are required to have regard to when preparing local plans.

Of the three principles informing the NPPF it is planning for places (an environmental role) that is of relevance to this study. It states:

*Planning for places (an environmental role) – use the planning system to protect and enhance our natural, built and historic environment, to use natural resources prudently and to mitigate and adapt climate change, including moving to a low-carbon economy.*

Plan-led and localised planning is the central theme of the proposed reforms and the NPPF seeks to facilitate this. The process for preparing such local plans remains unchanged other than the assumption of greater community involvement and mechanisms for the community to be active through neighbourhood planning schemes. SEAs and preparing a sustainability appraisal is still required and is to consider the potential impacts as result of the proposed policy.

Recognition of sites protected under the Birds and Habitats Directives is reflected in the NPPF with specific mention to development that is likely to have a significant effect on such sites are not considered to be sustainable under the terms of the presumption in favour of sustainable development. This is further supported in the NPPF core planning principles which states:

*Planning polices and decisions should seek to protect and enhance environmental and heritage assets in a manner appropriate to their significant, and reduce pollution. Where practical and consistent with other objectives, allocations of land for development should prefer land of lesser environmental value.*

The NPPF encourages local authorities to move toward criteria based policies against which proposals for any development on or affecting protected wildlife sites or landscape areas will be judged. Within this, the NPPF states that distinction between the hierarchy of international, national and locally designated sites in accordance with Circular 06/2005 should be made.

The above is further supported within the Natural Environment section of the NPPF and policy is expanded. Specifically, the NPPF provides the following guiding principles:

*When determining planning applications in accordance with the Local Plan and the presumption in favour of sustainable development, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:*

- If significant harm resulting from development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or as a last resort, compensated for, then planning permission should be refused
- Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted
- Opportunities to incorporate biodiversity in and around development should be encouraged
- Planning permission should be refused for development resulting in the loss of deteriorating or irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss

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200 Where the local plan is absent, silent, indeterminate or where relevant policies are out of date local planning authorities should grant permission deferring to NPPF.
The following sites should be given the same protection as European sites:

- Potential Special Protection Areas and candidate Special Areas of Conservation
- Listed or proposed Ramsar sites
- Sites identified or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, candidate Special Areas of Conservation, and listed or proposed Ramsar sites.

Development likely to have a significant effect on sites protected under the Birds and Habitats Directives would not be sustainable under the terms of the presumption in favour of sustainable development.

Although the proposed policy is clear in directing local authorities to consider biodiversity and environmental impacts the language used in the NPPF is less explicit in some areas than what is in PPS9 and its accompanying guidance note. Where PPS 9 provided direct reference to the potential need for mitigation and compensatory measures the NPPF does not. The NPPF references Circular 06/2005 and within this section 29-32 outlines the requirements for compensatory measures for which the trigger to provide such measures are those outlined by the Birds and Habitats Directive and Ramsar Convention. The relationship and requirements of the Natural Environment and Rural Communities (NERC) Act (2006) to the NPPF should also be noted at this point. Section 40 of NERC requires

‘Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity’.

As outlined above biodiversity is positioned as important within NPPF which is also consistent with the NERC Act however, the proposed removal of PPS 9 and accompanying good practice guide and deferral only back to Circular 06/2005 may have an impact on the demand for compensatory measures.

It is possible to conclude that the while the legislative framework is robust and the requirement for appropriate assessments, impact assessments and preparation of appropriate management regimes developed, there may be an impact on the demand for compensatory measures as a result of the current wording of the NPPF and move away from regional/strategic planning and to a greater emphasis on community led local planning.

A3.12.3 Reference to the goal of no net loss

Following from the above section the NPPF does not mention the goal or principle of no net loss. This is a notable shift from what is contained in PPS 9 and its associated good practice guide. Circular 06/2005 also references no net loss but only within the context of the Ramsar convention and not an overall good practice approach or objective.

While biodiversity is positioned as important and that development that encourages protection and enhancement as positive, the proposed policies do not place as much emphasis on network coherence and how sites (at European, National and Local) relate to one another. The inference that can perhaps be taken from the NPPF is that local authorities should highlight the hierarchy of designated sites and that those considered ‘lesser’ (national or local) should not be afforded as much consideration. While in legislative terms this may hold true the overall environmental objective and desire to protect and enhance habitats across a complete and comprehensive network is lost. Further, the presumption in favour of sustainable development and the policy provisions provided confirm this hierarchy with only European sites (where significant impact) being deemed not sustainable under the NPPF framework.

The potential for greater incremental loss of biodiversity through consideration of lower order sites being diminished is arguably great. While the NPPF does state/afford pSPA, cSAC and listed or proposed Ramsar sites the same protection in policy as European sites and SSSIs are to be afforded a high degree of protection the planning policy. The proposed NPPF is not as strong when it comes to considering greenfield or brownfield sites and the potential
biodiversity value of these sites. Consideration to these sites is within the context of ensuring adherence to the Habitats and Birds Directives and does not explicitly reference Biodiversity Action Plans (BAPs) and the relationship between the designated sites (local, regional, national and international) and priority areas identified through BAPs. While this is not to suggest that all development or local plans would not undergo the appropriate environmental assessment as required by either EIA, SEA, or Bird and Habitats Directive it appears the emphasis has shifted from considering the potential wider environmental gains as a result of the development process to a narrower scope and ensuring compliance with EU Directives. In short, while the requirements to consider the environmental impacts remain, the language has become more opaque.

Circular 06/2005 remains the principal reference document for relevant authorities to determine their biodiversity and geological conservation statutory obligations and their impact within the planning system.


As outlined above, in the UK as a matter of policy pSPA, cSAC and pRamsar are afforded in policy terms the same level of protection as SPA, SAC and Ramsar designations. At a national level SSSIs are also afforded a high level of policy protection. Circular 06/2005 remains in force and relevant and is referred to in the NPPF as being the reference document.

Table A3.1 summarises the national legislation. There does not appear to be significant differences in the requirements of national legislation to that of EU directives other than those detailed above.

A3.12.5 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

See Table A3.1

A3.12.6 The areas over which the requirements are applied

England, Scotland, Wales and Northern Ireland.

A3.12.7 The stage of the damage at which compensation is required

Ex-ante, i.e. before the impact/development

- all plans and proposed developments

Ex-post, i.e. once the impact has occurred

- Directive 2004/35/EC (The Environmental Liability Directive) seeks to achieve the prevention and remedying of environmental damage – specifically, damage to habitats and species protected by EC law, damage to species or habitats on a site of special scientific interest for which the site has been notified, damage to water resources and land contamination which presents a threat to human health. It reinforces the “polluter pays” principle – making operators financially liable for threats of or actual damage.

- A number of legal systems already exist in the United Kingdom which provide for the remediation of environmental damage. Under these regimes, action is taken in the public interest by public authorities such as local authorities or the Environment Agency. They can require damage to be put right by those responsible for it, or put the damage right themselves and then recover the costs afterwards from those responsible.

- The Regulations supplement existing environmental protection legislation such as the Environmental Protection Act 1990, the Water Resources Act 1991 or the Wildlife and Countryside Act 1981 and the Control of Major Accident Hazards Regulations 1999. Those pieces of legislation still apply, and to the extent that they impose additional obligations to those in these Regulations, still need to be complied with.
A3.12.8 Consideration of interim losses

Interim losses are considered at the assessment phase of any development proposal through the planning process. Natural England is the government’s advisor on the natural environment. In this capacity, Natural England is consulted and provides advice on any development that may affect a Natura 2000 site. In those instances whereby a development may affect a site it is a requirement that appropriate site survey and impact assessments are undertaken. This process includes considering the development impact on a site at various stages from pre-construction, construction and post construction. This assessment will then inform any proposed mitigation measures and/or compensatory measures. Question 8 below expands further on the approach for determining such requirements.

In those instances whereby development has been undertaken illegally determining the interim loss is retrospective and then through the various legislative levers available (see Table A3.1) it is possible for remediation works to be ordered.

A3.12.9 Baseline and methodology for determining the level and type of compensation

The process for determining the scope, size, scale and adequacy of compensatory measures is acknowledged as being complex. In 2011 the Department for Environment, Food and Rural Affairs (Defra) commissioned a series of studies to investigate the relationship between development and biodiversity and development of a metric tool that allows biodiversity losses and compensation to be measured. Two premises underpinned this work, one that at a practice level implementation requirements and approaches varied and the second, that with the development a metric tool greater consistency in implementation of compensatory measures would be achieved but moreover, the ability to quantify costs and benefits would exist.

The publication of Defra’s technical paper: proposed metric for biodiversity offsetting pilot in England, July 2011 provides a methodology for determining offset requirements. As the title suggests, this paper informs the following pilot programmes in England (see question 12) and details the metric tool proposed as part of this programme. The methodology as set out in this paper is voluntary and it is worth noting that in the currently political landscape it appears that in the UK less of a legislative or regulatory approach to achieve environmental targets is being adopted and preference toward more of a voluntary approach exists.

This section will be spent divided in two main parts, the first, outlining the role of Natural England and industry advice for determining offset/compensatory requirements and the second, outlining the methodology as proposed within Defra’s 2011 paper.

In England, Natural England is the government’s advisor on the natural environment with a remit to provide practical advice, grounded in science on how best to safeguard England’s natural wealth for the benefit of everyone. Through this role, it is Natural England who is consulted whenever a development may have an impact on a Natura 2000 site or any other statutory designated site, developments that are likely to affect species protected under the Habitats Regulations 2010 and those developments that require and Environmental Impact Assessment. In this role, Natural England will undertake an assessment of proposed development to determine the potential impact on Natura 2000 sites and other statutory designations and it is through this process within the planning system that mitigation and compensatory measures are determined.

Determining offset requirements is not an exact science and as such, there is not a single statutory or guidance document that can be referred to. Industry practice as set out by the Institute of Ecology and Environmental Management (IEEM) provides instructive guidance for relevant/competent authorities to determine the level of compensation and are as follows:

- primary, high level objectives related to the reasons for compensation, gross area of compensation and overall quality of compensation;
- detailed objectives comprising specific ecological requirements for the habitat compensation scheme in terms of, for example, the number of birds and the habitats that they require.
technical feasibility of what is proposed (e.g. experience of projects where the proposed mitigation has been employed or carried out);

- overall quantity of what is proposed (e.g. is it large enough to be viable; is it of equivalent extent to that of lost habitat?);

- overall quality of what is proposed (e.g. does it compare favourably with features lost and those whose loss or damage is to be compensated?);

- level of commitment provided to achieve what is proposed (e.g. is there a realistic understanding of what resources and effort will be required to achieve predicted outcomes?); and

- timescale over which predicted benefits are to be realised.

Natural England in its function as advisor considers each ‘case’ on its merits with advice underpinned by a principle of ensuring a sites Continued Ecological Functionality (CEF).

Ecological function can be defined as ‘… ecological and evolutionary processes, including gene flow, disturbance, and nutrient cycling’ (Noss 1990). As such, determining what offset or compensatory measures may be required is done within the context of understanding a site’s ecological function, how development would impact upon this and how the CEF can be maintained or enhanced after any development.

The recent publication by Defra provides an assessment framework or methodological approach for determining offset requirements. Mainstreaming/integrating into wider government body and agency practice forms part of the UK government’s reform process – specifically, the planning system. The stated objective is to develop a clear and concise development framework that does not unduly delay or restrict development and at the same time fulfils environmental responsibility.

Defra’s report acknowledges that ‘biodiversity in its entirety is impossible to measure’. A metric is used therefore to represent and provide a tool in which overall biodiversity can be measured. By establishing a metric it enables the impacts of a development to be quantified in turn allowing an offset requirement to be determined/calculated and the value of a compensatory measure or action defined.

Three salient points set out in Defra’s ‘guiding principles for biodiversity offsetting’ include that offsetting should:

- not change existing levels of protection for biodiversity;

- expand and restore habitats, not merely protect the extend and condition of what is already there; and

- contribute to enhancing England’s ecological network by creating more, bigger, better and joined areas for biodiversity.

In addition to the above it should also be noted that the government, in keeping with its localism agenda, envisages this system being led at the local level and local authorities when using this process (currently only through pilots) reflect their unique or identified environmental characteristics.

The metric proposed for use in the offsetting pilot is based on habitats. This approach requires development sites to be mapped and divided into habitat parcels. Similarly, for the proposed metric to work it is necessary to determine habitat bands. Based on this, habitats are pre-assigned to one of four habitat bands (see Table A3.2 below).

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Table A3.2  Habitat type bands

<table>
<thead>
<tr>
<th>Habitat type band</th>
<th>Distinctiveness</th>
<th>Type of habitat</th>
<th>Type of offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>High</td>
<td>BAP with ‘no loss’ target</td>
<td>Bespoke; LPA discretion as to whether the offsetting mechanism can be used</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
<td>Rest of BAP habitats</td>
<td>Like for like</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
<td>Semi-natural non BAP</td>
<td>Within band type or trade up</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Intensive agricultural</td>
<td>Trade up</td>
</tr>
</tbody>
</table>

Each band is then further defined by the level of ‘distinctiveness’ and habitat type. Distinctiveness refers to parameters such as species richness, diversity, rarity at local, regional, national and international scale and the degree to which a habitat supports species rarely found in other habitats and/or Biodiversity Action Plan (BAP) designation. Finally, the table then suggests the type of offset that may be considered for each band of habitat. Required offsets are always to be an improvement or a ‘trade up’ to the habitat that is being affected or lost.

It is necessary for relevant/local authorities to be able to calculate biodiversity value. To achieve this, a system of calculating ‘units’ has been devised and is based on determining how many units per hectare a particular habitat is worth. Using the Distinctiveness categorisation Table A3.3 below highlights this system.

Table A3.3  Habitat distinctiveness

<table>
<thead>
<tr>
<th>Habitat distinctiveness</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>6</td>
</tr>
<tr>
<td>Medium</td>
<td>4</td>
</tr>
<tr>
<td>Low</td>
<td>2</td>
</tr>
</tbody>
</table>

Once a particular habitat has been categorised it is also necessary to determine the condition. For this this, Defra has drawn on process already implemented by Natural England as part of their land management role called Higher Level agri-environment Scheme (HLS) that uses four categories for habitat condition which are: optimum, good, moderate and poor. For determining the level of offsetting required these conditions are all then weighted and combined with distinctiveness to determine biodiversity units per hectare. Table A3.4 below:

Table A3.4  Biodiversity per hectare matrix

<table>
<thead>
<tr>
<th>Habitat distinctiveness</th>
<th>Low (2)</th>
<th>Medium (4)</th>
<th>High (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimum (4)</td>
<td>8</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Good (3)</td>
<td>6</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Moderate (2)</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Poor (1)</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The above matrix enables the biodiversity value of a site to be calculated and enables relevant/local authorities to use this as a basis for determining offset requirements. Question 9 below provides further explanation on determining offset/compensation requirements.

The proposed system for calculating biodiversity value and in turn offsetting requirements is as outlined above, voluntary. While it provides a framework that can be used it is not yet the default system. As such, this document sits with the wide range of other publications.
prepared by government bodies such as Natural England and industry bodies such as IEEM that provide guidance to developers and decision makers to explain their development responsibilities. Currently, given the rate of reform and changes at a legislative and policy level it is likely that variations in advice and determination of appropriate baselines and methodological approaches exist. It will be necessary to consolidate recent work by Defra with existing practice, industry good practice and wider government policies particularly the NPPF and in turn the operating practices of relevant statutory bodies namely, Natural England as the government’s advisor on the natural environment.

**A3.12.10 Level of compensation required**

As outlined above, any development and associated biodiversity impact needs to improve and enhance or ‘trade up’ the type of habitat that is being affected or lost. Offsets can also be calculated to determine the number of biodiversity units to be delivered. The value of an offset site in biodiversity unit terms is determined by its function of:

- The size of the site;
- The habitat type band it is assigned to; and
- Its quality: the condition of the habitat at the start of the offset project and its condition at the end.

Quantifying the difference between the impacted site and that of the area covered by the offset is done by using a ‘currency based multiplier’. This approach provides a mechanism to adjust for variations in and between site conditions and the area that may need to be provided as an offset. As an example it the impacted site is of low habitat distinctiveness and is offset with an action of high habitat distinctiveness, it is possible (theoretically) that the offset area is smaller or less than the impacted areas. This can be further adjusted by using a fraction multiplier whereby if an impacted site is calculated to be worth 10 biodiversity units per hectare and the offset is worth 30 units per hectare, 3 hectares of impacted site could be offset with 1 hectare of offset.

The relevance of these calculations is twofold. First, it provides a mechanism for which biodiversity value can be calculated or quantified but secondly, it represents a divergence from the widely adopted principle of offset or replacement habitat ratio of 1:1. Defra outlines that it is the view of stakeholders that the fraction multipliers are more acceptable in the English context, and that Defra should not enforce the minimum 1:1 ratio.

There are a range of other considerations that decision makers need to take into account when determining offset requirements and risk factors are one. There are two main risk factors that need to be considered when determining offset requirements, they are:

- Delivery risks – those risks associated with delivery of the offset due/required: that is uncertainty in the effectiveness of restoration or habitat creation and management techniques;
- Spatial risks – these reflect ecological risks deriving from the change in location of the habitat or resource e.g., recreating a type of habitat in a new location may impact or reduce its biodiversity value.

To attempt to address these risks a multiplier is applied. A multiplier attempts to correct for a disparity or risk. The use of a multiplier is complex and Defra has acknowledged the wide range of views on the subject and its application to ecology and offsetting. A system has been developed however and is informed by the two risk factors outlined above and detailed in Table A3.5 and Table A3.6 below.
Calculating the units, determining the habitat type and applying multipliers cannot be seen as static in terms of time. Time or more specifically, the duration it takes for a habitat to reach the required quality or level of maturity is a critical consideration for offset requirements. There is likely to always be a misalignment between the timing of an impact and the offset and this needs to be considered. Forward planning, and encouraging development to front load the preparatory work ahead of the impact taking place is one way of addressing this.

In addition to pre-development site preparation or habitat banking schemes the economic technique of discounting over time which is used to compare costs and benefits that occur in different time periods. Defra’s consultation with stakeholders has indicated that the use of a multiplier to account for temporal risk is supported as it acts as an incentive to habitat banking and a disincentive for damaging habitats that take a long time to recreate or restore. The discount rate proposed by Defra is 3.5% which is based on the recommended rate in the Treasury Green Book and is said to reflect the value society attaches to ‘consumption’ at different points in time – see Table A3.7 below.

### Table A3.5 Multipliers for different categories of delivery risk

<table>
<thead>
<tr>
<th>Difficulty of recreation/restoration</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>10</td>
</tr>
<tr>
<td>High</td>
<td>3</td>
</tr>
<tr>
<td>Medium</td>
<td>1.5</td>
</tr>
<tr>
<td>Low</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table A3.6 Multipliers to deal with spatial risk

<table>
<thead>
<tr>
<th>Location parameters</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset is directly contributing to a spatially identified (in offsetting strategy) target or objective for the habitat in question</td>
<td>1:1</td>
</tr>
<tr>
<td>Offset is buffering, liking, restoring or expanding a habitat outside an area identified in the offsetting strategy</td>
<td>1:2</td>
</tr>
<tr>
<td>Offset is not making a contribution to the offsetting strategy</td>
<td>1:3</td>
</tr>
</tbody>
</table>

### Table A3.7 Multipliers for different timer periods using 3.5% discount rate

<table>
<thead>
<tr>
<th>Years to target condition</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1.2</td>
</tr>
<tr>
<td>10</td>
<td>1.4</td>
</tr>
<tr>
<td>15</td>
<td>1.7</td>
</tr>
<tr>
<td>20</td>
<td>2.0</td>
</tr>
<tr>
<td>25</td>
<td>2.4</td>
</tr>
<tr>
<td>30</td>
<td>2.8</td>
</tr>
<tr>
<td>32</td>
<td>3</td>
</tr>
</tbody>
</table>

Calculating the period of time for which time discounting should occur and similarly confirming the process for calculating and implementation of any offset measures is likely to be an iterative process. The technical paper released by Defra proposes application to pilot projects in England which is voluntary. As outlined above, while this paper is a step toward providing a comprehensive and single system for determining offset requirements a process of consolidation and mainstreaming will all other guidance and practices is required.

Similarly, determining the efficacy of the proposed metric and reaching consensus on categorisation and risk factors is likely to need ongoing review from an implementation
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perpective. Defra has acknowledged this and stated the pilot period should be for 2 years and the end of which an independent evaluation of the pilots will be completed.

A3.12.11 Financing of compensation requirements
The compensatory measures are financed by the authority that approves the plan(s). Developers are responsible for financing any measures in the case of development projects.

A3.12.12 Long-term measures taken to ensure that the compensatory measures last
Through the use of planning conditions or obligations (s.106) which is a legally binding agreement a relevant authority/competent authority can require particular management and monitoring regimes. s106 formalises any agreements for the provision of compensatory measures which may include monitoring programme and any remedial measures identified.

For developments, this may include (and represents good practice) and environmental management plan (which can include an Environment Action Plan) whereby provisions are set out to ensure the long term preservation and management of the site. The preparation of such plans is applicable to designated and non-designated sites; the former, requiring consideration to the specific conservation objectives of individual sites and the network as a whole.

Such management plans should include measurable objectives which set the trigger thresholds for remedial action.

Section 8 outlines industry good practice that seeks to ensure longevity and efficacy for any measures implemented.

A3.12.13 Pilot initiatives and other examples of how offsets are implemented

Voluntary Scheme
UK Government Natural Environment White Paper released in 2011 included a policy initiative that invited local planning authorities to test biodiversity offsetting through a nationally recognised pilot projects. The programme allows individuals/developers through the planning system to enter into a voluntary agreement for habitat banking. Defra has released ‘testing biodiversity offsetting’ this document sets out how the pilot projects will be established, the rationale for the testing phase and the evaluation methodology. Commencement of the pilot projects is anticipated in March 2012 and is to coincide with the release of the NPPF and will run for a period of 2 years.

The pilot projects will be led by local authorities and projects selected through the submission of an Expression of Interest (EOI) and must be from a local authority in England, willing to work with Defra and also willing to participate in an independent evaluation. An assessment of the EOI in a pilot area will be against the following criteria:

■ A group of local authorities
  – Covering a geographically coherent area: for example, a county, catchment or natural area;
  – Who will work together, with partners, to agree a strategy for using biodiversity offsets in their area;
  – Anticipating development during the test period (or with developments already in hand to which offsetting may apply);
  – Who will offer offsetting to all developers in their area who need to provide biodiversity compensation under planning policy requirements;
  – Who will encourage and support these developers in using the coming offsetting approach, including the metric.

In practical terms, local authorities would offer developers the option of delivering any biodiversity compensation required under planning policy through offsetting. Developers
could then opt to use offsetting as a mechanism to address their compensation requirements. It is not mandatory for developers and they can also opt to use existing process to deliver compensation. Figure A3.6 below shows how the process would work if a developer opted to participate in the pilot programme.

**Figure A3.6  Process**

Source: Environment Bank

As can be seen from the above, the planning system is the mechanism for which this scheme is anchored—largely, because development requires approval from the relevant authority. The habitat banking assessment process runs in parallel to the planning assessment but forms an integral element of any application through the preparation of environmental impact assessments, management plans and linking this through planning obligations and conditions (section 106 see 11 above).
The pilot programme will include the preparation of a ‘toolbox’. This toolbox will explain the ‘common approach to assessing biodiversity impacts and appropriate compensation’ see questions 8 and 9 above also. The toolbox will provide information and guidance for:

- Local authorities that have chosen to be part of the pilot and who will offer offsetting as a way of delivering planning policy requirements in their area;
- Developers in pilot areas who choose to sue the offsetting mechanism; and
- Organisations and individuals that may be interested in providing offsets.

Understanding offsetting at a strategic and local scale is noted as important – particularly as it relates to management of the ecological network (see also question 8 and CEF) and as such, the pilot would include four county-sized areas from across England to participate.

At the end of the 2 year pilot period an independent evaluation will be undertaken. Defra has prepared a list of evaluation questions within two main themes: using resources more effectively to delivery greater benefits and streamlining the process. The first theme looks at determining and quantifying biodiversity benefits, working in partnership, the use of offsets (strategies), implementation of offsets and offset providers. The second theme, is as the name suggests oriented toward evaluating process which includes, application of the common approach and metric, planning system, local authority process and developers process and implementation costs.

Statutory Requirements

Monitoring data on implementation of how compensatory measures are applied and implemented is not readily available. However, in 2011 Defra commissioned a study:

*To review the Habitats and Wild Birds Directives, as currently implemented in England, focussing on obligations affecting authorisations for developments, with a view to reducing burdens on business while maintaining the integrity of the purpose of the Directives*

This study was released in March 2012. The report goes some way to assessing implementation of requirements under the Habitats and Wild Birds Directives but is predominately focussed on improving process and developing a simple and clear system. However, the report does quantify the area of protected sites under the Directives, level of development applications that require consideration under the Directives and the role of Natural England, which are detailed as follows:

- In England 6% of land and approximately 23% of English inshore waters and by end of 2012 over 7% of offshore waters will be protected sites;
- Natural England receives approximately 26,500 land use consultations
- Natural England ‘objects’ to less than 0.5% of consultations on Habitat regulations grounds.

The review was informed by stakeholder meetings, third party submission of evidence, high level advisory group and challenge panels comprised of private, public organisations and NGOs.

The main message derived from the report is that current guidance is not clear, that there is a perception of over-precaution by regulators, that guidance was not sufficiently clear on how and when key regulatory decisions should be made and finally, that what represented ‘reasonable’ level of information to inform decisions is not consistent. In response to this, three main initiatives are proposed to assist in the implementation of the Directives. These are:

- Publication of a new customer-focussed overarching guidance and manual
- Stock take of the over 1600 pages of current guidance produced by multiple bodies and make proposals for simplification; and
- Provide customer-focussed and up-to-date information on the Habitats Regulations on one website.
Of particular relevance to this study is the proposed new overarching guidance and in particular the legal terms and decision points under the Habitats Regulations. For Natura 2000 sites some of the legal terms to be covered will include:

- Likely significant effect;
- Reasonable level of scientific certainty;
- Adverse effect on the integrity of a site;
- Cumulative effects;
- Mitigation; and
- Compensation.

The above is not the full list of terms to be considered but are those areas considered most relevant to this study due to their relationship to the need or otherwise for mitigation, compensation and planning process. Producing a guidance document that is in effect a ‘one stop shop’ for information and that is the reference point for all relevant decision makers as well as applicants is a practical and efficient response to the review’s findings. However, for the proposed measures to truly effect change, it is necessary for there to be alignment across the planning system, technical guidance notes produced by Defra (including Natural England) and in turn that the revised policy is mainstreamed/integrated into wider departmental and government practice. The review acknowledges the need for integrated working as well as the current skills gap and proposes establishing an industry-led professional standards programme to ensure consistency within industry practitioners.

The review also confirms that an ecosystems approach will be adopted by the Government and that this offers a long-term opportunity to improve the understanding of economic and environmental impacts and risks. In line with this, three areas will be examined further:

- How an ecosystems approach can help evaluate any specific choices over mitigation or compensation. Looking at where they are needed, while ensuring that additional socio-economic benefits are only considered after ecological impacts are secured;
- The extent to which an ecosystems approach could help to identify suitable Article 10 measures to help deliver Favourable Conservation Status (FCS); and
- The wider role an ecosystem approach can play in helping to make strategic choices about migration/compensation where a number of projects are impacting on the same area.

The last 12 months has seen a significant number of reviews and revised policy produced as it relates to the environment. Central to this also are the reforms to the planning system which provides the main mechanism for impacts to the environment to be considered. The government has announced and consulted on its proposed changes and creation of the NPPF but the official release of this has not yet occurred. The significance of this is not small. In all of the review studies commissioned and subsequent recommendations provided, the planning system is positioned as the principal vehicle for effecting change and enabling environmental considerations to occur. Reform of the planning system cannot be seen in isolation to environmental conservation objectives and processes. As such, while the proposed streamlining and simplification of the application of the Habitats and Wild Bird’s Directives seeks to address conflicting and inconsistent advice and the production of the technical guidance on biodiversity offsetting provides a common system approach for determining impacts and offset requirements what binds these processes together is the planning system.

The NPPF that was consulted on and has been the focus of this case studies analysis as detailed in question 1 is not silent on the environment. Reference to the importance of adhering to the Habitats and Wild Bird’s Directives is made as is the importance of biodiversity. The overarching principle of ‘presumption in favour of sustainable development’ is a policy area that will require much further integration and evaluation of how it is implemented. However, it is how all the documents as referred to in this case study come
Demand, supply and design elements of habitat banking in the EU

together and sit as a package that is key. It is too early to examine how this has or has not occurred and similarly, the evaluation of any updated departmental performance criteria is not yet available. The role of Natural England remains central to ensuring standards for conservation are developed and understood appropriately but the localism agenda and drive to create locally-led planning initiatives, documents and voluntary participation in pilot programmes does raise questions for how strategic level decisions and integration may work. While reference to the establishment of Major Infrastructure Planning Unit and Major Infrastructure and Environment Unit is made the role such groups will have for ensuring nationally important development projects are dealt with efficiently is not yet able to be assessed.

On balance, while the proposal to ensure consistency in use of legal terms, information requirements and concise descriptions of process are for many a welcome step. The practical reality of the scale of change and reform introduced within the planning system will only be able to be assessed once the integration across all reforms take place and they have been in place sufficiently to enable further review and evaluation.

A3.12.14 Evidence of habitat banking at national (or lower) level

In England there is no formal habitat banking system. However, the pilot programme as outlined in section 12 is one example of how habitat banking could be rolled out on a larger scale within the UK. While the programme is, and is likely to remain, voluntary, the Environment Bank is one example of the private sector response to provide an habitat banking. The Environment Bank is a company that has been established to facilitate the delivery of mitigation and compensation schemes associated with planned development. Figure 1.2 in Question 12 highlights the process for determining offset requirements and also the role of the Environment Bank.

A3.12.15 Barriers and lessons learned

Based on the current legislative and policy environment within the UK there appears to be a shift toward compliance and ensuring that development and plan making adheres to necessary provisions of the EU Directives rather than a wider integration of environmental principles and objective. This approach embeds at a policy and practice level only doing what is ‘required’ rather than looking to mainstream and embed principles across all areas of policy and practice. It is currently too early to assess the success of the voluntary pilot scheme for habitat banking in the UK.
A3.13 Bulgaria

Abbreviations:

Compliance Assessment Regulation - Regulation on the Conditions and Procedure of Implementing the Assessment of Compliance of plans, programmes, projects or investment proposals with the subject and aim of conservation of protected territories

Plan - “plan, programme, project or investment proposal” (as provided in Article 31 of the Biodiversity Act)

A3.13.1 Compensatory measures/offsets required at national (or lower) level

In Bulgarian legislation, compensatory measures are only resorted to when the “plan, programme, project or investment proposal” (hereafter “plan”) is an exception to Article 32. Article 32 of the Biodiversity Act\(^\text{202}\) provides that the competent authority shall approve the plan only when the environmental impact assessment concludes that the object of conservation in the protected area would not be harmed/endangered. This is subject to exception and so a development project with significant negative environmental impact can be approved only in cases of overriding public interest and when no alternative solutions could be applied (Article 33). If the protected area includes priority type habitat and/or habitat of protected species, the exception can be triggered only in considerations for human health, public security or positive environmental impact, or if those considerations are not at hand, the exception can be allowed only by positive statement from the European Commission.

In cases where exception is allowed by the competent authorities, Article 34 stipulates that the entity implementing the plan shall implement compensatory measures for ensuring the integrity of the National Ecological Network prior to the realization of the development project.

According to Article 34 (2), “The measures entail the conservation and restoration of the same habitat type or the same plant or animal species:

1. In another place(territory) of the protected area;
2. In extension of the same or extension of another protected area
3. In a new protected area”

Thus, compensatory measures are envisioned in cases where exceptions to Article 32 of the Biodiversity Act are approved.

A3.13.2 Reference to the goal of no net loss

Bulgaria ranks among the top five countries in Europe in terms of biodiversity. According to the National Plan for Biodiversity Protection, “the varied topography, geology, specific microclimatic conditions and millennia of human activity in the country determine the rich diversity of species, communities and natural habitats, many of which have conservation value\(^\text{203}\). Due to this national wealth in biodiversity, policy plans and strategies focus on the protection of species in specific areas such as forest management, sustainable use of fish resources, biological security, and integration of key biodiversity issues with agricultural sector.

Strategic plans, national white papers and other policy documents are an informative source of the present biodiversity protection framework in Bulgaria. The National Plan for Biodiversity Protection 2005 – 2010\(^\text{204}\) sets priorities, targets and objectives for the protection of biodiversity and categorizes measures and approaches to attain the identified objectives.

\(^{202}\) Biodiversity Act (Закон за биологичното разнообразие), published in the Official Journal, issue 77, 9.08.2002


ICF GHK with BIO Intelligence
Vision (long-term strategic objective): “protection, restoration and sustainable management of biodiversity in Bulgaria”

Strategic objective: “cessation of biodiversity loss in Bulgaria by 2010”

An underlining priority is the protection and restoration of species, habitats and ecosystems. To this end the completion of the National Ecological Network as part of Natura 2000 is listed as the most imperative operational priority. The development and improvement of mechanisms, instruments and measures for biodiversity management is also mentioned as a key priority in the national strategic plan. One of the operative measures of this priority is “the development and implementation of preventive measures for biodiversity protection as well as compensatory and stimulating measures”.

The policy paper “National Policy for Avoidance and Minimization of Biodiversity Loss” elaborates on the priorities in the area of biodiversity. According to the policy plan, the underlying priority is the completion of the National Ecological Network as part of the EU-wide network, Natura 2000. The set up of the network is not completed yet in Bulgaria as there are pending issues such as finalizing the choice of protected areas. It is aimed to accelerate the development and issuance of orders identifying and declaring protected areas and to determine the prohibition regimes for different activities in them. Another key priority is the adoption of management plans for protected areas and action plans for the protection of plant and animal species. These plans are an important tool for state and local authorities to support their regulatory functions and implementation of various activities included in the plans.

Management of protected areas

Chapter 2, Section V of the Biodiversity Act provides for the management of protected areas as well as the assessment of environmental impact of development plans and investment projects. Article 27 states that: “management plans shall be developed for the purpose of regulation of protected areas pursuant to Article 3 (1) para 1. The management plans shall include measures for the prevention of deteriorating conditions of habitat types and the endangerment and disturbance of endangered species”. These measures include:

1. prohibition or restriction of activities contrary to the requirements for protection of specific species/territories object of protection;
2. preventive action to avoid predicted adverse events;
3. supporting, guiding and regulating the activities;
4. restoration of natural habitats and habitats of species or populations of plant and animal species;
5. implementation of research, education and monitoring

None of the legislation and policy frameworks reviewed explicitly uses the terms “net loss” or “gain”.

Assessment of development/construction projects

Article 31 (1) of the Biodiversity Act stipulates that “plans, programs, projects and investment proposals that are not directly related and necessary for the management of protected areas and which individually or in combination with other plans, programs, projects or investment proposals could have significant negative effects on protected areas are subjected to assessment of their compatibility with the object and purpose of conservation of the protected zone”.

204 “Challenges and Priorities of National Environmental Policy, 2011” http://212.122.183.24/newsite/?show=16

205 Biodiversity Act (Закон за биологичното разнообразие), published in the Official Journal, issue 77, 9.08.2002
The assessment of development plans should be implemented in accordance with the assessment procedure stipulated in the Environmental Protection Act and the Regulation on the Conditions and Procedure for Assessment of Environmental Impact. In cases where there is a possibility of adverse impact on the protected area, the competent authority publishes a decision to carry out assessment of the degree of impact of the plan, program, project or investment proposal on natural habitats and habitats of species subject to conservation in the protected area. Article 31 (20) stipulates that the assessment should be commissioned to an expert body.

Article 32 of the Biodiversity Act provides that the competent authority shall approve the plan, programme, project or investment proposal only in cases when the assessment concludes that the object of protection will not be endangered. Exception from this provision can be authorized only in cases of overriding public interest and no alternative solution available.

**Decision-making process (whether to implement environmental impact assessment)**

1. **Mandatory assessment** – pursuant to the relevant provisions of the Environmental Protection Act
2. **No assessment** – in cases where the competent authorities decide that there would be no significant environmental impact of the plan/project. At this stage, the relevant authority may impose conditions, measures and requirements for the conservation of the protected area.
3. **Assessment** – in cases where the competent authorities decide that there is a possibility of negative environmental impact of the plan/project, a decision will be issued to implement an environmental assessment. The assessment shall be followed by a decision from the Minister of Environment and Water or the director of the respective regional authority. In the decision, the conditions, requirements ans measures for environmental protection will be stipulated.


Bulgarian legislation has transposed EIA, SEA, Habitats Directive, Water Framework Directive and Environmental Liability Directive with no significant differences identified in the following national legislative instruments:

- The EIA Directive (85/337/EEC as amended by Directive 97/11/EC) and the SEA directive (2001/42/EC) have been implemented through the Environmental Protection Act (Official Journal, issue 91/ 25.09.2002) and the Regulation for the Conditions and Procedure for Assessment of Environmental Impact (Official Journal, issue 3, 2006 г.).
- Habitats Directive has been transposed into the Biodiversity Act (Official Journal, issue 77, 9.08.2002).
- The Environmental Liability Directive has been transposed into the Act the responsibility for preventing and remediying of environmental damage (Official journal, issue 3, publication date 29/04/2008)
A3.13.4 Legislation or policy requirements for compensatory measures/offsets at national (or lower) level

The protection of biodiversity and ecosystems in Bulgarian legislation is regulated by the Biodiversity Act which was published in the Official Journal (issue 77) on 9.08.2002. More specifically, the Biodiversity Act regulates the conservation of plant, animal and fungal species; the set up, aims and functions of the National Ecological Network of protected areas as well as the administrative sanctions and measures of damages and violations related to protected areas and species.

The Regulation on the Conditions and Procedure of Implementing the Assessment of Compliance of plans, programmes, projects or investment proposals with the subject and aim of conservation of protected territories (Наредба за условията и реда за извършване на оценка за съвместимостта на планове, програми, проекти и инвестиционни предложения с предмета и целиите на охраняване на защитените зони) specifies in detail the environmental impact assessment pursuant to Article 31 of the Biodiversity Act. (issue 73, 2007, published in the official Journal on 11 September 2007)

Regulation for the Conditions and Procedure for Assessment of Environmental Impact (Official Journal, issue 3, 2006 г.) sets in detail the procedure for the environmental impact assessment. The Regulation provides that the final assessment report should include in Section IV 7) measures which have to be included in the development project for the avoidance, reduction or compensation of significant negative environmental impact.

A3.13.5 The areas over which the requirements are applied

Article 31 (2) of the Biodiversity Act states the types of protected areas that can be subject to environmental impact assessment. These are:

1. those reviewed and approved by the National Council on Biodiversity, whether deferred for further study and consideration, or are listed in Art. 10, para. 3 for submission to the Council of Ministers for adoption
2. listed in Art. 10, para. 4, published in “Official Gazette”, or
3. declared by an order of art. 12, para. 6.”

The Executive Environmental Agency provides a database with protected territories in Bulgaria. Currently, the completion of the National Ecological Network as part of Natura 2000 is a key priority.

At present, a decision of Council of Ministers identified:
- 118 protected areas for conservation of wild birds, covering 22.6% of the territory of Bulgaria and
- 231 protected areas to conserve habitats covering 30% of the territory of Bulgaria.

In total, there are 336 protected areas as part of Natura 2000, which represents 34.3 percent of the territory of the country.

A3.13.6 The stage of the damage at which compensation is required

Ex-ante measures

Article 34 of the Biodiversity Act stipulates that the entity implementing the development plan, programme, project or investment proposal shall take compensatory measures for

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207 The National Ecological Network consists of protected areas based on the EU-wide network Natura 2000.
208 http://pdbase.government.bg/zpo/bg/index.jsp
ensuring the integrity of the National ecological network before the realization of the plan, project, programme or investment proposal. The measures entail the conservation and restoration of the same habitat type or the same plant or animal species:

- In another place(territory) of the protected area;
- In extension of the same or extension of another protected area
- In a new protected area

**Measures during the project implementation**

Article 31 (7) of the Biodiversity Act provides that in cases where the environmental assessment indicates that there is no possibility of significant negative impact, the competent authorities may decide to impose conditions, requirements and measures at the implementation stage of the project.

A3.13.7  **Consideration of interim losses**

No information identified.

A3.13.8  **Baseline and methodology for determining the level and type of compensation**

No methodology /baseline specified in the legislation

The executor of the plan can propose compensatory measures in his proposal. If the plan is subject to compliance assessment then the expert entity who is carrying out the assessment proposes compensatory measures. The proposed compensatory measures are based on scientific methodology/rationale. The assessment is carried out following the Compliance Assessment Regulation. Then, the competent authority reviews the assessment and makes a decision pursuant to the Compliance Regulation.

*See Question 1 for Article 34 on compensatory measures*

A3.13.9  **Level of compensation required**

See question 8

A3.13.10  **Financing of compensation requirements**

Article 31 (19) of the Biodiversity Act stipulates that the entity executing the development plan/proposal/programme/investment project shall pay a fee for the environmental impact assessment.

Article 34 (1) of the Biodiversity Act provides that the expenses incurred for the implementation of compensatory measures shall be covered by the entity executing the development plan.

A3.13.11  **Long-term measures taken to ensure that the compensatory measures last**

No specific information identified

A3.13.12  **Pilot initiatives and other examples of how offsets are implemented**

Example of a plan incorporating compensatory measures:

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210 The Regulation on the Conditions and Procedure of Implementing the Assessment of Compliance of plans, programmes, projects or investment proposals with the subject and aim of conservation of protected territories (issue 73, 2007, published in the official Journal on 11 September 2007)

1 Наредба за условията и реда за извършване на оценка за съвместимостта на планове, програми, проекти и инвестиционни предложения с предмета и целите на опазване на защитените зони
Construction of an integrated system of treatment facilities for household waste in Sofia municipality – Chapter 5 of the Environmental Assessment Report identified the measures envisaged to prevent, reduce or where possible any significant adverse environmental impacts and plan implementation of these measures. 211 A detailed plan with 97 measures (ex-ante, at the time of the construction, at the time of plant exploitation and at the time of ecultivation) was developed, including planting and landscaping of nearby territories.

A3.13.13 Evidence of habitat banking at national (or lower) level

No specific examples of habitat banking schemes were identified.

A3.13.14 Barriers and lessons learned

The National Plan for Biodiversity Protection 2005 – 2010 which sets priorities, targets and objectives for the protection of biodiversity identifies “the development and implementation of preventive measures for biodiversity protection as well as compensatory and stimulating measures” as a key operational priority.

Bulgaria has implemented effectively or literally the provisions of EU Directives related to environmental protection. There is a delay of the completion in the National Ecological Network as part of Natura 2000. However, a strategy for the completion is identified and is being implemented.212 Article 34 of the Biodiversity Act provides for the situations in which compensatory measures can be required. This is in cases of exceptions to Article 32 of the Biodiversity Act.

There are no barriers in the implementation of measures identified.

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Annex 4  Background information used to inform the demand assessment

The EU has a current total land area of approximately 420 million ha across the 27 Member States. CORINE land cover data provides detailed information for 25 of these Member States, excluding Greece and the UK, covering a total land area of approximately 400 million ha\textsuperscript{213}. Table A4.1 shows how this area was distributed between the different types of land cover in 2006. It shows that more than 90 per cent of EU land was either agricultural land or forest and semi-natural land, accounting for a combined 369 million ha. Artificial surfaces, or previously developed land, have become the third largest land category and represented 4.3 per cent of EU land in 2006. This was followed by water bodies and wetlands, which accounted for 2.8 per cent and 2.2 per cent of EU land respectively.

Table A4.1  EU land cover (2006)

<table>
<thead>
<tr>
<th>Land cover</th>
<th>2006 area (million ha)</th>
<th>2006 share of overall area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Artificial surfaces</td>
<td>17.1</td>
<td>4.3%</td>
</tr>
<tr>
<td>Agricultural areas</td>
<td>182.8</td>
<td>46.2%</td>
</tr>
<tr>
<td>Forest and semi natural areas</td>
<td>176.0</td>
<td>44.5%</td>
</tr>
<tr>
<td>Wetlands</td>
<td>8.8</td>
<td>2.2%</td>
</tr>
<tr>
<td>Water bodies</td>
<td>11.2</td>
<td>2.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>395.8</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: CORINE land cover data for 2006, from the European Environment Agency Land Accounts

There are some significant differences between Member States not only in terms of their overall size, ranging from Malta at 28,000 ha to France at 55 million ha, but also in terms of coverage of the different types of land cover. For example, in 2006 artificial surfaces accounted for a minimum of 1.3 per cent of the total land area in Latvia and 1.4 per cent in Sweden and Finland, up to a maximum of almost 30 per cent in Malta, more than 20 per cent in Belgium and almost 13 per cent in the Netherlands.

The combined total of agricultural and forest and semi-natural areas exceeds 70 per cent of the total land area in each of the 25 Member States for which CORINE data exists. However, there are large differences between individual countries, with the proportions of agricultural land ranging from less than 9 per cent of the total land area of Sweden and Finland to 75 per cent of land in Denmark. The areas of forest and semi-natural land have a similar variance, ranging from 10 per cent of all land in the Netherlands to 75 per cent in Sweden.

Areas of wetlands and water bodies also vary between Member States. These areas are very small in the majority of countries and in three-quarters of Member States wetlands and water bodies each represent less than 2 per cent of the total land area, and can even be non-existent in some countries, such as wetlands in Luxembourg and water bodies in Malta. However, wetlands and water bodies can also represent a significant proportion of total land area in other countries. For example, water bodies accounted for more than 9 per cent of land in Finland in 2006, with wetlands accounting for more than 16 per cent of Ireland.

\textsuperscript{213} CORINE land cover data for 2006, accessed from the European Environment Agency Land Accounts
A4.1.2 Changes in land cover

Similar CORINE data also exists for 1990 and 2000, although the 1990 data is only available for EU-25 countries, excluding Bulgaria and Romania. However, it is possible to use the data to look at trends and growth rates over time, as shown in Table A4.2 below. The data show fairly consistent growth and declines in the various land cover categories between the two periods from 1990 to 2000, and from 2000-2006.

### Table A4.2 Trends in EU land cover

<table>
<thead>
<tr>
<th>Land cover</th>
<th>Average absolute growth per annum (Ha)</th>
<th>Average % growth per annum (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial surfaces</td>
<td>87,120</td>
<td>86,244</td>
</tr>
<tr>
<td>Agricultural areas</td>
<td>-87,380</td>
<td>-77,990</td>
</tr>
<tr>
<td>Forest and semi natural areas</td>
<td>1,560</td>
<td>-10,690</td>
</tr>
<tr>
<td>Wetlands</td>
<td>-10,300</td>
<td>-6,834</td>
</tr>
<tr>
<td>Water bodies</td>
<td>9,000</td>
<td>9,270</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: CORINE land cover data for 1990, 2000 and 2006*

The growth in artificial surfaces is particularly consistent growing at an average of 86-87,000 ha per annum, which equates to growth of just over 0.5 per cent per annum. The data suggests that the majority of this newly developed land is likely to be land that was previously used for agriculture, with agricultural land declining by approximately 87,000 ha per annum in the ten years to 2000 and by 78,000 ha per annum between 2000 and 2006. In both cases this represents a 0.04 per cent per annum decline in the stock of EU agricultural land.

There are also consistencies between trends in terms of the total area of wetlands and water bodies. The area of land covered by water bodies has increased by around 9,000 ha per annum over the whole period from 1990 to 2006, representing growth of between 0.1 and 0.2 per cent per annum. An analysis of the different types of water bodies suggests that the vast majority of this growth was due to increasing areas of inland water bodies, which includes natural or artificial stretches of water.

The area covered by wetlands has declined over time by an average of between 7,000 and 10,000 hectares per annum, and by between -0.1 and -0.2 per cent per annum. Forests and semi-natural areas is the final land category which experienced slight growth in land coverage of approximately 1,600 ha per annum from 1990 to 2000, before falling by almost 11,000 ha per annum between 2000 and 2006. Given the vast scale of forest and semi-natural areas, these changes are extremely small in percentage terms with growth of 0.001 per cent per annum between 1990 and 2000 and a decline of -0.006 per cent per annum from 2000 to 2006.

An analysis of the changes across individual Member States is presented in Table A4.3. The first major point is the considerable development that has taken place in Spain between 2000 and 2006 at a rate of almost 23,000 ha per annum. This represents more than 25 per cent of development of artificial surfaces across the EU as a whole during that period. Much of this development is likely to have taken place on land that was previously classed as forest and semi-natural areas, since Spain has experienced by far the largest decline of forest and semi-natural land of more than 18,000 ha per annum. This is more than three times larger than the next largest rate of decline of forest and semi-natural land, in Finland, although in percentage terms the losses of forest and semi-natural land are greatest in Cyprus. However, these reductions have been offset to a certain extent by some significant growth in forests and semi-natural areas in Ireland, Hungary and Poland.
The next largest rates of development have taken place in France (almost 14,000 ha per annum), Italy and Germany (both approximately 8,000 ha per annum) and the Netherlands (6,000 ha per annum). Although the fastest rates of growth of artificial surfaces, after Spain, are Cyprus, Ireland and Portugal.

Table A4.3  Trends in EU land cover by Member State, 2000-06

<table>
<thead>
<tr>
<th>Land cover</th>
<th>Average absolute growth per annum (ha)</th>
<th>Average % growth per annum (% pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Artificial surfaces</td>
<td>1 (MT)</td>
<td>22,880 (ES)</td>
</tr>
<tr>
<td>Agricultural areas</td>
<td>-13,043 (FR)</td>
<td>7,313 (FI)</td>
</tr>
<tr>
<td>Forest and semi natural areas</td>
<td>-18,095 (ES)</td>
<td>8,223 (IE)</td>
</tr>
<tr>
<td>Wetlands</td>
<td>-5,022 (IE)</td>
<td>564 (DE)</td>
</tr>
<tr>
<td>Water bodies</td>
<td>-103 (LT)</td>
<td>2,952 (PT)</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: CORINE land cover data for 1990, 2000 and 2006

Agricultural land has declined in all Member States between 2000 and 2006 except Finland, with the most significant losses in France (13,000 ha per annum), Hungary (10,000 ha per annum) and Germany (9,000 ha per annum). The most significant losses, in terms of the percentage of all agricultural land in each Member State, took place in the Netherlands, followed by Portugal, Cyprus and Hungary.

Changes in the area of wetlands were considerably lower, with many Member States experiencing small growth as well as declines. It is only the more significant losses experienced in Ireland and Finland that have driven the overall decline at EU level. It is a similar story for water bodies, where the majority of Member States have experienced minimal increases or declines, and it is only the stronger increases in Portugal (3,000 ha per annum), Germany (2,300 ha per annum), Spain (1,000 ha per annum) and Poland (750 ha per annum) that have driven the overall increase for the EU as a whole.

Disaggregated land cover data

The CORINE data also provides land cover data at a more disaggregated level, which enables the creation of different land categories. For the purposes of this study it is useful to be able to disaggregate some of the semi-natural areas to identify the extent of particular priority habitats. The categories presented in Figure A4.5 have disaggregated the broad ‘forest and semi-natural areas’ group into forests and transitional woodland shrub, alongside natural grasslands, moors and heathland, and sclerophyllous vegetation, which are now included as separate categories. Forests and transitional woodland shrub is by far the largest of these disaggregated groups accounting for almost 38 per cent of all land in the EU, varying from almost no land in Malta to more than 72 per cent of all land in Finland.

Natural grasslands (2 per cent), sclerophyllous vegetation (1.8 per cent) and moors and heathland (1.4 per cent) all have relatively similar land masses. The CORINE data suggests that these habitats are only prevalent in a small number of Member States and most others do not register much, if any, of these habitats. Natural grasslands are most common in Austria, Spain and Italy, while moors and heathlands are concentrated in Sweden, Portugal and Austria. Sclerophyllous vegetation is perhaps the most concentrated habitat with Spain accounting for almost 75 per cent of all sclerophyllous vegetation in the EU.

The majority of the ‘open spaces with little or no vegetation’ category (i.e. bare rocks, sparsely vegetated areas, burnt areas and glaciers and perpetual snow) has been renamed as ‘other undeveloped land’, while ‘beaches, dunes and sand plains’ have been added to the maritime wetlands to create a ‘coastal habitats’ category. The ‘other developed land’ category accounts for 1.3 per cent of all EU land and is most prevalent in Austria, accounting for 7 per cent of all land, but is also non-existent in other countries such as Belgium.
Luxembourg and the Netherlands. Coastal habitats account for just 0.4 per cent of all EU land and are most common in France, Germany and the Netherlands.
### Table A4.4  EU land cover by selected categories (2006)

<table>
<thead>
<tr>
<th>Land category</th>
<th>Main land types</th>
<th>2006 area (million ha)</th>
<th>2006 share of overall area</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial surfaces</td>
<td>Continuous/discontinuous urban fabric, industrial or commercial units, road and rail networks and associated land, port areas, airports, mineral extraction sites, dump sites, construction sites, green urban sites, sport and leisure facilities</td>
<td>17.1</td>
<td>4.3%</td>
<td>1.3% (LV)</td>
<td>29.4% (MT)</td>
</tr>
<tr>
<td>Agricultural areas</td>
<td>Non-irrigated arable land, permanently irrigated land, rice fields, vineyards, fruit trees and berry plantations, olive groves, pastures, annual crops associated with permanent crops, complex cultivation patterns, agriculture mosaics with significant natural vegetation, agro-forestry areas</td>
<td>182.8</td>
<td>46.2%</td>
<td>8.8% (FI)</td>
<td>74.9% (DK)</td>
</tr>
<tr>
<td>Natural grasslands</td>
<td>Natural grasslands</td>
<td>7.8</td>
<td>2.0%</td>
<td>0% (MT &amp; LU)</td>
<td>7.1% (AT)</td>
</tr>
<tr>
<td>Moors and heathland</td>
<td>Moors and heathland</td>
<td>5.5</td>
<td>1.4%</td>
<td>0% (CY, HU, LU, LV, MT)</td>
<td>6.1% (SE)</td>
</tr>
<tr>
<td>Sclerophyllous vegetation</td>
<td>Sclerophyllous vegetation</td>
<td>7.2</td>
<td>1.8%</td>
<td>0% (AT, BE, BG, CZ, DE, DK, EE, FI, HU, IE, LT, LU, LV, NL, PL, RO, SK)</td>
<td>17.0% (CY)</td>
</tr>
<tr>
<td>Forests and transitional woodland shrub</td>
<td>Broad-leaved forest, coniferous forest, mixed forest, transitional woodland-shrub</td>
<td>150.1</td>
<td>37.9%</td>
<td>0.6% (MT)</td>
<td>72.3% (FI)</td>
</tr>
<tr>
<td>Coastal habitats</td>
<td>Salt marshes, salines, intertidal flats, beaches, dunes and sand plains</td>
<td>1.4</td>
<td>0.4%</td>
<td>0% (AT, CZ, HU, LU, SK)</td>
<td>6.3% (NL)</td>
</tr>
<tr>
<td>Wetlands</td>
<td>Inland marshes, peatbogs</td>
<td>7.6</td>
<td>1.9%</td>
<td>0% (LU, MT)</td>
<td>15.6% (IE)</td>
</tr>
<tr>
<td>Other undeveloped land</td>
<td>Bare rocks, sparsely vegetated areas, burnt areas, glaciers and perpetual snow</td>
<td>5.2</td>
<td>1.3%</td>
<td>0% (BE, LU, NL)</td>
<td>7.0% (AT)</td>
</tr>
<tr>
<td>Water bodies</td>
<td>Water courses, water bodies, coastal lagoons, estuaries, sea and ocean</td>
<td>11.2</td>
<td>2.8%</td>
<td>0% (MT)</td>
<td>9.3% (FI)</td>
</tr>
</tbody>
</table>

**Total** 395.8 100%

*Source: CORINE land cover data for 2006, from the European Environment Agency Land Accounts*
Inland marshes and peat bogs comprise a smaller, inland ‘wetlands’ category, representing almost 2 per cent of total EU land, accounting for large quantities of land in Sweden and Finland, and a particularly strong concentration in Ireland, accounting for almost 16 per cent of all land in Ireland. The other categories (artificial surfaces, agricultural areas and water bodies) all remain unchanged from before.

Figure A4.1 shows average annual changes for each of the selected land categories. The disaggregation of the forests and semi-natural areas provides some interesting results. It shows the total area of EU forests and transitional woodland shrub to have grown by more than 18,000 ha per annum between 2000 and 2006, while the total areas of natural grasslands, moors and heathlands and sclerophyllous vegetation have declined by approximately 7,000 ha, 2,000 ha and 12,000 ha per annum respectively during the same period.

There has been very little change in the overall size of coastal habitats, but inland wetlands declined by approximately 7,500 ha per annum between 2000 and 2006. Other undeveloped land has also declined at a similar rate of around 8,000 ha per annum. The other categories are unchanged from before with artificial surfaces experiencing the largest overall growth in size and agricultural land experiencing the largest decline.

This evidence suggests that under a ‘no net loss’ scheme, the overall demand for biodiversity offsets is likely to be greatest for sclerophyllous vegetation, followed by the inland wetlands of marshes and peat bogs and natural grasslands. There is also likely to be demand for offsets for moors and heathland, albeit on a smaller scale, while demand for offsets for coastal habitats is likely to be minimal. The data suggest there was growth in forests and transitional woodland shrub between 2000 and 2006 at the total EU level, however, these figures conceal significant differences between Member States, some of which have lost significant areas of woodland over this period, such that the demand for offsets for woodland is likely to vary significantly by Member State.

It is also interesting to look at the average annual changes in relation to the size of the specific habitat or category of land. This shows the significance of the growth in artificial surfaces, whereby the total area of land covered by artificial surfaces grew by more than 0.5 per cent per annum between 2000 and 2006. The next largest rate of growth related to water bodies, at just under 0.1 per cent per annum, which is possibly due to growth in the overall size of EU reservoirs used for hydropower production, water supply and flood...
protection. The increase in the size of coastal habitats and forests and transitional woodland shrub is minimal as a percentage of the overall stock of these habitats.

In terms of the declining land categories, the losses to sclerophyllous vegetation were the most significant, declining by 0.17 per cent per annum between 2000 and 2006. This was similar to the declines of other undeveloped land, and was followed by declining rates of wetlands and natural grasslands, both of which are estimated to have declined by approximately 0.1 per cent per annum during this period. Finally the rate of loss of moors and heathland is lower and more in line with the percentage loss of agricultural land between 2000 and 2006.

Figure A4.2  Average percentage change in EU land cover, 2000-06

As mentioned above, there are some significant differences between the different Member States in terms of both the scale and composition of land use change between 2000 and 2006. This can be seen in Table A4.3, which shows that increases in artificial areas are common to most Member States, although the scale of development between 2000 and 2006 was largest in the Netherlands, Italy, Germany, France, and particularly Spain.

There is also some significant growth in forests and transitional woodland shrub in Ireland, Hungary, Portugal and Poland, which has more than offset the losses in Finland, Sweden and France in particular. The other category to have experienced growth in some Member States is water bodies, which have grown moderately in Portugal, Germany and Spain.

The land category that experienced the largest decline between 2000 and 2006 was agricultural land, which contracted in all Member States, except Finland where there was significant growth. However, the largest declines were experienced in France, Hungary and Germany, where the stock of agricultural land fell by a combined total of more than 32,000 ha per annum.

The declining trends experienced by most of the priority habitats were more focused on smaller groups of Member States. For example, the significant declines in sclerophyllous vegetation were very much focused on three Member States (Spain, Portugal and France), which accounted for 96 per cent of all losses in the EU between 2000 and 2006. Similarly the losses of natural grassland were very much focused on Spain and, to a lesser extent, Portugal and Italy, which account for 92 per cent of all EU losses over this period. It is the same case for moors and heathland, as the losses were focused on Portugal, which
accounted for 74 per cent of total EU losses during this period, with the inclusion of France and Ireland, increasing the combined losses to 93 per cent of the EU total.

The losses of inland wetlands were even more concentrated with Ireland and Finland accounting for a decline of more than 7,600 ha of inland wetlands per annum. This is larger than the EU total which was offset by some modest generation of new wetlands in other Member States, such as the Netherlands and Germany. Finally, the losses of other undeveloped land (i.e. bare rocks, sparsely vegetated areas, burnt areas, glaciers and perpetual snow) were experienced by Germany, Cyprus and Spain in particular. This was particularly significant in Cyprus where the local stock of other undeveloped land fell by more than 9 per cent per annum between 2000 and 2006.

**Figure A4.3 Land use change by Member State and land category, 2000-06**

![Land use change by Member State and land category, 2000-06](image)

**Development trends**

It is also possible to use CORINE data to assess the type of land used for new developments (i.e. the creation of new artificial surfaces) between 2000 and 2006 and the previous classification of this land in 2000. The data in Table A4.5 show that approximately 680,000 ha of land were developed to create new artificial surfaces between 2000 and 2006 at an average of 113,600 ha per annum. This represents the gross change in artificial surfaces over the period, and comprises the development of 86,200 ha of previously undeveloped land and 18,200 of brownfield land, but also includes a transfer of 9,200 ha of artificial surfaces back to other uses (particularly the transfer of mineral extraction sites, dump sites and construction sites into forests, semi-natural areas, and water bodies).

Table A4.5 also shows that most of the 113,600 ha of new artificial surfaces (75,400 ha per annum) was previously used as agricultural land, followed by brownfield land (18,200 ha per annum). Forests and transitional woodland shrub accounted for 12,400 ha of the land used for development per annum over this period, followed by the following habitats:
- Sclerophyllous vegetation (3,000 ha per annum);
- natural grasslands (2,500 ha per annum);
- other undeveloped land (850 ha per annum); and
- moors and heathland (700 ha per annum).

The remaining habitats (wetlands, coastal habitats and water bodies) are each estimated to have lost between 160 and 180 ha per annum to developments.

### Table A4.5 EU land developed between 2000 and 2006

<table>
<thead>
<tr>
<th>Land cover</th>
<th>Land developed between 2000-06 (ha)</th>
<th>% of all land developed (2000-06)</th>
<th>Average land developed (ha per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial surfaces</td>
<td>108,917</td>
<td>16.0%</td>
<td>18,153</td>
</tr>
<tr>
<td>Agricultural land</td>
<td>452,579</td>
<td>66.4%</td>
<td>75,430</td>
</tr>
<tr>
<td>Natural grassland</td>
<td>15,234</td>
<td>2.2%</td>
<td>2,539</td>
</tr>
<tr>
<td>Moors and heathland</td>
<td>4,115</td>
<td>0.6%</td>
<td>686</td>
</tr>
<tr>
<td>Sclerophyllous vegetation</td>
<td>17,749</td>
<td>2.6%</td>
<td>2,958</td>
</tr>
<tr>
<td>Forests and transitional woodland shrub</td>
<td>74,563</td>
<td>10.9%</td>
<td>12,427</td>
</tr>
<tr>
<td>Coastal habitats</td>
<td>952</td>
<td>0.1%</td>
<td>159</td>
</tr>
<tr>
<td>Wetlands</td>
<td>1,090</td>
<td>0.2%</td>
<td>182</td>
</tr>
<tr>
<td>Other undeveloped land</td>
<td>5,106</td>
<td>0.7%</td>
<td>851</td>
</tr>
<tr>
<td>Water bodies</td>
<td>1,031</td>
<td>0.2%</td>
<td>172</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>681,336</strong></td>
<td><strong>100%</strong></td>
<td><strong>113,556</strong></td>
</tr>
</tbody>
</table>

**Source:** CORINE ‘land cover flows’ data for 2006, from the European Environment Agency Land Accounts

The different types of development are shown in Figure A4.4 below. It shows that discontinuous urban fabric, construction sites and industrial and commercial sites were the largest types of development in terms of land used, each accounting for more than 20,000 ha of land per annum between 2000 and 2006. The other major types of development included mineral extraction sites, road and rail networks and sport and leisure facilities (each having developed between 7,500 and 13,000 ha of land per annum). These are followed by airports, continuous urban fabric and dump sites (each having developed between 1,000 and 1,500 ha of land per annum) and green urban areas and ports, both of which have smaller demands for development land of between 300 and 600 ha per annum.
It is also interesting to look at the different types of land developed by each use, as presented in Figure A4.5. This shows the high proportion of agricultural land used for most types of development in the EU between 2000 and 2006, but also identifies the types of development that pose the largest threats for priority habitats in the EU. For example, although the scale of port development was relatively small at just 320 ha per annum, 16 per cent of this land was previously moors and heathland, while a significant proportion of the land was also developed from water bodies, natural grassland, sclerophyllous vegetation and coastal habitats.

Many of the developments also resulted in large losses of forest and woodland shrub, which accounted for around 30 per cent of all land used to develop mineral extraction and dump sites and around 15-20 per cent of transport networks and sport and leisure facilities.

It is also possible to explore development trends across the Member States. Figure A4.6 shows that the scale of development was being driven by the EU15 Member States of Portugal, the Netherlands, Italy, Germany, France and particularly Spain between 2000 and 2006. Development in Spain accounted for around 25 per cent of all EU development between 2000 and 2006, which not only involved large areas of agricultural and brownfield land but also accounted for most of the natural grassland, sclerophyllous vegetation and other undeveloped land lost to development across the EU as a whole. The data also suggest relatively large losses of:
Demand, supply and design elements of habitat banking in the EU

- Agricultural land in Spain, Germany and the Netherlands;
- natural grasslands in Austria;
- moors and heathland in France, Portugal and Belgium;
- sclerophyllous vegetation in Cyprus;
- forests and woodland shrub in Portugal, Sweden, Spain, Finland, France and Germany;
- coastal habitats in Spain, Germany, France, and Denmark;
- wetlands in Estonia, Ireland, Hungary, Sweden and Finland;
- other undeveloped land in Spain and Portugal; and
- water bodies in Germany, the Netherlands, Spain and Finland.

Figure A4.6  Land developed per annum by Member State, 2000-06

Similar data are presented in Figure A4.7 showing the different types of development undertaken in each Member State between 2000 and 2006. This highlights the significant scale of construction sites in Spain, accounting for 42 per cent of all developments over this period. Only Slovakia and Slovenia had a higher proportion of construction sites over the same period, although construction sites were the largest type of development across most of the new Member States.
Across the rest of the EU-15, most developments involved the creation of additional ‘discontinuous urban fabric’ and ‘industrial or commercial’ developments. Some other more specific trends are described below:

- The scale of road and rail developments in Spain was around two times larger than any other Member State, while road and rail developments accounted for 26 per cent of all developments in Luxembourg (the highest of all Member States);
- Construction of ports was concentrated in Belgium and the Netherlands, with some smaller developments taking place in Germany, France, Spain and Italy;
- Construction of airports was concentrated in Spain and Germany, although airports accounted for a relatively large proportion of developments in Finland and Luxembourg;
- Mineral extraction sites were concentrated in Germany, Spain and France, and accounted for almost half of all developments in Bulgaria;
- Development of green urban areas was highest in the Netherlands, followed by Spain and Germany; and
- Development of sports and leisure facilities was particularly high in Austria, accounting for 42 per cent of all Austrian developments between 2000 and 2006.

Figure A4.7  Type of development by Member State, 2000-06
### Analysis of European Commission Opinions relevant to Article 6(4) of the Habitats Directive

<table>
<thead>
<tr>
<th>Date of Opinion</th>
<th>Member State</th>
<th>Summary of Development</th>
<th>No. and total area of sites affected</th>
<th>Type(s) of habitat affected</th>
<th>Total area affected</th>
<th>Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.12.2011</td>
<td>Germany</td>
<td>Deepening and widening of the ship fairway (river Elbe) to the port of Hamburg</td>
<td>4 sites covering a combined area of 491 ha</td>
<td>Estuaries habitat (and priority plant species <em>Oenanthe conioide</em>)</td>
<td>“Virtual loss” of 321 ha (and 59 ha of habitats of priority plant species <em>Oenanthe conioide</em>)</td>
<td>The required compensation is for the creation of equivalent habitats on a total area that will be larger or more ecologically valuable than the affected area. The proposed measures are at least 3 times the potentially affected area/number of species.</td>
</tr>
<tr>
<td>14.9.2011</td>
<td>Germany</td>
<td>Construction of a replacement motorway bridge, extension of the motorway A643 from 4 to 6 lanes and enlargement of a motorway junction</td>
<td>1 site covering an area of 72 ha (an isle of the river Rhine)</td>
<td>Primarily the priority habitat, Alluvial forests, although the site also contains Riparian mixed forests and water courses</td>
<td>0.2 ha affected by construction and changes to the local micro-climate due to light and rain interception by the bridge</td>
<td>The required compensation is for the creation (before damages occur) of equivalent habitats three times larger than the affected area. Planned measures included enlarging another local Natura 2000 site by 10.5 ha, to include the recreation of 4.4 ha of alluvial forest and riparian mixed forests.</td>
</tr>
<tr>
<td>25.1.2011</td>
<td>Hungary</td>
<td>Expansion of the existing economic area of Győr town to develop a car manufacturing complex and associated infrastructure (road and rail connections)</td>
<td>1 site, consisting of 4 parts covering an area of 2,823 ha</td>
<td>Priority habitats of Pannonian sand steppes, Euro-Siberian steppic woods and Pannonian inland sand dune thicket (as well as species of community interest)</td>
<td>The project overlaps with 279 ha of the site and is expected to include losses of 156 ha of priority habitats</td>
<td>Compensatory measures will be implemented on the same Natura 2000 site and on other sites. In total, the planned measures are expected to add 836 ha to the Natura 2000 network, comprising 357 ha of priority habitats, while a further 302 ha will be established or restored within the same site and other Natura 2000 sites.</td>
</tr>
<tr>
<td>3.12.2010</td>
<td>Germany</td>
<td>Construction of an extension to the motorway A49, including a bridge over the river “Joßklein”</td>
<td>1 site, covering an area of 2,688 ha</td>
<td>Priority habitat of Alluvial forests and non-priority beech forest habitat</td>
<td>1 ha of beech forest and ‘priority’ alluvial forests to be lost while an additional 5.5 ha of alluvial forest will be affected by increased nitrogen deposits</td>
<td>Planned measures included the creation of 12.8 ha of equivalent habitats in the same site and another local Natura 2000 site (enlarging the other site by 1.1 ha in the process to link the two sites).</td>
</tr>
<tr>
<td>11.6.2010</td>
<td>Germany</td>
<td>Construction of a new section of the motorway A20, including a 250m bridge</td>
<td>1 site, covering an area of 1,280 ha</td>
<td>Priority habitats (some of which are rare in North Germany) of Petrifying springs, Alluvial forests and Tilio-Acerion forests</td>
<td>The road and bridge will avoid priority habitats although these will be affected by additional air pollution and nitrogen</td>
<td>The required compensation was for the creation (before damages occur) of equivalent habitats on a total area three times larger than the affected area (area not provided).</td>
</tr>
</tbody>
</table>
### Date of Opinion | Member State | Summary of Development | Losses to Natura 2000 sites | Compensation
---|---|---|---|---
5.5.2009 | Germany | Extension of the Lübeck-Blankensee airport and associated infrastructure | 1 site, covering an area of 345 ha, surrounds the airport and another Natura site (a SPA under the Birds Directive) | The area comprises small patches of priority habitats (species-rich Nardus grasslands and bog forests) and non-priority habitats such as ponds, dry heath lands, wet grasslands and fens and oak forests |
5.5.2009 | Germany | Extension of the Lübeck-Blankensee airport and associated infrastructure | 1 site, covering an area of 345 ha, surrounds the airport and another Natura site (a SPA under the Birds Directive) | The area comprises small patches of priority habitats (species-rich Nardus grasslands and bog forests) and non-priority habitats such as ponds, dry heath lands, wet grasslands and fens and oak forests |
2006 | Spain (Tenerife) | Construction of the new port of Granadilla including a 2.6 km breakwater, 64 ha of port and logistics facilities and natural gas plant on an additional 15 ha | 2 sites, covering a combined area of 2,857 ha | “Sandbanks which are slightly covered by seawater all the time” and priority habitat “Grey Dunes” (as well as some priority species) |
6.6.2005 | Germany | Expansion of the Karlsruhe/Baden-Baden airport and associated infrastructure | 1 site of 225 ha but also 5 other adjacent and nearby sites of more than 3,000 ha | Open grassland, dry heaths, low land hay meadows and priority habitat “Nardus grassland” |
14.5.2004 | Spain | Construction of the La Brena II dam | 1 site of 60,032 ha | Specific habitats not mentioned but will affect |

**Compensation**

| | |
|---|---
<p>| DAMAGE CAUSED TO HABITATS WILL BE COMPENSATED BY THE CREATION OF EQUIVALENT HABITATS ON A TOTAL AREA THAT WILL BE 2 TO 3 TIMES LARGER THAN THE AFFECTED AREAS. PLANNED MEASURES INCLUDE RESTORING 4HA OF TRANSITION BOG ON THE SAME SITE, CONVERTING 4HA OF CONIFEROUS FOREST INTO OLD-OAK FOREST HABITATS ON A NEARBY SITE, AND SELECTIVE TREE-CUTTING AND ABANDONMENT OF FORESTRY MANAGEMENT APPLIED TO A FURTHER 10 HA OF LAND IN NATURA 2000 SITES. |
| PROPOSED MEASURES INCLUDED: TWO NEW NATURA 2000 SITES (TOTTALING ALMOST 7,500 HA) HOSTING “SANDBANKS WHICH ARE SLIGHTLY COVERED BY SEA WATER ALL THE TIME” ON TENERIFE AND GRAN CANARIA; RESTORATION PROJECT ON ONE OF THE TWO NATURA 2000 SITES TO RE-ESTABLISH A SIGNIFICANT AREA OF THE PRIORITY HABITAT “GREY DUNES”. |
| PROPOSED MEASURES INCLUDED: CREATION OF APPROXIMATELY 45 HA OF OPEN GRASSLAND; CREATION OF 2 HA OF DRY HEATHS; CREATION OF 10 HA AND RESTORATION OF 10 HA (THE LAND USED TEMPORARILY) OF LOW LAND HAY MEADOWS; AND CREATION OF 3.5 HA (AND OPTIONAL ADDITIONAL AREA OF 2.3 HA) AND RESTORATION OF THE 2.9 HA (THE LAND USED TEMPORARILY) OF PRIORIT HABITAT “NARDUS GRASSLAND”. |
| COMPENSATORY MEASURES WERE EXPECTED TO COST APPROXIMATELY €28.3 MILLION AND INCLUDED |</p>
<table>
<thead>
<tr>
<th>Date of Opinion</th>
<th>Member State</th>
<th>Summary of Development</th>
<th>Losses to Natura 2000 sites</th>
<th>Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.9.2004</td>
<td>France</td>
<td>Construction of a new high-speed train line to connect the cities of eastern France with Paris</td>
<td>1 site of 737 ha Priority habitat “Inland salt meadows”</td>
<td>Compensatory measures included: preserving 31 ha of remaining salt meadows near the train line through a management agreement; restoration and re-establishment of salt meadows (an 8 ha trial was already underway); and preservation of 3.5 ha of salt meadows within the same Natura 2000 site.</td>
</tr>
<tr>
<td>24.4.2003</td>
<td>Sweden</td>
<td>A new railway line, the “Bothnia Link”</td>
<td>2 sites, covering a combined area of 5,274 ha Priority habitat (“Natural forests of primary succession stages of land upheaval coast”) and non-priority habitats (estuaries, molinia meadows, mires and bogs)</td>
<td>The opinion included a condition that a comprehensive and realistic compensation package must be submitted for the Commission’s approval before the execution of the project.</td>
</tr>
<tr>
<td>24.4.2003</td>
<td>Germany</td>
<td>Extension of underground coal mining activities into new areas</td>
<td>2 sites, covering a combined area of 852 ha Priority habitats (“Bog woodland” and “Alluvial forests”) and non-priority habitats (wet heaths, mires and bogs, beech and oak forests, and water courses)</td>
<td>Proposed measures include: the creation of 30-45 ha of new alluvial forests along 10.6km of riverside; and the creation of 125-150 ha of beech and oak forests. The long term the affected areas are also expected to evolve towards new habitats with high nature value, such as bog woodland, oligotrophic to mesotrophic standing waters and hydrophilous tall herb fringe communities.</td>
</tr>
<tr>
<td>24.4.2003</td>
<td>The Netherlands</td>
<td>Extension of the port of Rotterdam to include 2,500 ha of land reclaimed from the sea and 750 ha of on shore development</td>
<td>4 sites, covering a combined area of 92,600 ha Priority habitat (“Grey Dunes”) and non-priority habitats (“White Dunes” and “Sandbanks which are slightly covered by seawater all the time”)</td>
<td>Proposed measures included: creating a new dune area of 100 ha off the Dutch coast, comprising a sizable area of “Grey Dunes”; restoration of 31,250 ha of a marine reserve within an existing Natura 2000 site to compensate the loss of “Sandbanks” and including 10 ha of Humid dune slack; and</td>
</tr>
<tr>
<td>Date of Opinion</td>
<td>Member State</td>
<td>Summary of Development</td>
<td>Losses to Natura 2000 sites</td>
<td>Compensation</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No. and total area of sites affected</td>
<td>Type(s) of habitat affected</td>
</tr>
<tr>
<td>24.4.2003</td>
<td>Germany</td>
<td>Creation of a new industrial and commercial area of 140 ha near Siegen / Freudenberg</td>
<td>1 site of 85 ha</td>
<td>All habitats and species on the site would suffer an irreversible and negative impact including European dry heaths, low land hay meadows and the priority habitat, “Nardus grasslands” (and several bird species)</td>
</tr>
<tr>
<td>19.4.2000</td>
<td>Germany</td>
<td>Extension of the Daimler Chrysler Aerospace Airbus site in Hamburg-Finkenwerder for the construction of the Airbus A3XX</td>
<td>1 site of 795 ha</td>
<td>3 habitats protected by the Habitats Directive including 1 priority habitat (as well as bird, fish and priority plant species)</td>
</tr>
<tr>
<td>18.12.1995</td>
<td>Germany</td>
<td>Construction of the A20 motorway linking Lubeck, Stralsund and Stettin (revised route following previous Commission opinion dated 27.4.1995)</td>
<td>1 sites of 11,000 ha</td>
<td>2 priority habitats of bog woodland and alluvial forests, although these are at least 300m from the proposed development and will not be directly affected</td>
</tr>
</tbody>
</table>
Demand, supply and design elements of habitat banking in the EU