

Setting priorities for the restoration of ecosystems

1. Introduction

The EU Biodiversity Strategy to 2020¹ contains 6 operational targets. Target 2 of the strategy reads as follows:

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Action 6a, which is one of the actions linked to Target 2, foresees that

By 2014, Member States, with the assistance of the Commission, will develop a strategic framework to set priorities for ecosystem restoration at sub-national, national and EU level.

In the present document the Commission offers guidance to the Member States in relation to the development and application of the strategic framework referred to in Action 6a. The Commission will continue to provide assistance to the Member States in the form of workshops and technical support during 2014 and beyond.

The Commission, supported by a contractor, has been working with the Member States and stakeholders regarding the development of the strategic framework referred to in Action 6a. During the period October 2012 to end 2013 there have been 4 meetings of a dedicated working group. In addition, a workshop was held on 29/30 May 2013 in Brussels. The final report from the contractor includes a model for ecosystem restoration, guidance regarding the steps to be taken for priority setting at national and sub-national level and information concerning support mechanisms and innovative financial mechanisms².

The present document takes account of the activities described above.

2. A common understanding of important terms and concepts.

Before developing a framework for identifying restoration priorities it is necessary to establish a common understanding of some of the key terms that are used in the EU Biodiversity Strategy to 2020 and in particular Target 2 and Action 6a.

¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0244>

² <http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/RPF.pdf>

Ecosystem Typologies: Under Action 5 of the EU Biodiversity Strategy, the Commission working together with the European Environment Agency, the Member States and other stakeholders and supported by a contractor is undertaking a major initiative in relation to the Mapping and Assessment of Ecosystems and their Services (MAES). This work includes a common understanding regarding ecosystem typologies as well as the methodologies for the mapping and assessment of ecosystems³. In order to promote consistency it is recommended that the ecosystem typologies developed under MAES are also applied in the development of the restoration prioritization frameworks.

Degradation and Restoration: Restoration objectives should be tailored to the ecosystem type, the services it provides, the recent history of the site and the location. For each ecosystem type, several states or ecological conditions can be described along a continuum from poor to excellent. Any significant improvement of ecosystem condition that moves an area of land/sea to a better state/condition should be regarded as a contribution to the 15% restoration target.⁴ Within the framework of the contract supporting the work on the restoration prioritization framework, a 4-level model of ecosystem condition was elaborated. An ecosystem can be assigned to one of 4 levels of condition and progress in a positive direction from one level to the next is recognized as restoration. The 4 –level model can be applied to all ecosystem types. The model, together with proposals for the descriptors of ecosystem condition, is included in the contractors report.

Terrestrial vs Marine Ecosystems: The 15% restoration target should be applied separately to terrestrial and marine systems i.e. restoration of 15% of degraded terrestrial ecosystems and restoration of 15% of degraded marine ecosystems.

The reference point (in comparison to which the restoration target should be evaluated): At EU level, the most suitable reference point and the foundation upon which the EU biodiversity Strategy was developed, is the EU 2010 Biodiversity Baseline⁵ as improved and refined within the framework of the MAES process. In addition, if Member States have more detailed information concerning the condition of their ecosystems in 2010 this can also be used to improve and refine the 2010 baseline.

The scope of the 15% restoration target: In principle, the target applies to all of the EU territory. This means there are no locations that can be considered as "un-restorable": urban areas can be made greener and the ecological function of intensively farmed land can always be improved. This does not imply that all urban areas, or intensively farmed land, need to be restored; it is simply an acknowledgement that restoration can, in principle, be carried out in any location no matter how degraded.

³ http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/MAESWorkingPaper2013.pdf and http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/2ndMAESWorkingPaper.pdf

⁴ This is in line with the concepts developed under the Birds and Habitats Directives, the Water Framework Directive and the Marine Strategy Framework Directive. For example, under the Habitats Directive, the objective is to achieve a favourable conservation status of species and habitats of European importance. As agreed in the framework to measure progress towards target 1 of the Biodiversity Strategy, moving from unfavourable bad to unfavourable inadequate will contribute to the achievement of target 1 and will therefore also contribute to the achievement of the 15% restoration target, even if the favourable status has not yet been achieved.

⁵ <http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline/>

Quantitative and Qualitative components of restoration: Restoration will have both quantitative (how much) and qualitative (intensity of change) components. In addition, actions which contribute to a reduction of the overall negative burden on an ecosystem (e.g. reducing the amount of atmospheric pollution and atmospheric deposition) should also be counted as contributions to the restoration target e.g. reducing the number of grid squares where critical loads are exceeded by 15%.

The 15% restoration target at the level of the Member States: Each Member State should restore at least 15% of the degraded ecosystems within its territory. If each Member State achieves this objective then collectively the EU will also achieve the 15% target. Such an approach leaves considerable flexibility to the Member States to decide their own priorities but in order to ensure an equitable approach the Commission considers that national actions for restoration should be part of a common framework and respect certain common principles (see below).

3. Setting Priorities for Restoration at national and sub-national levels

3.1 General considerations

The over-riding objective for the EU is sustainable growth and employment, and restoration of degraded territory contributes to these objectives. Restoration will also stimulate research and innovation (cf. Horizon 2020). Healthy, resilient ecosystems provide services to human society and these services are essential for sustainable growth and long-term wellbeing. Restoration should be directed towards optimizing the diversity and value of these ecosystem services by promoting the multifunctional nature of landscapes (seascapes) and maintaining and enhancing natural capital. These principles are also the basis for the deployment of Green Infrastructure in the European Union⁶. The restoration of degraded ecosystems will contribute significantly to the preservation and enhancement of the EU's Green Infrastructure. As described in chapter 3.3, achieving existing legal obligations under e.g. the Birds and Habitats Directives, the Water Framework Directive and the Marine Strategy Framework Directive (such as restoring species and habitats in Natura 2000 sites, achieving good ecological status in lakes and rivers or good environmental status in marine waters) will already contribute significantly to the 15% restoration target. However, achieving the 15 % target will also require action across the wider land and seascape.

3.2 Cross cutting Issues

In the development of their national frameworks for priority setting there are a number of cross-cutting issues that Member States should take into account.

⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0249>

3.2.1 The Opportunity for synergies across different sectoral policy areas:

- Regional development and territorial cohesion including the urban environment: Restoration actions in both urban, rural, coastal and marine areas can offer cost effective solutions for delivering a wide range of benefits such as a better quality of life, better integration of cities and their surrounding areas, better management of water resources, better air quality, healthier and more attractive environments to live and work, improved social cohesion and recreational opportunities⁷. Restoration of degraded locations provides benefits for local communities and employment opportunities as well as reducing the pressure for access to new, green-field sites.
- Adaptation to climate change and disaster prevention: Climate change is increasing the severity and frequency of extreme weather events and related natural disasters. Restoration can increase the resilience of natural ecosystems and human settlements to the impacts of climate change and is an integral part of EU policy on climate change adaptation⁸.
- Agriculture and forestry: The greening measures introduced into the revised CAP provide some opportunities for restoring the condition of agri-ecosystems and optimizing the ecosystem services delivered by these ecosystems. The fact that restoration is regarded as a process and that restoration targets need to take account of the historic and recent use of the land means that restoration can be undertaken on all types of agricultural land and is not synonymous with a change in land-use.

3.2.2 Critical pressures undermining ecosystem health and resilience. There are many pressures affecting ecosystem condition and some of these pressures are addressed in the context of EU legislation. However, in the development of a framework for setting priorities for ecosystem restoration at national and sub-national level, the following issues are considered as deserving of particular attention:

- Nutrient enrichment by nitrogen and phosphorous represents a significant threat to ecosystem function. Measures which can be taken at national and sub-national level to reduce nutrient over-loading can make an important contribution to restoration.
- Loss and degradation of soil has a profound effect not only on biodiversity but also on the productive capacity and economic value of the land. Loss of top-soil, loss of organic matter and soil compaction are major challenges in rural areas across Europe and particularly in the Mediterranean region. Contaminated sites in urban and peri-urban and industrial areas represent a significant lost resource. Every year in Europe 1000 square kilometres are lost due to urban sprawl/soil sealing. Preventing the continued decline of soil resources and the restoration of degraded soils represents a significant opportunity with multiple benefits⁹

⁷ http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/guide_multi_benefit_nature.pdf

⁸ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0216>

⁹ <http://www.cc.cec/dgintranet/env/b1/soil.htm>

- **Fragmentation.** The landscape across the European Union is one of the most fragmented territories in the world¹⁰ with transport, public utility and communications networks criss-crossing the territory and dividing it up into ever smaller parcels. Fragmentation has a severely disruptive effect on biodiversity and ecosystem functioning. Reducing fragmentation and mitigating its impacts is an important part of the restoration agenda. Nature conservation (cf. Article 10 of the Habitats Directive) requires ensuring the connectivity between different sites in the Natura 2000 network in order to promote genetic diversity, avoid populations becoming isolated and provide a range of habitats needed by species for migration, feeding, nesting, wintering, etc.

3.2.3 Integrated actions and the importance of landscape.

The highly diverse and characteristic landscapes to be found across the EU are a defining feature of our identity. An individual's feeling of place and "home" is shaped by the landscape in which they grew-up and in which they live. The landscape is comprised of the natural, geological and biological features that have been shaped and modified by centuries of human activity and offers a readily understandable focus around which restoration action can be planned and carried out.

3.2.4 Transboundary considerations.

Some natural features extend across national borders (rivers, mountain ranges, forests etc.) and some phenomena and issues are of a trans-boundary nature (e.g. long-range atmospheric pollution or species such as large carnivores and large ungulates with extensive ranges). In developing national and sub-national frameworks for prioritizing restoration action it is desirable to promote synergies and complementarity on different sides of shared borders.

3.3 Domains in which a framework for identifying restoration priorities already exists at the level of the EU

3.3.1 Introduction

The European Union has extensive environmental legislation much of which relates directly to the restoration agenda. As a general principle, measures taken in domains where there is a legal obligation to conserve and restore biodiversity together with a framework for identifying priorities and for monitoring and assessing progress, will form an essential and integral part for any Restoration Prioritisation Framework.

3.3.2 Species and habitats falling under the birds' and habitats' directives and Natura 2000 sites.

Target 1 of the EU Biodiversity Strategy is "*to fully implement the Birds' and Habitats' Directives.*" This target is further detailed as follows- "*To halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in*

¹⁰ <http://www.eea.europa.eu/publications/landscape-fragmentation-in-europe>

their status so that, by 2020, compared to current assessments: i) 100% more habitat assessments and 50% more species assessments under the Habitats' Directive shown an improved conservation status; and ii) 50% more species assessments under the Birds' Directive show a secure or improved status"

For the species and habitats falling within the scope of these two Directives a legal framework exists, objectives have been established and mechanisms developed for identifying priorities for restoration. The adequate conservation and management of the over 27.000 Natura 2000 sites and the full implementation of the species conservation and other measures of the EU Birds and Habitats Directives will make an essential contribution to the 15% restoration target. Member States are currently in the process of establishing conservation objectives and measures for the sites, often within the framework of management plans, which include restoration objectives. There is already significant experience in relation to restoration within and around Natura 2000 sites, especially within the framework of EU LIFE projects which needs to be built on. The Commission services are financing a contract to assess the restoration needs associated with the full implementation of the nature legislation.

Progress towards achievement of the favourable conservation status of habitats as defined under Target 1 of EU 2020 BDS will be monitored under the Habitats and Birds Directives and restoration actions taken within this framework will be taken into account in assessing progress towards the 15% target.

3.3.3 Freshwaters and marine waters

The Water Framework Directive¹¹ establishes an environmental objective (good ecological status) as well as requiring Member States to identify the pressures in each river basin and to elaborate a programme of measures to address these pressures. The assessment and reporting requirements under the Directive also ensure that changes in ecosystem quality can be followed on a systematic basis. In the Water Blueprint for Europe¹² it is also foreseen that the protection and enhancement of the ecosystem services provided by water bodies should be integrated into the River Basin Management plans required under the WFD.

In the light of the above considerations, effective implementation of the Water Framework Directive is regarded as satisfying the objective set out in Action 6a of the EU Biodiversity Strategy for the ecosystems and habitat types (rivers including transitional waters, lakes and inshore -1 nautical mile offshore-coastal waters) included within the scope of the WFD. Restoration actions taken within the framework of the WFD will be taken into account in assessing progress towards the 15% restoration target.

In a similar vein, the Marine Strategy Framework Directive¹³ also includes ecological targets and provisions for setting priorities and developing programmes of measures. Consequently, a strategic

¹¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

¹² <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012DC0673>

¹³ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056>

framework for setting restoration priorities already exists for the marine environment. Therefore, effective implementation of the Marine Strategy Framework Directive is regarded as satisfying the objective set out in Action 6a of the EU Biodiversity Strategy for the ecosystems and habitat types (coastal water beyond 1 nautical mile offshore, oceanic shelf and open ocean) included within the scope of the MSFD. Restoration actions taken within the framework of the MSFD will be taken into account in assessing progress towards the 15% restoration target.

3.3.4 Reducing some of the generic pressures on biodiversity.

Atmospheric pollution such as tropospheric ozone and atmospheric deposition of acidifying substances and nitrogen compounds can have a significant, negative impact on biodiversity. Local restoration actions to re-create the natural vegetation cover, or improve the conservation status of species and habitats, may not be successful if the critical loads for sulphur or nitrogen are exceeded due to trans-boundary pollution. Several pieces of EU legislation have led to a significant reduction in atmospheric pollution but critical loads for sulphur and nitrogen are still exceeded in many locations and the threshold levels for tropospheric ozone are being exceeded with increasing frequency. In December 2013 the Commission adopted an extensive package of measures aimed at improving air quality and reducing long-range trans-boundary air pollution¹⁴. These measures will, if agreed by the other EU institutions, constitute an important contribution to ecosystem restoration in the EU.

At the local level, the impact of long-range nitrogen deposition is accentuated by local emissions of ammonia and the application of nitrate fertilizer and these pressures will need to be addressed by measures at the national and sub-national level.

3.4. Priorities for Restoration in relation to urban ecosystems, croplands, grasslands, forests/woodlands.

As indicated above, there are a number of ecosystem types, habitat types and individual species as well as specific sites or areas, for which existing pieces of EU legislation already provide essential elements for the prioritization of restoration actions and descriptors of the environmental status that is to be achieved. However, for some of the EU land and seascapes and many urban areas that are not specifically protected by virtue of EU or national legislation, including habitat and ecosystem types which are not covered by the habitat types mentioned in the Annexes of the Habitats Directive, the Member States should consider including them in their national and/or sub-national level Restoration Prioritization Frameworks. These ecosystem types include urban ecosystems, croplands, some grasslands (e.g. temporary grasslands and improved grasslands as opposed to natural and semi-natural grasslands that are covered by the Habitats Directive) and many areas of forest/woodland. Information of specific relevance to the restoration of some of these ecosystem types is included in the final report of the contractor.

¹⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013DC0918>

In planning and undertaking restoration activities in relation to these ecosystem types or areas, Member States should keep in mind the principles and the cross-cutting issues discussed in previous sections of this document. In particular, the ecological condition of any particular ecosystem can lie anywhere on a continuum from poor to excellent. Furthermore, the objectives for restoration will depend upon the location, history and the specific ecosystem type or area. Finally, all restoration actions that are designed to deliver significant improvements in ecosystem condition should be considered as contributing to the 15% restoration target.

4. The Information and knowledge base for developing a framework for identifying restoration priorities at sub-national and national level.

The identification of priorities for the restoration of degraded ecosystems is very much dependent on the availability and quality of information on the extent and condition of the ecosystems concerned as well as the variety and value of the ecosystem services associated with them. In addition to the information gathered under existing legislation such as BHD, WFD and MSFD, maps and assessments of ecosystems and associated services available at national and sub-national levels will be used to inform the selection of restoration priorities.

Action 5 of the EU Biodiversity strategy foresees that Member States, with the assistance of the Commission, will map and assess the state of ecosystems and their services in their national territory by 2014. The Commission together with the EEA and with the support of a contractor is working intensively with the Member States to support the **Mapping and Assessment of Ecosystems and Services** (at the national level). Guidance documents, recommendations and reports have been produced and the assistance and support provided by the Commission to the Member States will continue in 2014 and beyond. The output of the mapping and assessment exercise foreseen under Action 5 of the EU Biodiversity strategy will, taking into account the assessments made under the B&HD, WFD and MSFD, be used for underpinning and measuring progress towards the achievement of the 15% restoration target.

5. Monitoring, recording and reporting progress

As indicated in section 2, the reference point against which progress towards the 15% restoration target should be measured, is the EU 2010 Biodiversity Baseline (improved and refined as appropriate). To measure progress towards the target it will be necessary to monitor and record restoration actions as well as further degradation of ecosystems in order that, by 2020, we will be in a position to assess the net gains and whether the target has been achieved.

Member States are encouraged to document the restoration efforts that are made within their territory. Together with the mapping and assessment of ecosystems and ecosystem services being undertaken under Action 5 of the Biodiversity Strategy, this information should allow for an assessment of the extent to which the 15% restoration target has been achieved.

Assessment of progress towards the 15% ecosystem restoration target will be part of the Mid-Term Review of the EU Biodiversity Strategy and the final evaluation of the EU 2020 Biodiversity Strategy. It will include progress reported under the BHD, WFD, MSFD and NEC directives. MAES will be the process for integrating these information flows as well as information from other sources in order to cover the whole EU territory.

6. The costs of restoration and sources of financial support.

The Commission has financed a study to estimate the additional costs associated with the achievement of Target 2 of the EU biodiversity strategy to 2020¹⁵. The estimates of the total costs aggregated across the EU 27 range between € 0.5 and 11 billion per annum (up to 2020) dependent upon the scenario (even distribution of effort, low cost, maximizing biodiversity benefits, maximizing ecosystem services outputs). The study also provides cost estimate projections for each Member State as well as a review of potential sources of financial support.

At the EU level, the funding instruments linked to the cohesion policy, the CAP and CFP are potential sources of finance for restoration efforts. Opportunities for financing also exist under the LIFE funding instrument. Funding should be a key element in the restoration prioritisation frameworks to be developed at national, sub-national and trans-boundary level.

The restoration of degraded ecosystems may also offer opportunities for private investors. Land that is severely degraded has little ecological and economic value: it cannot be used for agriculture and is of little interest for development. Restoration efforts can significantly increase the value of the land providing economic and social gains as well as environmental benefits. Restoration of certain habitats such as peat-lands can also offer significant benefits in terms of carbon sequestration and as such can provide a sustainable return on investment and substantial contribution to climate policy.

¹⁵ <http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/Fin%20Target%202.pdf> . AND <http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/Financing%20Target%202.pdf>