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PART 2/3

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EU ASSESSMENT OF PROGRESS IN IMPLEMENTING THE EU BIODIVERSITY STRATEGY TO 2020

Accompanying the document

Report from the Commission to the European Parliament and the Council

The Mid-Term Review of the EU Biodiversity Strategy to 2020

{COM(2015) 478 final}

MID-TERM REVIEW OF THE EU BIODIVERSITY STRATEGY TO 2020

EU ASSESSMENT OF PROGRESS IN IMPLEMENTING THE EU BIODIVERSITY STRATEGY TO 2020

PART 2/3

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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.

Socio-economic benefits of reaching this target: *Besides contributing to the achievement of the environmental and ecological quality objectives set by EU legislation, the 15% restoration target and deployment of green infrastructure contribute to a range of social benefits and economic benefits linked to improved air and water quality, flood control, noise reduction, recreation and social opportunities, and health. For example, the restoration of peat bogs in the framework of the Sustainable Catchment Management Programme in the North West of England is estimated to bring about savings of around £2 million per year in water supply and purification costs[1]. In Germany, yearly sales figures related to green roofs installation are estimated at 254 million EUR, with a growing trend[2]. A study in an Amsterdam district estimated that the annual benefits from creating urban green infrastructure could reach 400 million EUR per 10 million inhabitants, in the form of avoided health care and sick leave costs[3]. Restoring and re-wetting upland blanket bog of 3000 ha in the UK could deliver net benefits of GBP 63mio over a 25 year period, taking into account benefits from increased carbon sequestration, improvements in wildlife and reductions in water treatment costs, with a benefit-cost ration of 3:1. The UK environment agency recently undertook a 450 ha managed realignment project at Medmerry in the south coast. The project created 183 ha of saltmarsh and large areas of extra transitional, newly created habitat. The project saves on recurring coastal protection expenditure and is likely to have helped avoid considerable damage to the surrounding area during the 2013/2014 winter storms. The project has estimated benefits of over GBP 90m compared with project costs of GBP 28m. A main drinking water source of Vienna is purified only by the surrounding 32.000 hectares of forests and highlands of the Schneealpe mountains, with no need for a water treatment plant. In the UK, the creation of the National Forest increased the number of local jobs by 4.1% and local regeneration using green infrastructure attracted £96 million of investment. The Malmö urban regeneration initiative in Sweden decreased unemployment from 30 to 6% and reduced the turnover of tenancies by 50%.The Emscher Valley Restoration Project in Germany has created several thousand jobs, considerably improved the image of the region and promoted social cohesion. Belgium's first national park, the 'Hoge Kempen National Park', created some 400 jobs and stimulated private investment in tourism in this*

[1] Case Study: Peat bogs. Valuing the Benefits of Biodiversity, Economics and Funding SIG (2007) http://webarchive.nationalarchives.gov.uk/20110303145213/http:/ukbap.org.uk/library/EconomicBenefitsOfBiodiversityJun07.pdf

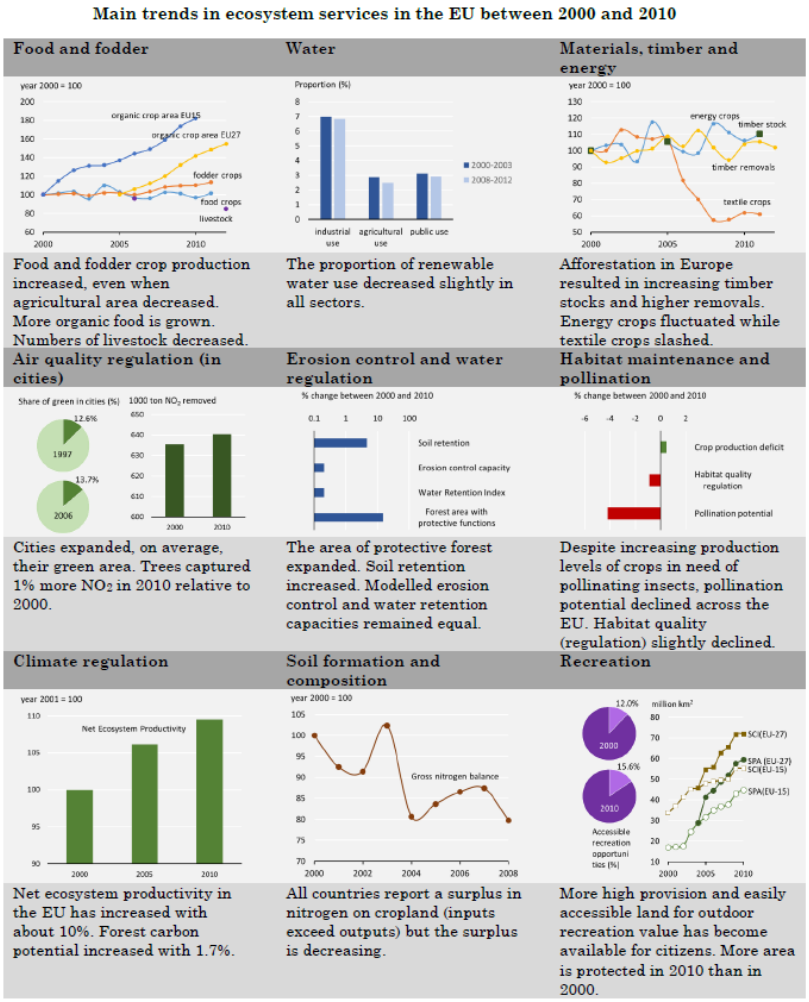
[2] European Federation of Green Roofs and Walls -- EFB 2015 (unpublished)

[3] "Green, healthy and productive: The Economics of Ecosystems & Biodiversity (TEEB NL): Green space and health", KPMG, May 2012

historically de-industrialised region. Upscaling these benefits requires a strategic approach at EU level, a supportive, enabling environment and a framework within which local, municipal, regional, national and EU scale actions can be mutually supportive and coherent.

The EU 2010 Biodiversity Baseline reported that for the period 1950-2010, the majority of ecosystem services showed either a degraded or mixed (i.e. degraded in some regions, enhanced in other) status across Europe. However, there were some positive exceptions such as timber production and climate regulation in forests. A recent analysis conducted by the Joint Research Centre[4] (JRC) confirms the increasing trends between 2000 and 2010 for some provisioning services and decreasing for services directly related to biodiversity. For instance, the increasing extent of forest area has resulted in positive influences on erosion control, carbon storage, water retention, air quality regulation and recreation. But, pollination is the most degraded for woodland and forest, heathland and shrub, and grasslands.

Figure 1 – Main trends in ecosystem services in the EU between 2000 and 2010



[4] https://www.researchgate.net/publication/274256807_Mapping_and_Assessment_of_Ecosystems_and_their_Services_Trends_in_ecosystems_and_ecosystem_services_in_the_European_Union_between_2000_and_2010

Concerning the restoration target, the European Environment Agency 'State and Outlook 2015' reports that despite cuts in air emissions, ecosystems still suffer from eutrophication, acidification and ozone depletion. Progress to policy targets has been mixed in meeting the EU's 2010 interim environmental objectives for eutrophication and acidification. In recent decades there have been significant improvements in reducing ecosystem exposure to excess levels of acidification, and the situation is predicted to improve further over the coming 20 years (EEA, 2013h). However, there has not been the same degree of improvement regarding eutrophication. Most of continental Europe experiences exceedances of critical loads (the upper limit that an ecosystem such as a lake or forest can tolerate without damaging its structure or function) for eutrophication. It is estimated that around 63% of European ecosystem areas and 73% of the area covered by the Natura 2000 network of protected areas were exposed to air pollution levels that exceeded eutrophication limits in 2010. The projections for 2020 indicate exposure to eutrophication will still be widespread.

Europe's waters are much cleaner than they were 25 years ago, due to investment in sewage systems to reduce pollution from urban wastewater treatment. Nevertheless, challenges remain. More than 40% of rivers and coastal water bodies are affected by diffuse pollution from agriculture, while between 20% and 25% are subject to point source pollution, for example, from industrial facilities, sewage systems and wastewater treatment plants. Although the Urban Waste Water Treatment Directive and the Nitrates Directive continue to deliver pollution control, diffuse nitrogen pollution remains problematic.

The trends and outlook for marine and coastal biodiversity indicate that achieving the target of good environmental status by 2020 remains a significant challenge. Marine and coastal ecosystems and biodiversity are under pressure throughout Europe, and their status is of concern. The target of achieving good environmental status by 2020 is at risk due to overfishing, sea floor damage, pollution by nutrient enrichment and contaminants (including marine litter and underwater noise), introduction of invasive alien species, and the acidification of Europe's seas[5].

As evidenced by State and Outlook 2015 Report, the ability of soil to deliver ecosystem services such as fertility, water and carbon storage is under increasing pressure. In withdrawing the proposal for a Soil Framework Directive in 2014, the Commission indicated that it remains committed to the objective of the protection of soil and will examine options on how to best achieve this.

In rural areas increasing recourse to more intensive management practices has been a significant pressure on biodiversity of many decades and this continues to be the case in many of the EU 12. Europe's rich

[5] The European Environment State and Outlook 2015; Synthesis Report http://www.eea.europa.eu/soer-2015/synthesis/report/3-naturalcapital

biodiversity has also developed in association with a diversity of traditional management practices. Land abandonment in less productive marginal areas means an end to these traditional ways of farming and this is having a significant impact on many species and habitats of Community interest.

If ecosystems become too small or too isolated, they will not be able to deliver their full range of services anymore. However, 30% of the EU's land is highly fragmented affecting the connectivity and health of ecosystems and their ability to provide services as well as viable habitats for species (SOER 2015). This trend is continuing in terrestrial ecosystems due to urban sprawl and land use intensification (in particular in agriculture). While freshwater ecosystems only cover about 5% of EU28 surface, they hold a higher number of species per unit area than land or sea, and provide key important ecosystem services. They also remain fragmented, even if some initiatives restore river continuity along important river stretches with the help of EU LIFE and EMFF programs.

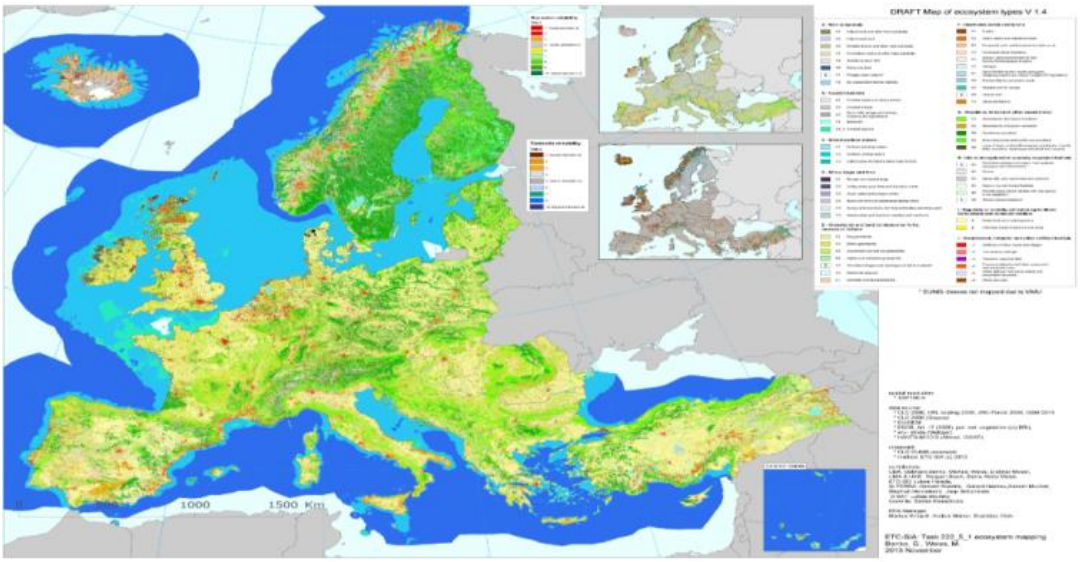
PROGRESS IN IMPLEMENTING ACTIONS

5) 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, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020.

All Member States are undertaking work on 'Mapping and assessment of ecosystems and their services'[6] — with the assistance of the European Commission and the European Environment Agency. The first deliverables at EU and MS level are expected in 2015. Under Horizon 2020, a specific coordination and support action has been launched in 2015 to develop and apply a consistent methodology across Member States. It is an essential part of the EU strategy and a necessary condition for the successful implementation of the strategy, to make information on ecosystems and their services an integral part of planning and development processes and decisions. High quality and consistent information on the condition of ecosystems and the services they provide will also be highly relevant for the future development and implementation of related policies such as regional policy, agriculture, fisheries, climate change, and disaster risk reduction and management. A first report published in April 2013[7] provided an analytical framework for mapping and assessment of ecosystems and their services in Europe. The second mapping and assessment report was published in March 2014[8]. It proposes indicators that can be used at European and Member State level to map and assess biodiversity, ecosystem condition and ecosystem services according to the Common International Classification of Ecosystem Services (CICES v4.3).[9] In 2014, the first map of European ecosystems was published by the European Environment Agency. A first report[10] on European ecosystem assessment — concept, data, and implementation was published in June 2015. It contains an inventory of the best available data to be used.

[6] http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/index_en.htm.
[7] http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/MAESWorkingPaper2013.pdf
[8] http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/2ndMAESWorkingPaper.pdf
[9] http://cices.eu/.
[10] European ecosystem assessment — concept, data, and implementation
http://www.eea.europa.eu/publications/european-ecosystem-assessment

Figure 2 - Map of European ecosystem types (EEA, 2014)



The policy report 'Mapping of Assessment of Ecosystems and their Services' from the Joint Research Centre (JRC, 2015) presents an analysis of the trends in the spatial extent of ecosystems and in the supply and use of ecosystem services at the European scale between 2000 and 2010. The main trends in provisioning, regulating and maintenance, and cultural ecosystem services were assessed using a set of 30 indicators assorted according to the CICES classification. According to the report, urban land and forest ecosystems are increasing in area while cropland and grassland are decreasing. There are some positive trends in several ecosystem services which are driven by a complex interaction of changes in agricultural production, afforestation, higher ecosystem productivity and increased nature protection. Many provisioning services show increasing trends. Increased forest extent results in positive influence on regulation services (i.e. erosion control, carbon storage, water retention, air quality regulation and recreation). Protected nature has increased since 2010 but pollination and habitat quality are worsening. The table below illustrates the main trends in ecosystem services in the EU between 2000 and 2010.

Work in 2015 is starting to focus more directly on valuing ecosystems and their services, and on integrating these values in reporting and accounting systems.

6a) By 2014, MS, 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 order to support the development of the prioritization frameworks as foreseen in action 6a, the Commission has worked with Member States to develop a common understanding of what needs to be done and to promote good practice in the way that restoration priorities are identified. In relation to the 15% restoration target, it is acknowledged i) that restoration is a process rather than a final destination meaning that any significant improvement in the ecological condition of a degraded site should be regarded as a contribution to the target; ii) that restoration objectives should also take account of the use that has been

made of the land e.g. ecological restoration of farmland does not require a change in land use; and iii) the ecological condition of even the most degraded areas can be improved which means that no locations are to be written-off as un-restorable. The majority of Member States have taken the line that priorities for restoration should be decided at a national level, that co-ordination at the level of the EU was not required and that burden sharing across the Member States was not necessary. Finally, it was recognized that restoration work undertaken in the context of existing EU legislation (e.g. Habitats and Birds Directives, Water Framework Directive, Marine Strategy Framework Directive, National Emissions Ceiling Directive) and policies would be taken into account in assessing progress towards the 15% restoration target. Further information concerning the work that was carried out on the restoration prioritization frameworks is online[11]. Progress to achieve the 15% restoration target is therefore being evaluated on the basis of a mix of information such as the improved status of water bodies across the EU, as reported under the Water Framework Directive, the improved status of habitats under the Habitat Directive (see further explanation provided in relation to Target 1).

Box 1: Restoration under the EU environmental legislation

With regard to restoration, the EU has a broad range of legislation and policies setting out environmental/ecological quality objectives the achievement of which in many cases requires restoration work to be carried out. Specifically with regard to the 15% restoration target, the EU recognizes the potential contribution of restoration to a range of economic and social as well as environmental objectives and continues to work towards a systematic approach for the identification of restoration priorities at EU, national and sub-national levels[12].

The Water Policy

The Water Framework Directive's objective of good status is necessary to ensure long term availability of sufficient water of good quality. Achieving good status for all water bodies will allow aquatic ecosystems to recover and to deliver the ecosystem services that are necessary to support life and economic activity that depend on water.

The Water Framework Directive and daughter Directives have contributed to improving water protection in the EU. A limited improvement in aquatic ecosystem health is planned by Member States as a result of the first cycle of River Basin Management Plans, with 53% of surface water bodies expected to achieve good status in 2015, up from 43% in 2009. Expressed in terms that are more or less equivalent to the Target 2, 15% restoration target, it would appear that in relation to water bodies covered under the WFD an 18% restoration level has already been achieved.. The actual achievements will be reported to the Commission in

[11] http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/RPF.pdf

[12] Draft Submission by the EU and its Member States in reply to Notification 2015-014 of 9 February 2015 on commitments to reduce habitat loss and on ecosystem restoration (Aichi Biodiversity Targets 5 and 15)

March 2016 together with the first update of the River Basin Management Plans.

The latest assessment of the River Basin Management Plans (RBMPs) carried out in 2012 indicates that progress towards the objective is expected, but good status will not be reached in 2015 for almost half of the EU water bodies. Several reasons are behind this. The assessment of the RBMPs identifies the main obstacles encountered in each Member State and stresses that hydro-morphological pressures, pollution and over-abstraction remain the main pressures on the water environment.

These findings have been confirmed by the 2015 Commission assessment of the programme of measures put in place by Member States to achieve the objective of the Water Framework Directive. In particular for the second cycle of River basin Management Plans the Commission recommends Member States to improve measures to control water abstraction and to ensure ecological flow, for instance by reviewing permits to ensure sustainable use and improve monitoring and enforcement. Agriculture is still an important source of diffuse pollution: Member States needs to better control fertilizers use as well as create incentives for more water efficient irrigation.

The Air Quality policy

Air pollution causes damage to human health and ecosystems. Biodiversity is especially under threat by high levels of ground-level ozone impacting on vegetation and by deposition of acidifying and eutrophying pollutants impacting on biota in general and on sensitive species in particular. Air pollution emissions have gone down significantly in the EU since the year 2000 and some improvement has been recorded on reduced concentrations of peak ozone, as well as deposition of acidifying and eutrophying components in the environment. Still the current levels of pollution are generally above the "critical loads" and "critical levels" that ecosystems can sustain without damage to biodiversity. The EEA has estimated that 84 % of the Natura 2000 areas were exposed to O3 concentrations above the critical level for the protection of forests in 2011. The EEA (2014e) further estimates that 63 % of the total EU-28 ecosystem area and 73 % of Natura 2000 area was at risk of eutrophication in 2010, due to excessive atmospheric nitrogen deposition covering most of continental Europe and the reduction of risk for eutrophication over the last decade or so has merely been moderate. Due to the very significant reductions in atmospheric sulphur dioxide emissions the risk for ecosystem acidification has been reduced. The EEA (2014e) estimates that 7 % of the total EU-28 ecosystem area and 5 % of the Natura 2000 area were at risk of acidification in 2010.
REFERENCE: EEA Report No 5/2014 http://www.eea.europa.eu/publications/air-quality-in-europe-2014

Action 6a of the Strategy foresees that Member States will establish restoration prioritization frameworks at national and sub-national level by 2014. As of the time of writing this report,, only two Member States, the

Netherlands and Germany, have provided the Commission with 'Restoration Priority Framework' documentation concerning their priorities for the restoration of degraded ecosystems (see Box 2 for further information). However, ecosystem restoration work is underway in many Member States with examples including the '*Trame Verte et Bleue*'[13] scheme in France which seeks to identify and preserve an ecological network. *Metsähallitus*[14] in Finland has under the METSO programme, restored 16 000 hectares of forests and mires in protected areas between 2008 and 2013 and more than 26 000 hectares before 2008. In the United Kingdom, measures are underway to meet Target 2 objectives such as work to restore habitats and improve ecosystem services at a landscape scale. For example, 48 new Local Nature Partnerships (LNPs) have been established around England to provide a local approach to managing the natural environment in an integrated way. In Scotland, Green Networks and green infrastructure projects aim to improve the environment by creating integrated habitat networks, and mapping of ecosystem health will inform targeted action to meet Target 2 objectives.[15]

Box 2 - Examples of Restoration Prioritisation Framework (RPF) from the Netherlands and Germany for Action 6a[16]

Netherlands

The Netherlands have developed a strategic framework to set priorities for ecosystem restoration at sub-national, national, taking into account EU-level interests and impacts.

The framework consists in principle of four layers:

1. The PAF (N2000)

2. The National Nature Network (NNN, formerly known as *Ecologische Hoofd Structuur*.

3. Natuurambitie Grote Wateren (Nature Ambition Great Waters)

4. Smaller national projects, such as 'groen-blauwe dooradering' (literally "green-blue veining')

Germany

In Germany, a diverse range of instruments exists for the conservation of biological diversity, which are applied across all levels of government. Key tools are spatial planning, protected areas, and compensatory measures for intervention and support measures.

The Federal Government adopted the following measures within the National Biodiversity Strategy:

• By 2020, watercourses and their floodplains are secured in their function as a habitat, and areas in their natural state are ensured.

• By 2020, the majority of watercourses have more natural flood plains.

• Increase the retention areas of rivers by at least 10% by 2020

In relation to these objectives, new initiatives are in the pipeline, including the National Flood Protection programme. In addition, the Federal Government will also establish a "Federal Program Blue Ribbon", which will involve the restoration of federal waterways and their floodplains.

[13] France 5th National Report, 2014
[14] Finland 5th National Report, 2014
[15] UK 5th National Report 2014
[16] Adapted from reporting from MS to EC 19 December 2014 and Germany 9 February 2015

6b) The Commission will develop a GI Strategy by 2012 to promote the deployment of green infrastructure in the EU in urban and rural areas, including through incentives to encourage up-front investments in GI projects and maintenance of ecosystem services, for examples through better targeted use of EU funding streams and Public Private Partnerships

A single area of land can offer multiple benefits, provided its ecosystems are in a healthy condition. Maintaining biodiversity-rich ecosystems, reconnecting fragmented natural and semi-natural areas, restoring damaged habitats, and improving our urban ecosystems will provide us with more and better goods and services. Investing in Green Infrastructure generates significant economic benefits; it creates both high- and low-skilled jobs such as in planning, engineering and building its elements as well as in restoring and maintaining urban and rural ecosystems.

In 2013, the Commission adopted a Green Infrastructure Strategy[17] to promote the deployment of Green Infrastructure in the EU. Considerable progress has already been made in implementing the actions proposed in the strategy[18]:

Promoting GI in the main policy areas:

Major conferences promoting the potential contribution of GI to major EU policy objectives were organised in 2013 and 2015. Guidance documents on the integration of GI into specific policy areas have been published (cf. regional and cohesion policies, water and flood management, EIA and SEA). Wider access to dedicated information on Green Infrastructure has been provided through BISE platform, including a catalogue on GI. Further work needs to be undertaken to develop documentation linking GI to health and consumer policies, to climate change adaptation and disaster risk management, to the common agricultural policy, and in relation to TEN-T and the Connecting Europe Facility.

Improving information, strengthening the knowledge base and promoting innovation:

The Horizon 2020 programme supports relevant research and innovation, notably on innovative nature-based solutions such as Green Infrastructure (cf. calls in 2014 and 2015). The European Environment Agency and the Joint Research Centre[19] have published reports on the usability of existing data and new methodologies for Green Infrastructure deployment. Relevant studies have been published by the EEA on spatial analysis of GI in Europe, and on the role of GI in mitigating the impacts of weather and climate change related natural hazards, and by the JRC on connectivity and multiple ecosystem services. The MAES initiative is providing

[17] COM(2013)249. A progress review is foreseen for 2017.
[18] See http://ec.europa.eu/environment/nature/ecosystems/index_en.htm.
[19] See http://ec.europa.eu/environment/nature/ecosystems/background.htm

the knowledge base for further analyses at EU and Member State's level. A review of the extent and quality of technical and spatial data available to GI deployment in the Member States is ongoing and should be delivered by the end of 2015.

Work is also under way on assessing the contribution technical standards and innovation could make to 'growing the market' of green infrastructure solutions (e.g. through the inclusion of GI into CEN/CENELEC work programme),

Improving Access to Finance

Green infrastructure projects are eligible under the Natural Capital Financing Facility, the innovative financing mechanism set up under an agreement between the Commission and the European Investment Bank, which started as Pilot Phase in 2015.

EU Level GI projects

Work is also under way on a cost-benefit analysis for opportunities (e.g. EU 2020 strategy and the Multiannual Financial Framework 2014-2020/, Connecting Europe Facility) for promoting EU-scale projects through a trans-European network Green Infrastructure initiative (TEN-G). The analysis – to be available in 2015 - should provide options on the ways forward and demonstrate how building blocks of GI could be promoted by a TEN-G approach – there should be a comprehensive approach combining building blocks of different characters (natural units such as river basins or mountain ranges, cross-border ecological networks or cultural-administrative units such as metropolitan areas). Governance setup, financing mechanisms, experiences and lessons learnt on European and Member States levels should be analysed in the view of applicability for TEN-G in order to assess whether a TEN-G initiative will be the adequate tool for prioritizing the uptake of GI with European-wide importance. At a major Conference[20] jointly organised by the European Economic and Social Committee, the Committee of the Regions, the European Parliament and the Commission on 5 May 2015, TEN G was highlighted as a priority amongst the next steps.

Beyond the implementation of Green Infrastructure on European level, there are a lot of interesting initiatives going on in the Member States (e.g. *Trame verte et bleue* in France, UK, etc.) and Member States have highlighted the importance of moving forward with Green Infrastructure at the Informal Council of April 2015 under the Latvian Presidency. However, strategic frameworks at national levels for implementing Green Infrastructure are not widely developed yet, awareness raising, capacity building and its integration need to be stepped up. The use of available financing opportunities offered by the integration of Green Infrastructure into appropriate funding mechanisms such as the Common Agricultural Policy, the Cohesion Fund, the European Regional Development Fund, the European Social Fund, the European Maritime and Fisheries Fund, and the Financial Instrument for the Environment provides new opportunities but uptake is

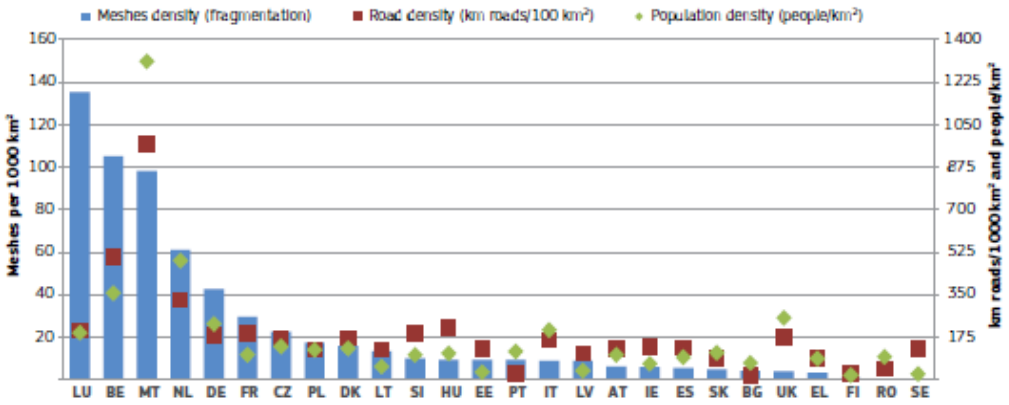
[20] http://www.eesc.europa.eu/?i=portal.en.events-and-activities-green-infrastructure-success

still limited. Its deployment is still too often small-scaled, and economic and social benefits are not sufficiently taken into account for decisions on whether to use a green or grey infrastructure solution. Actions on establishment, maintenance and improvement of Green Infrastructure have started mainly at local or regional levels, and not at the equally necessary national and European-wide scale[21]. Its contribution to maintain and enhance multiple ecosystem services could not be measured yet.

An assessment of Green Infrastructure regarding its spatial distribution/functionality/status and pressure needs to take into account existing frameworks (such as MAES) and recommendations for measuring the quality and potential of Green Infrastructure initiatives[22]. A review of extent and quality of technical and spatial data available to Green Infrastructure deployment in Europe is foreseen for 2015 in the Green Infrastructure Strategy.

Available status and pressure data beyond MAES (see action 5) are mainly linked to fragmentation. In the EU 2010 Biodiversity Baseline, one fragmentation index was available (based on 2006 data, 30% of the EU terrestrial land was estimated as highly fragmented[23]). Progress has been made in developing more specific fragmentation indicators (see Figure 3), and a first update of existing fragmentation indicators is planned in 2016.

Figure 3 - Landscape fragmentation and road and population density in 2009, across MS[24]



Landscape fragmentation is highly correlated with population and road density. Luxembourg and Belgium are very densely populated and are at the European nexus of transport links for cross-European travel, so have highly fragmented landscapes. The Netherlands, Germany, France, the Czech Republic have

[21] See Green Infrastructure library http://biodiversity.europa.eu/bise-catalogue on BISE http://biodiversity.europa.eu/topics/green-infrastructure
[22] See http://ec.europa.eu/environment/nature/ecosystems/background.htm.
[23] EU 2010 Biodiversity Baseline Technical report No 12/2010 http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline/
[24] EU Resource Efficiency Scoreboard 2014, http://ec.europa.eu/environment/resource_efficiency/documents/re_scoreboard_2014.pdf

significant landscape fragmentation values, but they are lower than in the first group of Member States due, in part, to investments in spatial planning. Countries with large areas of hills or mountains will inevitably be less fragmented since the geography deters urban and transport development.

However, fragmentation is not only due to grey infrastructures but also to the spread of artificial and intensively managed agricultural areas. Small patches of natural or semi-natural areas can become isolated in landscapes dominated by non-biodiversity friendly land-use practices, when this happens the capacity of agricultural and forest ecosystems to deliver multiple services to people is also affected. The share of natural and semi-natural land, which was fragmented, tended to increase over Europe between 2000 and 2006[25]. In 2006, 35% of the EU-28 forest lands were intermingled with natural and semi-natural non-forested land, agriculture and artificial land. Furthermore, European freshwater ecosystems are fragmented by artificial structures that a) may affect the passage of migratory fish and so restrict their range and/or abundance and b) change substantially the natural habitat distribution within rivers and modify their ecological capacity[26].

The EU Green Infrastructure and Adaptation[27] strategies have increased awareness that ecosystems can deliver services for mitigating the impact of selected climate change induced natural hazards, i.e. landslides, avalanches, floods, storm surges, as well as their contribution to global climate regulation. The role of Green Infrastructure in mitigating the impacts of weather and climate change related natural hazards has been mapped for the first time at European scale[28], analysing the natural capacity of ecosystems to deliver services that can mitigate the risk associated with natural hazards, the potential of occurrence of these natural hazards, as well as the demand side for such services.

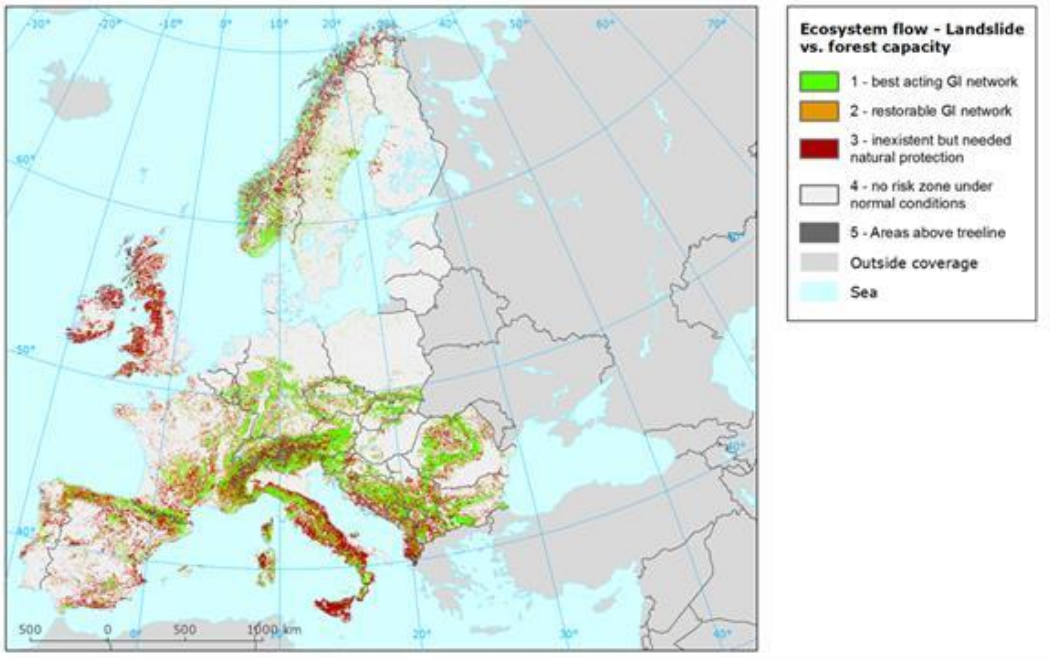
[25] SOER land system report http://www.eea.europa.eu/soer-2015/europe/land, Joint EEA-FOEN report on landscape fragmentation in Europe http://www.eea.europa.eu/publications/landscape-fragmentation-in-europe, EEA report on Green Infrastructure and territorial cohesion http://www.eea.europa.eu/publications/green-infrastructure-and-territorial-cohesion

[26] Fragmentation indicators are not reacting immediately to new policies or planning practices, thus long-term time series at European level are adequate. Fragmentation through grey infrastructure (i.e. transport infrastructure and urban areas) has been assessed in 2011 in http://www.eea.europa.eu/publications/landscape-fragmentation-in-europe, which can be updated once CLC 2012 data is available (possibly in 2016). Fragmentation of natural and semi-natural areas is planned to be updated in 2015; see http://www.eea.europa.eu/data-and-maps/indicators/fragmentation-of-natural-and-semi/fragmentation-of-natural-and-semi and doi: 10.1007/s13593-014-0238-1; for forest fragmentation see http://forest.jrc.ec.europa.eu/activities/forest-pattern-fragmentation/. Methodologies for assessing river fragmentation have been developed, but this indicator has not been populated with data so far http://www.eea.europa.eu/data-and-maps/indicators/fragmentation-of-river-systems.

[27] COM(2013)216 http://ec.europa.eu/clima/policies/adaptation/what/documentation_en.htm

[28] See ibid., Also: EEA (2015): The role of green infrastructure in mitigating the impacts of weather and climate change related natural hazards; and http://ec.europa.eu/research/environment/pdf/renaturing/nbs.pdf.

Figure 4 - Potential of Green Infrastructure to mitigate exposure to landslides



This map illustrates the potential of Green Infrastructure based on ecosystem capacity to mitigate exposure to landslides. Green areas show existing Green Infrastructure, in particular forests, currently delivering protection functions to landslides, and main actions would be adequate protection and management. The orange marked areas suggest that investing in restoration activities for the respective ecosystems could improve their capacity to protect against landslides. Red areas mark the most vulnerable regions to landslides, for which currently either existing ecosystems coverage do not insure against landslide risks (but by reforestation of degraded areas this protection function could be re-established), or natural ecosystems would not have the capacity to fully protect against landslide risks.

7a: In collaboration with the MS, the Commission will develop a methodology for assessing the impact of EU funded projects, plans and programmes on biodiversity by 2014

In 2012, a Commission review of the opportunities for biodiversity-proofing the EU budget[29] found that numerous tools exist to facilitate the process. Biodiversity-proofing is a structured process to ensure the effective application of tools to avoid — or at least minimise — biodiversity-harmful spending and to act as a catalyst for biodiversity-friendly spending. In 2014, the Commission published a practical common framework for biodiversity-proofing the EU budget, which includes general and fund-specific guidelines[30] for national and regional authorities and for Commission services.

The process of 'biodiversity proofing' of the EU budget is intended to ensure primarily that spending under the EU budget has no negative impacts on biodiversity, and additionally that spending under the EU budget

[29] http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/BD%20Proofing%20Main%20Report.pdf.
[30] All guidance documents available on http://ec.europa.eu/environment/nature/biodiversity/comm2006/proofing.htm

is generally supportive in achieving biodiversity targets. This process relates to policy instruments across many policy areas (such as agriculture, fisheries, transport, regional policy, and environmental protection). To complement this approach, the Commission has started tracking biodiversity-related expenditure under the EU budget[31].

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).

Following the adoption of the EU Biodiversity Strategy, the Commission has been working with Member States and stakeholders to evaluate what would need to be done to respect the principle of No Net Loss of biodiversity and ecosystem services across the EU. A more rigorous and systematic application of the mitigation hierarchy (avoid causing damage to biodiversity wherever possible, minimize any damage that cannot be avoided, restore to the extent possible any damage that occurs when the action is carried out and finally, compensate/offset any residual damage) was identified as the core issue particularly in areas outside the Natura 2000 network. The Commission has supported a number of contracts to support the development of the No Net Loss initiative and has also carried out a public consultation[32]. The NNL initiative will be considered following the results of the mid-term review of the EU Biodiversity Strategy to 2020 and the fitness check of the nature legislation.

Target 3a – Increase the contribution of agriculture to maintaining and enhancing biodiversity

By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement (*) in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline, thus contributing to enhance sustainable management

(*) Improvement is to be measured against the quantified enhancement targets for the conservation status of species and habitats of EU interest in Target 1 and the restoration of degraded ecosystems under target 2.

***Socio-economic benefits of reaching this target**:*

The following are examples of farming systems that contribute to maximize the agricultural area covered by biodiversity measures and provide socio-economic benefits:

[31] European Parliament, 'Safeguarding biological diversity' EU policy and international agreements' in depths analysis, April 2015

[32] http://ec.europa.eu/environment/nature/biodiversity/nnl/index_en.htm

- *Organic farming: A review of over 40 European studies found that, on average, organic farms provided between 10 % and 20 % more jobs per hectare (ha)[33], while a 2006 survey for the United Kingdom's Soil Association found organic farming in the United Kingdom provides 32 % more jobs per farm than equivalent non-organic farms[34]. According to a recent report, it is a sector that attracts younger workers and women, and positive employment trends can be seen all across Europe[35]. It is also acknowledged to create economic added value to agricultural products.*

- *High Nature Value Farming: HNVF systems represent about 30% of agricultural area and often occupy agriculturally marginal land of low productive capacity where intensification may not be cost-effective[36]. They often provide the main employment sources in those area and especially in mountain or islandic area and provide economic benefits. For example they contribute to the maintainance of the attractiveness of traditional landscape which indirectly benefits the tourism sector. There are also often the place of the production of traditional products with have high quality standard and which can represent alternative markets enabling the diversification of the economy[37,38].*

"Maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP…"

The biodiversity coverage of the CAP 2007-2013 was ensured by the Rural Development Policy as well as the integration of biodiversity elements into Cross Compliance. While this approach promoted targeted actions for biodiversity and strengthened Natura 2000 implementation in general, few biodiversity measures were implemented in areas of intensive agriculture, where they were especially needed. Overall progress in terms of the area covered by biodiversity-related measures as part of rural development will be demonstrated by the ex-post evaluation on the 2007-2013 RDPs. However, some relevant statistics for 2007-2013 are already available. During that period, € 23 billion of public funds was allocated to agri-environment measures covering 27% of the Utilized Agricultural Area (UAA). In addition, € 583 million were allocated for Natura 2000 payments covering 1.5 million hectares. Several of the other measures included in RDPs

[33] Green Jobs and related policy frameworks. An overview of the European Union. Begoña María-Tomé Gil, Ana Belén Sánchez López and Laura Martín Murillo; Sustainlabour, February 2013 Page 5, sources: (FIBL, 2009) and (Farm Structure Survey, 2007) http://www.sustainlabour.org/documentos/Green%20and%20decent%20jobs-%20An%20Overview%20from%20Europe%20FINAL.pdf

[34] 'EU Resource Efficiency Scoreboard 2014 .

[35] European Commission, Facts and figures on organic agriculture in the European Union (2013), October 2013

[36] *http://www.ieep.org.uk/assets/1386/HNV_and_CAP_Full_Report.pdf*

[37] http://www.heritagecouncil.ie/fileadmin/user_upload/Publications/Wildlife/High_Nature_Value_Farming_summary.pdf

[38] *http://www.fundatia-adept.org/?content=local_products*

would also have delivered benefits, mainly indirect, for biodiversity. In the EU-27, the total area under organic agriculture, which is regarded as positive for biodiversity, increased by 6% per year , between 2002 and 2011 and in 2011 amounted to an estimated 5.4% of the utilised agricultural area.

The reform of the Common Agricultural Policy for 2014-2020

The Commission presented in 2011 a set of legal proposals to reform the CAP. These proposals were designed to make EU agriculture more competitive, more sustainable and to promote vibrant rural areas. The final agreement on the Commission proposals reached in 2013 maintains the two pillars of the CAP, increasing the links between them and strengthening the environmental features of pillar 1.. An important feature of the new CAP is the recognition that farmers should be rewarded for the public services they provide. The reformed CAP provides many opportunities for supporting biodiversity-related measures and gives flexibility to the Member States to decide how and to what extent they will use these opportunities. However, it will take several years before the impacts of the reformed CAP on CAP can be measured. .

An evaluation of the implementation of the CAP reform, foreseen to start in late 2015, will provide more detailed information concerning the impacts of the changes designed to benefit biodiversity.

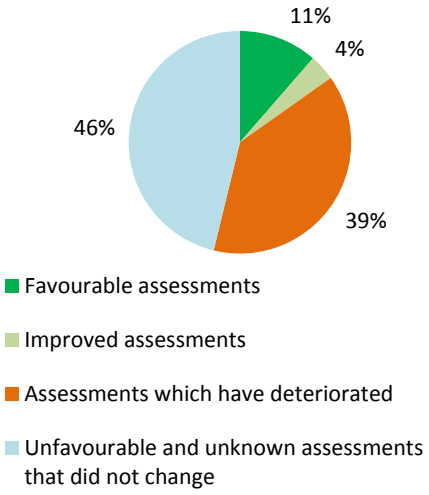
"Bring about a measurable improvement in the conservation status of species and habitats that depend on, or are affected by, agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline."

When using the information reported under the Habitats and Birds Directive (see target 1 for further explanation of the reporting process), a comparison is made between the status of species and habitats associated with agriculture in the period 2001-2006 and the status of the same species and habitats in the period 2007 to 2012, there is no measurable improvement. In relation to Annex 1 habitats from the Habitats Directive, while 4% of the assessments showed an improvement between the two periods, 39% of the assessments showed deterioration. In relation to species the corresponding figures were 4% and 20%[39]. Overall, grasslands and wetlands have the highest proportion of habitats with an unfavourable-bad and deteriorating status. Two major changes have contributed to upsetting the delicate balance between agriculture and biodiversity: i) specialisation and intensification of certain production methods (such as the use of more chemicals and heavy machinery); and ii) marginalisation or abandonment of traditional land management being a key factor in preserving certain habitats and site-specific bio-diversity.[40] These pressures have been exacerbated by urban sprawl, infrastructure developments (soil sealing) and climate change.

[39] EEA Technical report on State of Nature in the EU, May 2015 http://www.eea.europa.eu/publications/state-of-nature-in-the-eu
[40] http://ec.europa.eu/agriculture/envir/biodiv/index_en.htm

Urban development and its associated land-take, poses a significant threat to soil and biodiversity and could also impact upon agricultural production. Land-take concerns predominantly arable land and permanent crops followed by pastures and agricultural mosaics. Every year, about 1000 square kilometres of land is converted to artificial surfaces and most of this "lost" land is taken from agriculture[41].

Figure 5 - Changes (2007-2012 vs 2001-2006) in conservation status for Annex I habitats associated with agricultural ecosystems (grassland and cropland)



Source: EEA 2015

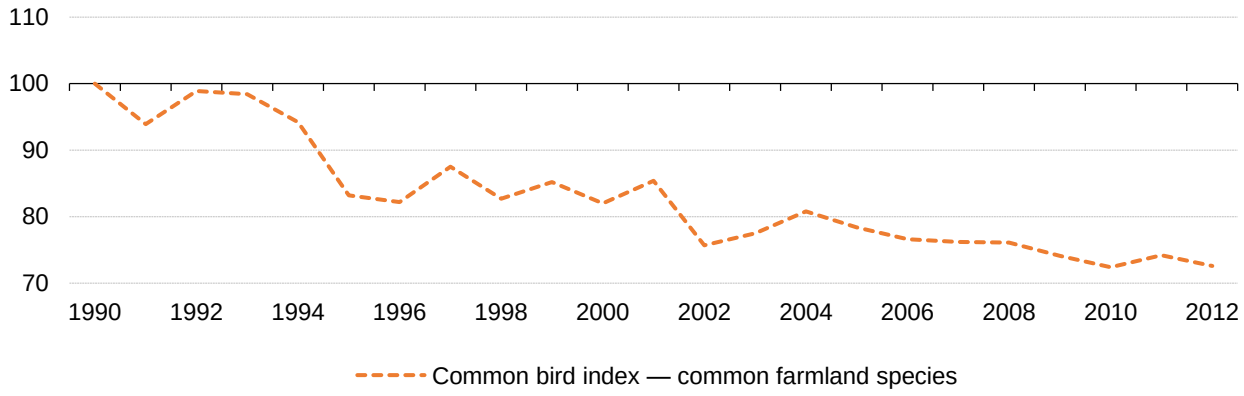
Box 3: Farmland bird and grassland butterfly - Barometer of biodiversity change of agricultural land

The farmland bird indicator is intended as a barometer of change for the biodiversity of agricultural land in Europe. Bird populations are considered to be a good indicator of the broad state of wildlife and the countryside because they occupy a wide range of habitats and tend to be near to or at the top of the food chain. This means that, as a rule, healthy bird populations signify a healthy state of the plants and invertebrates on which they feed.[42] Similarly, butterflies respond rapidly to changes in environmental conditions and habitat management, occur in a wide range of habitats, and are representative of many other insects. Butterflies are complementary to birds as an indicator because they use resources in the landscape at a much finer spatial scale.[43]

[41] http://www.eea.europa.eu/data-and-maps/indicators/land-take-2/assessment-2
[42] Defra (2014) Observatory monitoring framework – indicator data sheet. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/373096/agindicator-de5-11nov14.pdf
[43] JNCC (2014) Available at: http://jncc.defra.gov.uk/page-4236

Since 1990, farmland bird populations have decreased by nearly 30 %. The trend shows that bird species that depend on the farmland habitat as created by human activity are increasingly threatened by new agricultural practices. Among them are changes in land use (crop rotation patterns; disappearance of uncultivated verges; disappearance of hedgerows) and the increasing land take (asphalted areas).

Figure 6 – Common bird index – common farmland species, EU, 1990-2012 (*)
(index 1990 = 100)



(*) Estimates. EU: aggregate changing according to the context.

The Common farmland species index covers 39 bird species. Source: EBCC / RSPB / BirdLife / Statistics Netherlands; Eurostat (online data code: env_bio3)

The abundance of farmland birds varies between Member States. According to Eurostat, between 2000 and 2008, the common farmland bird index declined in the majority of the Member States assessed. The strongest declines were seen in Germany, Austria and Denmark, each with declines above twenty percentage points. Latvia and Slovakia, on the other hand, experienced an increase in the common farmland bird index of twenty and nearly ten percentage points respectively.

Figure 7 - Change in national and EU farmland bird indicators, 2000-08 (%)

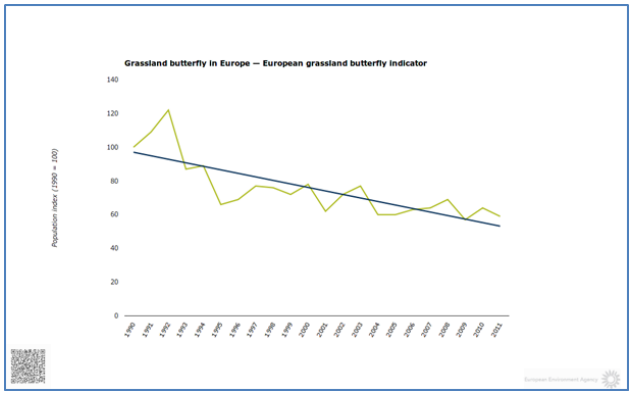
Source: EBCC/RSPB/BirdLife/Statistics Netherlands, also available at Eurostat
(online data code: env_bio2)

This decline in the number of farmland bird species has been confirmed in a number of further studies in the United Kingdom[44]. Much of the decline in farmland birds has been attributed to changes in agricultural methods, intensification and specialisation[45]. For example, one study found that nearly one third of Europe's Important Bird Areas are threatened by agricultural intensification and expansion[46]. Factors that have been cited as being particularly harmful in terms of agricultural intensification in the EU include hedgerow loss, land drainage, increased mechanisation, increased fertiliser and pesticide use, reduction of spring cultivation, simplification of crop rotations, changes in crop use, and loss of farm diversity[47]. The decline in common farmland bird species is in sharp contrast to the significant improvements observed in the populations of some rare bird species over the same period, most likely as a result of direct conservation action[48].

[44] Chamberlain, D.E., Fuller, R.J., Bunce, R.G.H., Duckworth, J.C. & Shrubb, M. (2000). Changes in the abundance of farmland birds in relation to the timing of agricultural intensification in England and Wales. J. Appl. Ecol. 37: 771–788; Fox, A.D. 2004. Has Danish agriculture maintained farmland bird populations? J. Appl. Ecol. 41: 427–439.; Wretenberg, J., Lindström, Å., Svensson, S., Thierfelder, T. & Pärt, T. 2006. Population trends of farmland birds in Sweden and England: similar trends but different patterns of agricultural intensification. J. Appl. Ecol. 43: 1110–1120.
[45] Donald, P. F., Green, R. E. and Heath, M. F. (2001). Agricultural intensification and the collapse of Europe's farmland bird populations. Proc. Roy. Soc. Lond. B 268: 25–29.
[46] BirdLife International (2004). Agricultural intensification threatens Important Bird and Biodiversity Areas in Europe. Presented as part of the BirdLife State of the world's birds website. Available from: http://www.birdlife.org/datazone/sowb/casestudy/140 . Checked: 24/04/2015
[47] BirdLife International (nd). Common bird indicators: helping to track progress towards the 2010 target.
[48] Gregory, R.D., Noble, D., Field, R., Marchant, J., Raven, M. & Gibbons, D.W. (2003). Using birds as indicators of biodiversity. Ornis Hungar. ,12 –13, 12 –24. ; Holling, M. & Rare Breeding Birds Panel (2011). Rare breeding birds in the United Kingdom 2009. Br. Birds, 104, 476 – 537.

Grassland butterflies have declined severely between 1990 and 2011; their populations have decreased by 50% and this reduction shows no sign of levelling off. This indicates a dramatic loss of grassland biodiversity since the European Butterfly Indicator is a useful proxy for a wider understanding of biodiversity changes. The main driver behind the decline of grassland butterflies is the change in rural land use: agricultural intensification where land is relatively flat and easy to cultivate, abandonment in mountains and wet areas - mainly in Eastern and Southern Europe.

Figure 8 - European grassland butterfly indicator



Source: SEBI001, EEA http://www.eea.europa.eu/data-and-maps/indicators/abundance-and-distribution-of-selected-species/abundance-and-distribution-of-selected-2

PROGRESS IN IMPLEMENTING ACTIONS

8a) The Commission will propose that CAP direct payments will reward the delivery of environmental public goods that go beyond cross-compliance (e.g. permanent pasture, green cover, crop rotation, ecological set-aside, Natura 2000).

The CAP reform regulation 1307/2013 on Direct Payments introduced a key change in the architecture of the direct payments: 30% of direct payments will be allocated through a mandatory "greening" component which will support agricultural practices beneficial for the climate and the environment. The G*reening*[49] *is intended to contribute to slowing down the decline in farmland biodiversity, most notably in intensive farming area, to the benefit of the environment and biodiversity in particular. Its positive effects will depend on the implementation of specific measures, not least because additional flexibility in implementation was granted to Member States and farmers in the final version of the legal texts.*[50]

[49] 'greening measures' include obligatory crop rotation, grassland maintenance, and more specific agri-environment measures, aimed at climate change mitigation and biodiversity conservation.
[http://www.eea.europa.eu/themes/agriculture/greening-agricultural-policy]
[50] http://www.eea.europa.eu/soer-2015/europe/agriculture

Greening practices take the form of simple, generalised, non-contractual and annual actions that are linked to agriculture. The proposal of the Commission of October 2011 specified that the greening should go beyond cross compliance and included the following elements: (i) crop diversification, (ii) the maintenance of permanent grassland (at farm level), and (iii) Ecological Focus Areas (EFAs) on 5% of the arable land of the holding. The objective of EFAs is, in particular, to safeguard and improve biodiversity on farms. Measures associated with EFAs can include, in particular, buffer strips, nitrogen-fixing crops, hedges, fallow land, catch crops and green cover. Member States shall also designate permanent grasslands which are environmentally sensitive areas, in areas covered by the Habitats and Birds Directives and which require strict protection in order to meet the objectives of those directives. Farmers shall not convert or plough these grasslands. Member States may, in order to ensure the protection of environmentally valuable permanent grasslands, decide to designate further sensitive areas situated outside areas covered by the Directives.

In the final adopted texts, it was specified in recital 44 of Regulation (EU) No 1307/2013 that EFAs should be established, in particular, in order to safeguard and improve biodiversity on farms. The initial elements to be taken into account for an area to qualify as an EFA were maintained (i.e. land lying fallow, terraces, landscape features, buffer strips), while the list of elements was extended to include some productive features (i.e. nitrogen-fixing crops, catch crops, short rotation coppices, agroforestry, forest edges). Those plants should be selected for their specific indirect biodiversity benefits in accordance with recital 44, and accompanied by appropriate farming practices, in particular through a reduced or non- use of fertilizers and plant protection products on the farms. In addition, greater flexibility was provided by allowing the objective of maintaining permanent grassland to be fixed at national/regional level instead of at the farm level. The designation and strict protection of environmentally sensitive grasslands was introduced as an additional requirement. The definition of permanent grassland was also extended to include pastures where grasses are not predominant; one consequence of which being that more semi-natural grasslands would become eligible for direct payments. Member States were also given the option to apply national schemes on condition that these schemes were adjudged to be equivalent to the greening elements specified in the EU texts. Exemption provisions such as the exclusion from EFA provisions of farms with less than 15 ha of arable land and farms with a high share of arable land used for the production of grasses, were also introduced. The associated delegated acts specified that in certain cases landscape features, buffer strips and green cover which are already covered by Cross Compliance, can also count towards EFAs.

An analysis of the first results of the greening implementation can only be done on the basis of Member States choices, because the Commission is still awaiting the information of the farmer's choices of EFA elements at farm level: this information will be provided in mid-December 2015. The results of notifications submitted by Member States in August and December 2014 which are valid for 2015 are indicated hereafter (state of play on 07.05.2015):

- Ecological Focus Area:

On arable area, the progress for implementing the action 8a depends largely on the biodiversity value of EFA choices made by farmers and Member States. Especially the non-productive EFAs, e.g. landscape features, are likely to have a better biodiversity benefit. But the progress will also depend on whether the elements selected go beyond those already protected under cross-compliance rules. Permanent crops are excluded from the greening obligations, therefore the action will not be achieved for this sector.

Only two Member States (NL and PL) will allow for **collective implementation of EFA** obligations. No Member State decided to apply regional level implementation. Four (EE, FI, LV, SE) out of the five Member States having the possibility to apply the "**forest exemption**" in relation to EFAs elected to do so

The **choice of elements** that farmers may use to fulfil their EFA obligation varies between Member States. A group of 5 Member States offers a limited selection of elements (2-4): FI, LT, NL, SI and ES. In contrast, another group of 14 MS offers an extensive list of elements (10 or more): AT, BE, BG, HR, CZ, FR, DE, HU, IE, IT, LU, PL, RO, SK. Nine Member States opted for an intermediate list: CY, DK, EE, EL, LV, MT, PT, SE and UK.

Both productive and non-productive elements have been chosen in relation to EFAs. The most popular element is the nitrogen-fixing crops (chosen by all MS except DK), followed by land lying fallow (all except NL, RO), landscape features (at least one) (24 MS), short rotation coppice (20 MS), catch crops (19 MS), buffer strips (17 MS), afforested areas (14 MS), agroforestry areas (11 MS), strips along forest edges without production (9 MS), terraces (8 MS) and, finally, strips along forest edges with production (6 MS).

In terms of EFA detailed choices:

Among **landscape features,** 24 Member States activated at least one landscape feature. The most popular were trees in group (17 MS), followed by field margins (16 MS), trees in line (16 MS), ditches (15 MS), hedges (13 MS), isolated trees (13 MS), ponds (12 MS) and traditional stone walls (7 MS). Member States could choose landscape features defined in Article 45 of Delegated Regulation (EU) No 639/2014 and/or those defined under their national cross-compliance rules. Four countries (FR, NL, RO, SE) and two (BE, UK) in some region(s) decided to apply only the Article 45 definition, while twenty allowed cross-compliance elements (AT, BE, BG, HR, CZ, DK, EE, FI, DE, GR, HU, IE, IT, LV, LU, MT, PL, PT, SK and UK; BE and UK in some region(s) only) including, for 12 of them, also other landscape features protected under cross-compliance. GAEC 7 was the main choice for countries which opted for cross-compliance on their own or in addition to those defined in Article 45. .

On **buffer strips** required under cross-compliance, Member States adopted different approaches to dimension limits on minimum and maximum width, ranging from 1 to 50 meters. Ten Member States activated also "other buffer strips" i.e., those not required under cross-compliance. Almost all countries decided to include strips of riparian vegetation in the buffer strip. All opted to allow grazing or cutting on buffer strip as a derogation to the non-production requirement.

Countries that activated **short rotation coppice** (SRC) chose between 2 to 11 species, most popular being willow (Salix) (20 MS), poplar (Populus) (17), alder (Alnus) (14), birch (Betula) (11) and ash (Fraxinus)

(11). Almost all Member States specified which inputs (either mineral fertilisers and/or plant production products) should be banned.

Approaches to the categorisation of crop mixtures required under the **catch crop EFA** also differs depending on Member States. The indicated period of sowing usually extends from July to September; however some Member States notified a longer period starting from May-June. Some countries developed different technical criteria on the way the mixed crops are to be established (e.g. percentages of crop in the mixture, choice from different crop categories), a required minimum presence of crops on the field and conditions on the use of inputs.

Countries opting for **nitrogen-fixing crops** (NFC) chose between 4 and 19 crops the most popular being: faba bean (*Vicia faba*) (27 MS), pea (*Pisum spp*) (26), alfalfa (*Medicago*) (26), lupin (*Lupinus*) (24), and clover (*Trifolium*) (24). The majority elaborated on biodiversity criteria underlying their choice of NFC, while the arguments given by few Member States were short and generic. Many decided, in the light of the Nitrates Directive, to allow NFC on the entire territory while others did not provide any specific information on the geographical location. A number of Member States pointed out specific limitations or conditions relating to mitigation of the risk of nitrogen leaching. 13 countries specified production methods.

- Permanent grassland:

By mid-December 2014 Member States notified their choices concerning the environmentally sensitive permanent grassland (ESPG). The approaches to the designation of ESPG in Natura 2000 areas differ between MS. Ten Member States designated all the grassland in Natura 2000, five Member States between 50% and 100%, while eleven Member States designated less than half of the grassland. 4 Member States decided to designate ESPG outside Natura 2000 areas (CZ, LV, LU, UK-WA).

- Equivalence:

Five Member States notified their intention to offer their farmers the possibility to meet (some of) their greening obligations through equivalent practices. Three of them through agri-environment and climate measures (AECM) (AT, IE, PL) and two under certification schemes (NL, FR). Crop diversification was a dominant choice for equivalent practice among those countries. EFA was chosen by two Member State while permanent grassland was chosen by one Member State.

8b) The Commission will propose to improve and simplify the GAEC (Good Agricultural and Environmental Conditions) cross-compliance standards and consider including the Water Framework Directive within the scope of cross-compliance once the Directive has been implemented and the operational obligations for farmers have been identified in order to improve the state of aquatic ecosystems in rural areas.

Cross Compliance is a mechanism which ties EU support for farmers to compliance with standards of environmental care and public/animal/plant health and animal welfare. On biodiversity, Cross-compliance

covers certain articles of the Birds and Habitats directives within the "Statutory Management Requirements (SMRs)" and a set of rules which are designed to avoid the deterioration of habitats within the GAECs (good agricultural and environmental conditions) [51].

The Commission proposal included a new GAEC to protect wetlands and carbon rich soils and extended the GAEC on the protection of landscape features by adding provisions to ban the cutting of hedges and trees during the bird breeding and rearing season along with safeguards for avoiding invasive species. The Commission proposed that the Water Framework Directive (WFD) as well as the Sustainable Use of pesticides Directive (SUD) would become part of Cross Compliance, once they have been implemented in all Member States and the obligations directly applicable to farmers have been identified

In the final adopted acts, the GAEC on wetlands was not retained but biodiversity elements of the GAEC 7 on landscape features were included. The final agreement also confirms the intention to make the WFD and SUD part of cross compliance. It was also agreed that pending their incorporation into cross-compliance, that the two Directives will be part of the compulsory scope of the Farm Advisory System so that all farmers concerned have access to the relevant advice.

If set at the appropriate level, Cross Compliance enables to increase the biodiversity delivery of the CAP. On SMRs, the environmental delivery of Cross Compliance relies on the level of ambition of the implementation of environmental legislation at Member States level. The cross-compliance system is however crucial for ensuring a better awareness on the part of farmers of the need to respect basic rules on biodiversity stemming from the Habitat and Birds Directives. On GAEC, a high level of quality of the biodiversity requirements under the GAEC 7 enables the increase of the level of biodiversity performance of agri-environment schemes which deal with the management of landscape features, the cutting of hedges and invasive species management. The progress for implementing the action 8b will depend on the degree of implementation of GAEC and environmental legislation and on the possible WFD integration.

9a) The Commission and Member States will integrate quantified biodiversity targets into Rural Development strategies and programmes, tailoring action to regional and local needs.

For the period 2014-2020, the Rural Development Regulation 1305/2013 contains one focus area specifically dedicated to biodiversity, namely " 4A: restoring, preserving, and enhancing biodiversity, including in Natura 2000 areas and in areas facing natural or other specific constraints, and high nature value farming, as well as the state of European landscapes". According to art 8.1.c (v), the strategy of RDPs

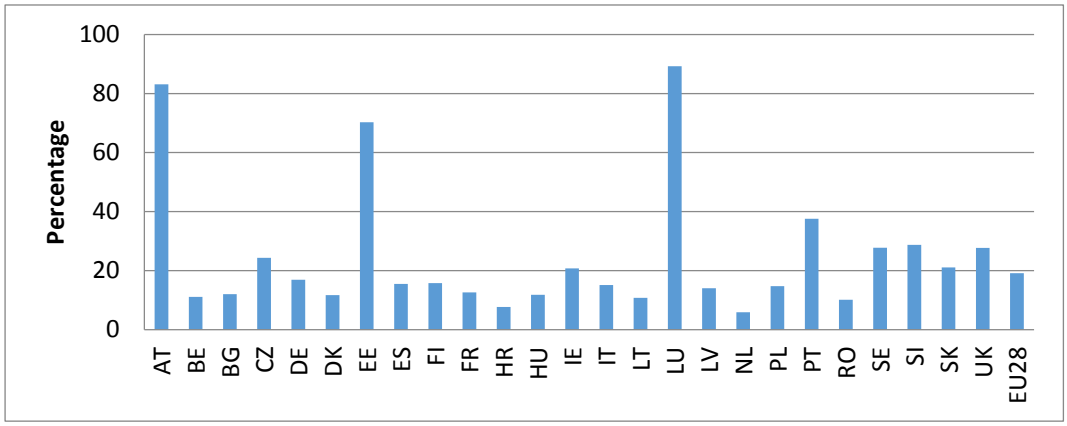
[51] http://ec.europa.eu/agriculture/envir/cross-compliance/index_en.htm

should describe appropriate approaches towards the specific needs of Natura 2000 areas. RDPs contain one quantified target on biodiversity[52] "*T9: percentage of agricultural land under management contracts supporting biodiversity and/or landscapes"*. The programmes do not specify the funding allocation to biodiversity (Focus Area 4), but instead designate the allocation at the priority level (Priority 4), which covers all environmental objectives. There are other priorities and focus areas which will deliver environmental benefits (including indirectly for biodiversity) such as improving water management linked to improved management of fertilizers and pesticides, preventing soil erosion and improving soil management, reducing GHG and ammonia emissions and promoting carbon conservation and sequestration.

For the second Pillar, the situation at the time of finalizing the present document (25/08/2015) was that a total of 73 RDPs had been adopted out of a total of 118 representing nearly three quarters of the Rural Development budget and 25 out of 28 Member States. An analysis of these approved programmes indicates that around 19.1% of the UAA is covered by biodiversity-related measures with very large disparities between Member States and regions (**Figure 9**). These disparities can be explained by i) the different levels of biodiversity ambition across the Member States/Regions; ii) differences in the structure of the RDPs (some RDPs have numerous, very specific Agri Environment and Climate Change Measures – AECMs - whereas in others the approach is more generic); and iii) differences in the way that the Member States have calculated the area covered by the RDP measures for indicator T9 (in some RDPs, only the areas where dark green AECMs are applied are taken into account, whereas in others, the area reported under indicator T9 covers a broader set of AECMs and Organic farming measures). A more precise and definitive conclusion regarding the percentage of UAA under biodiversity measures will require a more detailed assessment applying standardized methodologies across all the RDPs. As regards environment funding, on the basis of the 73 approved RDPs on 25/08/2015, around 44.2% of the total EAFRD budget has been allocated to Priority 4 and, for the measures considered individually, 4% to M08 (forest measures), 18,5% to M10 (agri-environment-climate measures), 5,8% to M11 (organic farming), 0,7% to M12 (Natura and WFD payments) and 15,6% to M13 (Natural Constraints Areas).

[52] Annex IV.4 of R 808/2014

Figure 9 - CAP CMEF indicator T9: percentage of agricultural land under management contracts supporting biodiversity and/or landscapes (as of 25/08/2015 – approved RDPs only)



Source: Database DG ENV.B1

9b) The Commission and Member States will establish mechanisms to facilitate collaboration among farmers and foresters to achieve continuity of landscape features, protection of genetic resources and other cooperation mechanisms to protect biodiversity.

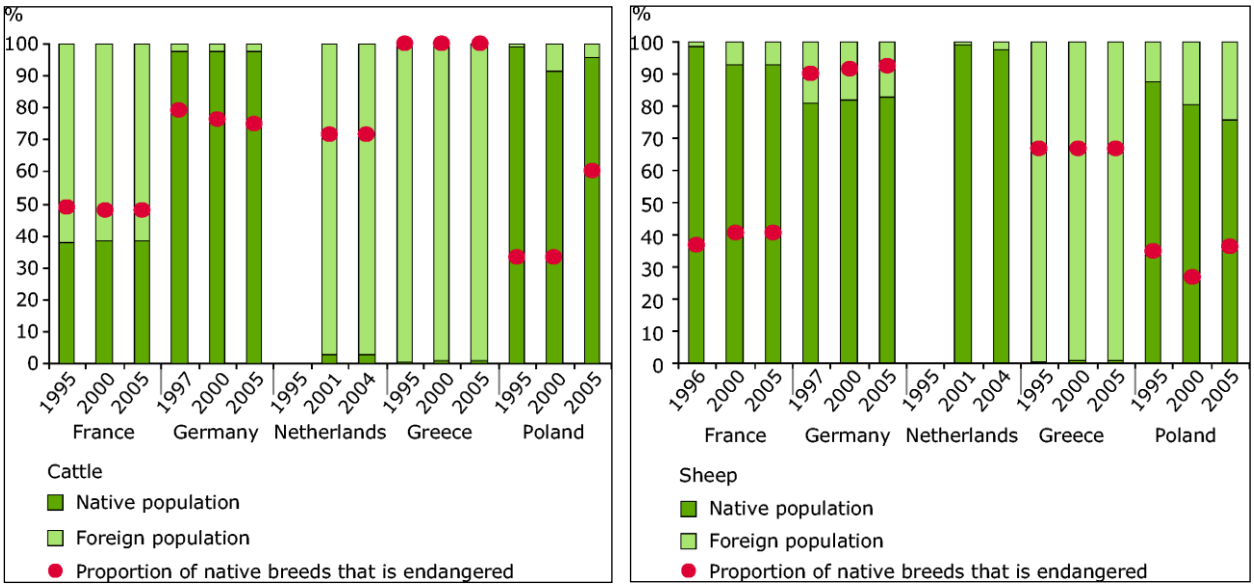
The Commission has provided the legal basis for mechanisms to facilitate collaboration among farmers and foresters on the continuity of landscape features, the protection of genetic resources and other mechanisms to protect biodiversity. This is especially made possible thanks to the agri-environmental payments which can be granted to group of farmers and the cooperation measure. The success of these measures in the second half of the strategy's implementation will depend on the establishment of implementation schemes at the Member States level. It is further to be seen whether the effectiveness of the interventions could be improved by targeting the implementation of biodiversity-related measures on specific area where biodiversity improvement can be achieved if common action are undertaken, and also by increasing the ambition of biodiversity measures in biodiversity-rich areas.

10) The Commission and Member States will encourage the uptake of agri-environmental measures to support genetic diversity in agriculture and explore the scope for developing a strategy for the conservation of genetic diversity.

In several countries, populations of native breeds, although generally well adapted to local circumstances and resources, remain in critically low numbers, being replaced by a few and widespread highly productive breeds, introduced for this purpose. The fact that native breeds make up only a small part of the total population, and that a high percentage of native breeds are endangered indicates a risk of loss of biodiversity. Although data are available for only a few countries, these indicate that many native cattle breeds are

endangered[53]. Overall, the situation is a cause of concern. On plant diversity, data is still not available to enable any conclusion to be drawn.

Figure 10 - Evolution of native population sizes and endangered breeds (cattle)



The **Rural Development Programmes** (RDPs) contribute through agri-environment-climate measures to agricultural genetic resource conservation at the farm level and encourages farmers to preserve local breeds and crops by rewarding them and other beneficiaries who engage in conserving agricultural genetic resources or undertake dissemination and advisory actions. Genetic resources-related actions were programmed in 26 Member States, with 72,193 contracts and some EUR 266 million (EAFRD) and EUR 424,5 million total public expenditure paid out in the period 2007-2013. An analysis of the measures concerning the conservation and use of agricultural genetic resources will be carried out after the adoption of all the RDPs for the period 2014-2020.

There is an ongoing **Preparatory Action** "EU plant and animal genetic resources" tabled by the European Parliament. The consortium officially started its work in July 2014 and progress of the activities can be followed on the website http://www.geneticresources.eu/. The aim of the preparatory action is to deliver inputs on how to improve communication, knowledge exchange and networking among all the actors potentially interested in activities related to the conservation of genetic resources in agriculture.

[53] EEA (2015) Livestock genetic diversity (SEBI 006) - Assessment published May 2010 http://www.eea.europa.eu/data-and-maps/indicators/livestock-genetic-diversity/livestock-genetic-diversity-assessment-published

In the context of the **European Innovation Partnership** (EIP-AGRI), a Focus Group on "Genetic resources: co-operation models" has been conducted. The reports of the meetings and preliminary outputs of the Focus Groups are available on the EIP-AGRI website[54]. In **Horizon 2020,** the research work programme for 2014-2015, the budget allocated to topic SFS-7 "Genetic resources and agricultural diversity for food security, productivity and resilience" in Societal Challenge 2 (Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy) amounts to 30 EUR million. In 2014, three projects (two on plants and one on animals) were selected for funding. In addition, other topics contribute to fund research aimed at the conservation of agricultural biodiversity. Efforts on agricultural genetic resources will continue in the work programme for 2016-2017.

The EU programme[55] on the conservation of genetic resources in agriculture established conservation activities, both *in situ* and *ex situ*. These actions enhanced the morphological and genetic knowledge of plant genetic resources and the dissemination of results to end-users. The programme resulted in the collection and characterisation of several thousands of new accessions and the establishment of conservation infrastructures, databases, core collections, gene banks, and accession catalogues.

With regard to legislation, the Commission adopted two directives[56] in 2008-09 on conservation of landraces and local varieties to support the conservation *in situ* of genetic resources. In 2010, the Commission adopted a Directive on fodder-plant seed mixtures with the aim of conserving traditional seed mixtures.[57] In addition, the Commission has adopted in 2014 the implementing legislation[58] concerning in particular the identification of conservation varieties of fruit plants and authorising their marketing as set out by Directive 2008/90/EC; its entry into force is foreseen on 1/1/2017.

In 2014, the European Commission presented a proposal to amend existing legislation on zootechnics[59]. The objective is to set up at EU level the zootechnical and genealogical conditions for trade in and imports into the European Union of breeding animals and their germinal products. This proposal also provides the

[54] http://ec.europa.eu/eip/agriculture/en/content/genetic-resources-cooperation-models
[55] Council Regulation (EC) 870/2004 of 24 April 2004 establishing a Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture and repealing Regulation (EC) No 1467/94.
[56] Directive 2008/62/EC: http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399552280672&uri=CELEX:32008L0062 and Directive 2009/145/EC: http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399552442848&uri=CELEX:02009L0145-20130828.
[57] Directive 2010/60/EU: http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399553530246&uri=CELEX:32010L0060.
[58] Directives 2014/96 on labelling, sealing and packaging, 2014/97 on registration of suppliers and of varieties, 2014/98 on genus, implementing Directive 2008/90/EC
[59] http://ec.europa.eu/food/animal/zootechnics/docs/Zootechnics_2014_Proposed_Regulation_en.pdf

Commission with the necessary authority to take action where there is a risk to the protection of genetic diversity, including for domestic animals.

Target 3b – Increase the contribution of forestry to maintaining and enhancing biodiversity

By 2020, Forest Management Plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size (to be defined by the Member States or regions and communicated in their Rural Development Programmes) that receive funding under the EU Rural Development Policy so as to bring about a measurable improvement(*) in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of related ecosystem services as compared to the EU 2010 Baseline.**

(*) Improvement is to be measured against the quantified enhancement targets for the conservation status of species and habitats of EU interest in Target 1 and the restoration of degraded ecosystems under target 2.
(**) For smaller forest holdings, Member States may provide additional incentives to encourage the adoption of Management Plans or equivalent instruments that are in line with SFM.

Socio-economic benefits of reaching this target: *Some studies indicate that the potential value of the services delivered by healthy forest ecosystems significantly exceeds that of timber production. The total value of marketed non-wood goods from European forests was over 2.75 billion EUR in 2010, including products such as cork, wild mushrooms, game, fruit and nuts, raw materials for medicines, colorants and aromatic products, wild honey and bee wax, to name just a few*[60]*. The same report underlines that forests are a major source of benefits for society: almost 4 million people in Europe earn their living in forestry and forest-based industries; forests protect settlements and infrastructure against natural and human-induced hazards; offer recreation opportunities, spiritual and cultural values and innumerable physical and mental health benefits . A recent study*[61] *of an urban forest in Germany found that it delivered multiple ecosystem services worth some €27 million per year – or just under €12,000/ha/year, related to local climate regulation, recreation, water retention and flood protection, erosion control, carbon sequestration and air quality improvement.. The UK Natural Capital Committee Report*[62] *(2015) finds that an increase of 750 000ha of woodlands would deliver net economic benefits of nearly GBP 550m per annum across Great-*

[60] FOREST EUROPE, UNECE and FAO 2011: State of Europe's Forests 2011. Status and Trends in Sustainable Forest Management in Europe. http://www.foresteurope.org/full_SoEF
[61] Lukas Sieberth (2014) Inwertsetzung von Ökosystemdienstleistungen - Eine objektive Bewertung auf lokaler Ebene – Remscheid
[62] The State of Natural Capital: Third Report to the Economic Affairs Committee (2015)

Britain; including market and non-market values from timber, recreation and impacts on greenhouse gases, with a benefit-cost ratio ranging from 5:1 to 6:1.

This target aims to use EAFRD funding to encourage the systematic use of forest management plans (or equivalent) with biodiversity measures that contribute to the targets in the EU Biodiversity Strategy.

Box 4 - The EU Forest Strategy

In 2013 the Commission adopted the New EU Forest Strategy[63] in response to new challenges facing forests and the forest sectors, to the increasing demands put on forests, and to the significant societal and political changes that have affected them over the last 15 years. The Strategy has three guiding principles:

- *Sustainable forest management* and the multifunctional role of forests, delivering multiple goods and services in a balanced way and ensuring forest protection;
- *Resource efficiency*, optimising the contribution of forests and the forest sector to rural development, growth and job creation; and
- *Global forest responsibility*, promoting sustainable production and consumption of forest products.

The strategy defines sustainable forest management as '**using forests and forest land in a way, and at a rate, that maintains their biodiversity**, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, **and that does not cause damage to other ecosystems**'.

The State of Nature in the EU brings together a wealth of information on the assessment of conservation status of species and habitats protected under EU nature legislation. However, European-wide harmonised data is widely lacking or not available at EU level for other habitats and species, and in particular for forest areas outside Natura 2000 sites. It has to be noted that while there is not a common forest policy, the EU has, while fully respecting the principle of subsidiarity, a long history of contributing through its policies to implementing sustainable forest management and to Member States' decisions regarding forests.

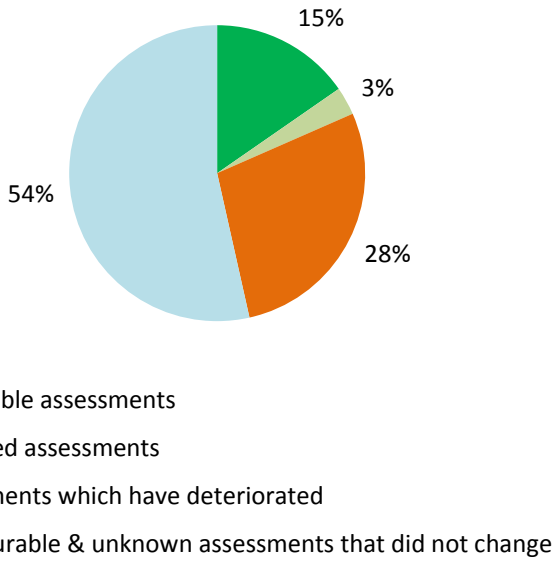
Measurable improvement in the conservation status of species and habitats that depend on or are affected by forestry and in the provision of ecosystem services as compared to the EU2010 Baseline

When using the information reported under the Habitats and Birds Directives (see target 1 for further explanation of the reporting process) a comparison is made between the status of species and habitats of

[63] http://ec.europa.eu/agriculture/forest/strategy/index_en.htm

Community interest associated with woodland/forest in the period 2001-2006 and the status of the same species and habitats in the period 2007-2012, there is no significant improvement. In relation to Annex I habitats from the Habitats Directive, favourable conservation assessments have decreased from nearly 17% to about 15% and the vast majority of individual assessments – about 80 per cent - remain unfavourable/unknown or have deteriorated. There is considerable variation across Europe's biogeographical regions: whereas in the Atlantic, Boreal and Steppic regions no woodland/forest habitats were found to be in a 'favourable' state over 30% in the Mediterranean and over 20% in the Alpine regions achieved favourable status.

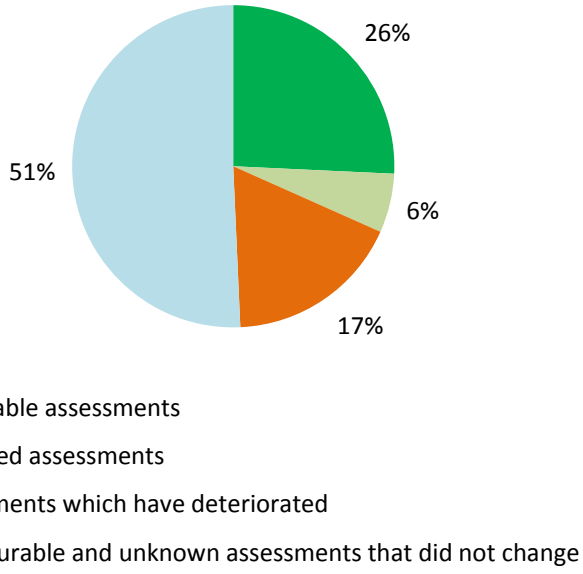
Figure 11 - Change (2007-2012 vs 2001-2006) in conservation status for Annex I habitats associated with woodland and forest ecosystem at EU 27 level



Source: EEA 2015

The conservation status of 26% of species associated with woodland/forest is favourable but around 70% are unfavourable/unknown or have deteriorated. The overall picture is therefore mixed.

Figure 12 – Changes in conservation status for non-bird species associated with woodland and forest ecosystems (2007-12)



Box 5: The importance of Europe's forests

From a historical low point about 200 years ago, Europe's forests have been recovering to cover some 40% of the EU territory today. A variety of different forest types cover the various geographical regions of Europe. They are remarkable ecosystems and a precious natural resource in many different ways. Among other things, they are home to many animals and plants; they protect us from floods and landslides; they remove carbon from the atmosphere and lock it away in their soils and biomass; they provide us with wood and other forest products; they are a source of employment; and they offer us a place for leisure and recreation. More than a quarter (26%) of EU forest and woodland are protected under Natura 2000.

In a global context, forest ecosystems in the EU are relatively young, uniform, intensely managed and fragmented. Very few natural, untouched forest ecosystems are left. Forest area increased by around 0.4% per year in recent decades but the rate of growth is currently slowing is down in several countries. Similarly, wood harvests were below annual growth and hence the wood volume in forests has increased for many years. Yet global competition for resources sharpens up, including for wood[64] and current EU policies to grow the bio-economy and the use of renewable energy sources[65] are likely to reinforce this global megatrend, driving the demand for timber and wood further up in the years to come.

European forests are largest reservoir of biodiversity compared to other terrestrial ecosystems. Nearly a quarter of the EU forest area is protected under Natura 2000 and 50% of the Natura 2000 network is covered by forest ecosystems.

[64] http://www.eea.europa.eu/soer
[65] http://ec.europa.eu/energy/en/topics/renewable-energy

Forests are also an important source of income both for many of the estimated 16 million private forests owners (some 60% of the EU forest area) but also for publicly owned forests. They contribute to rural development and provide some three million jobs. Wood is still the main source of financial revenue from forests, and an important raw material for bio-based industries.

PROGRESS IN IMPLEMENTING ACTIONS

11a) Member States and the Commission will encourage the adoption of Management Plans, *inter alia* through use of rural development measures and the LIFE+ programme.

With 90% of total EU funding for forestry measures, the Rural Development Regulation is also the key financial resource to implement the EU Biodiversity Strategy in forest ecosystems.

The estimated annual cost for managing the Natura 2000 network is around € 6 billion and approximately half of the network is comprised of forested land. During the period 2007-2013, €5.4 billion was available for forestry measures under EAFRD: a similar level of funding is foreseen for the period 2014-2020[66]. Under the Rural Development Regulation, the receipt of support for holdings above a certain size threshold (to be determined by the Member State) shall be conditional upon the existence of a forest management plan or equivalent During the negotiations of the 2014-20 Rural Development Programmes EU Member States and regions were therefore encouraged to draw up new forest management plans where they do not exist yet, and to include in them a number ofbiodiversity-positive measures.
At the moment it is too early to assess to what extent Member States will include forestry related measures, including biodiversity positive measures, under the Rural Development Regulation.

11b) Member States and the Commission will foster innovative mechanisms (e.g. Payments for Ecosystem Services) to finance the maintenance and restoration of ecosystem services provided by multifunctional forests.

As mentioned under Target 2, action 5 the EU initiative on **Mapping and Assessment of Ecosystems and their Services** (MAES) will provide spatially referenced information on ecosystem condition and related ecosystem services. This information will facilitate spatial planning and other decision processes. Under this initiative, a dedicated pilot study on forest aiming to identify available knowledge that can be used to map forest ecosystems and assess their condition and the services they provide was set up. On 2nd December 2014, a dedicated workshop on "Mapping and Assessment of Ecosystems and their Services (MAES) in forest environment" was held with the participation of representatives from Member States, relevant

[66] http://ec.europa.eu/agriculture/forest/strategy/index_en.htm

stakeholders and international organizations. In this workshop, it was agreed to test the MAES framework and indicators with real forest data and maps and to develop a guidance document to map and assess forest ecosystems and their services in EU. The final report of this work, planned for end-2015, will illustrate by means of a series of case-studies the implementation of mapping and assessment of forest ecosystem services in different contexts and at three geographical levels i.e. regional, national and European-wide. The results of this work will be published on the Biodiversity Information System for Europe (BISE)[67].

As indicated in the section on horizontal measures - mobilising resources to support biodiversity, the new EU financial instrument on **Natural Capital Financing Facility** (NCFF) will provide financing opportunities in the form of loans or equity investments for revenue-generating or cost-saving pilot projects promoting the preservation of natural capital, including climate change adaptation projects. Projects involving payments for the flows of benefits resulting from forest ecosystems (PES) are potentially eligible for funding. They are based on the beneficiary pays principle: the beneficiary of an ecosystem service pays the provider for securing that service. In addition to the NCFF, the European Investment Bank also provides support for forestry through priority lending streams-smaller enterprises, climate action and innovation/skills. Projects such as afforestation, renewable energy can be supported under this mechanism[68].

European Member States have been developing a variety of financing mechanisms to maintain and restore forest ecosystems and their services, and they are piloting new schemes, too. Examples include PES in public forests such as the Southern Finland Forest Biodiversity Programme (METSO), the KOMET Programme for forest conservation in Finland and Sweden, or the 'Woodland Carbon Code' in the UK.

Box 6: Examples of Payment for Ecosystem Services from forests

Southern Finland Forest Biodiversity Programme (METSO)

This programme was launched in 2002 to protect forest land in Southern Finland, where most forests are in commercial use by small scale non-industrial private landowners. The pilot programme introduced new voluntary conservation measures, under which landowners could:

- Contract their land for a fixed period;
- Establish a private protected area; and
- Sell the land to the state.

This ‘nature values trading’ mostly led to 10-year contracts and became the flagship instrument of the

[67] http://biodiversity.europa.eu

[68] http://www.eib.org/attachments/general/events/20150323_brussels_agriculture_rural_development_financing_a_growing_forest_sector_en.pdf

METSO pilot. Implementation emphasized nature values, which the compensation incentivized protecting. After the successful pilot, it was extended across the country in 2008 through the METSO II programme, excluding only the northernmost parts of the country, where conservation was already good. The criteria for eligible sites were defined in more detail, and administrators were trained in standardized interpretation of them. Compensation was based on lost timber income only ('opportunity cost') and nature values became simply eligibility criteria, not influencing the payments. In Finland, landowners have the right, and sometimes even responsibility, to produce timber and the compensation is for giving up a part of this.[69]

KOMET Programme, Sweden

This voluntary scheme, initiated by the Swedish Government and introduced in spring 2010 was a partnership of three government bodies with a budget of 11 million SEK in 2011for administrative costs and covering 9% of Sweden's forest land. It aimed to raise owners' awareness of the conservation value of biologically important forest, and encouraged them to enter nature conservation agreements or other forms of protection for them. Agreements may last for between 1 to 50 years, depending on the site's significance. Owners receive fixed-rate payments to compensate for limitations placed on their management in the interests of nature conservation. For habitat protection sites and nature reserves, owners receive full compensation plus an additional 25%.[70]

Mature Forest Reserves, France[71]

The focus is on water and forest fire prevention in the Massif des Maures. The service providers are the forests managed by the Office of National Forests. The mechanism consists of the water provider paying for maintaining a fuel break network, limiting the risk of wildfires, which can have negative impact on dam siltation and water quality. A study was conducted to assess the risks in case of fire. Funding comes from the Union for drinkable water distribution of the Corniche des Maures (SIDECM). The agreement duration is 4 years.

Romagna Acque S.p.a., Italy[72]

The aim is investing in water quality in water catchment (forest) area by a public company controlled by the local administrations (Province and Municipalities). The Dam was built in the 1982 with a capacity of 33M m3; more than 100M m3of high quality drinking water provided/year. The funding mechanisms is 25 years of constant investments in the catchment basin area (mainly forest area): an almost fixed amount of 4% of the total company revenues from water tariff, equal to an annual PES of 500,000 - 600,000 €. The cost of

[69] Primmer et al. (2010) cited by United Nations (2014) The Value of Forests: Payments for Ecosystem Services in a Green Economy. Available at: http://www.unece.org/fileadmin/DAM/timber/publications/SP-34Xsmall.pdf
[70] United Nations (2014) The Value of Forests: Payments for Ecosystem Services in a Green Economy. Available at: http://www.unece.org/fileadmin/DAM/timber/publications/SP-34Xsmall.pdf
[71] http://ec.europa.eu/environment/archives/ecoinnovation2012/2nd_forum/presentations/session2/2-4.pdf
[72] http://www.efi.int/files/attachments/publications/efi_policy_brief_7_eng_net.pdf

removing the soil from the dam-bed could have been 10 times higher in the same period

In public payment schemes, a public body is responsible for implementation, so there is a need to show public demand for the service and the cost-effectiveness of the mechanism.[73]

For example, in the water sector, public schemes are used to pay for the maintenance of forest areas and afforestation or reforestation to ensure high quality drinking water supply for municipalities.

Box 7: Example of Payment for Ecosystem Services for water from forest catchment

Copenhagen Energy PES scheme

During the last 20 years, Copenhagen Energy Corporation, which delivers drinking water to around one million consumers around Copenhagen, has seen a reduction in supply of about 14 million m³ of groundwater per year. One of the largest groundwater bodies used by Copenhagen Energy is the Vigersted Well Field from which also 5 million m³ per year are taken, equal to a year's consumption by 100,000 Copenhageners. Copenhagen Energy has therefore needed to protect this groundwater body through afforestation measures and the designation of well-head protection zones with no pesticides. Two forest-groundwater PES schemes have been developed to have two main effects:

- A change from agriculture to forests through afforestation of mainly broadleaf species.
- Restrictions on the use of fertilizers or pesticides in existing forest areas, and in some cases also replacing conifer stands with broadleaf tree species, to increase groundwater recharge.

To maintain quality of groundwater in the privately-owned forest adjacent to the Vigersted Well Field, Copenhagen Energy pays the private owner not to use pesticides on 95 hectares of the forest. In addition, Copenhagen Energy was able to buy 530 hectares of farm land on which broadleaf trees were then planted. Afforestation activities were implemented and managed by the state and local municipalities.[74]

12) Member States will ensure that forest management plans or equivalent instruments include as many of the following measures as possible:
– maintain optimal levels of deadwood, taking into account regional variations such as fire risk or potential insect outbreaks;

[73] United Nations (2014) The Value of Forests: Payments for Ecosystem Services in a Green Economy. Available at: http://www.unece.org/fileadmin/DAM/timber/publications/SP-34Xsmall.pdf
[74] Standing Forestry Committee, November (2008) cited by United Nations (2014) The Value of Forests: Payments for Ecosystem Services in a Green Economy. Available at: http://www.unece.org/fileadmin/DAM/timber/publications/SP-34Xsmall.pdf

– preserve wilderness areas;
– ecosystem-based measures to increase the resilience of forests against fires as part of forest fire prevention schemes, in line with activities carried out in the European Forest Fire Information System (EFFIS);
– specific measures developed for Natura 2000 forest sites;
– ensuring that afforestation is carried out in accordance with the Pan-European Operational Level Guidelines for SFM[75], in particular as regards the diversity of species, and climate change adaptation needs.

A Commission survey of Member States on Forest Management Plans [76] provides an overview of both the official requirements and the current practice 'on the ground' in many Member States. The survey shows that there are differences in the conception and use of Forest Management Plans between countries and, in some cases, regions. From the responses received, it appears that take-up of the measures referred to in Action 12 of the EU Biodiversity Strategy is limited. However, the amounts of dead-wood left in forests are increasing and many countries do require detailed biodiversity measures e.g. biodiversity management programmes or additional guidelines in Forest Management Plans for forests in designed nature conservation areas, such as Natura 2000 sites.

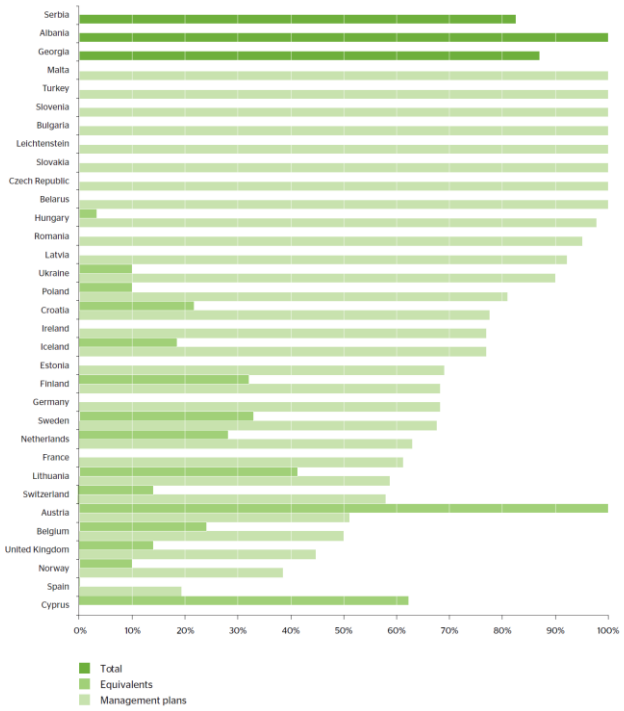
Woodland and forest represent nearly half of the Natura 2000 network[77] and more than one quarter of EU forests are part of Natura 2000 protected areas. Standard forest management practices apply to many of these forests, but many of them require also special measures to ensure a favourable conservation status of the forest species and habitat types covered under EU nature legislation. To help Member States determine and implement these measures, the Commission has been developing, together with Member States and stakeholders, a guide on 'Natura 2000 and Forests' which addresses some of these subjects.

The Commission has also published in June 2015, a call for tenders for a study on implementing sustainable forest management according to the EU biodiversity strategy and the EU bioeconomy strategy. This study will look, inter alia, how Forest Europe's Pan-European Operational Level Guidelines for SFM are being applied in today's forest planning, management and land-use operations in a number of EU Member States. The study will improve awareness and understanding of current practice, identify successful practices in a given regional context which may be considered 'good practice', and determine major gaps which should be addressed in the future[78].

[75] http://www.foresteurope.org/docs/MC/MC_lisbon_resolution_annex2.pdf
[76] http://ec.europa.eu/environment/forests/pdf/fmp_table.pdf
[77] http://www.eea.europa.eu/publications/state-of-nature-in-the-eu/annexes-a2013f
[78] https://etendering.ted.europa.eu/cft/cft-display.html?cftId=882

FOREST EUROPE's 2011 'State of Europe's Forests' report[79,80] identifies that for the 46 Forest Europe countries[81] with available data for 2010, around 90 percent of the forest area in these countries was under a Forest Management Plan or an equivalent. Countries such as Malta, Slovenia, Bulgaria, Slovakia, and Czech Republic reported that all forest area was covered by Forest Management Plans. In other Member States the figure is much lower. Data from Italy and Greece are not available.

Figure 13 - Percentage of forest area under management plans or equivalents, 2010



There has been a shift in forest management with an increase in the share of native tree species and steady decline of introduced tree species (e.g. in the Netherlands). Countries with a very low share, i.e. below 0.5 percent, of introduced tree species or no introduced tree species are Lithuania, Finland, Estonia, and Latvia. However, during the last ten years, an increase in introduced species has been observed for example in Bulgaria, France, Hungary, Iceland, Ireland, Portugal and Spain. The increase may be linked to the planting of introduced species for protective and wood production measures or expanding the forested area.[82]

[79] FOREST EUROPE, UNECE and FAO 2011: State of Europe's Forests 2011. Status and Trends in Sustainable Forest Management in Europe. Available at: http://www.foresteurope.org/documentos/State_of_Europes_Forests_2011_Report_Revised_November_2011.pdf?bcsi_scan_AB11CAA0E2721250=0&bcsi_scan_filename=State_of_Europes_Forests_2011_Report_Revised_November_2011.pdf

[80] The State of Europe's Forests 2015 report is due for publication later in 2015

[81] The State of Europe's Forests 2011 report covers the 46 FOREST EUROPE signatory countries and the European Union

[82] FOREST EUROPE, UNECE and FAO 2011: State of Europe's Forests 2011. Status and Trends in Sustainable Forest Management in Europe. Available at: http://www.foresteurope.org/documentos/State_of_Europes_Forests_2011_Report_Revised_November_2011.pdf?bcsi_scan_AB11CAA0E2721250=0&bcsi_scan_filename=State_of_Europes_Forests_2011_Report_Revised_November_2011.pdf