



Brussels, 3.2.2017
SWD(2017) 49 final

COMMISSION STAFF WORKING DOCUMENT

**The EU Environmental Implementation Review
Country Report - LUXEMBOURG**

Accompanying the document

**Communication from the Commission to the European Parliament, the Council, the
European Economic and Social Committee and the Committee of the Regions**

**The EU Environmental Implementation Review: Common Challenges and how to
combine efforts to deliver better results**

{COM(2017) 63 final}
{SWD(2017) 33 - 48 final}
{SWD(2017) 50 - 60 final}

This report has been written by the staff of the Directorate-General for Environment, European Commission. Any comments are welcome to the following e-mail address: ENV-EIR@ec.europa.eu

More information on the European Union is available on the internet (<http://europa.eu>).

Photographs: p.6 ©LIFE05 ENV/L/000047; p.9 ©Sara Winter/iStock; p.11 ©LIFE11 NAT/LU/000858; p.16 ©koekeloer/iStock; p.21 ©Bogdan Lazar/iStock

For reproduction or use of these photos, permission must be sought directly from the copyright holder.

©European Union, 2017

Reproduction is authorised provided the source is acknowledged.

Table of Content

EXECUTIVE SUMMARY	4
PART I: THEMATIC AREAS	5
1. TURNING THE EU INTO A CIRCULAR, RESOURCE-EFFICIENT, GREEN AND COMPETITIVE LOW-CARBON ECONOMY.....	5
Developing a circular economy and improving resource efficiency	5
Waste management	7
2. PROTECTING, CONSERVING AND ENHANCING NATURAL CAPITAL.....	9
Nature and Biodiversity.....	9
Green Infrastructure	11
Soil protection	11
3. ENSURING CITIZENS' HEALTH AND QUALITY OF LIFE	13
Air quality	13
Noise	14
Water quality and management	14
Enhancing the sustainability of cities	16
International agreements	17
PART II: ENABLING FRAMEWORK: IMPLEMENTATION TOOLS	18
4. MARKET BASED INSTRUMENTS AND INVESTMENT	18
Green taxation and environmentally harmful subsidies.....	18
Green Public Procurement.....	19
Investments: the contribution of EU funds.....	19
5. EFFECTIVE GOVERNANCE AND KNOWLEDGE.....	21
Effective governance within central, regional and local government.....	21
Compliance assurance.....	22
Public participation and access to justice	23
Access to information, knowledge and evidence.....	23

Executive summary

About the Environmental Implementation Review

In May 2016, the Commission launched the Environmental Implementation Review (EIR), a two-year cycle of analysis, dialogue and collaboration to improve the implementation of existing EU environmental policy and legislation¹. As a first step, the Commission drafted 28 reports describing the main challenges and opportunities on environmental implementation for each Member State. These reports are meant to stimulate a positive debate both on shared environmental challenges for the EU, as well as on the most effective ways to address the key implementation gaps. The reports rely on the detailed sectoral implementation reports collected or issued by the Commission under specific environmental legislation as well as the 2015 State of the Environment Report and other reports by the European Environment Agency. These reports will not replace the specific instruments to ensure compliance with the EU legal obligations.

The reports will broadly follow the outline of the 7th Environmental Action Programme² and refer to the 2030 Agenda for Sustainable development and related Sustainable Development Goals (SDGs)³ to the extent to which they reflect the existing obligations and policy objectives of EU environmental law⁴.

The main challenges have been selected by taking into account factors such as the importance or the gravity of the environmental implementation issue in the light of the impact on the quality of life of the citizens, the distance to target, and financial implications.

The reports accompany the Communication "*The EU Environmental Implementation Review 2016: Common challenges and how to combine efforts to deliver better results*", which identifies challenges that are common to several Member States, provides preliminary conclusions on possible root causes of implementation gaps and proposes joint actions to deliver better results. It also groups in its Annex the actions proposed in each country report to improve implementation at national level.

General profile

EU Directives are mostly transposed in time and applied correctly in Luxembourg. Some concerns remain in the area of water services (urban wastewater treatment) and water quality (nitrates pollution). Traffic congestion, which is primarily triggered by the large share of daily commuters but also prompted by the low fuel taxation, also constitutes a problem, leading to air pollution and human-health concerns. Luxembourg is sensitive to cross-border environmental and economic impacts.

Main Challenges

The main challenges with regard to implementation of EU environmental policy and law in Luxembourg are:

- ❖ Improving water quality by further reducing nitrates pollution.
- ❖ Completing urban wastewater treatment.

Main Opportunities

Luxembourg could perform better on topics where there is already a good knowledge base and good practices. This applies in particular to:

- ❖ Implementing measures for sustainable mobility to reduce traffic congestion and air pollution in and around Luxembourg City.
- ❖ Phasing out environmentally harmful subsidies.

Points of Excellence

Where Luxembourg is a leader on environmental implementation, innovative approaches could be shared more widely with other countries. A good example is:

- ❖ Luxembourg is the best performer in the EU in terms of resource productivity, i.e. how efficient the economy uses material resources to produce wealth.
- ❖ There is a strong public support for circular economy and resource efficiency concretized in initiatives such as the SuperDreckskëscht & Fit4Circularity schemes.

¹ Communication "Delivering the benefits of EU environmental policies through a regular Environmental Implementation Review" ([COM/2016/ 316 final](#)).

² Decision No. 1386/2013/EU of 20 November 2013 on a General Union Environmental Action Programme to 2020 "[Living well, within the limits of our planet](#)".

³ United Nations, 2015. [The Sustainable Development Goals](#)

⁴ This EIR report does not cover climate change, chemicals and energy.

Part I: Thematic Areas

1. Turning the EU into a circular, resource-efficient, green and competitive low-carbon economy

Developing a circular economy and improving resource efficiency

The 2015 Circular Economy Package emphasizes the need to move towards a lifecycle-driven 'circular' economy, with a cascading use of resources and residual waste that is close to zero. This can be facilitated by the development of, and access to, innovative financial instruments and funding for eco-innovation.

SDG 8 invites countries to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. SDG 9 highlights the need to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. SDG 12 encourages countries to achieve the sustainable management and efficient use of natural resources by 2030.

Measures towards a circular economy

Transforming our economies from linear to circular offers an opportunity to reinvent them and make them more sustainable and competitive. This will stimulate investments and bring both short and long-term benefits for the economy, environment and citizens alike.⁵

Pressure on material resources is one of the long-term trends affecting job creation and growth in the EU. Luxembourg is the best performer in the EU in terms of resource productivity⁶, i.e. how efficiently the economy uses material resources to produce wealth⁷, with 3.389EUR/kg (EU average is 2) in 2015. Figure 1 shows that Luxembourg's resource productivity has increased modestly since 2008 but decreased again since 2011.

In 2014, a study⁸ found that a circular economy is a source of competitive advantage, as it would lead to increased job opportunities (more than 2,200 jobs in the next three years), important cost-savings (EUR 300 million to EUR 1 billion per year) and less pressure on the environment. In addition, embracing a circular economy would increase the inflow of secondary raw materials that industries rely on, reinforcing their interdependency and substantially reducing waste production.

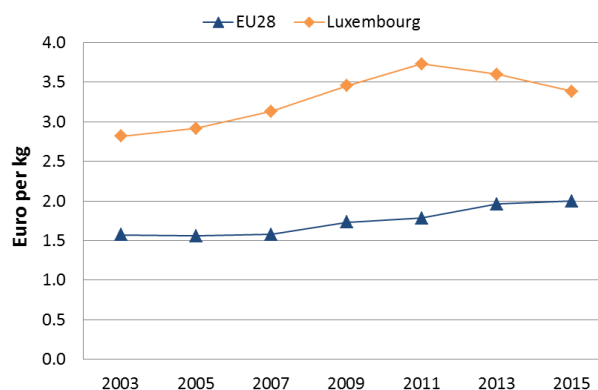
⁵ European Commission, 2015. [Proposed Circular Economy Package](#)

⁶ Resource productivity is defined as the ratio between gross domestic product (GDP) and domestic material consumption (DMC).

⁷ Eurostat, [Resource productivity](#), accessed July 2016

⁸ Ministry of Economy Luxembourg, 2014. 'Luxembourg as a Knowledge Capital and Testing Ground for the Circular Economy'

Figure 1: Resource productivity 2003-15⁹



The circular economy is high on the agenda of the Luxemburgish government. In order to unite all relevant stakeholders and coordinate their actions and sharing information, an inter-ministerial committee "Strategic group for a circular economy" under the governance of the secretaries of state for economic and environmental affairs was set up in 2015. Among those coordinated actions was the organisation of an international conference in the framework of the 2015 Luxembourg EU Presidency and the InnovFin Advisory programme on financing the circular economy. Within BENELUX there is also cooperation on the circular economy^{10,11}.

The government has developed a trademark – the SuperDrecksKëscht – in order to incentivise the citizens and businesses to better manage their waste, rationalise their resource consumption which paves the way towards a more circular model, which appears to be a particularly effective vehicle for the government to deliver its messages to the private sphere.

The circular economy is also fostered by the government through the development of economic activity zones and 'eco-neighbourhoods' based on circular principles. These zones promote low-carbon mobility, industrial symbiosis and collaborative consumption.

Efforts to promote eco-innovation and the circular economy in Luxembourg are mostly led by public-private partnerships and structured around the Luxembourg Eco-Innovation Cluster, LuxInnovation (the national agency for innovation and research), the Ministry of Economy,

⁹ Eurostat, [Resource productivity](#), accessed October 2016

¹⁰ BENELUX, [Roundtable](#) 14.12.2015

¹¹ Luxembourg Government, [Portail de l'environnement](#).

the Ministry of Sustainable Development and Infrastructure and the INTERREG North West Europe (NEW) programme that the latter promotes.

SMEs and resource efficiency

Small and Medium-sized enterprises (SMEs) are particularly important for the 'non-financial business economy' in Luxembourg, generating approximately 70 % of both value added and employment. Their productivity, measured as value added per head, is almost twice the EU average.

The Flash 426 Eurobarometer shows that 44% of the SMEs in Luxembourg have one or more full time employee working in a green job at least some of the time (EU28 average 35%)¹².



The same survey indicates that around 51% of Luxembourg's SMEs have invested up to 5% of their annual turnover in resource efficiency actions (EU28 average 50%), 48 % are currently offering green products and services, 50% took measures to save energy (EU28 average 59%), 65% to minimise waste (EU28 average 60%), 43% to save water (EU28 average 44%), and 53% to save materials (EU28 average 54%). From a circular economy perspective, 38% took measures to recycle by reusing material or waste within the company, 14% to design products that are easier to maintain, repair or reuse and 32% were able to sell their scrap material to another company. The resource efficiency actions undertaken have allowed the reduction of production costs in about 30% of Luxembourg's SMEs.

Regarding the good practices, Fit4Circularity is a new support scheme created in 2015 by LuxInnovation and targeting SMEs, following the Fit4Digital and Fit4Innovation initiatives. Fit4Circularity is dedicated to helping SMEs that are willing to make a more substantial

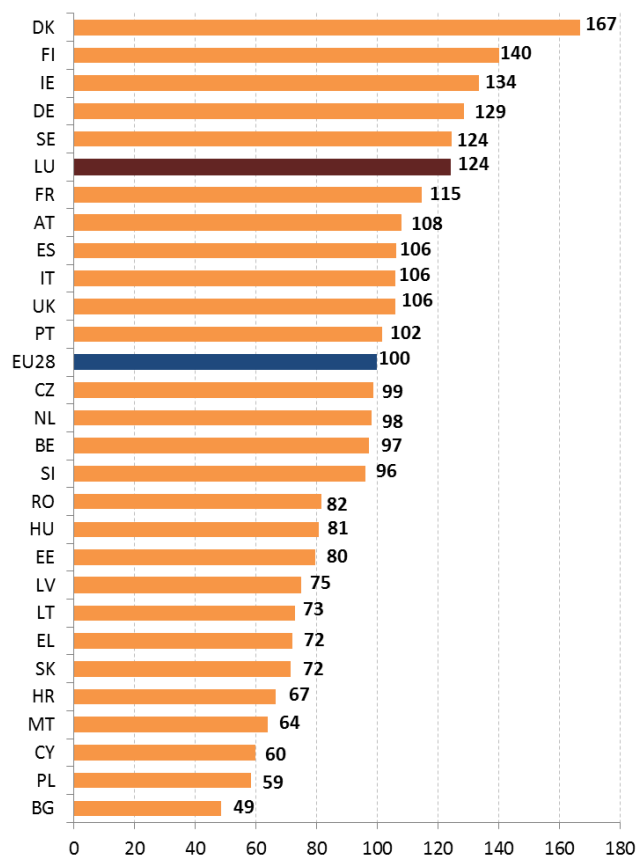
¹² European Commission, 2015. [Flash 426 Eurobarometer](#) "SMEs, resource efficiency and green markets" defines "green job" as a job that directly deals with information, technologies, or materials that preserves or restores environmental quality. This requires specialised skills, knowledge, training, or experience (e.g. verifying compliance with environmental legislation, monitoring resource efficiency within the company, promoting and selling green products and services).

commitment to sustainable development practices and to implement a circular economy approach. The objectives are to limit the use of raw materials, maximise the use of renewable sources, develop innovative products and services for sustainable growth, reduce energy consumption and increase reusability. The Fit4Circularity programme is designed to support companies in changing their business models from linear to circular value propositions.

Eco-Innovation

Luxembourg ranks high in the Eco-Innovation Scoreboard 2015 as shown in Figure 2. This is a considerable progress compared to previous years – the country was ranked 11th in 2011. Luxembourg performs above the EU average in resource efficiency and socio-economic outcomes.

Figure 2: Eco-Innovation Index 2015 (EU=100)¹³



The main drivers of Eco-Innovation are strong political support from the government towards eco-innovation, sustainable development and the circular economy, to make the country a global technology hub for eco-innovation. There is a growing awareness from businesses of the economic benefits of a circular economy, enabling them to rely on a more stable

¹³ [Eco-innovation Observatory](#): Eco-Innovation scoreboard 2015

business model, beneficial to both their competitiveness and their environmental impact. Luxembourg has a strong and comprehensive set of national environmental and innovation laws, largely based on EU legislation.

There is a small national market for eco-innovation. Nevertheless, the local market is flexible, which makes the country an ideal place to test innovative R&D. At the same time, the interdependency of Luxembourg and its geographic neighbours is strong, putting pressure on the demand for housing, services and infrastructures, generating considerable transport flows.

Waste management

Turning waste into a resource requires:

- Full implementation of Union waste legislation, which includes the waste hierarchy; the need to ensure separate collection of waste; the landfill diversion targets etc.
- Reducing per capita waste generation and waste generation in absolute terms.
- Limiting energy recovery to non-recyclable materials and phasing out landfilling of recyclable or recoverable waste.

SDG 12 invites countries to substantially reduce waste generation through prevention, reduction, recycling and reuse, by 2030.

The EU's approach to waste management is based on the "waste hierarchy" which sets out an order of priority when shaping waste policy and managing waste at the operational level: prevention, (preparing for) reuse, recycling, recovery and, as the least preferred option, disposal (which includes landfilling and incineration without energy recovery).

The progress towards reaching recycling targets and the adoption of adequate WMP/WPP¹⁴ should be the key items to measure the performance of Member States. This section focuses on management of municipal waste for which EU law sets mandatory recycling targets.

Although there was a reduction in municipal waste¹⁵ generation in Luxembourg between 2013 and 2014, it remains considerably high compared to the EU average (616 kg/y/inhabitant¹⁶ compared to around 475 kg on average)¹⁷. Figure 3 depicts the municipal waste by treatment in Luxembourg in terms of kg per capita.

Figure 3: Municipal waste by treatment in Luxembourg 2007-14¹⁸

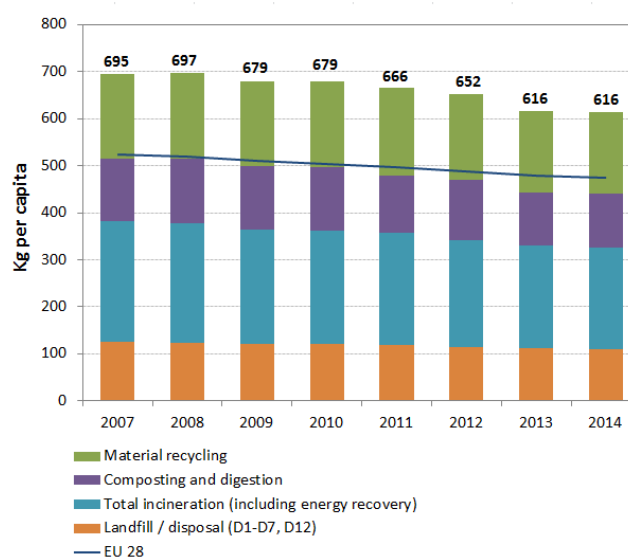
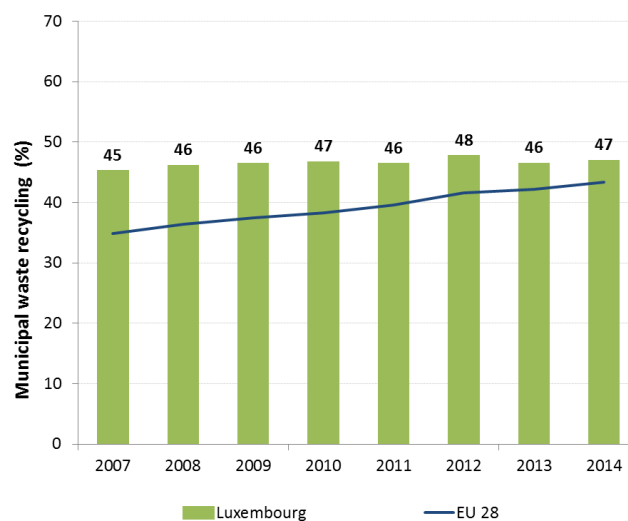


Figure 4 shows that the recycling of municipal waste in Luxembourg is 47% (including composting), slightly above the EU average (44%) in 2014 but showing a minor (1%) decrease since 2013.

Figure 4: Recycling rate of municipal waste 2007-14¹⁹



Incineration accounts for 35% and is above the EU average (27%). The amount of waste landfilled is below the EU average (18% compared to 28%)²⁰. Luxembourg is on a good path towards meeting the 2020 target of 50%

¹⁴ Waste Management Plans/Waste Prevention Programmes

¹⁵ Municipal waste consists of waste collected by or on behalf of municipal authorities, or directly by the private sector (business or private non-profit institutions) not on behalf of municipalities.

¹⁶ Transboundary commuters coming to work in Luxembourg (estimated 170 000 people every day) contribute significantly to this high figure.

¹⁷ Eurostat, [Municipal waste generation and treatment, by type of treatment method](#)

¹⁸ Eurostat, [Municipal waste and treatment, by type of treatment method](#), accessed October 2016

¹⁹ Eurostat, [Recycling rate of municipal waste](#), accessed October 2016

²⁰ This figure is expected to further diminish as of 2015 due to closure of one of the two landfills.

recycling of municipal waste²¹, but additional efforts will be needed to reach the 65% recycling target for 2030²².

Full implementation of the existing legislation could create more than 200 jobs in Luxembourg and increase the annual turnover of the waste sector by EUR 24 million. Moving towards the targets of the Roadmap on resource efficiency²³, could create over 400 additional jobs and increase the annual turnover of the waste sector by over EUR 45 million²⁴.

Suggested action

- Implement existing policies, including economic instruments (e.g. *Pay As You Throw* schemes), to promote prevention, make reuse and recycling more economically attractive²⁵.
- Shift reusable and recyclable waste away from incineration by gradually phasing out subsidies to incineration / introducing incineration tax.

²¹ Member States may choose a different method than the one used by ESTAT (and referred to in this report) to calculate their recycling rates and track compliance with the 2020 target of 50% recycling of municipal waste.

²² European Union, Proposal for a Directive on the landfill of waste, [COM/2015/0594](#) & European Union, Proposal for a Directive amending Directive 2008/98/EC on waste, [COM/2015/0595](#)

²³ which outlines how we can transform Europe's economy into a sustainable one by 2050

²⁴ Bio Intelligence service, 2011. [Implementing EU Waste legislation for Green Growth](#), study for European Commission. The breakdown per country on job creation was made by the consultant on Commission demand but was not included in the published document.

²⁵ According to the Luxembourgish authorities, the Act of 21 March 2012 foresees the implementation of the polluter pays principle by various taxes depending on the real quantity of waste generated (to be measured by weight or by volume). The municipalities are continuously following up the implementation of these measures. Besides the purely economic instruments, the Government is working on a system which is accepted by the society, and provides high quality separate collection of different types of materials.

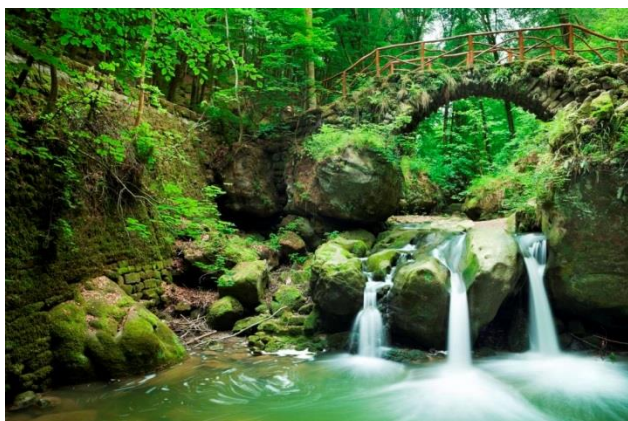
2. Protecting, conserving and enhancing natural capital

Nature and Biodiversity

The EU Biodiversity Strategy aims to halt the loss of biodiversity in the EU by 2020, restore ecosystems and their services in so far as feasible, and step up efforts to avert global biodiversity loss. The EU Birds and Habitats Directives aim at achieving favourable conservation status of protected species and habitats.

SDG 14 requires countries to conserve and sustainably use the oceans, seas and marine resources, while SDG 15 requires countries to protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

The 1992 EU Habitats Directive and the 1979 Birds Directive are the cornerstone of the European legislation aimed at the conservation of the EU's wildlife. Natura 2000, the largest coordinated network of protected areas in the world, is the key instrument to achieve and implement the Directives' objectives to ensure the long-term protection, conservation and survival of Europe's most valuable and threatened species and habitats and the ecosystems they underpin.



The adequate designation of protected sites as Special Areas of Conservation (SAC) under the Habitats Directive and as Special Protection Areas (SPA) under the Birds Directive is a key milestone towards meeting the objectives of the Directives. The results of Habitats Directive Article 17 and Birds Directive Article 12 reports²⁶ and the progress towards adequate Sites of Community Importance (SCI)-SPA and SAC designation²⁷

²⁶ The core of the 'Article 17' report is assessment of conservation status of the habitats and species targeted by the Habitats Directive. Article 12 of the Birds Directive requires Member States to report about the progress made with the implementation of the Birds Directive.

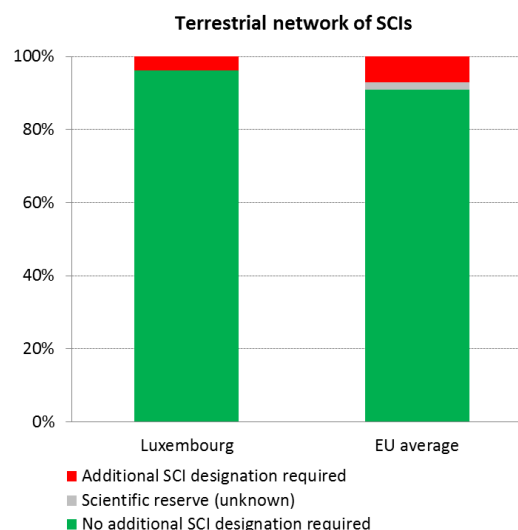
²⁷ Sites of Community Importance (SCIs) are designated pursuant to the Habitats Directive whereas Special Areas of Protection (SPAs) are designated pursuant to the Birds Directive; figures of coverage do not add up due to the fact that some SCIs and SPAs overlap. Special

both in land and at sea, should be the key items to measure the performance of Member States.

By early 2016, 27.03% of the national land area of Luxembourg is covered by Natura 2000 (EU average 18.1%), with 18 SPAs designated under the Birds Directive covering 16.1% (EU average 12.3%) and 48 SCIs designated under by the Habitats Directive covering 16.02 % (EU average 13.8%).

The latest assessment of the SCIs part of the Natura 2000 network shows that there are only two minor issues as regards designation and that the network is largely complete²⁸ as shown in Figure 5²⁹.

Figure 5: Sufficiency assessment of SCI networks in Luxembourg based on the situation until December 2013 (%)³⁰



Areas of Conservation (SACs) means a SCI designated by the Member States.

²⁸ For each Member State, the Commission assesses whether the species and habitat types on Annexes I and II of the Habitats Directive, are sufficiently represented by the sites designated to date. This is expressed as a percentage of species and habitats for which further areas need to be designated in order to complete the network in that country. A scientific reserve is given when further research is needed to identify the most appropriate sites to be added for a species or habitat. [The current data](#), which were assessed in 2014-2015, reflect the situation up until December 2013.

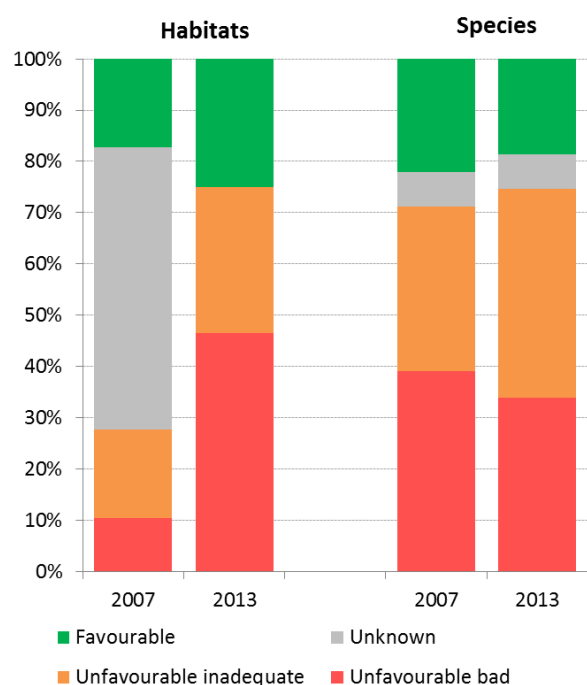
²⁹ The percentages in Figure 5 refer to percentages of the total number of assessments (one assessment covering 1 species or 1 habitat in a given biogeographical region with the Member State); if a habitat type or a species occurs in more than 1 Biogeographical region within a given Member State, there will be as many individual assessments as there are Biogeographical regions with an occurrence of that species or habitat in this Member State.

³⁰ European Commission internal assessment.

All SCIs have been designated as SACs under Article 4(4) of the Habitats Directive. The adoption of conservation measures for the sites was lagging behind, but the process of establishing management plans for all sites has been considerably accelerated in 2015. In 2015, the Ministry for Sustainable Development and Infrastructure launched a national communication campaign on Natura 2000, with the aim of improving public awareness on and acceptance of Natura 2000. The financing of the conservation measures has been carefully framed in an updated Priority Action Framework (PAF).

According to the latest report on the conservation status of habitats and species covered by the Habitats Directive³¹, 25% of the habitats' biogeographic assessments were favourable in 2013 (EU27: 16%).

Figure 6: Conservation status of habitats and species in Luxembourg in 2007/2013 (%)³²



Furthermore, 29% are considered to be unfavourable-inadequate³³ (EU27: 47%) and 46% are unfavourable-bad (EU27: 30%). As for the species, 19% of the assessments were favourable in 2013 (EU27: 23%) 41% at

³¹ The core of the 'Article 17' report is the assessment of conservation status of the habitats and species targeted by the Habitats Directive.

³² These figures show the percentage of biogeographical assessments in each category of conservation status for habitats and species (one assessment covering 1 species or 1 habitat in a given biographical region with the Member State), respectively. The information is based on Article 17 of the Habitats Directive reporting - [national summary of Luxembourg](#)

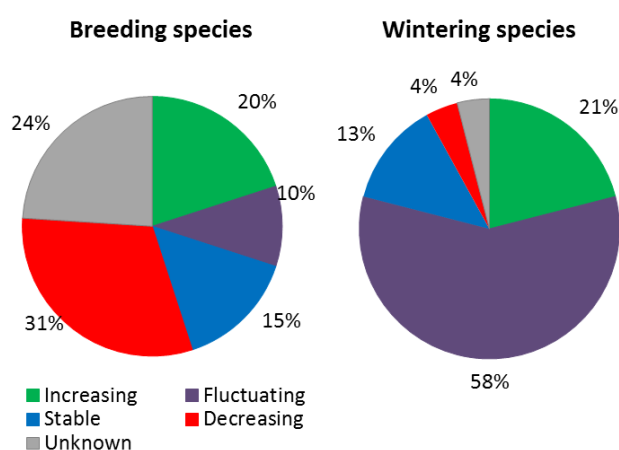
³³ Conservation status is assessed using a standard methodology as being either 'favourable', 'unfavourable-inadequate' and 'unfavourable-bad', based on four parameters as defined in Article 1 of the Habitats Directive.

unfavourable-inadequate (EU27: 42%) and 34% unfavourable-bad status (EU27: 18%). This is depicted in Figure 6³⁴.

Around 9% and 19% of the unfavourable assessments respectively for species and habitats were showing a positive trend in 2013. Biodiversity-rich habitats such as wetlands, dry meadows and extensively used orchards have seriously declined over the past 30 years providing clear evidence of a rampant homogenisation of landscapes. Generally, biodiversity is in a better conservation status in forests than in open, predominantly agricultural and aquatic ecosystems.

Figure 7 shows that as far as birds are concerned, 39% of the breeding species showed short-term increasing or stable population trends (for wintering species this figure was 34%).

Figure 7: Short-term population trend of breeding and wintering bird species in Luxembourg in 2012 (%)³⁵



The intensification of agricultural practices, urban and suburban development and an increased density of transportation infrastructure are the main driving forces affecting biodiversity in Luxembourg. While the overall status of biodiversity is still difficult to assess, national red lists³⁶, landscape statistics and monitoring of selected species often show negative trends.

A methodological guide for the implementation of the EU initiative on Mapping and Assessment of Ecosystems and their Services (MAES) in Luxembourg was completed in

³⁴ Please note that a direct comparison between 2007 and 2013 data is complicated by the fact that Bulgaria and Romania were not covered by the 2007 reporting cycle, that the 'unknown' assessments have strongly diminished particularly for species, and that some reported changes are not genuine as they result from improved data / monitoring methods.

³⁵ Article 12 of the Birds Directive reporting - [national summary of Luxembourg](#)

³⁶ The IUCN Red List is the world's most comprehensive inventory of the global conservation status of biological species. It is set upon precise criteria to evaluate the extinction risk of thousands of species.

March 2014. Based on this guide, 12 ecosystem services³⁷ were prioritised and mapped by the end of 2014. An update of the Habitat Quality Mapping (ecosystem assessment with a methodology developed for the restoration of ecosystems using fine scale datasets) and the Ecosystem Services Mapping is ongoing.

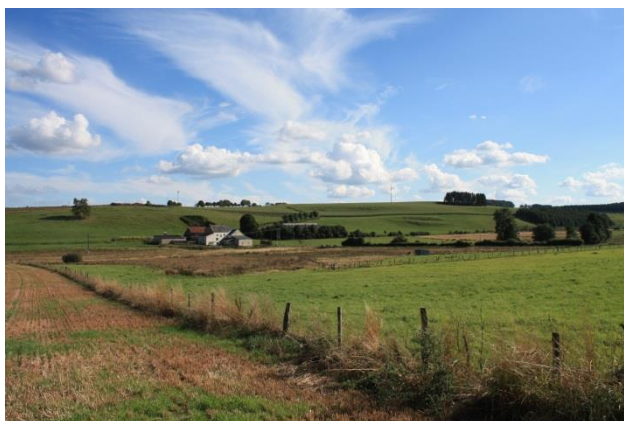
Suggested action

- Complete the SAC designation process and put in place clearly defined conservation objectives and the necessary conservation measures for the sites and provide adequate resources for their implementation in order to maintain/restore species and habitats of community interest to a favourable conservation status across their natural range.
- Ensure that the Rural Development Programme favours biodiversity measures and contribute to achieving a favourable conservation status of habitats and species.
- Avoid further habitat fragmentation and take measures to restore connectivity.

Green Infrastructure

The EU strategy on green infrastructure³⁸ promotes the incorporation of green infrastructure into related plans and programmes to help overcome fragmentation of habitats and preserve or restore ecological connectivity, enhance ecosystem resilience and thereby ensure the continued provision of ecosystem services.

Green Infrastructure provides ecological, economic and social benefits through natural solutions. It helps to understand the value of the benefits that nature provides to human society and to mobilise investments to sustain and enhance them.



Conserving and restoring Green and Blue Trails is a priority for Luxembourg, to be achieved through: identifying and protecting core sites; restoring ecological

³⁷ Ecosystem services are benefits provided by nature such as food, clean water and pollination on which human society depends.

³⁸ European Union, Green Infrastructure — Enhancing Europe's Natural Capital, [COM/2013/0249](https://ec.europa.eu/eip/ifp/2013/0249)

corridors through the construction of wildlife crossings and through better planning of urban development (*Plans sectoriels*).

The National Nature Protection Plan (PNPN2) aims at the protection, conservation and reconstruction of terrestrial and aquatic migration corridors, which are affected by urbanization and habitat fragmentation. It provides for biodiversity contracts as a core biodiversity enhancing measure. About 5,000 ha are managed under biodiversity contracts and buffer and core areas have been identified. The National Nature Protection Plan includes further programmes for the restoration of 15% of wetlands, semi-open landscapes and dry grasslands, as well as for reducing landscape fragmentation. However, measures taken so far have not been sufficient to halt the loss of such habitats and landscape fragmentation³⁹.

River restoration and natural flood risk management measures constitute important aspects in green infrastructure. Luxembourg aims at coordinating measures identified in flood risk management plans and in river basin management plans. Such projects reflect win-win situations, where river restoration yields a better flood risk prevention and substantially improves the ecological and hydromorphological status of the water body. They also become of increasing importance in the context of adaptation strategies to climate change. The latter will especially impact rainfall patterns with more abundant rainfall during the winter months whereas the summer months will be drier but with a higher frequency of extreme precipitations. Currently, Luxembourg has launched initial studies with the aim of realizing a river restoration project of 22km of the Alzette river and thereby addressing one of the most populated flood plains in the country. This project will be a showcase for new ways of dealing with green infrastructure in densely populated areas.

Soil protection

The EU Soil Thematic Strategy highlights the need to ensure a sustainable use of soils. This requires the prevention of further soil degradation and the preservation of its functions, as well as the restoration of degraded soils. The 2011 Road Map for Resource-Efficient Europe, part of Europe 2020 Strategy provides that by 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050.

SDG 15 requires countries to combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve

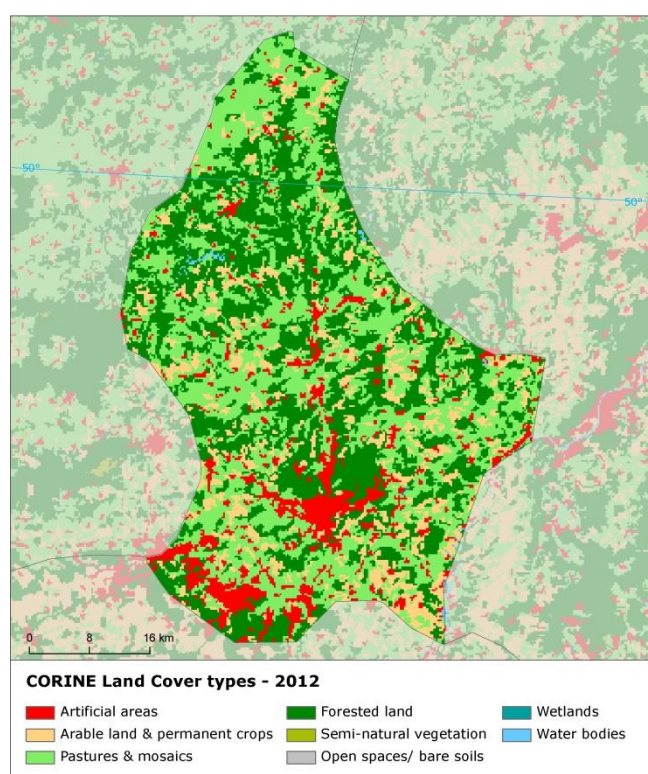
³⁹ [Luxembourg: contribution to the mid-term review of the EU biodiversity strategy to 2020 based on the 5th national report to CBD](https://ec.europa.eu/eip/ifp/2013/0249)

a land-degradation-neutral world by 2030.

Soil is an important resource for life and the economy. It provides key ecosystem services including the provision of food, fibre and biomass for renewable energy, carbon sequestration, water purification and flood regulation, the provision of raw and building material. Soil is a finite and extremely fragile resource and increasingly degrading in the EU. Land taken by urban development and infrastructure is highly unlikely to be reverted to its natural state; it consumes mostly agricultural land and increases fragmentation of habitats. Soil protection is indirectly addressed in existing EU policies in areas such as agriculture, water, waste, chemicals, and prevention of industrial pollution.

Figure 8 shows the different land cover types in Luxembourg in 2012.

Figure 8: Land Cover types in Luxembourg 2012⁴⁰



Artificial land cover is used for settlements, production systems and infrastructure. It may itself be split between built-up areas (buildings) and non-built-up areas (such as linear transport networks and associated areas).

The annual land take rate (growth of artificial areas) as provided by CORINE Land Cover was 0.32% in Luxembourg over the period 2006-12, below the EU average (0.41%). It represented 75 hectares per year and was mainly driven almost exclusively by the construction

⁴⁰ European Environment Agency. Land cover 2012 and changes country analysis [publication forthcoming]

sector⁴¹.

In terms of the percentage of built up land, Luxembourg is the 4th worst in the EU with around 2.7% in 2012⁴².

The soil water erosion rate in 2010 was 2.09 tonnes per ha per year, close to EU-28 average (2.46 tonnes)⁴³.

There are still not EU-wide datasets enabling the provision of benchmark indicators for soil organic matter decline, contaminated sites, pressures on soil biology and diffuse pollution. An updated inventory and assessment of soil protection policy instruments in Luxembourg and other EU Member States is being performed by the EU Expert Group on Soil Protection.

⁴¹ European Environment Agency [Draft results of CORINE Land Cover \(CLC\) inventory 2012](#); mean annual land take 2006-12 as a % of 2006 artificial land.

⁴² European Environment Agency, 2016. [Imperviousness and imperviousness change](#)

⁴³ Eurostat, [Soil water erosion rate](#), Figure 2, accessed November 2016

3. Ensuring citizens' health and quality of life

Air quality

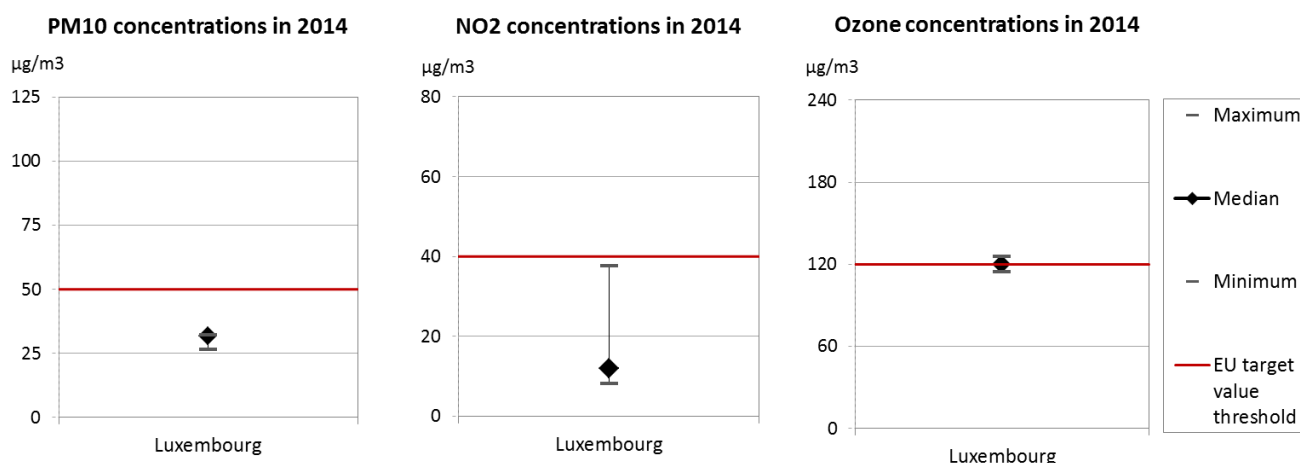
The EU Clean Air Policy and legislation require that air quality in the Union is significantly improved, moving closer to the WHO recommended levels. Air pollution and its impacts on ecosystems and biodiversity should be further reduced with the long-term aim of not exceeding critical loads and levels. This requires strengthening efforts to reach full compliance with Union air quality legislation and defining strategic targets and actions beyond 2020.

The EU has developed a comprehensive suite of air quality legislation⁴⁴, which establishes health-based standards and objectives for a number of air pollutants. As part of this, Member States are also required to

currently applicable national emission ceilings⁴⁶. Regarding nitrogen oxides and volatile organic compounds, even if significant emission reductions have been recorded, respectively 34% and 53%, emissions for these pollutants are still above current ceilings. It should be noted that the exceedance of the current ceilings for nitrogen oxides is partly due to the actual driving emissions of these pollutants from diesel vehicles.

At the same time, air quality in Luxembourg continues to give cause for concern. Nevertheless, for the year 2013, the EEA estimated that about 280 premature deaths were attributable to fine particulate matter⁴⁷ concentrations, 10 to ozone⁴⁸ concentration and 80 to nitrogen dioxide⁴⁹ concentrations.⁵⁰ This is due also to exceedances above the EU air quality standards such as

Figure 9: Attainment situation for PM10, NO2 and O3 in 2014



Note: These graphs show concentrations as measured and reported by the Member State at different locations; specifically they show, (a) for PM10, the 90.4 percentile of daily mean concentration, which corresponds to the 36th highest daily mean, (b) for NO₂, the annual mean concentration, and (c) for O₃, the 93.2 percentile of maximum daily 8-hour mean concentration values, which corresponds to the 26th highest daily maximum. For each pollutant they depict both the lowest and highest concentration reported, as well as the median values (i.e. note that 50% of the stations report lower concentrations than the respective median value, the other 50% report higher concentrations). The air quality standards as set by EU legislation are marked by the red line.

ensure that up-to-date information on ambient concentrations of different air pollutants is routinely made available to the public. In addition, the National Emission Ceilings Directive provides for emission reductions at national level that should be achieved for main pollutants.

The emission of several air pollutants has decreased significantly in Luxembourg⁴⁵. Reductions between 1990 and 2014 for sulphur oxides (-90%), and ammonia (-4%) ensure air emissions for these pollutants are within the

⁴⁴ European Commission, 2016. [Air Quality Standards](#)

⁴⁵ See [EIONET Central Data Repository](#) and [Air pollutant emissions data viewer \(NEC Directive\)](#)

⁴⁶ The current national emission ceilings apply since 2010 ([Directive 2001/81/EC](#)); revised ceilings for 2020 and 2030 have been set by [Directive \(EU\) 2016/2284](#) on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC.

⁴⁷ Particulate matter (PM) is a mixture of aerosol particles (solid and liquid) covering a wide range of sizes and chemical compositions. PM10 (PM2.5) refers to particles with a diameter of 10 (2.5) micrometres or less. PM is emitted from many anthropogenic sources, including both combustion and non-combustion sources.

⁴⁸ Low level ozone is produced by photochemical action and it is also a greenhouse gas.

⁴⁹ NO_x is emitted during fuel combustion e.g. from industrial facilities and the road transport sector. NO_x is a group of gases comprising nitrogen monoxide (NO) and nitrogen dioxide (NO₂).

⁵⁰ European Environment Agency, 2016. [Air Quality in Europe – 2016 Report](#). (Table 10.2, please see details in this report as regards the underpinning methodology)

shown in Figure 9⁵¹.

For 2014, exceedances above the EU air quality standards have been registered for nitrogen dioxide in one air quality zone (City of Luxembourg). Furthermore, target values and long-term objectives for ozone concentrations⁵² are exceeded.

It is estimated that the health-related external costs from air pollution in Luxembourg are above EUR 859 million/year (income adjusted, 2010), which include not only the intrinsic value of living a full health life but also direct costs to the economy. These direct economic costs relate to 98 thousand workdays lost each year due to sickness related to air pollution, with associated costs for employers of EUR 32 million/year (income adjusted, 2010), for healthcare of above EUR 3 million/year (income adjusted, 2010), and for agriculture (crop losses) of EUR 18 million/year (2010)⁵³.

Suggested action

- Maintain downward emissions trends of air pollutants in order to achieve full compliance with currently applicable national emission ceilings and air quality limit values - and reduce adverse air pollution impacts on health, environment and economy.
- Reduce non-methane volatile organic compounds emissions to comply with currently applicable national emission ceilings⁵⁴ and to reduce ozone concentrations.
- Reduce nitrogen oxide (NO_x) emissions to comply with currently applicable national emission ceilings⁵⁵ and/or to reduce nitrogen dioxide (NO₂) (and ozone concentrations), inter alia, by reducing transport related emissions - in particular in urban areas.

Noise

The Environmental Noise Directive provides for a common approach for the avoidance, prevention and reduction of harmful effects due to exposure to environmental noise.

Excessive noise is one of the main causes of health

issues⁵⁶. To alleviate this, the EU *acquis* sets out several requirements, including assessing the exposure to environmental noise through noise mapping, ensuring that information on environmental noise and its effects is made available to the public, and adopting action plans with a view to preventing and reducing environmental noise where necessary and to preserving the acoustic environment quality where it is good.

Luxembourg's implementation of the Environmental Noise Directive⁵⁷ is delayed. The noise mapping for the most recent reporting round, for the reference year 2011, is complete. However, action plans for noise management for the following period have not been adopted for any of the agglomerations, major roads, major railways or airports within the scope of the Directive.

Water quality and management

The EU water policy and legislation require that the impact of pressures on transitional, coastal and fresh waters (including surface and ground waters) is significantly reduced to achieve, maintain or enhance good status of water bodies, as defined by the Water Framework Directive; that citizens throughout the Union benefit from high standards for safe drinking and bathing water; and that the nutrient cycle (nitrogen and phosphorus) is managed in a more sustainable and resource-efficient way.

SDG 6 encourages countries to ensure availability and sustainable management of water and sanitation for all.

The main overall objective of EU water policy and legislation is to ensure access to good quality water in sufficient quantity for all Europeans. The EU water *acquis*⁵⁸ seeks to ensure good status of all water bodies across Europe by addressing pollution sources (from e.g. agriculture, urban areas and industrial activities), physical and hydrological modifications to water bodies) and the management of risks of flooding.

River Basin Management Plans (RBMPs) are a

⁵¹ Based on European Environment Agency, 2016. [Air Quality in Europe – 2016 Report](#). (Figures 4.1, 5.1 and 6.1)

⁵² See [The EEA/Eionet Air Quality Portal](#) and the related Central Data Repository

⁵³ Based on the [Impact Assessment](#) for the European Commission Integrated Clean Air Package (2013)

⁵⁴ Under the provisions of the revised National Emission Ceilings Directive, Member States now may apply for emission inventory adjustments. Pending evaluation of any adjustment application, Member States should keep emissions under close control with a view to further reductions.

⁵⁵ Ibid.

⁵⁶ WHO/JRC, 2011, Burden of disease from environmental noise, Fritschi, L., Brown, A.L., Kim, R., Schwela, D., Kephelopoulou, S. (eds), [World Health Organization, Regional Office for Europe](#), Copenhagen, Denmark

⁵⁷ The Noise Directive requires Member States to prepare and publish, every 5 years, noise maps and noise management action plans for agglomerations with more than 100,000 inhabitants, and for major roads, railways and airports.

⁵⁸ This includes the [Bathing Waters Directive \(2006/7/EC\)](#); the [Urban Waste Water Treatment Directive \(91/271/EEC\)](#) concerning discharges of municipal and some industrial waste waters; the [Drinking Water Directive \(98/83/EC\)](#) concerning potable water quality; the [Water Framework Directive \(2000/60/EC\)](#) concerning water resources management; the [Nitrates Directive \(91/676/EEC\)](#) and the [Floods Directive \(2007/60/EC\)](#)

requirement of the Water Framework Directive and a means of achieving the protection, improvement and sustainable use of the water environment across Europe. This includes surface freshwaters such as lakes and rivers, groundwater, estuaries and coastal waters up to one nautical mile.

Luxembourg has provided information to the Commission from its second generation of RBMPs. However, as the Commission has not yet been able to validate this information for all Member States, it is not reported here.

In its first generation of RBMPs⁵⁹ Luxembourg reported the status of 102 rivers and 5 groundwater bodies. Only 7% of natural surface water bodies achieve a good or high ecological status⁶⁰ and 8% of heavily modified or artificial water bodies achieve a good or high ecological potential. Around 74% of surface water bodies, 34% of heavily modified and artificial water bodies⁶¹ and 60% of groundwater bodies achieve good chemical status.⁶² Finally, 100% of groundwater bodies are in good quantitative status⁶³.

The main pressures are point sources from urban (and to a lesser extent industrial) wastewater, diffuse sources⁶⁴ from agriculture but also from other drivers, and hydromorphological alterations.

There are certain deficiencies in RBMPs: in particular, the methods for status assessment are not fully developed. A high number of exemptions were applied. The Programmes of Measures are expected to result in improvement of the ecological and chemical status of natural surface water bodies by 24% and 5% respectively. The planned measures are expected to result in improvement of ecological potential of artificial and heavily modified water bodies by 17% and chemical status of these bodies by 8%.

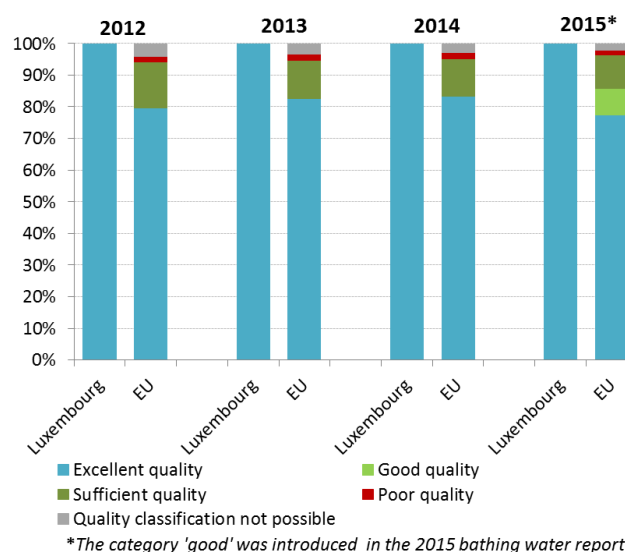
In the context of the Nitrates Directive, Luxembourg has decided to apply mandatory measures on its whole territory. Measures have been taken in the past years, to conform to a ruling of the EU Court of Justice on the

implementation of the Directive, however water quality due to pollution by nitrates (intensive livestock rearing and dairy farming) remains a matter of concern.

As regards drinking water, Luxembourg reaches very high compliance rates of 99-100 % for microbiological, chemical and indicator parameters laid down in the Drinking Water Directive⁶⁵.

As shown in Figure 10, in 2015, in Luxembourg all 11 bathing waters sites were of excellent quality. Luxembourg shows continued excellent bathing water quality over the years.

Figure 10: Bathing water quality 2012 – 2015⁶⁶



With regard to urban waste water treatment, 98.7% of the wastewater load collected is correctly treated as regards the secondary treatment requirements of the Urban Waste Water Treatment Directive. As regards the more stringent treatment that concerns 75.9% of the collected load only 42% of the load collected is correctly treated in accordance with the Urban Waste Water Treatment Directive⁶⁷. For this reason, the EU Court of Justice imposed fines on Luxembourg in 2014. Compliance is now foreseen by end of 2017.

The estimated investment needs (reported by Luxembourg under Article 17 of the Urban Waste Water

⁵⁹ Luxembourg has not yet submitted its 2nd RBMP to the Commission.

⁶⁰ Good ecological status is defined in the Water Framework Directive, in terms of the quality of the biological community, the hydromorphological characteristics and the physico-chemical and chemical characteristics.

⁶¹ Many European river basins and waters have been altered by human activities, such as land drainage, flood protection and building of dams to create reservoirs.

⁶² Good chemical status is defined in the Water Framework Directive in terms of compliance with all the quality standards established for chemical substances at European level.

⁶³ For groundwater, a precautionary approach has been taken that comprises a prohibition on direct discharges to groundwater, and a requirement to monitor groundwater bodies.

⁶⁴ Diffuse pollution comes from widespread activities with no one discrete source, e.g. acid rain, pesticides, urban run-off, etc.

⁶⁵ [Commission's Synthesis Report on the Quality of Drinking Water in the Union](#) examining Member States' reports for the 2011-2013 period, foreseen under Article 13(5) of Directive 98/83/EC; COM(2016)666

⁶⁶ European Environment Agency, 2016. [European bathing water quality in 2015](#), p. 26

⁶⁷ European Commission, Eighth Report on the Implementation Status and the Programmes for Implementation of the Urban Waste Water Directive ([COM\(2016\)105 final](#)) and Commission Staff Working Document accompanying the report ([SWD\(2016\)45 final](#)).

Treatment Directive) to reach full compliance with the Directive are of EUR 101 million⁶⁸.

Suggested action

- Improve methods for status assessment.
- Address in the Water Framework Directive Programme of Measures all relevant pressures and implementation gaps, in particular measures addressing agricultural pollution.
- Properly assess new modifications of water bodies according to article 4(7) of the Water Framework Directive.

Enhancing the sustainability of cities

The EU Policy on the urban environment encourages cities to implement policies for sustainable urban planning and design, including innovative approaches for urban public transport and mobility, sustainable buildings, energy efficiency and urban biodiversity conservation.

SDG11 aims at making cities and human settlements inclusive, safe, resilient and sustainable.

Europe is a Union of cities and towns; around 75% of the EU population are living in urban areas.⁶⁹ The urban environment poses particular challenges for the environment and human health, whilst also providing opportunities and efficiency gains in the use of resources.

The Member States, European institutions, cities and stakeholders have prepared a new Urban Agenda for the EU (incorporating the Smart Cities initiative) to tackle these issues in a comprehensive way, including their connections with social and economic challenges. At the heart of this Urban Agenda will be the development of twelve partnerships on the identified urban challenges, including air quality and housing⁷⁰.

The European Commission will launch a new EU benchmark system in 2017⁷¹.

The EU stimulates green cities through awards and funding, such as the EU Green Capital Award aimed at cities with more than 100,000 inhabitants and the EU Green Leaf initiative aimed at cities and towns, with between 20,000 and 100,000 inhabitants.

⁶⁸ European Commission, Eighth Report on the Implementation Status and the Programmes for Implementation of the Urban Waste Water Directive ([COM \(2016\)105 final](#)) and Commission Staff Working Document accompanying the report ([SWD\(2016\)45 final](#)).

⁶⁹ European Environment Agency, [Urban environment](#)
⁷⁰ <http://urbanagendaforthe.eu/>

⁷¹ The Commission is developing an [Urban Benchmarking and Monitoring \('UBaM'\) tool](#) to be launched in 2017. Best practices emerge and these will be better disseminated via the app featuring the UBaM tool, and increasingly via e.g. EUROCITIES, ICLEI, CEMR, Committee of the Regions, Covenant of Mayors and others.

Luxembourg has allocated EUR 1.170 million (6% of its allocation under the ERDF, excluding technical assistance) to sustainable urban development.

In 2013, the number of passenger cars per 1000 inhabitants was 676 in Luxembourg, well above the EU average (494), and the highest in the EU-28. The share of diesel passenger cars is 66% in Luxembourg, compared to the EU-average of 41%⁷². Peak-hour congestion in Luxembourg constitutes a major problem, above all in the City of Luxembourg and on the main surrounding motorways and other roads. According to the Europe's Worst Countries for Traffic Congestion in 2014 based on the amount of hours spent in gridlock, Luxembourg was the fourth worst⁷³.



However, addressing air pollution (NO₂) in the region around the City of Luxembourg seems to be on the right track following the replacement of diesel buses and construction of a tram line (operational in 2017). Nevertheless, further investments in the area of sustainable mobility and measures to reduce the share of diesel passenger cars in the national fleet are needed, in order to maintain the downward trend in the emissions

⁷² European Automobile Manufacturers Association, 2014. [Passenger Car Fleet Per Capita](#)

⁷³ [INRIX 2015 Traffic Scorecard](#)

and to finally achieve full compliance with the air quality standards.

In Luxembourg large urban projects are designed to incorporate sustainability concepts. A prominent example is Kirchberg, a 365-hectare urban project located in the north-eastern part of Luxembourg City. In order to decentralize from the capital area, other current projects include a Nordstad master plan for the rural area in the north and Belval in the southwest on the border with France. In a region 20 kilometers from Luxembourg City that was suffering from industrial decline and economic depression, the Belval mixed-use urban renewal project aims to revitalize the industrial wasteland on the brown field of a former steel factory complex through a public-private partnership. The 120-hectare site of Belval is planned for 5,000 inhabitants and 20,000 employees with public investment of almost EUR 1 billion⁷⁴.

International agreements

The EU Treaties require that the Union policy on the environment promotes measures at the international level to deal with regional or worldwide environmental problems.

Most environmental problems have a transboundary nature and often a global scope and they can only be addressed effectively through international co-operation. International environmental agreements concluded by the Union are binding upon the institutions of the Union and on its Member States. This requires the EU and the Member States to sign, ratify and effectively implement all relevant multilateral environmental agreements (MEAs) in a timely manner. This will also be an important contribution towards the achievement of the SDGs, which Member States committed to in 2015 and include many commitments contained already in legally binding agreements.

The fact that some Member States did not sign and/or ratify a number of MEAs compromises environmental implementation, including within the Union, as well as the Union's credibility in related negotiations and international meetings where supporting the participation of third countries to such agreements is an established EU policy objective. In agreements where voting takes place it has a direct impact on the number of votes to be cast by the EU.

Luxembourg has signed and ratified almost all MEAs. It has signed but not yet ratified the Nagoya Protocol⁷⁵.

⁷⁴ Worldwatch Institute Europe, 2015. [Sustainability of Significant Urban Projects in Luxembourg; Belval](#).

⁷⁵ [Nagoya protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization to the Convention on biological diversity](#)

Part II: Enabling Framework: Implementation Tools

4. Market based instruments and investment

Green taxation and environmentally harmful subsidies

The Circular Economy Action Plan encourages the use of financial incentives and economic instruments, such as taxation to ensure that product prices better reflect environmental costs. The phasing out of environmentally harmful subsidies is monitored in the context of the European Semester and in national reform programmes submitted by Member States.

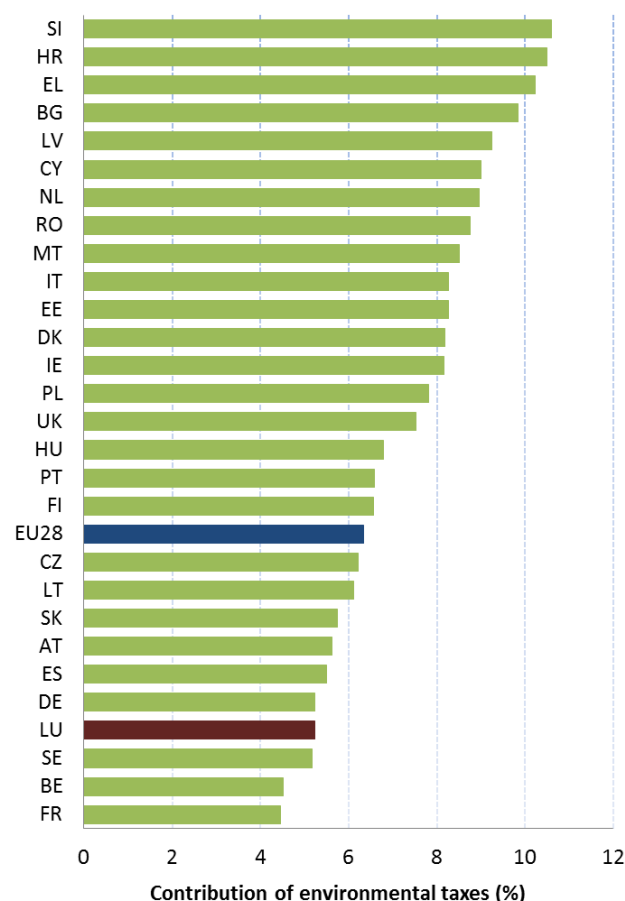
Taxing pollution and resource use can generate increased revenue and bring important social and environmental benefits.

Luxembourg has seen a steady decrease in its environmental tax revenues share in GDP over the last 10 years, amounting to 1.99% of GDP in 2014 (EU28 average: 2.46% of GDP). Figure 11 shows that environmental tax revenue accounts for 5.23% of total revenues from taxes in 2014 (EU28 average: 6.35%).⁷⁶ This shows a decrease compared to 2013. Energy taxes make up the largest proportion of environmental taxes in Luxembourg by far, amounting to 1.84% of GDP in 2014. Revenues from taxation of transport (excluding fuels) made up just 0.14% of GDP in 2014.

Luxembourg's transport fuel rates are some of the lowest in the EU, not having been modified since January 2007 (diesel) and July 2012 (petrol), although the increase in VAT from 15% to 17% contributed to increased fuel taxes. The tax rate on diesel fuel is 62% of the petrol tax rate⁷⁷ and this differential does not reflect the respective social costs associated⁷⁸. Consequently, the share of new registered diesel cars in total cars reached 73% in 2013, being the highest among EU15 & EFTA countries⁷⁹.

In addition, transport taxes in Luxembourg are low in comparison to other Member States. The vehicle registration fee of EUR 50, applied irrespective of vehicle type or emissions, is one of the lowest in the EU, and has no impact on a driver's choice of vehicle. Circulation taxes are particularly low in Luxembourg compared to other countries, not calculated on the basis of emissions, and its transport fuel rates are also amongst the lowest in the EU.

Figure 11: Environmental tax revenues as a share of total revenues from taxes and social contributions (excluding imputed social contributions) in 2014⁸⁰



An impact of low excise duties on transport fuels is the so-called 'fuel tourism', creating traffic congestion and air pollution. A study indicates that, in 2012, the total cost of 'fuel tourism' amounted to approximately 3.5 billion euros per year considering ecological and health negative impacts on a national and international level⁸¹.

The general tax reform, due to take effect in 2017, includes measures to encourage a "sustainable mobility", supporting the purchase of green cars, pedelecs and bicycles. Furthermore, for company cars, the valuation of the benefit in kind will be differentiated depending on the CO₂ emissions of the car. The current rate of 1.5% of

⁷⁶ Eurostat, [Environmental tax revenues](#), accessed June 2016

⁷⁷ European Environment Agency 2016, [Environmental taxation and EU environmental policies](#), Table 4.3 on p.24

⁷⁸ Diesel fuel affects local air pollution much stronger than gasoline, primarily due to the higher emissions of particulate matter and nitrogen oxides per litre.

⁷⁹ European Automobile Manufacturers Association, 2013 data

⁸⁰ Eurostat, [Environmental tax revenues](#), accessed October 2016

⁸¹ This cost clearly prevails over the economic profits that may be associated with these sales (3,5 billion against 2.1 billion euros). Source: [Ermittlung und Bewertung der positiven und negativen Wirkungen des Treibstoffverkaufs unter besonderer Berücksichtigung negativer externer Umwelt- und Gesundheitseffekte – Status quo 2012 und maßnahmeninduzierte Veränderungen](#), Government of Luxembourg, 25 November 2016.

the commercial value of the car will be replaced with a range of percentages between 0.5% and 1.8%.

Luxembourg has been identified as one of the 12 Member States which have particular scope for improving the design of their environmentally related taxes⁸². A 2016 study⁸³ suggests that there is considerable potential for shifting taxes from labour to environmental taxes in Luxembourg. Under a good practice scenario⁸⁴, these could generate EUR 0.22 billion in 2018, rising to EUR 0.43 billion in 2030. This is equivalent to 0.39% and 0.50% of GDP in 2018 and 2030 respectively. According to the study, the largest potential source of revenue could come from the proposed amendments to taxes on transport fuels. This accounts for EUR 0.32 billion in 2030, equivalent to 0.37% of GDP. The next largest contribution to revenue could come from the proposed passenger aviation tax. This accounts for EUR 0.03 billion in 2030, equivalent to 0.04% of GDP.⁸⁵

Green Public Procurement

The EU green public procurement policies encourage Member States to take further steps to reach the target of applying green procurement criteria to at least 50% of public tenders.

Green Public Procurement (GPP) is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life-cycle when compared to goods, services and works with the same primary function that would otherwise be procured.

The purchasing power of public procurement equals to approximately 14% of GDP⁸⁶. A substantial part of this money is spent on sectors with high environmental impact such as construction or transport, so GPP can help to significantly lower the impact of public spending and foster sustainable innovative businesses. The Commission has proposed EU GPP criteria⁸⁷.

⁸² European Commission, 2015. [Tax Reforms in EU Member States 2015](#), Institutional Paper 008 Sept. 2015, p.91.

⁸³ Eunomia Research and Consulting, IEEP, Aarhus University, ENT, 2016. [Study on Assessing the Environmental Fiscal Reform Potential for the EU28](#). N.B. National governments are responsible for setting tax rates within the EU Single Market rules and this report is not suggesting concrete changes as to the level of environmental taxation. It merely presents the findings of the 2016 study by Eunomia *et al* on the potential benefits various environmental taxes could bring. It is then for the national authorities to assess this study and their concrete impacts in the national context. A first step in this respect, already done by a number of Member States, is to set up expert groups to assess these and make specific proposals.

⁸⁴ The good practice scenario means benchmarking to a successful taxation practice in another Member State.

⁸⁵ The amounts in this paragraph are expressed in real 2015 terms.

⁸⁶ European Commission, 2015. [Green public procurement](#)

⁸⁷ In the Communication "Public procurement for a better environment" ([COM/2008/400](#)) the Commission recommended the creation of a

The Luxembourgish public procurement law formally encourages contracting authorities to make use of tender procedures to promote sustainable development⁸⁸. Similarly, the National Plan for Sustainable Development adopted in 2010 explicitly sets the objective of promoting green criteria in public procurement. However, the Plan does not set any target objectives, specific measures or mandatory criteria to promote GPP. Some guidance is provided on criteria that can be required in the terms of references and links to EU GPP website and toolkit. Guidelines for sustainable construction works are also available⁸⁹.

Investments: the contribution of EU funds

European Structural and Investment Funds Regulations provide that Member States promote environment and climate objectives in their funding strategies and programmes for economic, social and territorial cohesion, rural development and maritime policy, and reinforce the capacity of implementing bodies to deliver cost-effective and sustainable investments in these areas.

Making good use of the European Structural and Investment Funds (ESIF)⁹⁰ is essential to achieve the environmental goals and integrate these into other policy areas. Other instruments such as the Horizon 2020, the LIFE programme and the EFSI⁹¹ may also support implementation and spread of best practice.

The total budget for the ESIF is EUR 140 billion for the period 2014-2020, 20% less compared to 2007-13.

Figure 12: European Structural and Investment Funds 2014-2020: Budget Luxembourg by theme, EUR billion⁹²

process for setting common GPP criteria. The basic concept of GPP relies on having clear, verifiable, justifiable and ambitious environmental criteria for products and services, based on a life-cycle approach and scientific evidence base.

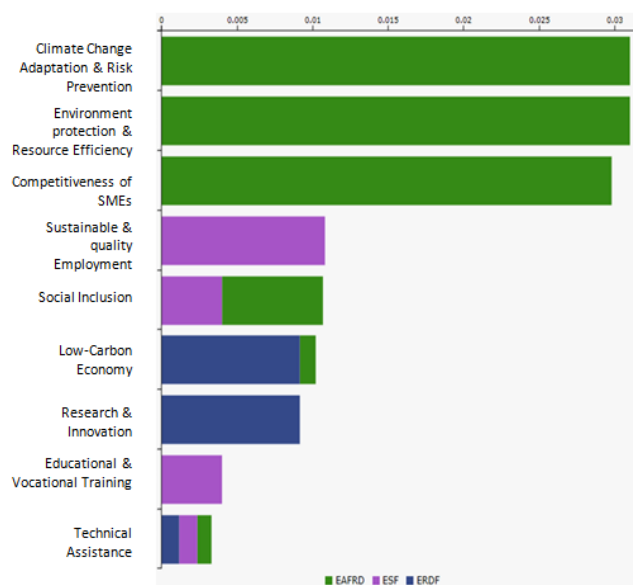
⁸⁸ The amended Law of 25 June 2009 on public procurement provides that the contracting authorities "shall ensure that, when awarding public contracts, account is taken of the aspects and problems of the environment and the promotion of sustainable development". While the award is to be made in accordance with the principle of the most economically advantageous tender, environmental characteristics are amongst the criteria to be taken into consideration.

⁸⁹ PwC 2016, 'Stock-taking of administrative capacity, systems and practices across the EU to ensure the compliance and quality of public procurement involving European Structural and Investment (ESI) Funds'

⁹⁰ ESIF comprises five funds – the European Regional Development Funds (ERDF), the Cohesion Fund (CF), the European Social Fund (ESF), the European Agricultural Fund for Rural Development (EAFRD), and the European Maritime and Fisheries Fund (EMFF). The ERDF, the CF and the ESF together form the Cohesion Policy funds.

⁹¹ European Investment Bank, 2016 [European Fund for Strategic Investments](#)

⁹² European Commission, [European Structural and Investment Funds Data By Country](#)



Luxembourg does not implement any LIFE integrated project.

Luxembourg has one European Regional Development Fund (ERDF), one European Agricultural Fund for Rural Development (EAFRD) and one European Social Fund (ESF) Operational Programme (OP). It does not have any funding under the European Maritime and Fisheries Fund (EMFF). Only Thematic Objectives 1 (research, development and innovation) and 4 (shift towards a low-carbon economy in all sectors) have been selected under the ERDF OP, each having EUR 9.166 million (see Figure 12).

Luxembourg is using loans from the European Investment Bank (EIB) to finance investments for water and waste infrastructures. Investments in the water sector will also be financed under the EAFRD.

Luxembourg has EAFRD funding of EUR 0.1bn over the period 2014-20. The budget for agri-environmental-climate measures (AECM) represents 29% of the total EAFRD and is one of the twelve highest % allocations (EU average is 16.51%). The surface dedicated to agricultural land under contracts for biodiversity (89.2 %) is the highest in the EU.

Direct payments (Pillar 1 CAP⁹³) are the most important for Luxembourg, and the high choice for Ecological Focus Areas (EFA) is beneficial for the environment.

It is too early to draw conclusions as regards the use and results of ESIF for the period 2014-2020, as the relevant programme is still in an early stage of its implementation.

Current data suggest that the EU funds for the 2007-2013 period were almost fully spent.⁹⁴

⁹³ Pillar 1 is the non-rural development (non-EAFRD) part of the CAP.

⁹⁴ Final data for the period 2007-2013 will only be available at the end of 2017.

5. Effective governance and knowledge

SDG 16 aims at providing access to justice and building effective, accountable and inclusive institutions at all levels. SDG 17 aims at better implementation, improving policy coordination and policy coherence, stimulating science, technology and innovation, establishing partnerships and developing measurements of progress.

Effective governance of EU environmental legislation and policies requires having an appropriate institutional framework, policy coherence and coordination, applying legal and non-legal instruments, engaging with non-governmental stakeholders, and having adequate levels of knowledge and skills⁹⁵. Successful implementation depends, to a large extent, on central, regional and local government fulfilling key legislative and administrative tasks, notably adoption of sound implementing legislation, co-ordinated action to meet environmental objectives and correct decision-making on matters such as industrial permits. Beyond fulfilment of these tasks, government must intervene to ensure day-to-day compliance by economic operators, utilities and individuals ("compliance assurance"). Civil society also has a role to play, including through legal action. To underpin the roles of all actors, it is crucial to collect and share knowledge and evidence on the state of the environment and on environmental pressures, drivers and impacts.

Equally, effective governance of EU environmental legislation and policies benefits from a dialogue within Member States and between Member States and the Commission on whether the current EU environmental legislation is fit for purpose. Legislation can only be properly implemented when it takes into account experiences at Member State level with putting EU commitments into effect. The Make it Work initiative, a Member State driven project, established in 2014, organizes a discussion on how the clarity, coherence and structure of EU environmental legislation can be improved without lowering existing protection standards.

Effective governance within central, regional and local government

Those involved in implementing environment legislation at Union, national, regional and local levels need to be equipped with the knowledge, tools and capacity to improve the delivery of benefits from that legislation, and the governance of the enforcement process.

Capacity to implement rules

⁹⁵ The Commission has work ongoing to improve the country-specific knowledge about quality and functioning of the administrative systems of Member States.

It is crucial that central, regional and local administrations have the necessary capacities and skills and training to carry out their own tasks and co-operate and co-ordinate effectively with each other, within a system of multi-level governance.

The low number of infringement procedures and complaints/petitions reflects an efficient approach to protection of human health and the environment.

The transposition of Directives is generally in time, conformity checking identifies normally only minor issues. Bad application cases are rare.

The 2013 European Quality of Government Index puts Luxembourg in fifth place out of the 28 Member States⁹⁶.



Coordination and integration

Legislative competences are with the central government, which can enact Laws together with the Parliament. For environmental issues, the Ministry for Sustainable Development and Infrastructure is responsible, together with the Ministry of Home Affairs and Great Region. Formulating environmental policy and drafting legislation, including also on water policies, falls within the competence of the Minister of Environment.

Impact assessments are important tools to ensure environmental integration in all government policies⁹⁷. The Commission encourages the streamlining of the environmental assessments to avoid overlaps in environmental assessments and accelerate decision-making, without compromising the quality of the environmental assessment procedure. The Commission has issued a guidance document in 2016⁹⁸ regarding the

⁹⁶ Charron N., 2013. [European Quality of Government Index \(EQI\)](#)

⁹⁷ Article 11 of the TFEU provides that "Environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities, in particular with a view to promoting sustainable development."

setting up of coordinated and/or joint procedures that are simultaneously subject to assessments under the EIA Directive, Habitats Directive, Water Framework Directive, and the Industrial Emissions Directive.

Compliance assurance

EU law generally and specific provisions on inspections, other checks, penalties and environmental liability help lay the basis for the systems Member States need to have in place to secure compliance with EU environmental rules.

Public authorities help ensure accountability of duty-holders by monitoring and promoting compliance and by taking credible follow-up action (i.e. enforcement) when breaches occur or liabilities arise. Compliance monitoring can be done both on the initiative of authorities themselves and in response to citizen complaints. It can involve using various kinds of checks, including inspections for permitted activities, surveillance for possible illegal activities, investigations for crimes and audits for systemic weaknesses. Similarly, there is a range of means to promote compliance, including awareness-raising campaigns and use of guidance documents and online information tools. Follow-up to breaches and liabilities can include administrative action (e.g. withdrawal of a permit), use of criminal law⁹⁹ and action under liability law (e.g. required remediation after damage from an accident using liability rules) and contractual law (e.g. measures to require compliance with nature conservation contracts). Taken together, all of these interventions represent "compliance assurance" as shown in Figure 13.

Best practice has moved towards a risk-based approach at strategic and operational levels in which the best mix of compliance monitoring, promotion and enforcement is directed at the most serious problems. Best practice also recognises the need for coordination and cooperation between different authorities to ensure consistency, avoid duplication of work and reduce administrative burden. Active participation in established pan-European networks of inspectors, police, prosecutors and judges, such as *IMPEL*¹⁰⁰, *EUFJE*¹⁰¹, *ENPE*¹⁰² and *EnviCrimeNet*¹⁰³, is a valuable tool for sharing experience and good practices.

Currently, there exist a number of sectoral obligations on inspections and the EU directive on environmental liability (ELD)¹⁰⁴ provides a means of ensuring that the

"polluter-pays principle" is applied when there are accidents and incidents that harm the environment. There is also publically available information giving insights into existing strengths and weaknesses in each Member State.

Figure 13: Environmental compliance assurance



For each Member State, the following were therefore reviewed: use of risk-based compliance assurance; coordination and co-operation between authorities and participation in pan-European networks; and key aspects of implementation of the ELD based on the Commission's recently published implementation report and REFIT evaluation¹⁰⁵.

No significant up-to-date information has been found on the organisation and functioning of the environmental compliance system in Luxembourg. Information is lacking in particular in relation to the following:

- data-collection arrangements to track the use and effectiveness of different compliance assurance interventions;
- the extent to which risk-based methods are used to direct compliance assurance at the strategic level and in relation to industrial installations as well as other critical activities, including in specific problem-areas highlighted elsewhere in this Country Report, i.e. the threats to protected habitat types and species and the pressures on water quality from diffuse sources of pollution and inadequate urban waste-water treatment systems.
- how competent authorities in Luxembourg ensure a targeted and proportionate response to different types of non-compliant behaviour, in particular in relation to serious breaches detected.

⁹⁹European Union, [Environmental Crime Directive 2008/99/EC](#)

¹⁰⁰[European Union Network for the Implementation and Enforcement of Environmental Law](#)

¹⁰¹[European Union Forum of judges for the environment](#)

¹⁰²[The European Network of Prosecutors for the Environment](#)

¹⁰³[EnviCrimeNet](#)

¹⁰⁴European Union, [Environmental Liability Directive 2004/35/CE](#), p.56

¹⁰⁵[COM\(2016\)204 final](#) and [COM\(2016\)121 final](#) of 14.4.2016. This highlighted the need for better evidence on how the directive is used in practice; for tools to support its implementation, such as guidance, training and ELD registers; and for financial security to be available in case events or incidents generate remediation costs.

The added value of structured mechanisms for cooperation between competent authorities has been recognised¹⁰⁶. Currently Luxembourg does not actively participate in the activities of the European networks of environmental professionals.

For the period 2007 to 2013, Luxembourg did not report any instances of environmental damage handled according to the Environmental Liability Directive. The country does not have mandatory financial security (to pay for remediation when an operator cannot) and it is not evident that insurance is either sufficiently available or taken out.

Suggested action

- Improve transparency on the organisation and functioning of compliance assurance and on how significant risks are addressed.
- Encourage greater participation of competent authorities in environmental compliance networks.
- Step up efforts in the implementation of the Environmental Liability Directive (ELD) with proactive initiatives, in particular by setting up a national register of ELD incidents and drafting national guidance. It should moreover take further steps to ensure an effective system of financial security for environmental liabilities (so that operators not only have insurance cover available to them but actually take it up).

Public participation and access to justice

The Aarhus Convention, related EU legislation on public participation and environmental impact assessment, and the case-law of the Court of Justice require that citizens and their associations should be able to participate in decision-making on projects and plans and should enjoy effective environmental access to justice.

Citizens can more effectively protect the environment if they can rely on the three "pillars" of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters ("the Aarhus Convention"). Public participation in the administrative decision making process is an important element to ensure that the authority takes its decision on the best possible basis. The Commission intends to examine compliance with mandatory public participation requirements more systematically at a later stage.

Access to justice in environmental matters is a set of guarantees that allows citizens and their associations to challenge acts or omissions of the public administration

before a court. It is a tool for decentralised implementation of EU environmental law.

For each Member State, two crucial elements for effective access to justice have been systematically reviewed: the legal standing for the public, including NGOs and the extent to which prohibitive costs represent a barrier.

Luxembourg generally grants the public, including environmental NGOs, an effective access to justice in environmental matters. However, the judicial review system in the environmental area is based on rules existing in different environmental legislation and jurisprudence. The absence of a clear set of rules regarding the different actions that may be taken by the public reduce legal certainty and transparency. Furthermore, the main issue in the Luxembourgish legal system remains the potentially high legal representation fees, which may prevent the public from bringing environmental cases to the courts. A provision in the environmental legislation that the legal costs related to environmental procedures may not be prohibitively expensive is missing¹⁰⁷.

Suggested action

- Take the necessary measures to ensure that the costs of legal challenges involving EU environmental law are not prohibitively expensive, and in line with the requirements of EU law as well as the Aarhus Convention.

Access to information, knowledge and evidence

The Aarhus Convention and related EU legislation on access to information and the sharing of spatial data require that the public has access to clear information on the environment, including on how Union environmental law is being implemented.

It is of crucial importance to public authorities, the public and business that environmental information is shared in an efficient and effective way. This covers reporting by businesses and public authorities and active dissemination to the public, increasingly through electronic means.

The Aarhus Convention¹⁰⁸, the Access to Environmental Information Directive¹⁰⁹ and the INSPIRE Directive¹¹⁰

¹⁰⁶ Memoranda of understanding between key enforcement authorities are used in Luxembourg. See for details 'Comparative Study of Pressures and Measures in the Major River Basin Management Plans, Task 1c Enforcement systems, p. 14-16.

¹⁰⁷ Jan Darpö, 2013. ['Study on access to justice in environmental matters'](#)

¹⁰⁸ UNECE, 1998. [Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters](#)

¹⁰⁹ European Union, [Directive 2003/4/EC on public access to environmental information](#)

¹¹⁰ European Union, [INSPIRE Directive 2007/2/EC](#)

together create a legal foundation for the sharing of environmental information between public authorities and with the public. They also represent the green part of the ongoing EU e-Government Action Plan¹¹¹. The first two instruments create obligations to provide information to the public, both on request and actively. The INSPIRE Directive is a pioneering instrument for electronic data-sharing between public authorities who can vary in their data-sharing policies, e.g. on whether access to data is for free. The INSPIRE Directive sets up a geoportal which indicates the level of shared spatial data in each Member State – i.e. data related to specific locations, such as air quality monitoring data. Amongst other benefits it facilitates the public authorities' reporting obligations.

For each Member State, the accessibility of environmental data (based on what the INSPIRE Directive envisages) as well as data-sharing policies ('open data') have been systematically reviewed¹¹².

Luxembourg's performance on the implementation of the INSPIRE Directive as enabling framework to actively disseminate environmental information to the public can be improved. Luxembourg has indicated in the 3-yearly INSPIRE implementation report¹¹³ that the necessary data-sharing policies allowing access and use of spatial data by national administrations, other Member States' administrations and EU institutions without procedural obstacles are available and implemented. Most of Luxembourg's spatial data is available at no cost, and generally there exists no special legislation detailing any limitations or general conditions for their delivery and use. An exception is made for cadastral, topographic and aerial image data for which costs are charged. Although, Luxembourg does not yet have an official license model for the use and re-use of the data. The very recent open data initiative, linked to the Public Sector Information directive, has contributed to a general opening of many datasets and promotion of Creative Commons licences for data and geo-data created by public authorities.

Assessments of monitoring reports¹¹⁴ issued by Luxembourg and the spatial information that Luxembourg has published on the INSPIRE geoportal¹¹⁵ indicate that not all spatial information needed for the evaluation and implementation of EU environmental law has been made available or is accessible. The larger part of this missing spatial information consists of the

environmental data required to be made available under the existing reporting and monitoring regulations of EU environmental law.

In the meantime, the actions indicated in the "INSPIRE action plan", which has been sent to the European Commission together with the 2016 Monitoring & Reporting documents, and aiming at closing the gaps between the INSPIRE roadmap and the situation in Luxembourg, have been started.

- All the missing INSPIRE metadata sets have been added.
- A 5 year programme has been launched, aiming at fulfilling the roadmap deadlines in terms of availability of INSPIRE-compliant datasets, view services and download services.

In 2016 a considerable effort will be made to make all datasets available "as is".

Suggested action

- Identify and document all spatial data sets required for the implementation of environmental law, and make the data and documentation at least accessible 'as is' to other public authorities and the public through the digital services foreseen in the INSPIRE Directive.

¹¹¹ European Union, EU eGovernment Action Plan 2016-2020 -

Accelerating the digital transformation of government [COM\(2016\) 179 final](#)

¹¹² Upon request by the Commission, most Member States provided an INSPIRE Action Plan addressing implementation issues. These plans are currently being assessed by the Commission.

¹¹³ European Commission, [INSPIRE reports](#)

¹¹⁴ [Inspire indicator trends](#)

¹¹⁵ [Inspire Resources Summary Report](#)