OECD Environmental Performance Reviews

BELGIUM

2021

OECD

OECD Environmental Performance Reviews: Belgium 2021

Please cite this publication as:
OECD (2021), *OECD Environmental Performance Reviews: Belgium 2021*, OECD Environmental Performance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/738553c5-en.

ISBN 978-92-64-41981-0 (print)
ISBN 978-92-64-40034-4 (PDF)
ISBN 978-92-64-67520-9 (HTML)
ISBN 978-92-64-81808-8 (epub)

OECD Environmental Performance Reviews
ISSN 1990-0104 (print)
ISSN 1990-0090 (online)

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Foreword

The principal aim of the OECD Environmental Performance Review programme is to help member and selected partner countries improve their individual and collective performance in environmental management by:

- helping individual governments assess progress in achieving their environmental goals
- promoting continuous policy dialogue and peer learning
- stimulating greater accountability from governments towards each other and public opinion.

This report reviews the environmental performance of Belgium since the previous review in 2007. Progress in achieving domestic objectives and international commitments provides the basis for assessing the country's environmental performance. Such objectives and commitments may be broad aims, qualitative goals or quantitative targets. A distinction is made between intentions, actions and results. Assessment of environmental performance is also placed within the context of Belgium's historical environmental record, present state of the environment, physical endowment in natural resources, economic conditions and demographic trends.

The OECD is indebted to the government of Belgium for its co-operation in providing information, for the organisation of the virtual review mission (10-12 June 2020), and for facilitating contacts both inside and outside government institutions.

Thanks are also due to the representatives of the two examining countries, Thomas Pedersen (Denmark) and Jurgita Gaižiūnienė (Lithuania).

The authors of this report were, Gérard Bonnis, Eugene Mazur, Sarah Miet, Frédérique Zegel (OECD Environment Directorate) and Tony Zamparutti (consultant), under the co-ordination of Frédérique Zegel. Nathalie Girouard and Frédérique Zegel provided oversight and guidance. Carla Bertuzzi and Sarah Miet provided statistical support, Annette Hardcastle and Shellie Phillips provided administrative support and Mark Foss copy-edited the report. Natasha Cline-Thomas provided communications support. Preparation of this report also benefited from inputs and comments from several members of the OECD Secretariat, including Müge Adalet McGowan, Aimee Aguilar Jaber, Brilé Anderson, Nils Axel Braathen, Tomasz Kozluk and Kurt van Dender, as well as Divya Reddy of the International Energy Agency.

The OECD Working Party on Environmental Performance discussed the draft Environmental Performance Review of Belgium at its meeting on 8 December 2020 and approved the Assessment and Recommendations.

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Signs

The following signs are used in figures and tables:

.. : not available

_ : nil or negligible

. : decimal point

Country aggregates

OECD Europe: This zone includes all European member countries of the OECD, i.e. Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

OECD: This zone includes all member countries of the OECD, i.e. the countries of OECD Europe plus Australia, Canada, Chile, Colombia, Israel*, Japan, Korea, Mexico, New Zealand and the United States.

Country aggregates may include Secretariat estimates.

This publication presents EU aggregates that predate the United Kingdom's withdrawal from the European Union on 1 February 2020. Therefore, the EU aggregates presented here refer to the European Union including the United Kingdom, unless otherwise stated.

Costa Rica was not an OECD member at the time this publication was prepared. Accordingly, Costa Rica does not appear in the list of OECD members and is not included in the zone aggregates.

Currency

Monetary unit: Euro (EUR)

In 2019, USD 1 = EUR 0.893

In 2018, USD 1 = EUR 0.847

Cut-off date

This report is based on information and data available up to December 2020.

Abbreviations and acronyms

ABP	Agence Bruxelles Propreté–Net Brussel
AECM	Agri-environment-climate measures
AIU	Areas intended for urbanisation
ANB	Flemish Agency for Nature and Forests
BCR	Brussels-Capital Region
BPNS	Belgian part of the North Sea
BRPCE	Brussels Regional Programme for a Circular Economy
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO	Carbon monoxide
CO_2 eq	Carbon dioxide equivalent
CoDT	Territorial Development Code
DMC	Domestic material consumption
EIA	Environmental impact assessment
ELV	End-of-life vehicle
ETS	Emissions Trading System
EU	European Union
FPB	Federal Planning Bureau
FPSHFCSE	Federal Public Service Health, Food Chain Safety and Environment
GDP	Gross domestic product
GHG	Greenhouse gas
INM	Integrated nature management
IRPC	Inter-regional Packaging Commission
IUCN	International Union for Conservation of Nature
LEZ	Low emission zone
LULUCF	Land use, land-use change and forestry

MPA	Marine Protected Area
MSP	Marine Spatial Plan
NBS	National Biodiversity Strategy
NECP	National Energy and Climate Plan
NER	Nutrient emission right
NGO	Non-governmental organisation
NMP	Nature management plan
NMVOC	Non-methane volatile organic compounds
NO_2	Nitrogen dioxide
NOx	Nitrogen oxide
NPSI	National Pact for Strategic Investment
NVZ	Nitrate vulnerable zone
OVAM	Public Waste Agency of Flanders
PAHs	Polycyclic aromatic hydrocarbons
PAYT	Pay-as-you-throw
PFS	Public financial support
PM_{10}	Particulate matter smaller than 10 microns in diameter
$PM_{2.5}$	Particulate matter smaller than 2.5 microns in diameter
PRO	Producer responsibility organisation
RBD	River Basin District
RBMP	River Basin Management Plan
R&D	Research and development
RD&D	Research, development and demonstration
RDP	Rural Development Programme
REB	Brussels Ecological Network
RIA	Regulatory impact assessment
RSV	Spatial structure plan
RUP	Spatial implementation plan
SDGs	Sustainable Development Goals
SEA	Strategic environmental assessment
SEP	Main ecological structure
SFM	Sustainable forest management
SOx	Sulphur oxide
SPA	Special protection areas
SPW	Wallonia Public Service

TPES	Total primary energy supply
UAA	Utilised agricultural area
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value added tax
VEN	Flemish Ecological Network
VLM	Flemish Land Agency
VOC	Volatile organic compounds
WEEE	Waste electrical and electronic equipment
WFD	Water Framework Directive

Basic statistics of Belgium

2019 or latest available year (OECD values in parenthesis)[1]

PEOPLE AND SOCIETY					
Population (million)	12		Population density per km^2	376	(36)
Share of population by type of region			Population annual growth rate, latest 5 years	0.6	(0.6)
Predominantly urban (%)	53	(48)	Income inequality (Gini coefficient)	0.26	(0.32)
Intermediate (%)	38	(28)	Poverty rate (% of pop. with less than 50% med. income)	8	(11)
Rural (%)	9	(24)	Life expectancy	82	(81)
ECONOMY AND EXTERNAL ACCOUNTS					
Total GDP (National currency, billion)	476		Imports of goods and services (% of GDP)	88	(27)
Total GDP (USD billion, current PPPs)	631		Main exports (% of total merchandise exports)		
GDP compound annual real growth rate, latest 5 years	1.7	(2.2)	Medicinal and pharmaceutical products	13	
GDP per capita (1 000 USD current PPPs)	55	(47)	Road vehicles	12	
Value added shares (%)			Petroleum, petroleum products and related materials	7	
Agriculture	1	(2)	Main imports (% of total merchandise imports)		
Industry including construction	21	(25)	Road vehicles	13	
Services	78	(74)	Medicinal and pharmaceutical products	11	
Exports of goods and services (% of GDP)	88	(27)	Petroleum, petroleum products and related materials	10	
GENERAL GOVERNMENT					
Per cent of GDP					
Expenditure	52	(40)	Education expenditure	6.2	(5.0)
Revenue	50	(37)	Health expenditure	7.6	(7.7)
Gross financial debt	120	(108)	Environmental protection expenditure	1.3	(0.5)
Fiscal balance	-1.9	-(2.9)	Environmental taxes (% of GDP)	2.2	(1.6)
			(% of total tax revenue)	5.0	(5.3)
LABOUR MARKET, SKILLS AND INNOVATION					
Unemployment rate (% of civilian labour force)	5.4	(5.4)	Patent in environment-related technologies (% of all technologies, average of latest 3 years)[2]	9.9	(10.3)
Tertiary educational attainment of 25-64 year-olds (%)	41	(38)	Environmental management	4.9	(4.1)
Gross expenditure on R&D (% of GDP)	2.7	2.4	Water-related adaptation technologies	0.6	(0.5)
			Climate mitigation technologies	7.1	(7.9)
ENVIRONMENT					
Energy intensity TPES per capita (toe/cap.)	4.8	(4.1)	Road vehicle stock (vehicles/100 inhabitants)	65.9	
TPES per GDP (toe/1 000 USD 2015 PPPs)	0.11	(0.09)	Water stress (abstraction as % of available resources)	16.7	(8.8)
Renewables (% of TPES)	7.8	(10.8)	Water abstraction per capita (m^3/cap./year)	354	(710)
Carbon intensity (energy-related CO_2)			Municipal waste per capita (kg/capita)	409	(525)
Emissions per capita (t/cap.)	7.9	(8.7)	Material productivity (USD, 2015 PPPs/DMC, kg)	4.5	(2.9)
Emissions per GDP (t/1 000 USD 2015 PPPs)	0.16	(0.20)	Land area (1 000 km^2)	30	
GHG intensity[3]			% of arable land and permanent crops	29	(12)
Emissions per capita (t CO_2 eq/cap.)	10.3	(12.0)	% of permanent meadows/pastures	16	(22)
Emissions per GDP (t CO_2 eq/1 000 USD 2015 PPPs)	0.25	(0.30)	% of forest area	23	(31)
Mean population exposure to air pollution ($PM_{2.5}$), µg/m^3	12.7	(13.9)	% of other land (built-up/other land)	33	(34)

1. Values earlier than 2014 are not considered. OECD value: where the OECD aggregate is not provided in the source database, a simple average of latest available data is calculated where data exist for a significant number of countries.
2. Patent applications for higher value inventions that have sought protection in at least two jurisdictions.
3. Excluding emissions/removals from land use, land-use change and forestry. Emissions expressed in CO_2 equivalent.
Source: Calculations based on data from databases of the OECD, Eurostat, IEA/OECD and World Bank.

Executive summary

Belgium is not on track to achieve the Sustainable Development Goals by 2030

In the past decade, greenhouse gases and air pollutant emissions, municipal waste generation, energy and material consumption, and water abstractions decreased. However, Belgium's performance remains insufficient to halt biodiversity loss and to alleviate the growing pressures of demographic development, urbanisation and intensive agricultural practices.

Local air pollution, especially from transport and heating, remains a health concern. Belgium equalised diesel and petrol taxes and Antwerp, the Brussels-Capital Region and Ghent introduced low emission zones. Varying the road distance charge by space and time and removing the favourable tax treatment of company cars would help address air pollution and congestion costs of road transport.

Belgium is far from achieving good status for water bodies. High use of nutrients and pesticides in agriculture is the most important source of pollution. The country needs to identify and assess key measures for achieving water quality objectives. It has the opportunity to strengthen water management objectives under the post-2020 Common Agricultural Policy.

The federal and regional governments should share a long-term vision to reach 2030 targets aligned with climate neutrality

The National Energy and Climate Plan (NECP) and the Long-term Strategy outline contributions of the federal authority and the regions to climate targets of the European Union (EU). However, the fragmentation of competences and lack of an independent co-ordinating body hamper the development of a shared long-term vision and implementation of coherent policies. An internal burden-sharing agreement on the 2030 objective remains to be adopted.

Oil, gas and nuclear dominate the energy mix. Belgium is not on track to meet its 2020 targets for renewable energy and energy efficiency. NECP projections indicate that 2020 and 2030 climate targets are within reach. However, further efforts will be needed to meet the more stringent targets adopted by the European Union for 2030 to achieve climate neutrality.

Regions need to strengthen co-ordination

Institutional and procedural differences in policy implementation between Flanders, Wallonia and the Brussels-Capital Region create an unlevel playing field for businesses. Each region plans and implements its own policy in several domains with cross-border issues. Several co-ordination mechanisms between the federal and regional governments, as well as across the regions, help them adopt common positions on Belgium's international commitments and to exchange good practices. However, this co-ordination needs to be more effective in several areas, such as climate change, water resources management, and waste management and circular economy.

Compliance promotion and monitoring have improved, but enforcement must be more effective

Environmental authorities are paying growing attention to promotion of compliance and green business practices. Compliance monitoring is planned to a large degree based on systematic assessment of environmental risk posed by economic entities. The number of inspections has been stable in the three regions over recent years despite resource constraints. The efficiency of inspection work has also increased in recent years due to the digitalisation of many procedures and better performance management. The use of administrative fines has recently increased. However, additional efforts are needed to deter non-compliance, which remains significant. Belgian regions should continue to reduce non-compliance by expanding application of administrative fines that can be imposed without prosecution and by improving collection of monetary penalties.

Enhancing policy coherence to build a strong, resilient and green economic recovery

Belgium has a strong institutional set-up for sustainable development but needs to reinvigorate related inter-federal co-operation and improve coherence between energy and climate, transport and fiscal policies. As the COVID-19 emergency passes, the federal and regional governments should develop a co-ordinated recovery plan with ambitious climate and environmental targets.

The country can build on the National Pact for Strategic Investment and the NECP to set priorities. Phasing out nuclear energy by 2025 requires major investment in power generation, cross-border interconnections, smart grids, storage and demand response. The housing stock is old and among the least efficient in Europe. Belgium should follow up on the National Debate on Carbon Pricing to implement a carbon tax in sectors not covered by the EU Emissions Trading System and phase out fossil fuel subsidies. Increased revenue could help fund low-carbon infrastructure and support vulnerable households. Federated entities can make renewable energy policies more cost-effective and have yet to develop a common vision of mobility to shift from roads to rail and active modes. Cost-benefit analysis of public investment projects should be systematic.

Belgium must develop a more ambitious biodiversity policy

Belgium has many endangered species and the situation has worsened over the past decade. The proportion of habitats of community interest in a favourable state of conservation is low. Land take, landscape fragmentation and intensive agriculture are the main causes. Belgium will have to align its biodiversity policy objectives with the more ambitious objectives of the new EU strategy for biodiversity by 2030. Given the extent of built-up areas in Belgium compared to other OECD members, the objective of strict protection of 10% of land and coastal waters will be difficult to achieve.

Regional planning, agricultural and trade policy provide levers for action

Regions have taken spatial planning policy measures to stop land taking by 2040. The confinement linked to the COVID-19 crisis recalled the importance of access to nature for the well-being of the population. The regions have set new ambitious targets for access to green spaces in urban areas, but the instruments to finance them are not yet in place. In rural areas, Belgium must seize the opportunity offered by the reform of the EU's Common Agricultural Policy post-2020 to set biodiversity targets in agriculture. Belgium has taken steps to prevent the introduction of invasive alien species and illegal imports of timber. However,

more is needed to control imports of threatened exotic species and imported deforestation through supply chains, which increase the risk of wildlife-human contact in the tropics and, with it, the risk of a pandemic.

Waste management and circular economy policies have been strong…

Regions have used effective mixes of policy instruments to achieve and maintain high levels of incineration, recycling and composting for municipal solid waste and eliminating nearly all landfilling. Belgium has achieved an absolute decoupling of municipal waste generation from economic and population growth. Some extended producer responsibility schemes, including for packaging waste, have been effective in collecting and recovering their waste streams. The regions have established programmes to address contaminated sites. They have also worked closely with private enterprise and other stakeholders on ambitious policies for the transition to the circular economy. These initiatives have addressed key sectors, in particular construction and the food chain, as well as cross-cutting actions such as circular purchasing in both enterprises and government.

…but further efforts and co-ordination are needed

Performance in municipal waste management varies across the regions. Overall, Belgium will need to further improve municipal waste reduction, reuse, recycling and composting to meet domestic and EU targets. The performance of some extended producer responsibility schemes, such as those for waste electrical and electronic equipment and for end-of-life vehicles, needs to be improved. Belgium will have to turn existing and planned initiatives on the circular economy into stronger results, including reductions in material consumption, and material and carbon footprints. To ensure that policy actions are effective and efficient, the regions and the federal government should continue to strengthen co-ordination.

Assessment and recommendations

The Assessment and recommendations present the main findings of the OECD Environmental Performance Review of Belgium and identify 38 recommendations to help the country make further progress towards its environmental objectives and international commitments. The OECD Working Party on Environmental Performance reviewed and approved the Assessment and recommendations at its meeting on 8 December 2020.

1.1. Environmental performance: Trends and recent developments

Belgium is characterised by strong international and regional interdependence reflecting its geographical location and size. Its economy is tightly integrated with those of neighbouring countries. With few exploitable natural resources other than forests, Belgium depends on external markets for its energy and raw material supplies. Gross domestic product (GDP) per capita is well above the OECD average. Population and road densities are high, and Antwerp has one of the busiest ports in Europe. These characteristics influence levels and patterns of production and consumption (energy, transport, water and space) and housing and infrastructure needs. The resulting pressures on the environment are numerous and strong. Urban sprawl, landscape fragmentation, intensive agricultural practices and road traffic entail major social costs. These relate particularly to greenhouse gas (GHG) emissions, air pollution, traffic congestion and ecosystem degradation. High use of nutrients and pesticides in agriculture has significant impacts on water quality.

Since 2005, Belgium has made progress in decoupling several environmental pressures from economic growth (e.g. GHG and air pollutant emissions; municipal waste generation; energy and material consumption; water abstractions); in improving wastewater treatment; and in expanding the network of protected areas (Figure 1). However, progress remains insufficient to halt biodiversity loss and to alleviate the growing pressures of demographic development, urbanisation and intensive agricultural practices. Although Belgium performs well in many economic and well-being dimensions, it is not on track to achieve the Sustainable Development Goals (SDGs) by 2030.

The COVID-19 crisis had some positive outcomes on the environment. Reduced human activity has reduced air pollution, GHG emissions and pressures on biodiversity and natural habitats. However, these effects will be only temporary if recovery builds on the pre-crisis model. Generation of medical and hazardous waste is increasing (Section 1.5).

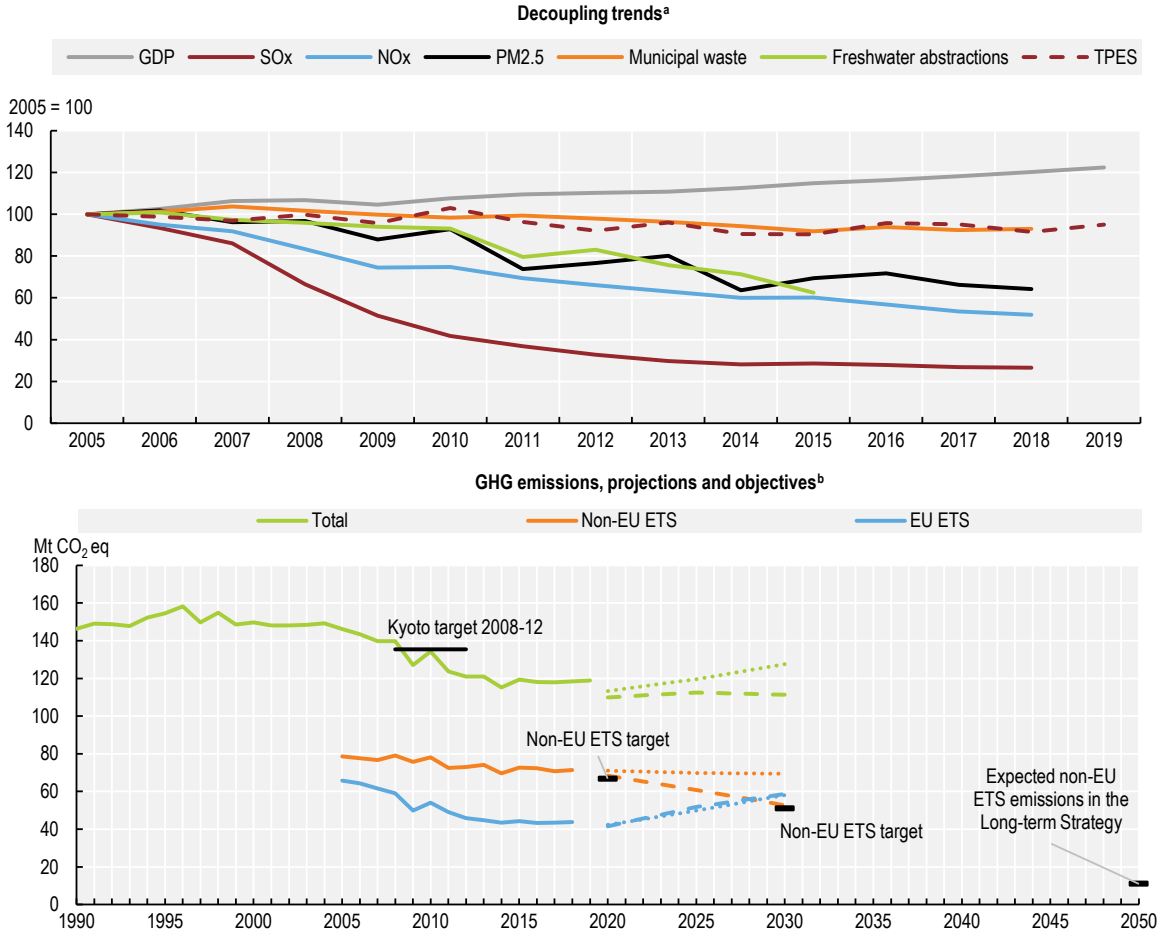
Belgium may achieve its 2020 climate targets, but it lacks a long-term vision shared by the federal and regional governments to reach 2030 targets aligned with climate neutrality

Belgium has committed by law to phase out all nuclear plants by 2025. However, the fragmentation of energy and climate competences between the federal and regional governments and lack of an independent co-ordinating body hamper the development of a shared long-term climate vision and implementation of coherent policies (SPF, 2018). The country submitted a National Energy and Climate Plan (NECP) in 2019 and a Long-term Strategy in 2020. These outlined the national contribution to the 2030 and 2050 targets of the European Union (EU) to reach the goals of the Paris Agreement. While both documents list the contributions of the federal authority and the regions, they do not provide an integrated vision of policies. An internal burden-sharing agreement on the 2030 climate objective remains to be adopted. Including the climate emergency in the Constitution and introducing a climate law that provides for a binding co-operation agreement could strengthen climate governance.

The achievement of 2020 climate objectives remains uncertain and further efforts are needed for 2030 and beyond (Figure 1). Fossil fuels, mainly oil and gas, dominate the energy mix, but the share of nuclear power in electricity generation is among the highest in the OECD. Energy supply from renewable sources was about four times higher in 2019 than in 2005. However, it accounted for only 9.4% of gross final energy consumption in 2018, below the 2020 objective of 13% and half the EU average. The NECP sets the objective to reach a 17.5% share by 2030, which is less ambitious than the draft version of the plan (although renewable energy is set to increase in absolute terms due to higher energy consumption) and below the 25% indicative target set for Belgium by the EU Governance Regulation (EC, 2020a). Energy consumption has remained stable since 2005. Thanks to improved energy efficiency of buildings, and due to warmer winters, energy consumption from the residential sector fell. However, energy consumption of

all other sectors (particularly in the commercial sector and industries) increased. The country is not on track to achieve its 2020 target for energy efficiency. The NECP expects final energy consumption to be reduced only slightly between 2020 and 2030 (CONCERE-NCC, 2019).

Figure 1. Selected environmental performance indicators



Notes: a) GDP expressed at 2015 prices and purchasing power parity; break in time series in 2008 for municipal waste generation.
b) GHG emissions excluding land use, land-use change and forestry. Dotted lines refer to projections of the National Energy and Climate Plan (NECP), with existing measures. Dashed lines refer to projections of the NECP, with additional measures.
Sources: CONCERE-NCC (2020), Belgium's Long-term Strategy; CONCERE-NCC (2019), National Energy and Climate Plan 2021-2030; EEA (2019), Country Profiles: Greenhouse Gases and Energy 2019 (database); IEA (2020), World Energy Statistics and Balances (database); OECD (2020), OECD Environment Statistics (database).

StatLink https://doi.org/10.1787/888934230566

GHG emissions, which decreased between 2005 and 2014, have stabilised. However, due to the high contribution of energy-intensive industries, emission intensity per capita remains higher than the EU average. In addition, Belgium's carbon footprint is substantially higher than production-based emissions as the country is a net importer of GHG emissions, although recent data are lacking (FPB, 2017). NECP projections with additional measures indicate that 2020 and 2030 targets of reducing emissions not covered by the EU Emissions Trading System (ETS) by 15% and 35% respectively (compared to 2005) are within reach[1] (Figure 1). The COVID-19 may affect results for 2020. However, further efforts will be needed to meet the more stringent targets adopted by the EU for 2030 to achieve climate neutrality at EU level by 2050. The NECP expects the most significant reductions to come from the transport and building

sectors. However, ETS emissions are projected to increase between 2020 and 2030 due to the nuclear phase-out and increasing dependence on gas.

The mid-term review of the National Adaptation Plan 2017-20 concluded that implementation was still partial (NCC, 2019). The plan addresses issues on biodiversity, crisis management, energy, health, research and international co-operation. By early 2019, of the 11 actions, 4 had not really started, 3 had met budgets and deadlines, and the remaining 4 had not been fully implemented. Two years after the adoption of the plan, one measure achieved the objective set. NCC concluded that support to this plan and its implementation should be reinforced. The final evaluation of the National Adaptation Plan was to take place by the end of 2020.

Air emissions have dropped, but air pollution remains a health concern

Emissions from major air pollutants have decreased and 2010 objectives set in the National Emission Ceilings Directive have been achieved. Belgium is on track to meet its 2020 and 2030 emission reduction commitments for sulphur oxides (SO_X), nitrogen oxides (NO_X), fine particulate matter ($PM_{2.5}$), non-methane volatile organic compounds (NMVOC) and ammonia (NH_3) (with additional measures for the latter) (EC, 2020b). The country has managed to reduce emissions from transport thanks to the introduction of catalytic converters, particulate filters and more stringent emission standards. Reductions of emissions from electricity production and industry were achieved through a fuel switch to renewables, the closing of some coke ovens, blast furnaces and all coal power plants, the use of end-of-pipe techniques and of low solvent products. Emissions from heating were reduced thanks to fuel switching and more stringent product legislation. However, the residential and tertiary sectors remain the primary source of particulate emissions, mainly because of wood burning. Emissions from agriculture were reduced by implementing low emission animal housing and manure spreading.

Air quality has improved over the past decade. However, EU limit values for NO_2 continue to be exceeded at some stations exposed to vehicle emissions and in street canyons in cities,[2] in particular Brussels and Antwerp (EEA, 2020). Ozone concentrations have continued to exceed the EU target value, especially in warm years such as 2018. In 2019, 93% of Belgians were still exposed to $PM_{2.5}$ concentration levels above the value recommended by the World Health Organization. The Brussels-Capital Region (BCR) expects the recently introduced low emission zone and planned ban of diesel vehicles by 2030 to help further reduce air pollution. Antwerp and Ghent also introduced low emission zones. Transport pricing and taxation also have potential to address air pollution (Section 1.3).

Material productivity is high and municipal waste management is efficient

Belgium generates more economic value per unit of materials used than the OECD Europe average and material productivity improved (Section 1.5). Over the past decade, the country has achieved an absolute decoupling of municipal waste generated from economic and population growth. In 2018, Belgians generated 410 kg of municipal waste per inhabitant, 85 kg less than the OECD Europe average. The country further reduced its already low shares of municipal waste sent to landfill and achieved recycling and composting levels above the OECD Europe average. Extended producer responsibility schemes have largely met their recovery and recycling targets. In coming years, however, Belgium's regions will need to further increase recycling and composting to meet their own and EU objectives (Section 1.5).

Intensive agriculture is a major environmental pressure

The area of agricultural land in use has remained relatively stable and occupies the largest part of the territory (45%). However, as bigger and more intensive structures replace smaller ones, the number of farms has continued to decline significantly. In recent decades, intensification and specialisation of agriculture, and at the same time marginalisation of land, have resulted in significant biodiversity loss in

and around farmland. Nitrogen and phosphorus surpluses decreased between 2005 and 2015, as did sales of pesticides between 2011 and 2018. However, they remain among the highest in OECD member countries per hectare of agricultural land (OECD, 2019).

Consequently, the most frequently identified pressures exerted on species are agricultural intensification (affecting more than three-quarters of species); fragmentation of habitats and the resulting loss of connectivity; the incidence of pollution (especially eutrophication); land take (especially in the Atlantic area); and intensification of forestry in Wallonia. Biological invasions are the second most important cause of the extinction of species (BCHM, 2019). In Flanders, Brussels and the marine area, changes in environmental quality due to eutrophication also impose heavy pressure on fauna and flora.

Better management of protected areas is required to improve the conservation of habitats and species

Belgium has almost met the 2020 Aichi targets to protect at least 17% of land area and far exceeded the 10% target for coastal and marine areas. In 2020, protected areas covered 15% of Belgium's territory, a share lower than the OECD average (UNEP-WCMC, 2020). In addition, only a limited number of sites at land are strictly protected or managed effectively (BCHM, 2019). The Belgian part of the North Sea, which is a sensitive ecosystem, is one of the most densely used marine areas in the world. It faces major pressures from sea-based activities (e.g. fishing, coastal defence, sand and gravel extraction, shipping, offshore energy, tourism) and land-based activities (agriculture, urbanisation, harbours, industry). The establishment of ecologically significant coastal and marine protected areas in the Belgian marine zone, complemented by the Natura 2000 network (37% of the area of the Belgian part of the North Sea), has been important progress. However, efforts have not been sufficient to improve the conservation status of habitats and species. Only a quarter of species are in good status (Section 1.4).

More needs to be done to improve water quality

The country is under moderate to medium-high water stress despite low levels of abstraction per capita. Both 2017 and 2018 were dry years, during which farmers faced water scarcity on an unprecedented scale. Over the past decade, water abstractions decreased. Water abstractions from industry have fallen sharply due to the restructuring of the metallurgy sector and outages of nuclear power plants, which reduced needs for cooling, as well as to efficiency improvements.

Water quality is an issue. Belgium has a long way to go to achieve the targets of good status for water bodies set in the EU Water Framework Directive (WFD) (EC, 2019a). The second River Basin Management Plans (RBMPs adopted over 2016-17) show that only 24% of surface water bodies achieved good ecological status, while only 2% of surface water bodies and 37% of groundwater bodies reached good chemical status. This is a lower performance than the EU average, though this is in part due to Belgium's high population density (EEA, 2018). High use of nutrients and pesticides in agriculture are the most important sources of surface and groundwater pollution. Despite significant progress in reaching compliance, delays in implementing the Urban Waste Water Treatment Directive also have had impacts on water quality. By 2016, 99% of wastewater collected underwent secondary treatment and 94% more stringent treatment. However, diffuse pollution from non-connected dwellings affects nearly half of surface waters and 10% of groundwaters (EC, 2020c, 2019b).

Enhanced co-ordination is needed between regional, national and international levels to harmonise water status assessment and co-ordinate Programmes of Measures (PoMs) of the RBMPs (EC, 2019a). To this end, a collaboration platform has been set up. Division of responsibilities results in several regional plans for the same river basins. Further work is needed to improve water quality monitoring, characterise pressures on water bodies and clarify the links between water status, individual pressures, impacts and PoMs. The RBMPs are unclear on the extent to which measures implemented will contribute to achieving

the WFD objectives and sources of funding are not always identified. The third RBMPs are being developed. The design of Belgium's Strategic Plan under the post-2020 Common Agricultural Policy is an opportunity to set more ambitious targets on water. Belgium's share of agricultural land under contract to improve water management is below the EU average.

Box 1. Recommendations on climate change and water management

- Adopt an inter-federal climate law setting long-term (2030 and 2050) national targets to achieve climate neutrality. Establish an independent expert body to define internal burden sharing of the 2030 objectives. Ensure that future revisions of the NECP present an integrated national overview instead of compilation of plans at different levels.
- Reinforce the implementation of the National Adaptation Plan measures; strengthen co-operation and develop synergies between regions and the federal state on adaptation issues.
- Continue to improve water quality monitoring to assess the status of water bodies in line with the Water Framework Directive.
- Identify key measures to tackle priority substances and assess their impact to clarify the timeframe for achieving water quality objectives.
- Strengthen water management objectives in the upcoming Strategic Plan to implement the post-2020 Common Agricultural Policy.

1.2. Environmental governance and management

Belgium employs a wide range of good international practices of environmental governance – from policy evaluation to permitting, compliance monitoring and damage remediation. It has made progress on all relevant recommendations of the 2007 Environmental Performance Review (EPR). However, non-compliance with environmental law, albeit on the decline, remains an important issue.

Disparity of regional systems is partly mitigated through co-ordination mechanisms

Belgium's regions – Flanders, Wallonia and the BCR – are responsible for most environmental policies. The federal government's environment-related portfolio includes product regulation and marine protection, several energy, transport and fiscal matters, as well as co-ordination of Belgium's international environmental policy. The regions delegate significant authority to provinces (in the Flemish and Walloon regions) and municipalities, which share responsibilities for land-use planning, permitting and environmental services.

Environmental governance systems in the three regions have many institutional and procedural differences. Planning and implementation in several domains with cross-border issues (e.g. river basin management) happen independently in each region. The dominance of EU directives in the regulatory framework of all jurisdictions partly compensates for the effects of regionalisation of environmental policy. There is evidence that the regions often proactively learn from each other's policy initiatives. Several co-ordination mechanisms between the federal and regional governments, including committees and co-operation agreements, reduce disparities in the playing field for businesses. However, inter-regional co-ordination is less effective in some policy areas, such as climate change, water resources management, and waste management and circular economy (Sections 1.1 and 1.5).

Environmental assessment of policies has improved and includes ex post evaluation

Strategic environmental assessment (SEA) has been increasingly used over the last decade: it is implemented for all land-use plans, strategic plans and programmes with a potentially significant environmental impact. Many federal and regional strategic plans also undergo *ex post* evaluation to identify and address unforeseen adverse effects.

However, regulatory impact assessment (RIA) is mandatory only at the federal level. It is required to consider impacts on air quality, biodiversity, climate change mitigation and adaptation, mobility, energy and natural resources (EC, 2017a). The regions do not use RIA and have recently weakened formal mechanisms to evaluate sustainable development implications of draft regulations.

The permitting system is diversified, linked to spatial planning and supported by general binding rules

Environmental permitting is fully integrated with urban planning in Flanders and Wallonia and is closely linked to environmental impact assessment (EIA) in every region. Belgium has one of the highest shares of developed land among OECD member countries and land fragmentation has increased. Consequently, a strong connection between environmental and land-use law is important in integrating environmental aspects into spatial planning.

Regulatory requirements are diversified as a function of environmental risk: EIA is conducted on a case-by-case basis for medium-risk facilities; low-impact installations in the Walloon Region and the BCR

only need to notify the municipal government and do not require a permit. This diversification helps reduce the administrative burden on regulated businesses.

Flanders and Wallonia have adopted general and sector-specific environmental conditions based on best available techniques – general binding rules – for all classes of installations (the BCR – for most classes), to serve as a foundation for environmental permits. This is a good international practice followed by an increasing number of OECD member countries, particularly for low-impact installations.

Strengthened enforcement has led to reduced non-compliance, but challenges remain

Compliance monitoring is increasingly planned based on systematic assessment of risk posed by individual installations. The number of inspections has been stable in the three regions over recent years despite resource constraints. The share of site visits detecting non-compliance declined in Flanders from 37% to 19% over 2013-17, but remains high in Wallonia at 35-40%. This indicates that additional efforts are needed to deter non-compliance. The efficiency of inspection work has increased in recent years due to the digitalisation of many procedures and better performance management. Outcome performance measurement would help the environmental enforcement authorities evaluate the impact of their activities on compliance behaviour.

In all three regions, administrative and criminal fines cannot be imposed for the same offence. Competent authorities can impose an “alternative” administrative fine if the public prosecutor has not opened a criminal case within a certain period after receiving the prosecution report. In the BCR, there are plans to make regulatory changes to allow the offender to pay an administrative fine to avoid prosecution. The vast majority of environmental offences are not prosecuted. Instead, they are punished by alternative administrative fines, whose rates are high by international standards. The Flemish Region also has “exclusive” administrative fines. They are imposed for mild breaches that do not warrant criminal prosecution. These directly applicable fines are a more flexible sanction. The use of administrative fines has recently increased, but their collection requires improvement.

All three regions have made progress in addressing the challenge of contaminated sites, with extensive programmes for registration and risk assessment of contaminated sites. Flanders and the BCR use different innovative tools to finance their remediation. The Flemish Region has among the lowest shares of public burden of environmental remediation in the European Union (van Liedekerke et al., 2014). Wallonia strengthened its legal provisions for soil remediation in 2018. However, it does not recover enough industrial site remediation costs from private responsible parties, which puts an unnecessary burden on the public budget.

Various tools are used to promote green business practices

Environmental authorities are paying increasing attention to promotion of compliance and green business practices. Various guidance documents have been published on websites of environmental authorities, including inspectorates. Flanders has been at the forefront of developing voluntary agreements between the regional government and other parties, including industry, local governments, non-governmental organisations (NGOs) and universities. The Green Deals initiative, running since 2017, has involved over 1 000 parties. However, governments use few incentives to promote environmental management system certification.

To expand the market for green products and services, the federal government and the regions have developed green public procurement initiatives. Both Flanders and Wallonia have set a target of 100% sustainable public procurement by 2020. However, this target will not be achieved, and progress is not adequately monitored.

Environmental democracy is vibrant, supported by education and awareness efforts

Federal and regional authorities implement open government and open data policies, which largely determine the mechanisms for public participation and access to environmental information. Public participation is an integral part of the EIA, SEA and permitting processes. The public is extensively consulted on draft legislation, plans and programmes at all administrative levels. The public also has unfettered access to environmental information: federal and regional governments have established their own environmental information systems, including geoportals. They publish regular environmental and sustainable development reports. Information comparability across regions has improved with regard to spatial environmental data, but remains a challenge in several other areas. Access to justice on environmental matters is guaranteed, but court procedures can be long, and high litigation costs can be inhibitive to citizens (Paquet, Maréchal and Gerritsen, 2019).

The French-, Flemish- and German-speaking communities, which are responsible for education policies, collaborate closely with the regions in the field of environmental education in schools and universities. Regional governments actively support environmental awareness through outreach centres, dedicated events and volunteer activities.

Box 2. Recommendations on environmental governance and management

- Increase the effectiveness of co-ordination between the federal government and the regions, as well as among the regions, particularly in the fields of climate change, water resources management, and waste management and circular economy.
- Enhance formal environmental assessment of draft regional laws and regulations by integrating it into other procedures for regulatory quality assurance.
- Continue to reduce non-compliance by expanding the application of administrative fines that can be imposed without first resorting to prosecution and by improving collection of monetary penalties; consider decriminalising less serious offences by making them liable only to administrative sanctions.
- Strengthen performance management by environmental enforcement authorities by introducing outcome indicators of behaviour of the regulated community.
- Reduce the public burden of environmental remediation by ensuring that land owners or other responsible parties either clean-up contaminated sites directly or pay fees to constitute public funds earmarked for remediation.
- Further expand efforts to promote green business practices by creating regulatory incentives (e.g. inspection frequency) for environmental management system certification and scaling up and monitoring implementation of sustainable public procurement.
- Further enhance access to justice by providing legal and financial assistance to citizens on environmental matters.

1.3. Towards green growth

Belgium performs well in many economic and well-being dimensions. However, the high level of public debt and population ageing, rising skill shortages and low productivity growth create vulnerabilities (OECD, 2020a). Economic growth was moderate but steady in the five years preceding the coronavirus outbreak. It was accompanied by strong employment growth. As of December 2020, it was expected that GDP would shrink by 7.5% in 2020, the sharpest contraction since the Second World War (OECD, 2020b). It would then slowly recover (+4.7% in 2021 and 2.7% in 2022). The public debt was anticipated to rise from 98% of GDP in 2019 to 116% in 2020 and the unemployment rate to grow from 5.4% to 5.7%.

Following the generalised lockdown in early 2020, the federal government introduced a fiscal package equal to 3.9% of GDP (OECD, 2020b). It consists mainly of deferrals of tax and social security payments, along with some direct income support measures that were effective in protecting jobs and businesses and in sustaining economic activity. The authorities made it possible to defer the repayment of credits and introduced a guarantee scheme for new credits and credit lines (which amounts to 10.7% of GDP). These measures, along with the European Central Bank's accommodative monetary policy and prudential policy easing by the National Bank of Belgium, have supported aggregate demand. With the economy on a recovery path, some measures were phased out progressively in early autumn. However, the federal government reintroduced emergency measures following the tightening of containment measures in early November. The recovery will be temporarily disrupted and is expected to continue being hampered by potential restrictions imposed in response to sporadic outbreaks of the pandemic until vaccination against the virus becomes general in late 2021.

Enhancing policy coherence to build a strong, resilient and green economic recovery

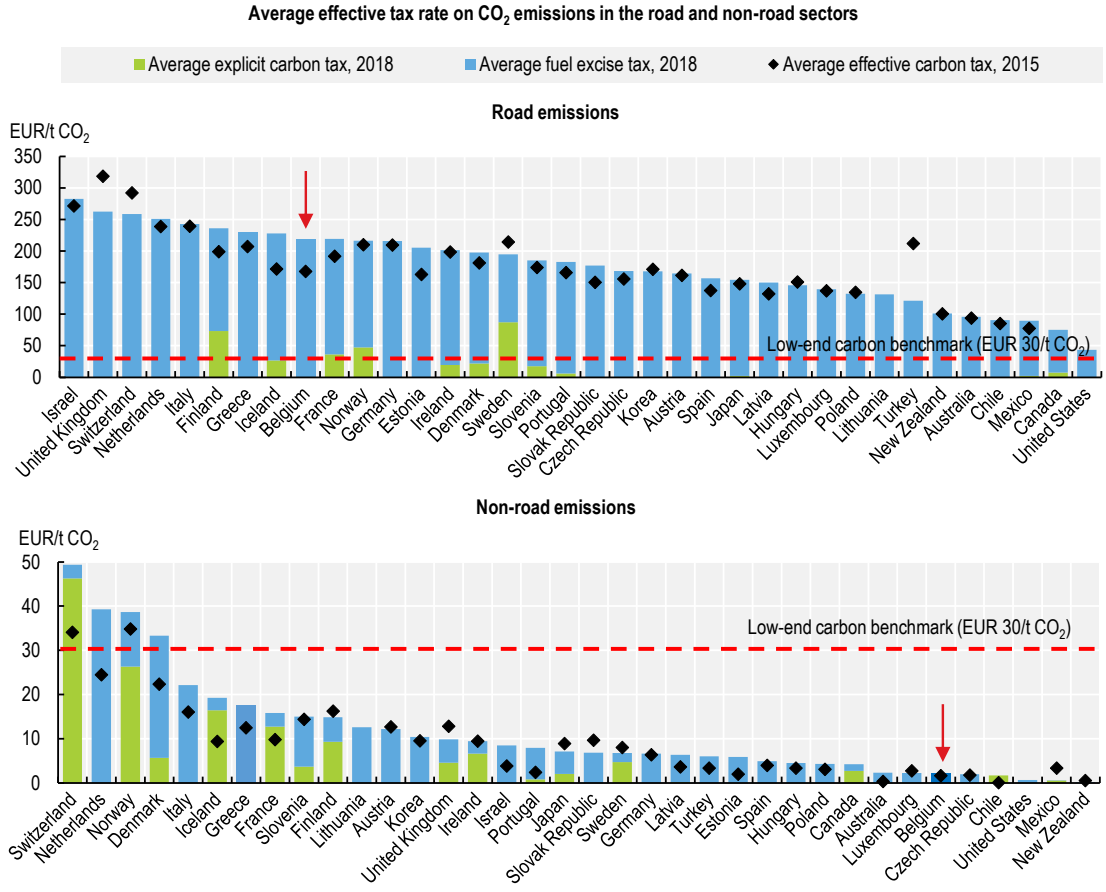
Belgium has a long-established, strong institutional set-up for sustainable development. In 2017, it developed a National Sustainable Strategy and presented the voluntary review of the implementation of the 2030 Agenda to the United Nations High-level Political Forum on Sustainable Development. However, inter-governmental co-operation on sustainable development has since stopped. The third federal plan on sustainable development, planned for adoption ten years ago, is still in preparation. There is room to improve policy coherence by improving co-ordination in energy and climate, transport and fiscal policies, and systematic assessment of the impact of regulations on sustainable development.

As the COVID-19 emergency passes, recovery efforts should focus on putting the country back on track to meet the SDGs. Despite progress in decoupling environmental pressures from economic growth, the depletion of natural capital is putting well-being's sustainability at risk. The new federal government has to co-ordinate with the regions to draw up a recovery plan to benefit from the "Next Generation EU" resources (more than EUR 5 billion allocated to the country). At least 37% of the plan's expenditure should contribute to climate objectives (EC, 2020d). Investing in low-carbon and natural infrastructure, promoting innovation and circular economy, strengthening carbon prices and phasing out environmentally harmful subsidies should be key components of the package to accelerate the green transition. The federal and regional governments do not have a green growth strategy, but have taken steps to promote a green and inclusive economy through the 2018 National Pact for Strategic Investment and the NECP. Tracking progress in low-carbon investment would be useful for setting priorities of the recovery plan. While the Flemish government announced a EUR 4.3 billion recovery plan focusing on sustainable economy and digitalisation, a co-ordinated plan between the federal and regional governments would have higher economic multiplier effect and climate impact. A wealth of regional initiatives promote investment, innovation and employment in energy efficiency, green chemistry and circular economy. Improving synergies in these fields will be essential in pursuing a green recovery.

There is scope to make the tax system more growth- and environmentally-friendly

There is scope to make the tax system more growth- and environmentally-friendly as recommended in previous EPRs and Economic Surveys. Belgium's tax-to-GDP ratio remains one of the highest in the OECD. Despite a recent reform, the tax structure is skewed towards labour, which penalises growth and employment. The less distortive environmentally related taxes account for a small part of revenue (equal to 2.2% of GDP in 2018 vs. 2.3% in the OECD Europe average). Belgium aligned diesel and petrol taxes in 2019. This is notable progress as diesel has higher carbon content than petrol and diesel engines generally generate higher local air pollution cost. Only three OECD member countries apply equal tax rates. However, taxes on energy products do not fully reflect environmental costs of energy use. Effective tax rates[3] on carbon dioxide (CO_2) emissions from energy use are low, especially in non-road sectors (Figure 2).

Figure 2. Effective tax rates on CO_2 emissions are low, especially in non-road sectors



Note: Tax rates as applicable on 1 July 2018. CO_2 emissions are calculated based on energy use data for 2016 from IEA (2018), *World Energy Statistics and Balances*. Emissions from the combustion of biofuels are included. The average effective carbon tax rate in 2015 is the sum of the average explicit carbon tax rate in 2015 and the average fuel excise tax rate in 2015.
Source: OECD (2019), *Taxing Energy Use 2019: Using Taxes for Climate Action*.

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Support to fossil fuel consumption was equal to 40% of energy tax revenue in 2018, among the highest rates in the OECD.[4] It is mostly made up of tax preferences for the use of oil products, in particular lower taxation of heating oil and partial refund of excise duty on diesel for commercial use. These tax preferences narrow the tax base and undermine carbon prices. Support to fossil fuel consumption rose significantly in

the past decade as forgone revenue from tax concessions increased with taxes on diesel. Belgium has not reported progress towards phasing out fossil fuel subsidies in its NECP as required by EU regulation. The National Debate on Carbon Pricing has identified options to implement a carbon price in non-ETS sectors and should be followed up. A multi-stakeholders' mechanism to track and support the reform of environmentally related taxes and subsidies, as recommended in the 2007 EPR, would be helpful.

It is estimated that 14% of Belgian households face challenges in affording energy, although there is no national indicator on energy poverty (KBF, 2020). Belgium has introduced measures to support vulnerable households: reduced tax rates on heating oil, as well as social tariffs for electricity and natural gas. These measures often fail to target the most in need, distort prices, fail to encourage people to save energy, and reduce investment capacity in infrastructure (Court of Audit, 2018; Brugel, 2020). Providing direct support to vulnerable households, decoupled from energy consumption, would better address environmental and equity issues.

GHG emissions from road transport increased over 2013-18 due to the growing number of vehicles and the longer distances travelled (FPB, 2020). High congestion, especially in the Brussels and Antwerp agglomerations at peak periods, is a serious brake to productivity. Moreover, air pollution from vehicles poses significant health risks. Belgium has made some progress in developing transport pricing and taxation to help internalise the environmental costs as recommended in the 2007 EPR. The federal government aligned diesel and petrol taxes, while regions introduced environmental components in vehicle taxes and distance charges for trucks. This has helped reduce the share of diesel in the fleet and the reported average air pollutant emissions of new vehicles. Differentiating the distance charge by space and time for trucks, along with expanding the system to light duty vehicles and cars, would provide substantial gains in time and environmental benefits. Removing the favourable tax treatment of company cars, which is costly and particularly benefits high-income men, would also help internalise environmental and congestion costs of road transport. The new federal government has committed for a full decarbonisation of the company car fleet by 2026. However, favourable company car taxation would continue to contribute to car use, congestion and non-exhaust air emissions (e.g. from tyres and brakes).

Investment needs in low-carbon infrastructure are high

In 2018, public expenditures on waste (0.4% of GDP) and wastewater management (0.1% of GDP) were in line with the EU averages, while spending for the protection of biodiversity was lower (less than 0.1%). Public investment in waste and wastewater management is mostly carried out by municipalities. Over the past decade, waste investment has varied with additional incineration capacity in Wallonia and the development of separate collection in the three regions, while investment in wastewater treatment has been stable. Industrial investment for environmental protection, in particular emission abatement and wastewater treatment, has increased significantly since 2011 due to stricter EU emission and effluent standards.

Investment needs in sustainable energy and mobility are estimated at almost 2% of 2018 GDP annually over the next decade. The 2018 National Pact for Strategic Investment that aims at boosting productivity and innovation includes energy and mobility among its six priorities[5] (Strategic Committee, 2018a). The commitment to phase out nuclear energy by 2025 requires major investment in power generation, cross-border interconnections, smart grids, storage and demand response. Continuous discussions over the possible extension of a limited number of nuclear power plants and unambitious renewable targets for 2030 is creating uncertainty (EC, 2020e). Belgium has made significant progress in developing renewables thanks to generous green certificate systems and decreasing technology costs. It is a world leader in terms of residential solar photovoltaic (PV) capacity installations per capita (IEA, 2019). However, this came at high costs with significant impact on electricity prices. Support levels have been reduced (subsidies have stopped for small solar PV except in BCR). There is still room to make regional renewable energy policies more cost-effective by gradually integrating renewables into the electricity market (IEA, 2016). The Marine

Spatial Plan recently established new zones for offshore windfarms that will be subject to tendering at federal level. Additional efforts are also needed to reduce administrative barriers and promote renewable heat and transport fuels.

Moving towards decarbonisation of buildings by 2050 demands large renovation works. The housing stock is old and among the least efficient in Europe (BPIE, 2017). Regions have developed long-term renovation strategies and implemented a wide range of measures to promote energy-efficient buildings. These include energy performance standards, tax incentives and subsidies for renovation, as well as information tools. Despite positive outcomes, additional measures are needed to raise the renovation rate of public buildings from less than 1% to the required 3% and reach the long-term targets. Governments envisage developing private funding via energy service contracts, crowdfunding and EU funds. The federal government is considering extending the reduced valued-added tax rate applied to old building renovation to demolition and reconstruction (already in place in some cities). In addition to revenue loss and equity concerns, however, such a measure could increase construction waste and energy use from production and transport of construction materials. Making property taxes and rental income tax reductions conditional upon energy efficiency improvement could encourage investment. Low natural gas and oil heating prices do not provide sufficient incentives for renovation projects. Gradual introduction of carbon pricing would be more cost-effective in triggering energy efficiency investment.

Reducing congestion involves developing integrated infrastructures to improve access to Brussels and Antwerp, shifting from roads to rail and active modes. Since 2010, investment in transport has hovered around 0.45% of GDP – a low rate by international standards – and has shifted from rail to road. Despite dense road and rail networks, infrastructure is not sufficient to meet the growing demand for transport. Wallonia and BCR have adopted long-term mobility plans and investment plans focusing on public transport and soft mobility (especially in BCR). However, the Executive Committee of Mobility Ministers has not managed to co-ordinate a consistent vision across the federated entities as recommended in the 2007 EPR. There is a need to strengthen the committee's role and evaluation capacity as cost-benefit analysis of infrastructure projects is ad hoc; public entities at different levels apply their own practices (Strategic Committee, 2018b). Improving transport demand management will require co-operation on road charges and the removal of incentives for car use. Increased revenue could help fund low-carbon transport infrastructure.

Belgium is a strong innovator, but eco-innovation performance is modest

Belgium is a strong innovator. It has a highly skilled workforce, an attractive research system with a strong science base, strong universities and good public-private collaboration. By contrast, the country's eco-innovation performance is modest. Government R&D budget on environment decreased in the past decade. Public budget on energy-related research, development and demonstration per unit of GDP is among the ten highest in the IEA due to the high share of budget spent on nuclear power and, to a lower extent, on energy efficiency. Renewable energy sources account for a low share of spending, which has decreased in recent years. The decrease in public R&D support is reflected in patent applications for environment-related technology. After a sharp increase over 2005-09, applications decreased more rapidly than in other OECD member countries. Nevertheless, Belgium has developed a specialisation in waste management technology and has maintained a relative advantage in water-related adaptation technologies. The country is not specialised in climate change mitigation technologies despite a relative advantage in specific technology in the production or processing of goods.

At regional level, there is a wealth of initiatives focusing on energy efficiency, green chemistry and circular economy. These include the BCR Innovation Plan 2016-20, Circular Flanders, the Flanders industry innovation Moonshot and the Walloon GreenWin cluster. However, regional best practices are not disseminated at national level, and co-operation in this area is not a priority (EC, 2017b). Other barriers to eco-innovation are low carbon prices, skills shortage, lower than expected uptake of green public

procurement, limited control over the design of imported products and insufficient market for recycled products.

The environmental goods and services sector is small, although its share in total value added (1.2%) was on par with the EU average in 2017. Waste and energy resource management (production of renewable energy and energy-saving measures) dominate the sector. Although all regions provide subsidies to develop employment in social enterprises active in the circular economy,[6] there seems to be room for development compared with other EU countries.

Box 3. Recommendations on green growth

Enhancing policy coherence for sustainable development and green growth

- Reinvigorate inter-federal co-operation on sustainable development by regularly reporting on implementation of the national strategy, adopting a new Federal Sustainable Development Plan, translating SDGs into time-bound specific quantitative targets and systematically integrating SDGs into regulatory impact analysis and strategic and policy documents.
- Develop a recovery plan with ambitious climate and environmental targets, co-ordinated between the federal and regional governments, building on the assessment of progress and gaps in low-carbon investment in the National Pact for Strategic Investment and the National Energy and Climate Plan.

Greening the system of taxes and subsidies

- Establish a multi-stakeholders' mechanism to track and support the reform of environmentally related taxes and subsidies. Swiftly develop a plan to phase out fossil fuel and other environmentally harmful subsidies.
- Introduce a carbon tax for sectors not subject to the EU Emissions Trading System and develop compensatory measures for vulnerable households. Improve information on energy poverty.
- Vary the road distance charge by space and time for trucks and expand the system to light duty vehicles and cars. Abolish the favourable tax treatment of company cars.

Promoting low-carbon investment and eco-innovation

- Enhance inter-federal co-operation and develop a common vision of mobility laid out in a national mobility plan giving priority to sustainable mode, consistent with related plans at all levels of government.
- Systematically conduct cost-benefit analysis of public investment projects and ensure it is considered in decision making. Consider establishing an independent evaluation body to assess cross-regional projects and harmonise practices.
- Create a clear and predictable support system while gradually integrating renewables into the electricity market as technology costs decrease.
- Accelerate building renovation by developing private funding via energy service contracts, crowdfunding and EU funds. Consider making property and rental income tax reductions conditional upon energy efficiency improvement.
- Promote knowledge sharing and partnerships across regions to encourage eco-innovation.

1.4. Biodiversity

Belgium has a remarkable diversity of species despite its small size. This biodiversity brings many benefits to society – around EUR 1 billion for the Natura 2000 network in Flanders alone. However, a significant number of species are threatened and the situation has deteriorated over the past decade. The proportion of habitats of Community interest in a favourable state of conservation is low. Land take, landscape fragmentation and intensive agriculture are among the main causes of biodiversity loss.

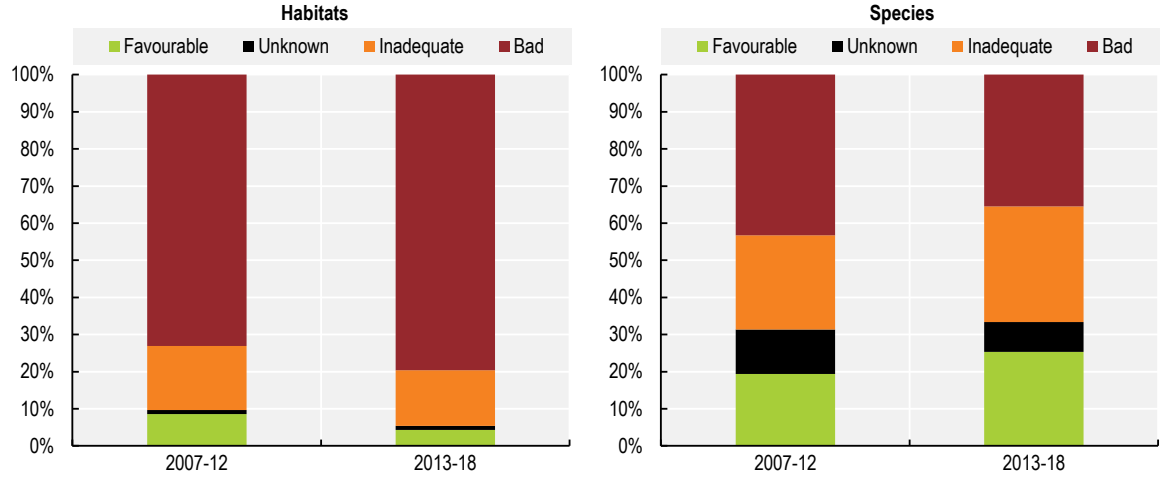
Nature conservation in Belgium is under the responsibility of the three regions with the exception of two exclusive federal competencies: the import, export and transit of non-native plant species, as well as non-native animal species and their remains, and nature conservation at the North Sea. The Inter-ministerial Conference for the Environment, composed of the competent ministers of the federal government and the three regions, approves the updating of the National Biodiversity Strategy (NBS).

Updating the National Biodiversity Strategy is an opportunity to increase ambition

Belgium will have to align its NBS and regional biodiversity policies with the ambitions of the new EU Biodiversity Strategy for 2030. The NBS could usefully provide a framework to assess and highlight the costs and benefits for society of halting biodiversity loss and fostering synergies of biodiversity policy with other environmental, land and sectoral policies.

The status of habitats and species is of concern (Figure 3). More than 33% of freshwater fish species, nearly 30% of bird species and more than 20% of vascular plant and mammal species are threatened. Common farmland bird populations have halved since 2000, the worst trend in the OECD area. Pesticide sales and the nitrogen balance per hectare are among the highest in the OECD. Forest bird populations have declined by almost 20% since 2000, which is also the worst trend in the OECD area. About 30% of the Belgian part of the North Sea does not reach the target of good environmental status set for 2020 by the EU Marine Strategy Framework Directive, especially the coastal waters.

Figure 3. The status of habitats and species is of concern



Source: EEA (2019), "Conservation status and trends of habitats and species" (Dashboard).

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Yet Belgium was among the first countries to implement sea-use planning. Its significant efforts to create new marine protected areas go beyond the target of 30% of the new EU Biodiversity Strategy for 2030.

However, their level of protection, as measured by International Union for Conservation of Nature standards, raises questions. Belgium could assess the risk of eutrophication and litter pollution of coastal waters, as it did for pollution by oil and hazardous and noxious substances.

In the regions, the coverage of terrestrial protected areas almost meets the Aichi target of 17% for 2020. However, only 1% of Wallonia and 2% of BCR and Flanders are strictly protected. This is far from the 10% target of the EU Biodiversity Strategy for 2030. Only 74% of the Flemish Ecological Network and 4% of the supplementary network of nesting areas and connecting areas have been demarcated, far behind the initial goal of completion (2003). The Walloon “Main Ecological Structure” includes development zones where nature protection is not the priority; Wallonia is seeking to have a functional ecological network with legal status. There is no quantified target for the extent of the Brussels Ecological Network. Flanders has recently introduced a performance-based incentive system for areas under nature management, which is a step in the right direction.

Nature-based solutions should be put into practice

Belgium has made progress in developing tools to assess nature-based solutions defined as measures that protect, sustainably manage or restore nature, with goal of maintaining or enhancing ecosystem services to address a variety of social, environmental and economic challenges (OECD, 2020c). It should use these tools in the economic valuation of biodiversity. This would pave the way for payments for ecosystem and welfare services to finance biodiversity in a cost-effective manner. To date, the main instruments of biodiversity policy have been direct environmental regulation and public financial support. Belgium has made little use of pricing instruments (taxes, tradable permit systems) and payments for ecosystem services. Its efforts to develop information measures and voluntary schemes are commendable.

The confinement linked to the COVID-19 crisis recalled the importance of access to nature for the well-being of the population. BCR aims to provide all residents with green space within 200 metres of their home by 2020 (an ambitious objective not yet assessed). It also intends to maintain the 50% share of undeveloped land by 2040, a good performance compared to the main cities of the European Union. Wallonia aims to provide its city dwellers with green spaces within a quarter of an hour's walk. Belgium could introduce a tax to finance urban green spaces, imposed either on residents (as in Yokohama, Japan) or on building permits (as in France).

There is room to better mainstream biodiversity in spatial planning, agricultural, forest, climate and trade policies

Pressures from urbanisation and land fragmentation have increased. Belgium has one of the highest shares of built-up areas in the OECD. Between 2012 and 2018, the land take rate was higher than in most European countries despite progress in re-cultivation of urban areas to semi-natural land. Each region has its own spatial planning policy. Flanders has adopted a target of no land take by 2040, ahead of the EU target for 2050. The objective of land consolidation has gradually widened from the structural adjustment of agriculture to rural development. A new land development law in 2014 facilitates access to land acquisition and management tools. This includes biodiversity management contracts with the Flemish Land Agency that usefully complement the protection of biodiversity on land outside the network of protected areas. In Wallonia, the artificialisation of land continues, although at a decreasing rate. Since 2005, any new area intended for urbanisation having an impact on nature must be compensated in land-use planning. Municipal nature development plans, currently voluntary, could be an integral part of the development of a functional ecological network with legal status. In BCR, the principle of reasoned densification provides for the creation of new "quality districts" offering housing, public facilities, activities and green spaces. Creating new green spaces in the city centre, as foreseen by the Regional Plan for Sustainable Development, can be extremely expensive and difficult. Consequently, BCR should prioritise

management of nature on the undeveloped land for which the Regional Land-Use Plan provides legal protection for biodiversity.

Belgium has adopted a national approach to implement the EU Directive on sustainable use of pesticides. It is one of the few EU countries to have set risk reduction targets for pesticides. Direct regulation, in particular for public spaces, sources of drinking water and home gardens, is the main instrument of the pesticide policy. In 2015, Wallonia introduced a tax on livestock effluents, fertilisers and pesticides for the agricultural sector. Instead of being based on the use of pesticides, the tax should reflect the risks of pesticides to health and the environment, as in Denmark. The principle of risk-based taxation of pesticides could be introduced into the Belgian pollinator strategy under development.

There is a big contrast between Flanders and Wallonia in the implementation of the Rural Development Programme (RDP) of the EU's Common Agricultural Policy (CAP). Wallonia aims to put 20% of the utilised agricultural area under biodiversity management contract, whereas Flanders has a goal of only 2%. The vast majority of the organic farming area in Belgium (92%) is in Wallonia with the remainder in Flanders. The design of the CAP allows a large choice of agricultural practices via a combination of direct regulation and financial support (direct payments). Belgium should carefully identify agricultural practices beneficial for biodiversity, including as co-benefits for practices targeting other environmental objectives such as water quality, air quality, soil quality or mitigation of GHGs.

Flanders and Wallonia are reporting positive steps in applying the risk approach to manure policy. Flanders has gradually strengthened its farm nutrient management policy. First, it introduced a system of tradable nutrient emission rights. Second, it targeted farms with the highest risk of nutrient loss. More recently, it differentiated watersheds according to their difficulty in achieving the objective of the EU Water Framework Directive. Wallonia has chosen to delimit 60% of its farmland as an area vulnerable to nitrates. Flanders plans to regulate ammonia emissions based on the risk of deposits on protected areas.

The RDP supports afforestation and reforestation to promote mixed forests compatible with the Natura 2000 objectives, as well as agroforestry. Exemption from property tax, inheritance and gift tax also encourages the protection of forest biodiversity. Flemish climate policy foresees 10 000 ha of additional forest by 2030 (in addition to Flanders' 140 000 ha) to implement the EU "no debit rule" for the land use, land-use change and forestry (LULUCF) sector. In Flanders, contributions to a Compensatory Afforestation Fund (CAF) implement the principle of no net deforestation. The contribution to CAF should be based on the market value of the land (and not just the quality of the forest) to be deforested so that offset planting can be done on similar land types. Only 37% of private Flemish forests and 4% of private Walloon forests are managed by forest groups whose creation is supported by federal law to create economies of scale and promote sustainable forest management.

A good way to finance biodiversity is to remunerate the service of carbon sequestration by ecosystems. Three levers can increase GHG removals from the LULUCF sector, all of which can have co-benefits for biodiversity: carbon stocks in forests, agricultural practices and sustainably produced biomass. However, LULUCF's GHG removals have been divided by three since 1990. CAP support to agri-environmental and climate measures and organic farming, in addition to the greening and cross-compliance requirements, is expected to reverse the trend by 2030 (Belgian State, 2016). For that, the Belgian NECP should quantify the removals required for each LULUCF component (forests, harvested wood products, grassland, wetlands, cropland, soil carbon stocks), and the measures to achieve it.

Administrative measures and public procurement policy at the federal level have tightened controls on illegal timber imports. However, the lack of co-operation agreement between federal and regional authorities relating to trade in exotic animals and plants hampers the effective implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This and the lack of transparency on global commodity supply chains increase the risk of deforestation and contact between wildlife and humans in the tropics, which heightens the risk of a pandemic. Convergence between federal and regional policies is necessary on these issues, as is the case for preventing the introduction and

managing the spread of invasive alien species which was the subject of a co-operation agreement in 2019 between the federal level, the regions and the communities.

Box 4. Recommendations on biodiversity

Institutional and policy framework

- Align objectives of the Belgian National Biodiversity Strategy and regional biodiversity policies with those of the EU Biodiversity Strategy for 2030; mainstream the new biodiversity objectives in Belgium's strategic plan to implement the post-2020 Common Agricultural Policy by setting biodiversity targets for agriculture and identifying beneficial agricultural practices to achieve them.

Policy mix

- Extend biodiversity and climate policy to a nature-based solution approach, combining the objectives of environmental services and well-being with that of protecting nature; promote payments for these nature-based environmental and well-being services.
- Introduce a tax on the use of pesticides based on health and environmental risks (as in Denmark); accelerate the development and adoption of a Belgian pollinator strategy introducing the principle of risk-based pesticide taxation.
- Introduce a tax on grey infrastructure (e.g. tax on building permits as in France, housing tax as in Japan), the proceeds of which could be used to finance nature protection.

Mainstreaming biodiversity in other policies

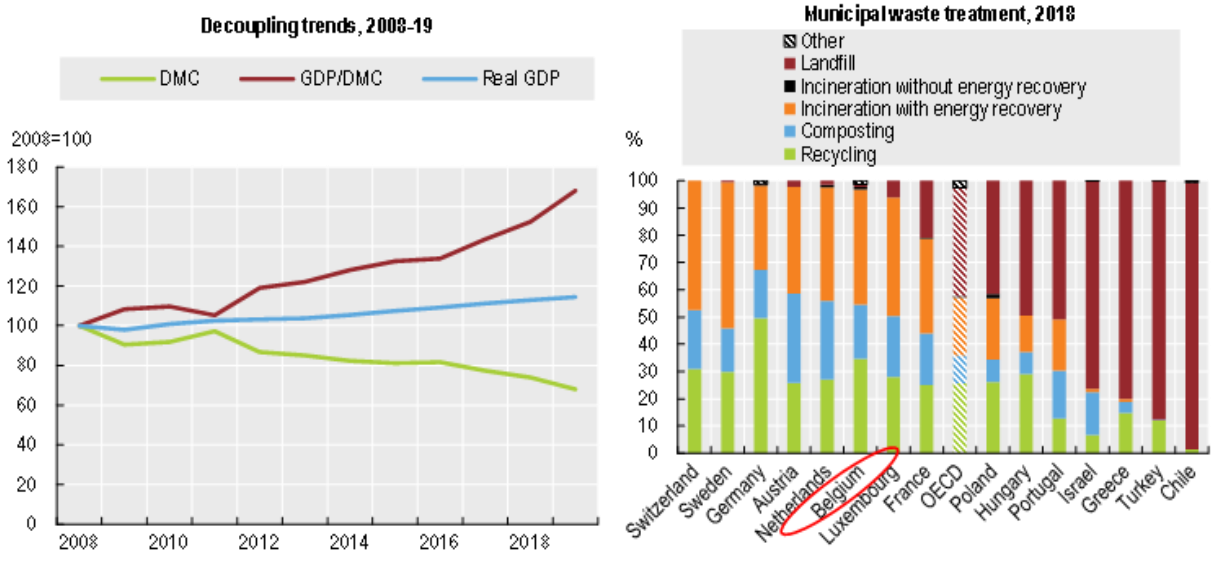
- Further mainstream biodiversity in spatial planning, in particular to improve ecological connectivity and avoid further fragmentation of habitats; in Flanders, speed up the release of the regional spatial policy plan to achieve the objective of no net land take by 2040; in Wallonia, extend the concept of "Main Ecological Structure" to that of a functional ecological network with legal status; in BCR, protect and manage nature on undeveloped land for which the Regional Land-Use Plan provides for legal protection of biodiversity.
- Assess and promote the biodiversity co-benefits of policy measures aimed at achieving net carbon sequestration in the land use, land-use change and forestry sector.
- Develop a national policy on the trade in exotic animals and plants to promote synergies between federal and regional policies for a more effective implementation of the CITES Convention.
- Develop a national policy to tackle imported deforestation; consider joining the Amsterdam Declarations Partnership.

1.5. Waste, materials management and the circular economy

Both material consumption and municipal waste generation have decoupled from GDP

Belgium's economy is service-oriented, largely dependent on trade; material productivity[7] is high. Material consumption[8] per capita is below the OECD Europe average (although not in terms of the economy's "footprint", taking account of materials extracted and processed abroad to meet final demand). Over the past decade, domestic material consumption has fallen, while GDP has increased (Figure 4). This has resulted in improved material productivity; a decline in consumption of construction materials has been a key factor.

Figure 4. Material productivity improved and landfilling has fallen further



Source: OECD (2020), OECD Environment Statistics (database).

StatLink https://doi.org/10.1787/888934230623

Belgium is one of the few countries to have achieved an absolute decoupling of municipal waste generation from economic and population growth over the past decade. Total waste generation on the other hand, increased by 10% between 2010 and 2018; construction and demolition waste (including excavated soils), the main component of total waste generated, increased by 34%. Municipal waste generation per capita is lower than the OECD Europe average (though Belgium counts a comparatively low share of service sector waste in this category).

Nearly all municipal waste goes for recovery and recycling, although further efforts are needed to meet long-term recycling goals

Since 2007, the low share of municipal waste sent to landfill has fallen further, due in part to landfill taxes introduced in the Wallonia region. Incineration is the leading method for municipal waste treatment, although Belgium is also close to OECD frontrunners for recycling and composting. Recycling has increased slightly overall, especially in the BCR. Belgium as a whole appears to have met the EU's 2020 target for recycling household and municipal waste, though recycling levels vary across the regions.

Responding to the COVID-19 pandemic, regions have taken measures to minimise potential health impact of increased medical waste. These temporary measures reduced separate collection and recycling and may affect results for 2020.

Belgium's regions are responsible for waste policies. They have used largely effective mixes of policy instruments, including separate collection for an increasing number of waste streams, landfill bans, landfill and incineration taxes, and public awareness initiatives. In Wallonia, for example, incineration taxes have shifted incineration to energy recovery. Across the three regions, however, incineration taxes have not provided sufficient incentives to further boost recycling. Belgium, and in particular the BCR and Walloon regions, will need to further develop their policy mixes to meet EU and domestic goals beyond 2020.

Recycling is supported by extended producer responsibility schemes: these cover a broad range of waste streams, going beyond those required by the EU to include used tyres and minerals oils. All three regions have take-back schemes for pharmaceuticals. While the producer responsibility organisations are largely national, most of these schemes are managed at regional level: this structure allows regions to adjust schemes to their specific contexts, but it creates a challenge for governance. One exception is packaging, where a co-operation agreement has defined a common approach. Belgium's extended producer responsibility schemes have largely met their targets, both nationally and within each region; for end-of-life vehicles. However, unauthorised dismantling outside the scheme remains an important challenge. This is an EU-wide issue, although Belgium can look to good practices in other member states to identify opportunities for stronger policy action.

The three regions have set targets to minimise and reuse waste. Flanders met its 2007 target to reduce residual waste and has set more stringent targets for coming years. Wallonia met its 2010 target to reduce household and similar waste (not including inert, bulky and yard waste fractions) but did not achieve an ambitious 2010 target to reduce household and similar waste including these fractions. Wallonia appears on track to meet a less stringent 2025 target for the latter category. Flanders has made good progress towards its post-2020 targets for greater reuse of municipal waste. BCR and Wallonia's 2018 waste and resources plans calls for setting reuse targets for key waste streams.

Belgian households spend less on waste management than most other OECD Europe countries. On the other hand, public expenditures (specifically, government current and capital transfers for waste management) are high compared to these countries. A large share of investment for waste management comes from specialised producers; among these, most treatment facilities for municipal waste are owned by public, inter-municipal organisations. The Flanders Region has already considered prospects for reducing incineration capacity to match an expected fall in demand as municipal waste generation falls and recycling increases; BCR and Wallonia are studying future incineration needs. Policy goals to reduce waste incineration (thus closing some capacity) will support EU, national and regional goals to cut carbon emissions.

All three regions have established comprehensive approaches to identify, map and investigate potentially contaminated sites and to plan their remediation. They have made good progress in site clean-up. Flanders, moreover, plans to remove all asbestos with a significant impact on human health in buildings by 2040.

While Belgium has strengthened enforcement of waste shipments via road, insufficient inspection of illegal waste exports from Belgium's ports remains a concern. Most illegal exports that are discovered originate in neighbouring EU member states; in some cases, bilateral co-ordination has been poor.

The regions and the federal government have launched ambitious circular economy initiatives, but further efforts are needed to consolidate results

The BCR and Flanders regions have been pioneers for their initiatives for the transition to a circular economy; Wallonia has undertaken a series of circular economy actions and an ambitious regional strategy

was in preparation in 2020. All three regions have combined their waste and resources policies. Moreover, they have linked their circular economy initiatives with economic and industrial strategies. The federal government has promoted circular initiatives in product policy.

Across Belgium, governments have worked with enterprises and civil society to raise awareness, build capacity and build partnerships for the circular economy: these have been central elements, for example, of the Circular Flanders Programme and of the "Be Circular" Programme in the BCR. The regions and the federal government have promoted circular purchasing approaches in both government bodies and private organisations. Belgium recycles a high share of its construction and demolition waste; however, the bulk of recycled material goes to lower value products such as aggregate. Regional initiatives support greater reuse and higher value recycling, although results in terms of overall waste indicators are not yet fully apparent. The regions have tackled food loss and food waste by increasing separate collection and through initiatives such as the Brussels Good Food Strategy and the Walloon REGAL Plan. As part of their waste and circular economy initiatives, the regions have involved social enterprises in key areas. In Wallonia, for example, these groups have helped redistribute unsold food, as well as refurbished used furniture and electronic and electrical equipment.

Belgium nonetheless needs to undertake significant work to turn these initiatives into stronger results in areas from construction waste to food waste, and to ensure material consumption and material and carbon footprints are reduced. Moreover, new initiatives can support the European Commission's new Circular Economy Action Plan, including in product policy areas such as establishing a right to repair and countering product obsolescence. The federal government that took office in October 2020 has proposed to develop, together with the regions, a national action plan for the circular economy.

Across all three regions, circular economy policies have relied on financing mechanisms and voluntary agreements with industry and other stakeholders. They have given less attention to fiscal instruments. Belgium can also go further in the use of government purchasing to foster circular products and solutions.

The regions and an intra-Belgian platform have explored indicators to measure progress in the transition to the circular economy. Flanders, for example, has developed circularity indicators for final consumption sectors. Belgium has made good progress in implementing the OECD Council's 2004 Recommendation on Material Flows and Resource Productivity and the 2008 Recommendation on Resource Productivity. Key areas for this progress include the analysis of material flows, as well as policies for the circular economy.

Further co-ordination is needed for more effective and efficient waste and circular economy policies

Belgium's three regions are responsible for waste management policy and also lead on most areas of circular economy policies. Nonetheless, Belgium is a small, open economy, with movements of municipal, hazardous and other waste streams among its regions and across its national borders. The regions have improved their bilateral and national co-ordination in areas including data harmonisation, extended producer responsibility management and waste shipment tracking. Nonetheless, differences persist in regional legislation, in data collection methodologies and in policy results, increasing costs. The federal government and the three regions have strengthened co-ordination and information exchange on circular economy policies in recent years, including via the creation of a joint platform; further efforts in this area can improve the effectiveness of circular economy actions and overall results for Belgium.

Box 5. Recommendations on waste, materials management and the circular economy

Policy instruments

- Increase regional incineration taxes to create further incentives for waste recycling.
- Continue efforts to increase separate collection and recycling of household waste, particularly in Brussels and Wallonia. Follow through with plans in all three regions to increase the separate collection of food waste, and increase stakeholder engagement and public awareness raising to reduce food loss and food waste.
- Strengthen measures to reduce the number of end-of-life vehicles dismantled outside the extended producer responsibility scheme, for example by improving the traceability of motor vehicles, strengthening public awareness and government enforcement in this area and introducing economic incentives.
- Strengthen inspection and enforcement of waste exports, in particular at the Port of Antwerp, to address the level of illegal shipments.
- Explore opportunities across government levels to broaden the mix of regulatory and economic instruments for moving further up the waste hierarchy and for promoting the transition to a circular economy, including taxes on raw materials and differential value-added tax rates for recycled and reused materials. Take further steps to integrate circular economy criteria into green public procurement standards and to promote their use across all levels of government.

Planning and co-ordination

- Strengthen regional co-ordination on common challenges for extended producer responsibility schemes.
- Strengthen co-ordination on waste and circular economy policies, and knowledge sharing in challenging areas such as the reuse of construction and demolition waste. Develop common national policy goals for the circular economy in the national action plan in preparation, in key areas of the EU's 2020 Circular Economy Action Plan. Consider setting headline targets for the reductions in material consumption and footprints.

Monitoring and assessment

- Continue to improve the comparability of data on waste management and the circular economy across regions to support performance assessment. Further develop monitoring and analysis of materials and circular economy trends across Belgium. Carry out regular evaluations of the outcomes and costs of circular policy initiatives to identify the most effective approaches and the lessons learnt, to further improve actions within Belgium and to inform initiatives in other OECD member countries, including via the OECD Working Party on Resource Productivity and Waste and the OECD Roundtable on the Circular Economy in Cities and Regions.

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Notes

[1] If Belgium uses the flexibility mechanisms provided in the Effort Sharing Decision (2013-2020) and the Effort Sharing Regulation (2021-2030). Under the Effort Sharing Decision member states are allowed certain flexibility in meeting their annual emission allocations (AEA): i) overachievement in a given year can be carried over to subsequent years, up to 2020; ii) an emission allocation of up to 5% during 2013-19 may be carried forward from the following year; iii) during 2013-19, member states may transfer (for instance, by selling) part of their AEA for a given year to other member states under certain conditions. The Effort Sharing Regulation allows nine member states the choice to use a limited amount of ETS allowances for offsetting emissions in the effort sharing sectors in 2021 to 2030. This concerns member states that have national reduction targets significantly above both the EU average and their cost-effective reduction potential or that did not allocate any EU ETS allowances for free to industrial installations in 2013. The member states with this option are Austria, Belgium, Denmark, Finland, Ireland, Luxembourg, Malta, the Netherlands and Sweden.

[2] With more than 50 000 inhabitants. Apart from the measured concentrations, Belgium also reported exceedances of the annual limit value assessed using models.

[3] Effective tax rates on energy use translate excise and carbon tax rates into rates per tonne of CO_2.

[4] Data need to be interpreted with caution because fossil fuel subsidy data may be partial and because data record tax expenditure as an estimate of revenue that is foregone due to a particular feature of the tax system that reduces or postpones tax relative to a jurisdiction's benchmark tax system, to the benefit of fossil fuels. Hence, tax expenditure estimates could increase due either to greater concessions, relative to the benchmark treatment, or to a raise in the benchmark itself. It is important to note that definitions of tax expenditure, and the benchmarks used to estimate the size of the expenditure, are nationally determined and may hamper international comparisons.

[5] Along with digital transition, cyber security, education and health.

[6] Recycling, repair and reuse (including preparation for reuse), rental and leasing.

[7] Material productivity designates the amount of GDP generated per unit of materials used (GDP/DMC). A rise in material productivity is equivalent to a decline in material intensity (DMC/GDP).

[8] Domestic material consumption (DMC) refers to the amount of materials directly used in an economy, or the apparent consumption of materials. DMC is computed as domestic extraction used plus imports (i.e. material inputs) minus exports.

Annex 1.A. Actions taken to implement selected recommendations from the 2007 OECD Environmental Performance Review of Belgium

Recommendations	Actions taken
Chapter 1. Environmental performance: Trends and recent developments	
Strengthen measures to reduce PM emissions, especially from the transport sector (e.g. fuel quality control, stricter car inspection for diesel vehicles).	Since 2005, PM emissions have decreased, mainly due to reduced iron and steel production and wider use of catalytic converters and particulate filters in road transport (Chapter 1). Emissions from wood burning in the residential sector are the primary source of PM emissions. Belgium submitted its National Air Pollution Control Programme in 2019, in line with the EU directive on the reduction of national emissions of certain atmospheric pollutants. In 2018, the country respected EU air quality limit values for PM_{10} and $PM_{2.5}$. However, a majority of the population is exposed to concentration levels above the value recommended by the World Health Organization. Antwerp (2017), BCR (2018) and Ghent (2020) introduced low emission zones, with stricter vehicle access conditions over time, to help reduce air pollution.
Boost efforts to reduce ozone episodes; reduce emissions of NO_X, VOCs, PAHs and trichlorobenzene; consider additional measures to reduce household emissions (e.g. PAHs, NMVOCs).	Annual average ozone concentrations have stabilised over the last decade. However, ozone concentrations have continued to exceed the EU target value, especially in warm years such as 2018. The National Air Pollution Control Programme covers emissions from all sectors. The country is on track to meet its 2020 and 2030 emission reduction commitments for SO_X, NO_X, $PM_{2.5}$, NMVOC and NH_3 (with additional measures for the latter).
Better control air pollution from ocean and inland navigation (e.g. fuel quality standard).	Air pollution from ships is regulated by the revised Annex VI to MARPOL (Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto) and Directive 2016/802/EU relating to a reduction in the sulphur content of certain liquid fuels. The North Sea is an Emission Control Area for both SO_X and NO_X. Flanders is part of the European LIFE-project CLINSH (CLean INland Shipping) that promotes clean inland waterway transport and tests emission reduction techniques, alternative fuels and onshore power supply. Flemish ports participate in the Environmental Ship Index system.
Evaluate and implement policy mixes (including use of economic instruments) to improve the efficiency of air quality management).	Belgium has made some progress in developing transport pricing and taxation to help internalise the environmental costs (Chapter 3).
Strengthen institutional co-operation between departments and between federal and regional governments, in particular as regards the environment-energy interface.	There are co-ordination mechanisms between the federal and regional governments, including committees and co-operation agreements (Chapter 2). However, the fragmentation of energy and climate competences between the federal and regional governments and lack of an independent co-ordinating body hamper the development of a shared long-term climate vision and implementation of coherent policies (Chapter 1).
Adopt and implement the comprehensive National Climate Plan, taking account of the National Allocation Plan, reviewing reliance on buying credits on external markets and other flexibility mechanisms, and maximising synergies between federal, regional and sectoral policies and measures.	Belgium submitted a National Energy and Climate Plan (NECP) in 2019 and a Long-term Strategy in 2020 (Chapter 1). While both documents list the contributions of the federal authority and the regions, they do not provide an integrated vision of policies.
Integrate objectives related to climate change in energy and transport policies (e.g. energy efficiency, energy pricing and taxation, transport pricing and taxation).	The NECP covers the energy and transport sectors.
Improve energy efficiency in all sectors, with special attention to the building sector.	Since 2005, total final consumption has remained stable, but energy intensities have declined (Chapter 1). Energy consumption in the residential sector decreased

	significantly and increased in other sectors, particularly in the commercial sector (over 2005-10) and industries. Belgium is not on track to achieve its 2020 energy efficiency target, and the NECP expects final energy consumption to be reduced only slightly over 2020-30. Energy efficiency of buildings has improved. Regions have developed long-term renovation strategies and implemented a wide range of measures to promote energy-efficient buildings. However, additional efforts are needed to decarbonise the building stock by 2050 (Chapter 3).
Conduct a comprehensive review of climate mitigation measures beyond the EU emission trading scheme.	Studies have estimated the impact of federal measures on greenhouse gas emission reductions (2017, 2015, 2013, 2012, 2011, 2009). The NECP describes climate mitigation measures, but their contribution to the targets is often not quantified.
Maintain the recent acceleration of construction of wastewater infrastructure, including upgrading existing sewerage networks; ensure that financing arrangements do not slow progress; improve synchronisation in the construction of regional wastewater treatment and municipal sewerage infrastructure.	Belgium met the Urban Waste Water Treatment Directive (UWWTD) requirements in terms of collection, but not the objectives for treatment levels. By 2016, 99% of wastewater collected underwent secondary treatment and 94% more stringent treatment. Since 2007, BCR has commissioned a second wastewater treatment plant covering a total of 1 100 000 population equivalent (p.e.); the p.e. not connected and treated collectively is estimated at 2%. Flanders established area-wide implementation plans in 2015, as part of the river basin management plans (RBMPs). They set completion deadlines for sewerage projects and individual wastewater treatment systems and define municipal and regional treatment tasks in the outlying area (by means of the so-called partition point).
Speed up the provision of sewage treatment for all dwellings outside zones served by public systems.	Despite significant progress in reaching compliance, delays in implementing the UWWTD have had impacts on water quality. Diffuse pollution from non-connected dwellings affects nearly half of surface waters and 10% of groundwaters. Wallonia designates priority areas in which studies are conducted to determine the most appropriate wastewater treatment method; the region established the public management of autonomous sanitation to guarantee an equivalent level of environmental protection regardless of the type of system (autonomous or collective).
Formulate measures to identify and remove remaining and new sources of hazardous substances.	Regions have strengthened monitoring of hazardous substances in water bodies and have taken measures to reduce emissions, discharges and losses of hazardous substances in RBMPs.
Chapter 2. Environmental governance and management	
Strengthen the review by regional authorities of municipal land-use plans to increase their effectiveness in addressing environmental objectives; strengthen co-operation among regions in land-use planning and environmental impact assessment.	There is a strong link between urban planning law and environmental law: urban planning permits have environmental conditions attached to them. Local planning procedures require consultation with other levels of government to ensure vertical co-ordination. Spatial planning co-ordination across the regions remains insufficient.
Strengthen environmental inspectorates; increase their effectiveness and efficiency, where appropriate.	Inspections have become more efficient due to the digitalisation of many procedures and better performance management. The frequency of inspections is based on systematic assessment of environmental risk posed by the installation. The number of inspections has been stable in the three regions over recent years.
Review the experience with partnerships between government and non-governmental organisations (e.g. industry, trade unions, environmental NGOs) to see how such partnerships can be made more ambitious, cost-effective and transparent and how they can be associated with other instruments.	The federal and regional governments provide financial support to NGOs, as well as trade unions in their environmental activities. The Flemish government issued a 2015 regulation on supporting environmental NGOs.
Continue to improve access for all to environmental information, and improve the comparability of information among regions.	The federal and regional governments have established their own environmental information systems, including geoportals. The INSPIRE implementation has improved the comparability of environmental information across regions. However, insufficient comparability remains a problem in many data sets.
Increase citizens' access to justice in environmental matters.	Citizens can invoke Article 23 of the Belgian Constitution, which provides a right to the protection of a healthy environment, directly in administrative and judicial procedures. NGOs are often involved in legal proceedings as they have the right to challenge any act or decision by the authorities. However, there is no legal or financial assistance available to citizens on environmental matters.
Continue to develop environmental education, particularly at higher education levels.	The communities (responsible for education policies) and the regions (responsible for environmental policies) collaborate closely in the field of environmental education. About 85% of French-speaking schools report implementing sustainability practices. The francophone Academy for Research and Higher Education supports sustainability initiatives in universities and colleges. Flanders is implementing environmental programmes for schools (Circular Edu-Action) and higher education (Ecocampus).

Chapter 3. Towards green growth	
Further implement the federal plan for sustainable development (2004-08); develop and implement a national strategy for sustainable development, in line with UN commitments.	The third federal plan on sustainable development, planned for adoption ten years ago, is still in preparation. In 2017, Belgium adopted a National Sustainable Strategy and presented the voluntary review of the implementation of the 2030 Agenda to the United Nations High-level Political Forum on Sustainable Development (Chapter 3). However, inter-governmental co-operation on sustainable development has since stopped. Belgium is not on track to achieve SDG targets by 2030 (Chapter 1).
Set quantitative targets for the environment in relevant planning (e.g. economic and sectoral); make further use of economic analysis for setting environmental and sustainable development priorities.	Quantitative targets for the environment are set in various sectoral plans (e.g. NECP, regional rural development plans). The Federal Planning Bureau is a frontrunner in developing "beyond GDP" indicators and regularly updates environmental accounts. SDGs and "beyond GDP" indicators are used to prepare the third federal plan for sustainable development.
Further integrate environmental concerns into sectoral policies (e.g. energy, transport, agriculture) through strategic environmental assessment and development of market-based mechanisms; further implement policy and measures to improve energy efficiency.	Strategic environmental assessment has been increasingly used over the last decade: it is implemented for all land-use plans, as well as strategic plans and programmes (Chapter 2). There is scope to make the tax system more growth- and environmentally-friendly (Chapter 3). In 2018, environmentally related tax revenue – both as a share of GDP and as a share of total tax revenue – was below 2005 levels. In recent years, revenue from energy taxes has been rising driven by increased diesel taxation. Effective tax rates on CO_2 emissions from energy use are low, especially in non-road sectors. Preferential tax treatments narrow the tax base and undermine carbon prices. Low natural gas and oil heating prices do not provide sufficient incentives for energy efficiency investments.
Develop transportation pricing and taxation (e.g. excise tax on fuel, road pricing) to help internalise the environmental damage costs.	The federal government aligned diesel and petrol taxes while regions introduced environmental components in vehicle taxes and distance charges for trucks. Company car taxation undermines carbon price signals in road transport.
Increase the use of economic instruments (e.g. taxes, charges, trading mechanisms) and economic analysis (e.g. cost-benefit analysis).	Regions have used pay-as-you-throw mechanisms to encourage waste reduction; extended producer responsibility systems to promote recycling; and landfill taxes to divert waste from landfilling (Chapter 5). However, incineration taxes have not provided sufficient incentives to further boost recycling and fiscal instruments for circular economy such as taxes on raw materials could be further developed. Regions have implemented economic instruments to address pollution from agriculture (Chapter 4). Flanders has a system of tradable nutrient emission rights, water pollution taxes and underground water extraction charge. Wallonia has a tax on the environmental load generated by farms. At the federal level, reduced VAT rates are granted to fertilisers (6%) and pesticides (12%). Cost-benefit analysis of infrastructure projects is ad hoc.
Establish a green tax commission and review, and if necessary revise, the relevant taxes and other economic instruments to improve their effectiveness and economic efficiency; review systematically the environmental effectiveness and economic efficiency of the country's financial assistance schemes.	The National Debate on Carbon Pricing has identified options to implement a carbon price in non-ETS sectors but remains to be implemented. Belgium postponed its plan to phase out fossil fuel subsidies. A multi-stakeholders' mechanism to track and support the reform of environmentally related taxes and subsidies would be helpful.
Adopt a national transport plan and ensure that the various (e.g. federal and regional) transport plans are consistent, mutually supportive and well implemented.	Wallonia and BCR have adopted long-term mobility plans and investment plans focusing on public transport and soft mobility (especially in the BCR). However, the Executive Committee of Mobility Ministers has not managed to co-ordinate a consistent vision across the federated entities.
Firmly implement measures to achieve full cost recovery of sewerage and wastewater activities through "polluter pays" charging systems, with due regard to social concerns.	Revenues from tariffs essentially cover the costs of providing water services; the public budget subsidises less than 20%. Regions levy taxes on discharge of wastewater and water pollution and apply social tariffs for water services.
Implement the user-pays principle for environmental services (water, waste) while continuing to give access to these services to the poor; consider extending fiscal incentives for energy-saving building insulation.	Vulnerable households benefit from social tariffs for electricity, natural gas and water (Chapter 3). In Flanders, about half of household waste charges reflect a pay-as-you-throw element; some municipalities offset the costs for low-income households, for example by providing set numbers of free bags per year (Chapter 5). In Wallonia, each municipality sets household waste fees under a two-part system with a fixed charge plus a variable charge based on weight; since 2012, the government has required municipalities to recover between 95% and 110% of the operational costs for waste collection and treatment.
Further analyse the impacts of environmental policy on employment in Belgium.	The environmental goods and services sector accounted for 1% of employment in 2017. There is a wealth of regional initiatives promoting employment in energy efficiency, green chemistry and circular economy. The impact of some of these initiatives on employment has been estimated. For example, social enterprises for waste recycling and reuse in Brussels and Wallonia have recorded a doubling of jobs since 2004, reaching more than 2 050 full-time equivalent jobs in 2018.

Chapter 4. Biodiversity	
Review and revise manure management and fertiliser use policies in order to further reduce nutrient loading of ground and surface waters.	Flanders has implemented several manure action programmes since 2007 to reduce nutrient loading in water. It has designated its entire territory as a nitrate vulnerable zone within the meaning of the EU Nitrates Directive and has set up a system of tradable nutrient emission rights, administered by a manure bank. It introduced the principle of an in-depth assessment of farms with the highest risk of nutrient loss, as well as a differentiation of watersheds according to distance to target of the EU Water Framework Directive.
Bolster current efforts to reduce pesticide contamination of water sources (e.g. by increasing the rate of the existing pesticide tax).	BCR has extended the ban on the use of pesticides in zones of close protection to drinking water intakes, in force since 2013, to the entire protection zone in 2016. Wallonia defined, in 2019, "prevention and surveillance zones" around drinking water intakes (e.g. a buffer zone with permanent vegetation of 6 m on each side of the watercourses), in which the use of pesticides and fertiliser is prohibited. In 2015, Wallonia introduced a tax on livestock effluents, fertilisers and pesticides (the "tax on the environmental burden generated by agricultural activities").
Complete the National Biodiversity Strategy (as required under the UN Convention on Biological Diversity) with close co-operation between regional, federal and local authorities and stakeholders; include quantitative targets, as appropriate.	In 2013, the Inter-ministerial Conference for the Environment approved the update and extension of the National Biodiversity Strategy (NBS) until 2020, under the title “Biodiversity 2020, update of the Belgian NBS”, in order to align with the Aichi targets of the UN Convention on Biological Diversity. The updated NBS includes quantitative targets, in particular the protection of at least 17% of land and inland waters and at least 10% of coastal and marine areas and the restoration of at least 15% of degraded ecosystems.
Strengthen the management of protected areas (e.g. new nature parks, agreements with landowners and/or land users) and the connectivity between protected areas in the context of Natura 2000, including through enhanced regional co-operation; extend biodiversity corridors by improving the ecological water quality of rivers, as required by the EU Water Framework Directive.	The three regions have increased their protected areas (areas with an approved nature management covering over 94 060 ha in 2019 in Flanders [63 000 ha in 2011]); Nature Conservation Act applying to 16 000 ha in 2019 in Wallonia (10 400 ha in 2007); 291 ha of nature and forest reserves in 2019 in BCR (229 ha in 2007). The harmonised system of differentiated nature management plans allowing to increase the level of ambition on biodiversity, recently implemented in Flanders, is a step in the right direction. This new approach of shifting public financial support from land acquisition to management of nature strengthens the management of protected areas through agreements with landowners/land users. Enhanced regional co-operation and using rivers as biodiversity corridors have strengthened connectivity between protected areas, which is relatively high compared to EU-27 countries.
Enhance nature conservation on farmland; set targets and periodically evaluate achievements.	In Flanders, the farmland area under Flemish Land Agency biodiversity management agreements increased from 4 000 ha in 2007 to 9 000 ha in 2020 and from 180 km to 500 km for hedges and hedgerows (planting and maintenance).
Promote common forest management among private forest owners, so as to create economies of scale and foster environmentally-friendly land use, thereby enabling sustainable forest management.	Following the 1999 federal law supporting the creation of forest groups, 37% of Flemish private forests and 4% of Walloon private forests have entrusted their management to forest groups, non-profit associations. They receive provincial support for their contribution to the joint management of private forests to create economies of scale and promote sustainable forest management.
Enhance public and private financing of nature and biodiversity conservation (e.g. hunting plans and fees to control large game populations, local nature tax on building permits).	Flanders and Wallonia levy freshwater fishing and hunting license fees; Flanders allocates the proceeds to dedicated funds, respectively, for fishing and game management. A small part (EUR 100 000/year) of the federal fee on offshore wind farms, introduced in 2017, is used to finance the protection of marine biodiversity.
Continue to develop partnerships with NGOs and further involve local volunteers in managing protected areas, including in densely populated areas.	NGOs and private entities manage nature reserves in Flanders (19 164 ha) and Wallonia (3 416 ha). In 2016-19, the BCR granted EUR 1.7 million to NGOs for activities related to biodiversity. In 2017, an innovative partnership between federal public agencies, academics and NGOs gave birth to the Tracking Invasive Alien Species research project. Launched in 2017, the #Bebiodiversity website platform brings together administrations, businesses, unions and NGOs to encourage voluntary initiatives from the private sector. In 2018-21, the Flemish Department of Environment and Spatial Development, its Agency for Nature and Forests and NGOs launched a “green business and biodiversity deal”: 133 companies have voluntarily committed to increasing biodiversity on their land/business parks (1 900 ha).
Further implement international agreements to protect nature and biodiversity (e.g. CITES, CBD).	In 2017, the Federal Public Service for Health, Food Chain Safety and the Environment created a “species inspection” unit to monitor compliance with EU regulations i) on wildlife trade, which implements the CITES Convention; ii) on timber, which promotes due diligence in placing timber on the EU market in order to avoid the marketing of illegally harvested timber; and iii) on invasive alien species. This has led to a considerable increase in the number of inspections and sanctions.
Place greater emphasis on public access to green urban areas in land-use planning policies.	The first Nature Plan of BCR, adopted in 2016, sets the objective that by 2020, every Brussels resident must have access to a green space less than 200 m from their home (400 m for a green space of more than 1 ha). Wallonia aims to provide its city dwellers

	with green spaces within a quarter of an hour's walk.
Enhance protection of marine ecosystems, e.g. through creation of new marine nature reserves; continue efforts to reduce pollutant releases into the North Sea, by increasing urban wastewater treatment and reducing agricultural run-off.	In 2010, marine protected areas increased from 10% to 37% of the Belgian part of the North Sea, beyond the new objectives of the EU Biodiversity Strategy for 2030. A risk assessment of pollution of the North Sea by oil and hazardous and noxious substances was carried out between 2012 and 2015 within the framework of the "Bonn Agreement: Area-Wide Assessment of Risk Evaluations" project.
Chapter 5. Waste, materials management and the circular economy	
Strengthen efforts to prevent illegal trade of ozone-depleting substances and hazardous waste.	The three regions have taken measures to improve enforcement of waste shipments. Inspection and enforcement of waste exports from the Port of Antwerp, however, are not on par with the level of illegal shipments.

Sources: Country submission and findings of 2021 EPR.

Part I. Progress towards sustainable development

1. Environmental performance: Trends and recent developments

Belgium has reduced emissions of greenhouse gases and air pollutants, municipal waste generation, energy and material consumption and water abstractions. Yet urbanisation, landscape fragmentation, intensive agricultural practices and road traffic continue to put pressures on the environment. This chapter provides an overview of the main environmental trends in Belgium over the past decade. It describes the country's progress and challenges on its path towards decoupling environmental pressures from economic growth and achieving the Sustainable Development Goals. It reviews the main economic and social developments, takes stock of changes in the energy, carbon and material intensity of the economy, and measures progress towards sustainable management of natural resources.

1.1. Introduction

Belgium is a small and open economy, located in an area of intense economic activity. Although the weight of the industrial sector (particularly heavy industries) in the economy has declined, it remains relatively important. Major environmental pressures such as emissions of air pollutants, material consumption and municipal waste generation, have been decoupled from economic growth. However, pressures from transport, space and intensive agricultural practices remain.

This chapter provides an overview of the main environmental trends observed in Belgium. It highlights the progress made by the country since 2005 towards its national and international goals and the challenges to be met for green growth and sustainable development. Where possible, trends are compared with those of other OECD countries.

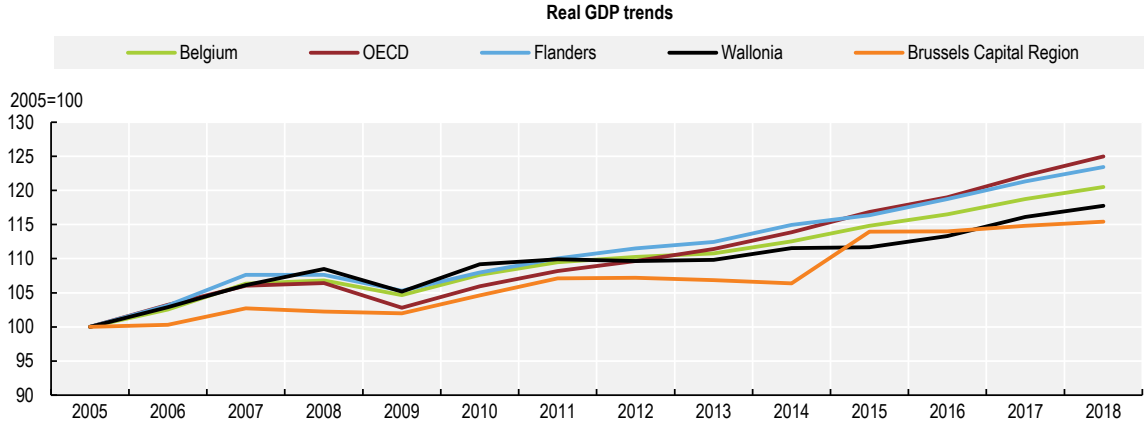
1.2. Main economic and social developments

1.2.1. Economic performance and structure of the economy

Belgium is a small but open economy, located in an area of intense economic activity. Population density is high at 378 habitants per square kilometre (km²) (CONCERE-NCC, 2019). The service sector dominates the economy (Basic statistics). In 2019, exports and imports of goods and services accounted for 88% of gross domestic product (GDP) each (Basic statistics). Although its weight in the economy has declined, industry (in particular chemicals, food products, basic metals and fabricated metal products) remains an important sector (Basic statistics). GDP per capita has increased and is well above the OECD average (Basic statistics).

Economic activity has been moderate but steady in the five years preceding the COVID-19 outbreak (Figure 1.1; OECD, 2020a). It was accompanied by a strong increase in employment. As of December 2020, it was expected that GDP would shrink by 7.5% in 2020, the sharpest contraction since the Second World War, before slowly recovering (4.7% in 2021 and 2.7% in 2022) (OECD, 2020b). The public debt (Maastricht definition) was anticipated to rise from 98% of GDP in 2019 to 116% in 2020.

Figure 1.1. Economic activity grew faster in Flanders than in Wallonia and the Brussels-Capital Region



Sources: OECD (2020), "Aggregate National Accounts, SNA 2008 (or SNA 1993): Gross domestic product", OECD National Accounts Statistics (database); OECD (2020), "Regional economy", OECD Regional Statistics (database).

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Before the COVID-19 crisis, unemployment reached a record low rate of 5.4% (in 2019) (Basic statistics), but the employment rate remained low. Labour market participation was especially low for low-skilled, migrant and older workers. The long-term unemployed and inactive population already faced a number of employment barriers. Furthermore, participation in lifelong learning was low, especially for some disadvantaged groups (OECD, 2020a). December estimates of the impact of the COVID-19 crisis indicate the unemployment rate will increase from 5.7% to 7.9% between 2020 and 2021 (OECD, 2020b).

1.2.2. Progress towards sustainable development

Belgium is not on track to achieve the Sustainable Development Goals (SDG) by 2030 (Table 1.1). In 2019, less than one-third of the 51 SDG monitoring indicators had a favourable evaluation (FPB, 2019a). In all, 22 indicators are linked to a quantitative target. On current trends, only four will reach their target by 2030 (research and development, exposure to particulate matter, oil pollution and Natura 2000 protected marine area). The target is not expected to be reached for 17 of the indicators and 1 cannot be evaluated. Among the 29 indicators without a target, 11 are moving in the right direction, 6 are moving the wrong way and 12 have no movement that is statistically significant.

Table 1.1. Belgium is not on track to reach SDG targets by 2030

	SDGs	Indicators	Objective	Assessment
	No poverty	Risk of poverty or social exclusion	10.55	☹
		Very low work intensity	↓	☺
		Over-indebtedness of households	↓	☹
	Zero hunger	Adult obesity	↓	
		Meat consumption	↓	☺
		Organic agriculture area	↑	☺
	Good health and well-being	Healthy life years	↑	
		Premature deaths due to chronic diseases	68.6	☹
		Daily smokers	13.1	☹
	Quality education	Early school leavers	0	☹
		Lifelong learning	↑	
		Underachievement in reading	↓	
	Gender equality	Gender pay gap	0	☹
		Inactive population due to caring responsibilities	↓	☹
		Female members of parliament	50	☹
	Clean water and sanitation	Nitrates in river water	↓	☺
		Nitrates in groundwater	↓	☹
		Water consumption	↓	☺
	Affordable and clean energy	Dwellings without adequate heating	0	☹
		Renewable energy	18.3	☹
		Energy productivity	11.1	☹
	Decent work and economic growth	Unemployment rate	↓	
		Youth not in employment, education or training	↓	☺
		Accidents at work	0	☹
	Industry, innovation and infrastructure	Passenger transport by car	67.4	☹
		Road freight transport	62.9	☹
		Research and development	3	☺
	Reduced inequalities	Risk of poverty	↓	☹
		Depth of risk of poverty	↓	

		Income inequality: Gini index	→	☺
	Sustainable cities and communities	Inadequate dwelling	↓	☹
		Exposure to particulate matter	10	☺
		Noise pollution	0	☹
	Responsible consumption and production	Domestic material consumption	↓	☺
		Hazardous waste	↓	
		Waste recycling	↑	☺
	Climate action	Greenhouse gas emissions non-ETS	51.2	☹
		Natural disaster victims	1.98	
		Contribution to international climate fund	↑	
	Life below water	Oil pollution	0	☺
		Sustainable fisheries	100	☹
		Natura 2000 protected marine area	10	☺
	Life on land	Natura 2000 protected land area	↑	
		Forests with FSC label	↑	☺
		Farmland bird population	↑	☹
	Peace, justice and strong institutions	Security feeling in public spaces	↑	☺
		Corruption Perceptions Index	↑	
		Trust in institutions	↑	
	Partnerships for the goals	Official development assistance	0.7	☹
		Official development assistance to least developed countries	50	☹
		Public debt	↓	

Notes: Cells are empty where assessment is not possible. ETS = Emissions Trading System. FSC = Forest Stewardship Council. SDGs = Sustainable Development Goals.
Source: FPB (2019), Quelle priorité pour un développement durable?

1.2.3. Population, well-being and environmental quality of life

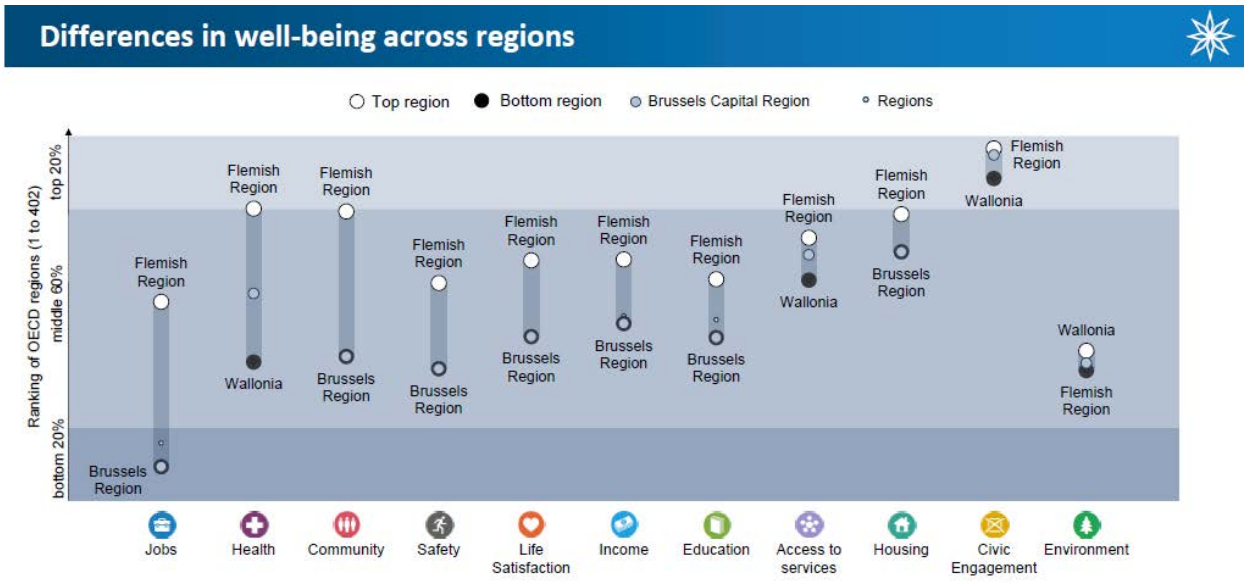
Regional disparities and well-being

Belgium is a federal state with three regions (Wallonia, Flanders and the Brussels-Capital Region [BCR]), as well as three linguistic communities (the Flemish Community, the Wallonia-Brussels Federation and the German-speaking Community) (CONCERE-NCC, 2019). The three regions have powers for territorial issues such as public works, agriculture, employment, urban and rural planning, and the environment. The linguistic communities have powers in matters such as education and culture.

The BCR, while the smallest in size (0.5% of the territory) and population (11%), is the most densely populated (7 502 habitants per km² compared to the national average of 378). It contributes about 18% to the national GDP (dominated at 92% by services) and per capita GDP is almost twice the national average. Since 2012, economic activity grew faster in Flanders than in Wallonia and the BCR (Figure 1.1). Flanders, where 58% of the population lives, generates 59% of national GDP. The service sector drives the economic activity (73%), although industries still account for a quarter of the region's gross value added. Wallonia is the less densely populated part of the country (216 inhabitants per km²) and generates 23% of national GDP (OECD, 2020c).

The gap in GDP per capita between Belgian regions has narrowed moderately since 2005. The narrowing disparities have been driven by relatively faster economic growth in Flanders and Wallonia (20% and 14%, respectively, between 2005 and 2017) compared to only 8% in the BCR. However, regional economic disparities in Belgium remain higher than the OECD median. The youth unemployment rate in the BCR reached 36% in 2016, more than twice the level observed in Flanders (OECD, 2020c, 2018a).

Figure 1.2. The Flemish Region performs better than others on most well-being dimensions



Notes: Relative ranking of the regions with the best and worst outcomes in the 11 well-being dimensions, with respect to all 402 OECD regions. The 11 dimensions are ordered by decreasing regional disparities in the country.
Source: OECD (2018a), Regions and Cities at a Glance 2018 – Belgium.

The top performing region (Flanders) in Belgium fares better than the OECD median for all 13 well-being indicators, with the exception of air pollution and employment rate. The latter is lower than the OECD median in all regions. On the other hand, the regions with the poorest performance in the country still fare better than the median OECD region in six well-being indicators: income, civic engagement, safety, access to services, housing and health (mortality rate). Belgium has the fourth largest regional disparities in health among OECD countries. Large disparities are also found in jobs and community. All Belgian regions rank among the top 20% of OECD regions in terms of voter turnout, which is due to the compulsory voting system (Figure 1.2).

Brussels ranks among the top 20% of the 327 OECD metropolitan areas in terms of GDP per capita. However, Belgian metropolitan areas have air pollution levels above the OECD median as measured by people's exposure to particulate matter smaller than 2.5 microgrammes (µg) ($PM_{2.5}$). The population of Liège has better air quality than Gent, Antwerp and Brussels (OECD, 2018a).

Public perception of environmental quality and awareness of environmental issues

Various surveys in each region evaluate public perception of environmental quality. In the 2018 survey from Brussels Environment, food quality, air pollution and depletion of natural resources are the most worrying environmental issues. More than half of respondents think the presence of synthetic chemicals (such as pesticides) in food impact their health. At the same time, almost half think that bad air quality affects their health. Due to the dirtiness of the streets and degraded air quality, more than half of respondents think that environmental quality in Brussels is deteriorating compared to 43% in 2008. Regarding climate change, 33% think they will have to radically adapt their lifestyle in years ahead (Brussels Environment, 2018).

Compared to five years earlier, Flanders had far fewer "indifferent consumers" in 2017 (i.e. who do not think about their ecological footprint). At the same time, the number of "determined consumers" (who believe they can make the right decisions for the benefit of the environment) has increased significantly. Regarding climate change, 73% of respondents consider emissions from companies to be the main driver,

60% point to the "throw away" culture and 24% think domestic heating is the main driver. Regarding energy, 44% of respondents envisage buying an electric car and 33% would opt for renewable energy. However, Flemish people attribute a low impact to air travel. To avoid harmful impact of food on the environment, Flemish people favour avoiding food waste (69%), buying seasonal fruit and vegetables (68%) and choosing food products with less packaging (65%) (OMGEVING, 2017).

In 2018, more than half of Walloons took home their leftover food in restaurants (SPW, 2018). However, at home, about half also threw away leftover meals at least once a day or once a week. People over 40-years-old were less likely to throw out any type of food. The majority of Walloons gave their uneaten food to animals (domestic or not) or put it in compost. Those over 50-years-old (58%) and those from higher social classes (59%) composted more. In addition, most Walloons used their own reusable bags or boxes for food shopping. Nevertheless, the use of single-use plastic bags had not yet completely disappeared, especially among people under 25-years-old (about 15% of this age group still used them). Books and clothes were the main second-hand products bought. Two-thirds of Walloons were willing to borrow, rent or share home and garden tools, and half said they would adopt this new mode of consumption for their mobility.

1.3. Transition to an energy-efficient and low-carbon economy

1.3.1. Main objectives and programmes

Targets and legislation of the European Union (EU) shape Belgium's climate and energy policy. As required by EU rules, the country submitted a National Energy and Climate Plan (NECP) in 2019 and a Long-term Strategy (LTS) in 2020 (CONCERE-NCC, 2020, 2019). These outline the national contribution to the EU targets for 2030 and 2050 to reach the goals of the Paris Agreement. These documents follow the Inter-federal Energy Pact adopted by the four energy ministers to define a common ambition for the energy transition: to guarantee safe, secure and sustainable energy supply at an affordable price. The NECP and LTS list the contributions of regional and federal governments but do not provide an integrated vision of policies. An internal burden-sharing agreement on the 2030 climate objective remains to be adopted. In addition, the objectives set in the NECP on renewables and energy efficiency are unambitious and below the indicative target set for Belgium by the EU Governance Regulation (Table 1.2; EC, 2020a). Furthermore, the LTS does not include an overall objective for the reduction of greenhouse gas (GHG) emissions.

Table 1.2. Belgium's objectives, targets and contributions under the Governance Regulation

National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-11%	-15%	-35%	As in ESR
National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	9.4% (2018)	13% (RED target)	17.5%	Unambitious (25% is the result of RES formula)
National contribution for energy efficiency:	2018			
Primary energy consumption (Mtoe)	46.8	47.8	42.7	Low
Final energy consumption (Mtoe)	36.3	36.0	35.2	Low

Notes: Regulation (EU) 2018/1999, amending Regulations (EC) No 663/2009 and (EC) No 715/2009, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013. ESR = Effort Sharing Regulation; RED = Renewable Energy Directive. "RES formula" refers to the formula set out in Annex II of the Governance Regulation.
Source: EC (2020), "Assessment of the final National Energy and Climate Plan of Belgium", Commission Staff Working Document, SWD(2020) 900 final, European Commission, Brussels.

Fragmentation of competences is recognised as a brake on climate ambitions (SPF, 2018a). Regions have large responsibility for the rational use of energy, the promotion of renewable energy sources, public transport, transport (except rail) infrastructure, spatial planning, agriculture and waste management. The federal government has responsibility for energy security and nuclear energy, offshore seawaters (and thus offshore windfarms), energy taxation and product policies (labelling, fuel quality, performance standards). The three regions and the federal government collaborate through the energy policy co-ordination platform (CONCERE/ENOVER), the Co-ordination Committee for International Environmental Policy and the National Climate Commission (NCC). However, politicised debates hamper implementation of coherent policies (SPF, 2018a, 2018b). The NCC is not playing the central role it was allocated by the 2002 co-operation agreement between the federal and regional governments. It took seven years to reach an agreement on burden-sharing following adoption of the 2020 target on emission reduction in sectors not covered by the EU Emissions Trading System (ETS) (UNFCCC, 2019). Academics have suggested including the climate emergency in the Constitution and adopting a Climate Law to strengthen institutional co-operation on energy and climate (SPF, 2018a).

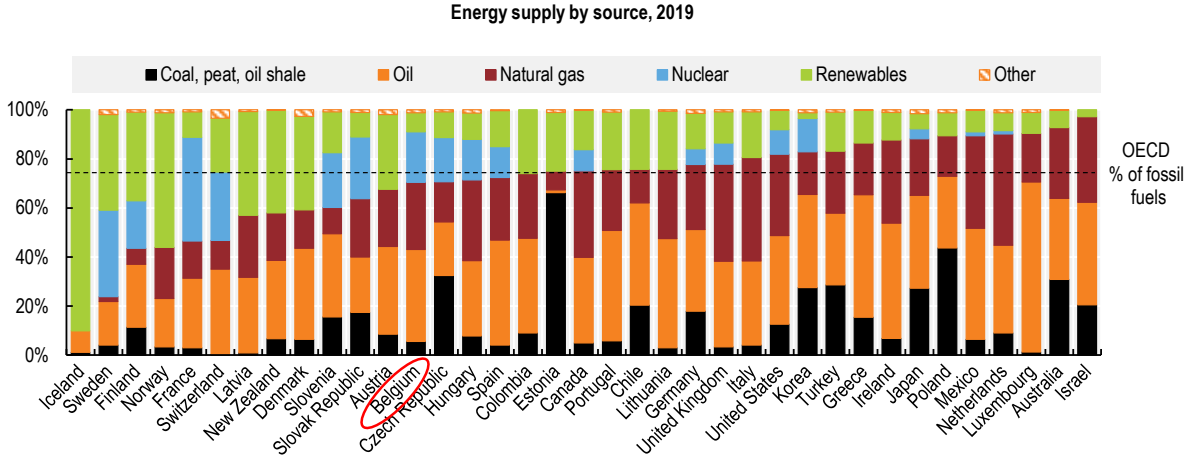
1.3.2. Energy supply and demand

Energy supply and electricity production

Belgium has limited national energy resources; its production represented about a quarter of total primary energy supply (TPES) over the past decade. It is therefore highly dependent on other countries for its energy supply. National production is mainly composed of nuclear power and energy from renewable fuels and waste. The country has faced several prolonged unplanned shutdowns of nuclear plants since 2012 (IEA, 2016; CONCERE-NCC, 2019). A 2003 law provides for the phase-out of nuclear power, but concerns over energy supply security have led to a revision of the shutdown schedule. It is now planned between 2022 and 2025.

In 2019, fossil fuels continued to dominate the energy mix: oil represented 37% of TPES, followed by natural gas (27%) and coal (6%) (Figure 1.3). The overall share of fossil fuels (70%) was, however, below the OECD average (79%). This is because nuclear accounts for a high share of the energy mix (21% in 2019). Renewables (8%) made-up the remainder (OECD, 2020d). Since 2005, the share of coal in TPES decreased, replaced by natural gas and renewables, but the share of nuclear power remains one of the highest in the OECD.

Figure 1.3. Fossil fuels and nuclear dominate the energy mix



Note: Total primary energy supply excludes electricity trade.
Source: IEA (2020), "World energy statistics", IEA World Energy Statistics and Balances (database).

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Renewable energy

Belgium has relatively low potential for producing renewable energy due to its topography, dense population and relative lack of sunshine. The large-scale use of hydropower, onshore wind turbines and solar solutions are therefore difficult challenges for land-use planning and public support (CONCERE-NCC, 2018). It has, however, relatively good resources for offshore wind and biomass (including waste), and is already increasing use of these resources (IEA, 2016).

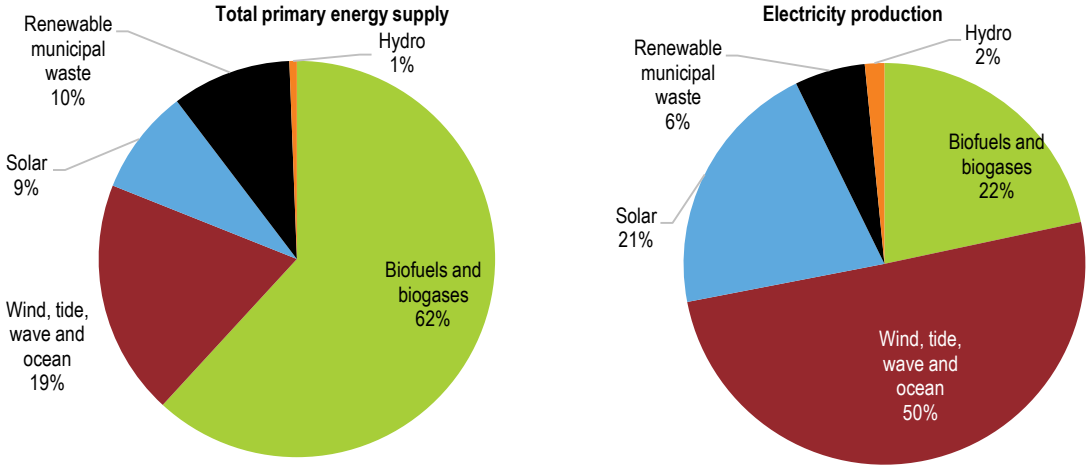
Although increasing, the shares of renewables in the energy and the electricity mix are among the lowest in the European Union. In 2019, energy supply from renewable sources was about four times higher than the 2005 level: biofuels and biogas were the main source, followed by wind, municipal waste and solar energy. Hydro and geothermal accounted for a negligible part Figure 1.4). Renewable energy sources accounted for 20% of electricity production, wind being the main source, followed by biofuels and biogas, solar, municipal waste and hydro (Figure 1.4). The development of renewable energy is mainly due to more use of biofuels and waste but also to a surge in wind and solar from negligible levels, thanks to subsidies (IEA, 2016; Eurostat, 2020a).

The NECP set the objective to reach 17.5% of renewable energy in gross final consumption of energy as Belgium's contribution to the 2030 EU objective (of 32%) (CONCERE-NCC, 2019). However, the proposed contribution remains significantly below the indicative target of 25% set for Belgium by the EU Governance Regulation[1] (EC, 2020a). It is also less ambitious than the draft version of the plan (although due to higher energy consumption, renewable energy is set to increase in absolute terms). With only 9.4% of renewable energy in gross final energy consumption in 2018, the country is below its 2020 objective of 13% (Eurostat, 2020a; Table 1.2). The NECP is unclear on how Belgium will reach its 2030 target.

In 2018, renewable energies accounted for 18.9% of gross electricity consumption (in line with the trajectory for the 2020 target of 20.9%) and 8.2% of heating and cooling (below the trajectory for the 2020 target of 11.9%) (CONCERE-ENOVER, 2010; Eurostat, 2020a). The 2030 objectives are to reach a share of renewable sources of 37.4% in final electricity consumption and 11.3% in heating and cooling (CONCERE-NCC, 2019). In 2018, the share of renewables in transport fuels reached 6.6%, below the trajectory for the 2020 target of 10.14% (Eurostat, 2020a).

Figure 1.4. Renewable sources increased, but they remain low

Energy supply and electricity production from renewable sources, 2019



Note: Total primary energy supply excludes electricity trade.
Source: IEA (2020), "World energy statistics", IEA World Energy Statistics and Balances (database).

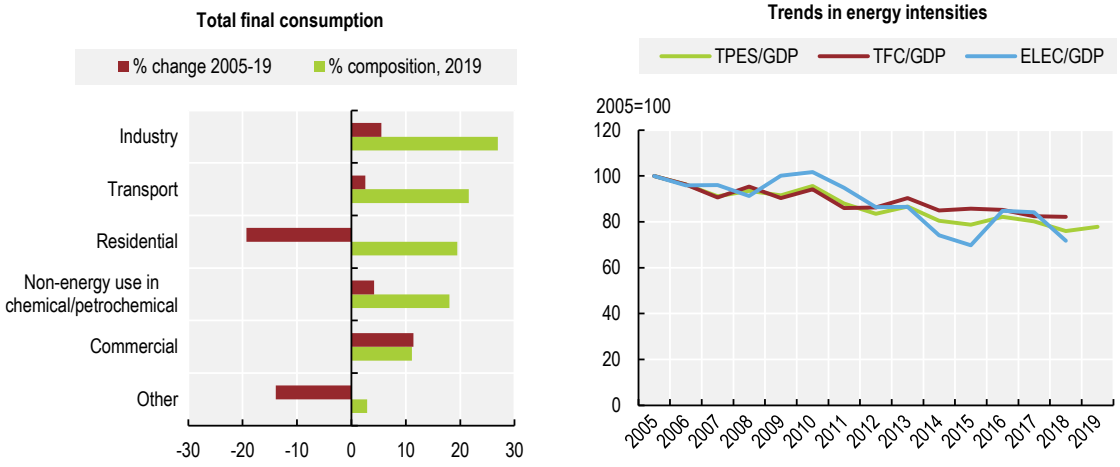
StatLink https://doi.org/10.1787/888934230680

Each entity laid out its objectives and measures to increase the share of renewables in the energy mix. These include various support schemes for wind, solar and biomass energy production, and biofuel incorporation in transport fuels. The main regional measures are the green certificates to promote electricity generation from renewables, financial support (grants and loans) for boilers and heat network, and facilitation for photovoltaic installations. Flanders set up a mandatory share of renewable energies for renovation and new construction projects beginning in 2014; the BCR and Wallonia introduced it later. As the BCR imports 90% of its electricity for consumption, it invests mostly in renewable electricity outside the regional territory (CONCERE-NCC, 2019). Measures in the NECP mainly expand those already in place or foreseen to achieve the 2020 target. The federal government plans to further increase the offshore wind capacity by extending the zones of offshore concession with the new Marine Spatial Plan. Other measures aim at simplifying access to financial support for renewable energies (CONCERE-NCC, 2018). Regarding the transport sector, the federal government intends to reach an incorporation rate for biofuel of 14% by 2030 (CONCERE-NCC, 2019).

Energy consumption

Although total final consumption (TFC) has remained stable since 2005, energy intensities have declined. This reflected a decoupling from economic and population growth (Figure 1.5). TPES per unit of GDP and per capita decreased over the period but remains above the OECD average (OECD, 2020d).

Figure 1.5 Industry, transport and buildings consume the most energy



Notes: GDP at 2015 prices and purchasing power parities. TPES: total primary energy supply; TFC: total final consumption; ELEC: electricity production.
Source: IEA (2020), "World energy statistics", IEA World Energy Statistics and Balances (database).

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Belgium has a strong manufacturing base with several energy-intensive sectors, such as chemicals, refining, and iron and steel. Therefore, industries are the main energy consumer: energy combustion accounts for 27% of TFC, while non-energy use in chemical/petrochemical industries represents 18%. Transport is the second biggest energy consumer, followed by the residential sector and the commercial sector (Figure 1.5). Apart from the residential sector, of which TFC decreased by 19% since 2005, consumption of all sectors increased, particularly in the commercial sector and industries.

The Belgian housing stock is characterised by a high proportion of old buildings and natural gas is the main source of heating. The rate of household equipment with energy-consuming appliances continues to

rise (CONCERE-NCC, 2019). However, the energy efficiency of buildings has increased. Each region has developed its own long-term strategy for the renovation of buildings. Despite regional specificities, many measures are shared. Regulatory measures include i) stricter energy performance requirements, including energy performance certificates with building passports specifying a renovation roadmap to reach the 2050 objectives and energy audits; ii) the gradual phasing out of heating systems supplied by fossil fuels for new construction or major renovations, beginning with oil; and iii) stricter energy performance standards for appliances. The NECP also details tax measures, financial incentives and the leading role of governments, as well as tools and measures for information/awareness (CONCERE-NCC, 2018). Relatively warm winters since 2010 have also led to less energy consumption in the residential and tertiary sectors.

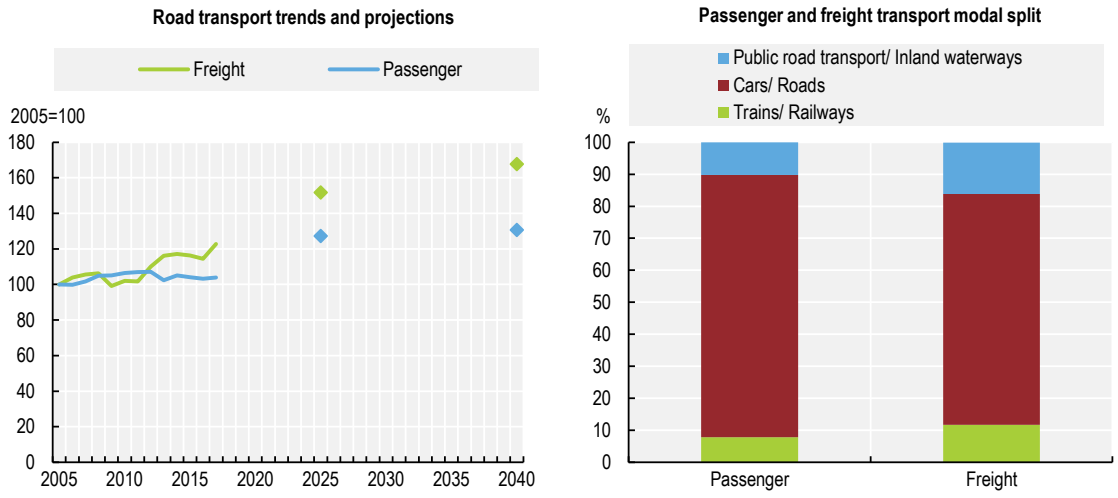
Despite some achievements, further effort will be needed to decrease energy consumption. The country is not on track to achieve its 2020 energy efficiency target. Between 2020-30, the NECP expects final energy consumption to be reduced only slightly, which is not in line with EU ambition. While the coronavirus lockdown has led to a drop in energy demand in 2020, Belgium should contribute a fair share to 2030 EU targets.

Transport

Because of Belgium's location as a transit country and its trade-dominated economy, transport is a growing sector (CONCERE-NCC, 2019). The country is crossed by important waterways and dense road and railway networks with the Port of Antwerp one of the busiest in Europe. Consequently, transport is the largest emitter of GHGs, the second largest consumer of energy and an important source of air pollution (Section 1.4.2).

Road transport accounts for the bulk of land transport for passengers (92% in 2017) and for goods (72% in 2018) (Figure 1.6). Overall, road transport has increased since 2005. It is expected to continue, along with the associated rise in demand for fossil fuels (CONCERE-NCC, 2019). Since 2005, car passenger transport has increased by 4%, road freight transport by about 23%; and inland waterways by 27%.

Figure 1.6. Road transport is increasing



Notes: This is based on data in passenger-kilometre for passenger transport (cars only), in tonne-kilometre for freight transport; right panel: 2017 data for passengers and 2018 data for freight transport.
Sources: Eurostat (2020), "Modal split of passenger transport", Transport (database); FPB (2020), Transport (database); FPB (2019), "Perspectives de l'évolution de la demande de transport" (édition 2019) Annexe statistique.

StatLink https://doi.org/10.1787/888934230718

In 2017, cars represented 82% of passenger transport,[2] road public and collective transports[3] accounted for 10%, and trains for 8% (Figure 1.6). Public transport increased significantly in the 2000s, in particular bus and trains. Use of buses, and to a lesser extent trains, clearly slowed down between 2010-17 (FPB, 2019b). Overall passenger modal split has remained relatively stable since 2005.

Private cars represent 82% of the vehicle fleet in 2020, trucks account for 13% and motorcycles 7% (Statbel, 2020a). The number of private vehicles is constantly increasing (+15% for private cars and +31% for motorcycles over 2008-20).

Although decreasing, diesel is still the most used fuel in the vehicle fleet. Diesel vehicles represented 57% of the fleet in 2007: use peaked at 63% in 2012-14, decreasing to 52% in 2020 (Statbel, 2020a). The vehicle fleet is relatively young: 38% of private cars are less than five-years-old and 66% are less than ten-years-old. Meanwhile, 54% and 39% of buses and motorcycles, respectively, are less than ten-years-old (Statbel, 2020a).

Following trends in road passenger and freight transports, energy consumption and GHG emissions from transport decreased between 2007 and 2012 due to the financial crisis. However, they have since increased. In 2017, 57% of road transport emissions came from cars, followed by trucks, buses and coaches (30%) and vans (12%) (FPB, 2019b).

1.3.3. Climate change mitigation and adaptation

Greenhouse gas emissions profile

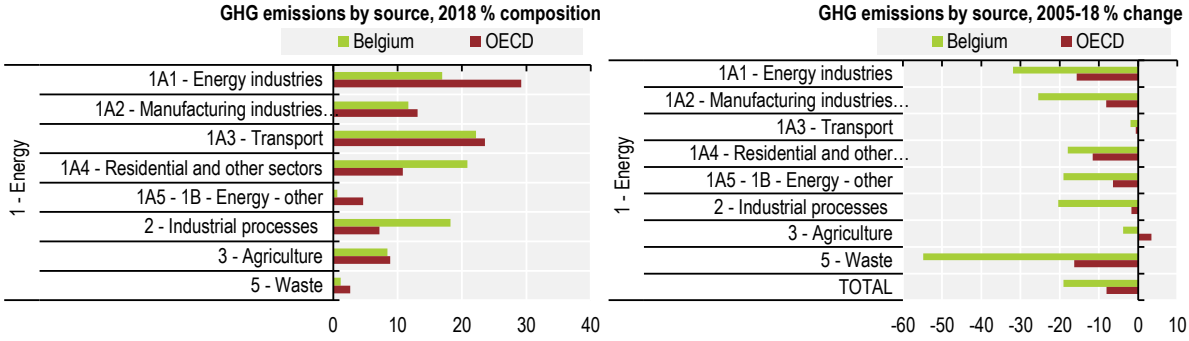
GHG emissions stabilised between 1990 and 2005, decreased following the 2008 financial crisis and have re-stabilised since 2014 (-19% between 2005 and 2018), while GDP continued to increase. There are three main drivers of the decoupling. First, increased use of gaseous fuels and decrease in use of liquid and solid fuels have led to a less carbon-intensive energy mix. Second, energy efficiency has improved, and the structure of the economy has changed (fewer energy-intensive industries such as steel, and more value added in sectors such as services and trade with lower energy intensity) (CONCERE-NCC, 2018). In 2018, total emissions rose again. The COVID-19 crisis reduced GHG emissions from road traffic by 50% and emissions from buildings by 25% from 19 March to 3 May 2020. However, these effects will be only temporary if the recovery builds on the pre-crisis model.

The GHG intensities of Belgium per unit of GDP and per capita have decreased over 2005-18 and remain under the OECD average. However, they remain higher per capita than the EU average (OECD, 2020d). Belgium's carbon footprint is substantially higher than production-based emissions as the country is a net importer of GHG emissions, although recent data are lacking (FPB, 2017).

In 2018, the energy sector was responsible for 72% of total emissions,[4] which is less than the OECD average of 81% (Figure 1.7). This is due to the relatively high share of nuclear power in the energy mix. The transport sector accounts for 22% of total emissions, followed by the residential and commercial sector[5] (21%), energy industries (17%), manufacturing industries (12%) and fugitive emissions (1%) (Figure 1.7).

GHG emissions from energy combustion have decreased in all sectors between 2005 and 2014, and have stabilised in recent years. Emissions from transport increased by 5% between 2013 and 2018 due to the growing number of vehicles and the longer distances travelled. Although the number of buildings increased, related emissions decreased by 18%, thanks to the switch of fuel mix, better insulation and generally warmer winters leading to a decrease in energy consumption (CONCERE-NCC, 2019).

Figure 1.7. Transport, buildings and industry are the main sources of GHG emissions



Notes: Total emissions exclude emissions or removals from land use, land-use change and forestry. 1A2: Manufacturing industries and construction; 1A4: Residential and other sectors.
Source: OECD (2020), OECD Environment Statistics (database).

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Industrial processes and products use are the third largest source of GHG emissions: they accounted for 18% of total emissions in 2018, much more than the 7% average in the OECD. Since 2005, emissions have decreased by 20% – a much faster pace than the OECD average (-2%) (Figure 1.7). This is due to investments in catalysts in nitric acid production beginning in 2003 and a sharp decrease in emissions from fluorochemical production and from metal production due to the economic crisis (UNFCCC, 2020). The shift from solid to gaseous fuels in the power generation sector and in industry, combined with the development of biofuels in some sectors, has reduced the carbon intensity of energy consumption (CONCERE-NCC, 2019). Emissions from energy and manufacturing industries have decreased by 32% and 25%, respectively, since 2005; this decrease is linked to fuel switching and improvements in energy efficiency (Figure 1.7).

Agriculture accounts for 8% of total emissions, composed mainly of methane (CH_4) and nitrous oxide (N_2O) although some carbon dioxide (CO_2) emissions are caused by liming. Since 2005, emissions have decreased slightly (- 4%) due to less livestock production and nitrogen use (CONCERE-NCC, 2019; Figure 1.8). The waste sector accounted for about 1% of total GHGs: emissions come from waste incineration, disposal of solid waste in landfill and sewage treatment. Emissions from waste have been steadily decreasing (-55% since 2005), mainly due to the recovery of biogas in landfills. The LULUCF sector is a net sink.

In terms of gases, the largest contribution to total emissions is CO_2 (85% of emissions in 2018), followed by CH_4 (7%) and N_2O (representing an additional 5%). The rest is composed of fluorinated gases.

Progress towards main objectives

Belgium complied with its commitments of the first period of the Kyoto Protocol (2008-12), reducing its GHG emissions by 13.9% (using the flexible mechanisms under the Kyoto Protocol). For the second commitment period (2013-20), alongside the European Union and its member states, Belgium communicated an independent quantified economy-wide emission target to reduce emissions by 20% by 2020 compared with 1990 levels (UNFCCC, 2020; Figure 1.8). The country ratified the Paris Agreement in 2017.

Owing to the complexity of the state structure, governance of climate policy is difficult in Belgium. The difficulties in governance may also slow the pace of implementation of the programme with additional

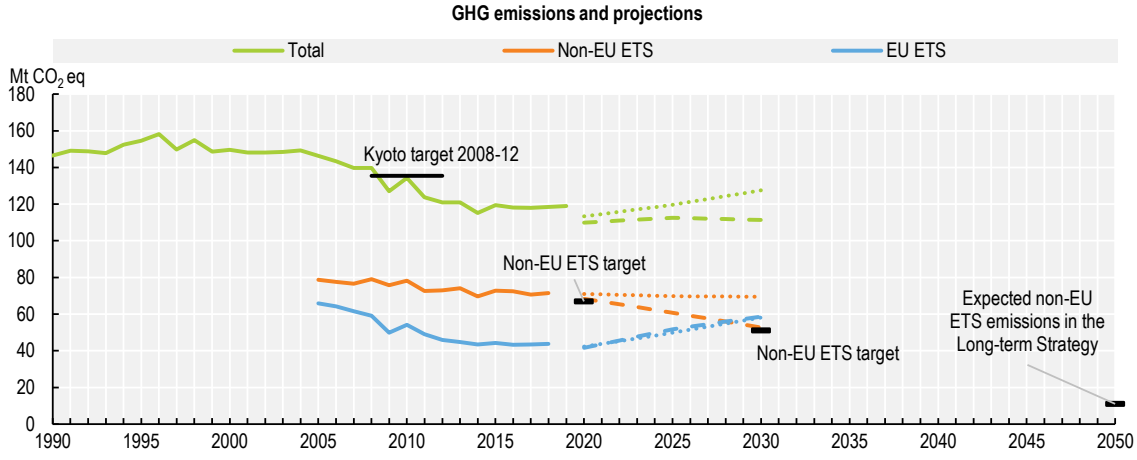
measures (WAM) (UNFCCC, 2019). Total ETS and non-ETS emissions decreased by 33% and 9%, respectively, over 2005-18 (Figure 1.8). NECP projections (WAM) indicate that 2020 and 2030 targets of reducing non-ETS emissions by 15% and 35%, respectively, compared to 2005, are within reach[6] (Figure 1.8). The COVID-19 pandemic may affect results for 2020. However, further efforts will be needed to meet the more stringent targets adopted by the European Union for 2030 to achieve climate neutrality at EU level by 2050.

The NECP projects a 33% reduction of non-ETS emissions by 2030 compared to 2005 levels (WAM). The most significant reductions will occur in the transport (-27%) and building sectors (-41%) (CONCERE-NCC, 2019; EC, 2020a; Figure 1.8). Over the same period, ETS emissions are expected to decrease by only 12%. This is due to the nuclear phase-out and increasing dependence on gas, which will increase emissions between 2020-30.

The building sector has contributed significantly to reduced GHG emissions in sectors not covered by the EU ETS. Emissions are projected to decrease still further in the WAM scenario. Some regions have set additional objectives. These include quantified reductions in GHG emissions; no longer connecting development projects to the gas grid; new energy performance certificates of buildings; building passports; and incentives for buildings renovation. Increased potential for green heating is foreseen via the promotion of heat pumps and heat networks that use renewable or waste heat (EC, 2020a). However, in Wallonia, many detached houses use heating oil due to lack of a natural gas distribution network.

The NECP contains a number of additional objectives targeting the transport sector, including a 10% increase in sustainable shipping by 2030. Belgium plans to encourage alternative fuels (including electromobility) through tax incentives, support for building refuelling and recharging infrastructure (EC, 2020a). In the non-ETS industrial sector, the regions are aiming for further reductions in GHG emissions by promoting enhanced energy efficiency, fuel switching (renewable heat and power) and further reductions of fluorinated gases (EC, 2020a).

Figure 1.8. Belgium is not on track to achieve climate neutrality by 2050



Notes: GHG emissions excluding land use, land-use change and forestry. Dotted lines refer to projections of the National Energy and Climate Plan (NECP), with existing measures. Dashed lines refer to projections of the NECP, with additional measures. Non-ETS targets: under the EU Effort Sharing legislation.
Sources: OECD (2020), OECD Environment Statistics (database); EEA (2019), Country Profiles: Greenhouse Gases and Energy 2019 (database); CONCERE-NCC (2020), Belgium's Long-term Strategy; CONCERE-NCC (2019), National Energy and Climate Plan 2021-2030.

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Adaptation to climate change

Belgium is now 2.4°C warmer than in the pre-industrial period. In recent years, the country experienced persistently mild winters, recurring drought and a succession of hot summers, culminating in the unprecedented temperature extremes recorded during summer 2019. These phenomena have already affected agricultural yield, mortality figures and labour productivity loss, among others (NCC, 2020). Projections for 2100 show additional increases in temperatures (of 0.4°C to 3.0°C in winter and 0.8°C to 3.6°C in summer) and seasonal precipitation (more precipitation in winter and less in summer). Extreme weather events (heatwaves, heavy rainfalls) will occur more frequently, river flows are expected to decrease and sea level on the Belgian coast may rise by 39 to 69 centimetres.

In 2010, Belgium adopted the National Adaptation Strategy. It describes the main consequences of climate change, existing adaptation measures, the roadmap for achieving a future national adaptation plan for 2020-30 and the different strategic orientations for the development of adaptation policy. This strategy has three objectives (CONCERE-NCC, 2018). First, it aims to improve coherence between adaptation activities carried out in the country. This includes assessment of the impact of climate change, vulnerability to climate change and measures to address it already applied. Second, it seeks to improve communication at national, European and international levels. Third, it envisions developing a national action plan.

The NCC adopted the National Adaptation Plan (2017-20) on 19 April 2017 (NCC, 2017). The plan aims to provide clear and concise information on adaptation policies and their implementation. It identifies specific adaptation measures at national level to strengthen co-operation and develop synergies between the different entities (federal, regional). The plan addresses six sectors and transversal issues: biodiversity, crisis management, energy, health, research and international co-operation (NCC, 2020). A mid-term evaluation, completed in February 2019, pointed out that implementation is still partial. Of the 11 actions, 4 have not really started, 3 met budgets and deadlines, and the remaining 4 have not yet finished. Two years after adoption of the plan, one measure has achieved its objective. The Commission recommended reinforcing support for this plan and its implementation (NCC, 2020). The final evaluation of the plan will take place by end 2020.

1.4. Atmospheric emissions and air quality

1.4.1. Main objectives and programmes

Each region implements the two EU air quality directives. Directive 2004/107 relates to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons (PAHs) in ambient air. Directive 2008/50 addresses ambient air quality and cleaner air for Europe relating to sulphur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter smaller than 10 µm (PM_{10}), as well as $PM_{2.5}$, lead, benzene and carbon monoxide (CO). The country has also ratified the Gothenburg Protocol and implemented the related European National Emission Ceilings (NEC) Directive (2001/81/EC), setting absolute emissions ceilings for 2010 for nitrogen oxides (NOx), sulphur oxides (SOx), volatile organic compounds (VOC) and ammonia (NH_3). The “new” EU NEC Directive 2016/2284 seeks to reduce national emissions of the same atmospheric pollutants plus $PM_{2.5}$. In this context, including the National Air Pollution Control Programme, Belgium has committed to 2020 and 2030 reduction targets, split up between the three regions (Table 1.3) (CCIEP, 2019).

Each region adopted regional plans and policies to comply with national objectives: the Air-Climate-Energy Plans for the BCR and Wallonia, and the Air Policy Plan 2030 for Flanders. The main measure to tackle air pollution in the BCR is the Low emission zone (LEZ), which was implemented on 1 January 2018. The LEZ helps reduce road transport emissions by gradually banning the most polluting vehicles from the BCR. The BCR government has committed to phase out diesel (by 2030), and petrol and liquefied petroleum gas (by 2035). Significant budget has been allocated to public transport in the Good Move plan (Chapter 3).

The Flemish Region, with the objective of staying below World Health Organization (WHO) recommendations for all air pollutants, has set three 2030 intermediate targets. First, it aims to halve the number of premature deaths due to air pollution compared to 2005. Second, it seeks to halve the number of people living in locations with NO_2 concentrations exceeding 20 µg/m^3 compared to 2016 (applies for every individual municipality). Third, it aims to reduce surfaces where critical loads for acidification and eutrophication are exceeded by one-third compared to 2005. In addition, Antwerp and Ghent introduced LEZ.

Wallonia, in the framework of the National Air Pollution Control Programme imposed by EU Directive 2016/2284, is committed to working towards the WHO guidelines for health protection. It implements an integrated air/energy policy and focus on urban areas and areas exposed to road transport. Federal air policy, based on requirements of Europe and the UN Economic Commission for Europe requirements, complement the regional ones. Federal obligations are introduced in a project co-operation agreement law between regional and federal authorities. The different governments have validated the project, but the different parliaments must adopt it before it becomes law; this was expected in 2020 (CCIEP, 2019).

Table 1.3. Belgium national and regional emission ceilings and objectives

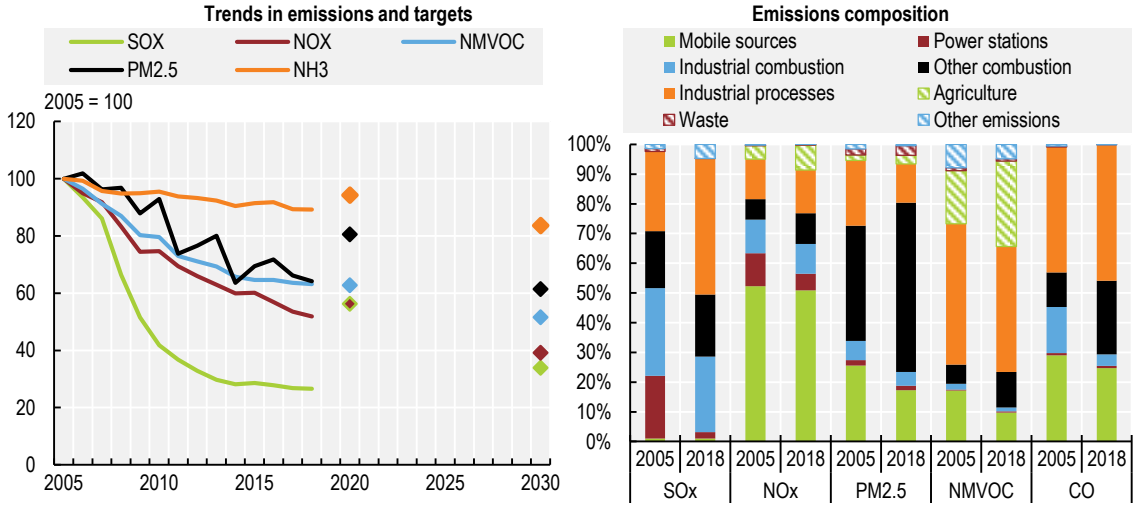
	BE 2005 Emissions (kt)	BE 2020 Objective (%)	2020 Ceilings (kt)				BE 2030 Objective (%)	2030 Ceilings (kt)			
			BE	VLA	WAL	BCR		BE	VLA	WAL	BCR
NOx	303.5	-41%	179.1	100.3	72.4	4.7	-59%	124.4	71.8	49.4	3.2
SOx	142.1	-43%	81.0	43.9	25.8	1.7	-66%	48.3	32.5	15.4	0.4
$PM_{2.5}$	34.8	-20%	27.8	14.2	11.3	0.5	-39%	21.2	11.9	8.8	0.5
NMVOC	145.8	-21%	115.2	73.1	36.8	4.6	-35%	94.8	58.8	32.1	3.9
NH_3	75.2	-2%	73.7	40.5	30.4	0.0	-13%	65.4	38.3	27.0	0.1

Notes: Emission ceilings from national emission reduction commitments to the EU NEC Directive 2016/2284. BE = Belgium. VLA = Flanders. WAL = Wallonia. BCR = Brussels-Capital Region.
Source: CCIEP, 2019.

1.4.2. Atmospheric emissions

Emissions from all pollutants have decreased since 2005, and have been decoupled from economic and population growth. As a result, intensities per unit of GDP and per capita declined and are well below the OECD Europe average (except for NOx per capita). Belgium has achieved the 2010 objectives set in the NEC Directive and is on track to meet its 2020 and 2030 emission reduction commitments for SOx, NOx, $PM_{2.5}$, non-methane volatile organic compounds (NMVOC) and NH_3 (with additional measures for the latter) (EC, 2020b; Figure 1.9).

Figure 1.9. Belgium is on track to meet its 2030 air pollutant emission reduction objectives



Note: Targets calculated from national emission reduction commitments to the NEC Directive 2016/2284.
Source: OECD (2020), OECD Environment Statistics (database).

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Since 2005, emissions from all sources have decreased for all pollutants, except $PM_{2.5}$ from agriculture and NMVOCs from residential combustion (Figure 1.9). Road transport remains the most important source of NOx emissions (44% in 2018) and is also responsible for significant emissions of $PM_{2.5}$, CO and NMVOCs. Emissions from passenger cars decreased due to more use of catalytic converters, particulate filters and other technical measures. A road charge for heavy vehicles also stimulated the renewal of the vehicle fleet: the number of kilometres driven by Euro 6 type trucks increased from 30% in April 2016 to

67% in 2019. The implementation of the Brussels' LEZ in 2018 has started to show positive outcomes in reducing emissions from transport.

Industrial processes are a major contributor to SOx emissions (46% in 2018), to CO (46%) and to NMVOCs (42%). They are also responsible for 15% of NOx emissions and 13% of $PM_{2.5}$. Industrial and residential combustion are the first emitter of SOx (46%) and $PM_{2.5}$ (62%), and account for 20% of NOx, 28% of CO and 13% of NMVOCs (Figure 1.9).

In the Flemish Region, NOx, SOx and $PM_{2.5}$ emissions were mainly reduced in electricity production and industry due to switching to gaseous fuels and use of end-of-pipe techniques. Both voluntary agreements and general binding rules (emission limit values) were used. Emissions were also reduced in heating appliances thanks to fuel switching and more stringent product legislation. While emissions from new stoves and other appliances are regulated, older stoves continue to generate a large share of emissions. Indeed, the most important source of emissions of primary $PM_{2,5}$ and PAHs remains wood combustion in domestic stoves. A Green Deal was set up to tackle these emissions in the coming decade. Industry reduced VOC emissions, mainly by using low solvent products and end-of-pipe techniques, as well as by cutting down on diffuse/fugitive emissions. NH_3 emissions are mainly emitted by agricultural activities; low emission animal housing and manure spreading techniques helped reduce these emissions. Belgium took a programmatic approach to reduce N-deposition in order to protect valuable natural reserves from eutrophication/acidification (country submission).

Since 2005, Wallonia managed to decrease emissions from all pollutants (Walloon Government, 2018). One important driver was the 2009 economic crisis, which resulted in an important slowdown of the industrial activity (shutdown of the hot iron and steel industry). Other important factors were the reduction of power plant activity and shut down of two lines of glass production. The regular occurrence of relatively warm winters since 2006 also led to less consumption in the residential and tertiary sectors. Key policy measures include improvements in chemistry sectors (permits review), the switch from coal to gas or wood in the energy sector, the closing of coke ovens, agreements with industrial sectors for energy consumption and efficiency, more use of gas and of substitute fuel in industry, stronger permits (glass, cement plants…) and building insulation (residential and tertiary). Other improvements are due to a decrease and change in livestock composition, less use of mineral fertilisers (NH_3), and biogas recovery from landfills (CH_4) (country submission).

1.4.3. Air quality

Belgium publishes regular information on air quality, including by measurement stations on a dedicated website. Annual average ozone concentrations have stabilised over the last decade. However, ozone concentrations have continued to exceed the EU target value, especially in warm years such as 2018.

The BCR did not respect the EU NO_2 limit values in two stations in 2018,[7] but respected EU standards on $PM_{2.5}$ and PM_{10}. The first results of LEZ implementation are encouraging: the number of older diesel vehicles on the road has fallen significantly and the quantity of NOx and $PM_{2.5}$ emitted by cars on the road has also decreased. Brussels Environment expects the region will meet air quality standards for NO_2 at all measuring stations between 2020 and 2025. As of 2020, the Brussels measurement network will be equipped with two additional stations every year (between 2020 and 2025) to refine the measurement and knowledge of air quality. These extra stations will target places highly exposed to pollution linked to transport (CCIEP, 2019).

In Flanders, a number of monitoring stations exceeded the daily limit value for PM_{10} until 2013. The various Flemish and local action plans on PM (2005), on industrial hotspot zones (2007) and on PM and NO_2 for the City and Port of Antwerp (2008) managed to improve air quality. These plans included some important investments in several industrial installations to reduce their channelled and diffuse emissions (CCIEP, 2019). The yearly limit value for lead was exceeded in the direct vicinity of two non-ferrous metals plants.

However, specific investments – action plans in Beerse (2010) and Hoboken (2017) – enabled Flanders to respect the limits. However, there were still exceedances of the yearly NO_2 limit in 2018 along busy roads and in street canyons in cities with more than 50 000 inhabitants. The "Air Policy Plan 2030" aims at resolving them (CCIEP, 2019).

Wallonia respects the EU limit values for air quality except for ozone. Nevertheless, to improve the monitoring network, it was installing two new stations targeting road traffic in the two main cities (Charleroi and Liège). In the meantime, four temporary monitoring stations were installed in the traffic zones of those towns. A Walloon air quality indicator allows comparison of the air quality in each municipality to the regional (or more local) average. This indicator considers four pollutants (ozone, NO_2, $PM_{2.5}$ and PM_{10}) (AwAC, 2020).

Overall, with a mean population exposure to $PM_{2.5}$ of 12.7 µg/m^3 in 2019, 93% of Belgians were still exposed to levels above the WHO recommendation of 10 µg/m^3. However, this is an improvement from 99% of people exposed on average to 16.2 µg/m^3 of $PM_{2.5}$ in 2011. Mortality from exposure to $PM_{2.5}$ was estimated at 303 deaths per million inhabitants in 2019, representing about 2.9% of GDP equivalent. These outcomes are below the OECD Europe average (OECD, 2020d).

1.5. Transition to efficient resource management

1.5.1. Material consumption

Belgium extracts about 76% of its domestic material consumption[8] (DMC): non-metallic minerals (mainly construction minerals) account for almost two-thirds, while biomass makes up the remainder. Due to its location as a transit country and its open economy, Belgium imports 243 million tonnes of materials, almost twice as much as its DMC. These materials are mainly fossil energy (43% of imports), biomass (24%) and metals (19%). The country also exports large amounts of materials (about 1.7 of DMC level), mainly fossil energy (32%), metals (30%) and biomass (20%) (OECD, 2020d).

Over the past decade, DMC decreased and was decoupled from GDP growth, resulting in improved material productivity.[9] In 2019, Belgium generated more wealth per unit of material consumed (about USD 4.5/kg) than the OECD Europe average (USD 3.1/kg). The country also consumed fewer materials per inhabitant (about 11 tonnes in 2019) than average for the OECD Europe area (13 tonnes). However, the material footprint – which considers materials extracted abroad to meet final demand – was about twice as much (24 million tonnes per inhabitant in 2017). This was due to the outsourcing of the production of consumer goods (OECD, 2020d).

In 2019, non-metallic minerals made up the largest share (45%) of DMC, followed by biomass (40%), fossil energy (30%) and metals (-15% as exports exceeded imports). Since 2011, DMC has declined under the combined effect of less consumption of construction materials and of metals since 2016. This drop in consumption, in turn, was due to the renewal of the fleet of a shipping company[10] (FPB, 2019b). Consumption of fossil energy declined until 2014 but has since increased because of rising gas imports.

1.5.2. Waste prevention and management

The three Belgian regions develop separate waste management plans, but they share several common goals. These include reducing generation of municipal solid waste and of key waste streams, increasing levels of waste recycling and reuse and, especially in the most recent plans, supporting the transition to a circular economy by linking waste to resources. The plans in the three regions set targets for key waste streams and also seek to achieve EU targets (Chapter 4).

Total waste

In 2018, Belgium generated about 5.9 million tonnes of waste per inhabitant, above the EU average of 5.2 million tonnes. More than a third came from the construction sector, followed by manufacturing (25%), waste and water management (23%), households (7%) and services (7%). The generation of waste has increased by 10% since 2010. The construction sector increased by 34%, water and waste management by 9% and manufacturing by 18%. However, the generation of waste from households and from services decreased (Eurostat, 2020b; Chapter 5). Following the COVID-19 crisis, medical and hazardous waste generation has been increasing.

In 2018, Belgium recycled about 77% of its treated waste. Of the remainder, 11% was incinerated with energy recovery, 8% was landfilled and 4% was incinerated without energy recovery. Belgium is one of the best performing countries in the European Union where recycling represents on average 48% of waste treated and landfill accounts for 39% (Eurostat, 2020b).

Municipal waste

Belgium has reduced the amount of municipal waste generated by 7% since 2005 making it one of the few countries to achieve an absolute decoupling from economic and population growth. This decrease may be linked in part to waste reduction policies (Chapter 5); a methodological change in 2014, however, contributed to these reductions. In 2018, Belgians generated about 410 kg of municipal waste, 70 kg less than in 2005 and about 85 kg less than the OECD Europe average (OECD, 2020d). This low intensity is partly because the BCR excludes waste from other sources than households; these are included in other regions and countries. These amounts are estimated at about 385 000 tonnes, increasing amounts of municipal waste generated per capita in Belgium to 442 kg per inhabitant. In 2017, the BCR represented 7% of municipal waste generated in Belgium, Flanders 59% and Wallonia 34% (country submission).

Belgium is a leader in municipal waste recovery,[11] which already reached 87% of amounts treated in 2005 compared to 45% on average in OECD Europe countries. In 2018, the recycling rate (35%) was the third highest in the OECD. In addition, 20% of municipal waste was composted, 42% was incinerated with energy recovery, 1% was landfilled and 1% was incinerated without energy recovery (OECD, 2020d). This low rate of disposal is due to two factors. First, a landfill ban of untreated waste (including biodegradable municipal waste) has been in place since 2007. Second, Flanders and Wallonia have increased landfill taxes considerably; the BCR, which does not have a landfill infrastructure, pays landfill tax depending on which region receives waste (Chapter 5).

1.6. Land use and natural resource management

1.6.1. Physical context and land use

Belgium is a small country in size, bordered by the Netherlands, Germany, Luxembourg, France and the North Sea. It has the highest density of artificial surfaces (11.3% of total country area) in the OECD (OECD, 2020d). It is composed of three main geographical regions: the coastal plain in the northwest and the central plateau (both belong to the Anglo-Belgian Basin) and the Ardennes uplands in the southeast to the Hercynian orogenic belt. The landscape is made of sand dunes and polders in the coastal plain, and fertile valleys, thickly forested hills and plateaus inland. Agricultural areas cover over 45% of the territory, forests over 23% and other areas (including artificial areas) 33%. The climate is maritime temperate with significant precipitation in all seasons.

Environmental pressures from urbanisation and fragmentation of land are increasing. Within Europe, Belgium shows one of the highest rates of land take – the change in the area of agricultural, forest and other semi-natural land taken for urban and other artificial land development. Between 2012 and 2018,

Belgium converted about 195 m²/km² of land into urban areas every year. Despite progress in re-cultivation (about 66 m²/km² per year), the net land take is high by European standards (EEA, 2019). Due to high population and infrastructure densities, Belgium is also one of the most sealed[12] countries (about 4% of the territory is sealed compared to 2% in the EU-28) (EEA, 2020).

Cities are particularly decentralised,[13] about 17% more than the OECD average. The average urban population density has decreased since 2000. Although Belgium's urban areas are about 20% less fragmented than the OECD average, new development has occurred in a more fragmented way since 2000 (OECD, 2018b).

1.6.2. Use of agricultural inputs

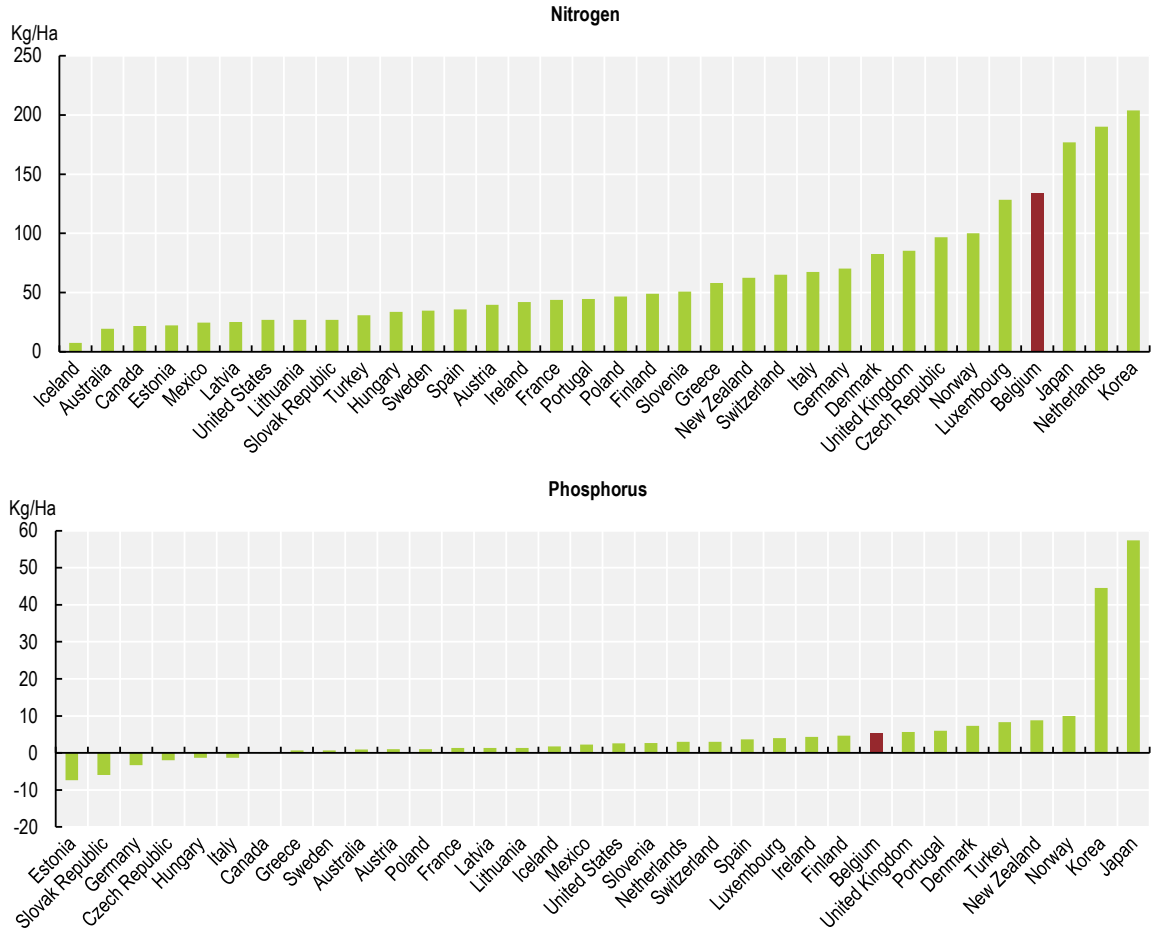
The area of agricultural land in use has remained relatively stable since 2005. It occupies the largest part of the territory: 29% for arable land and cropland and 16% for meadows and pastures. As bigger and more intensive structures replaced small ones, the number of farms has continued to decline significantly in recent years (-30% in the number of businesses between 2005 and 2017) (UNFCCC, 2019). Livestock density indicates the pressure that livestock farming exerts on the environment. In 2016, density reached 2.8 livestock units/ha of utilised agricultural area (UAA), the third largest share in the EU-28 (after the Netherlands and Malta). The share of mixed crop-livestock farms remains low (20%), while more than half of farms are specialised in livestock and nearly 30% in crops (Chapter 4). Reducing pressure from agriculture on biodiversity is an important challenge for Belgium whose agriculture is one of the most intensive, specialised and productive in Europe (BCHM, 2019). In recent decades, the combination of intensification and specialisation of agriculture with marginalisation of land has resulted in significant biodiversity loss in and around farmland (BCHM, 2019). Farmland bird populations, in particular, have nearly halved over the past two decades (Chapter 4).

Animal production (meat, milk) represents 56% of the gross value of Belgian agricultural production; plant production (44%) is specialised in market gardening and horticulture, potatoes, fruits, cereals and sugar beet (Statbel, 2020b). The share of agriculture, forestry and fisheries in the Belgian economy continues to decline, and represents less than 1% of GDP (CONCERE-NCC, 2019). The net value added of agricultural production decreased by 8% between 2008-11 and 2016-18 (Statbel, 2020b). Organic agriculture is developing rapidly (6.9% of the UAA in Belgium in 2019) but remains below the EU average of 8% (Eurostat, 2020c; Statbel, 2020b).

Nitrogen and phosphorus surpluses decreased by 10% and 55%, respectively (measured in kilogramme per hectare of agricultural land), between 2005 and 2015. However, they remain among the highest in the OECD (Figure 1.10). Sales of agricultural pesticides decreased slightly between 2011 and 2018 but remain higher than in most OECD countries per hectare of agricultural land (OECD, 2019a).

Figure 1.10. Nitrogen and phosphorus balances are high

2016-18 averages



Note: Data for Belgium refer to 2013-14 averages.
Source: OECD (2020), "Agri-environmental indicators", OECD Agriculture Statistics (database).

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Flanders and Wallonia implement the EU Nitrate Directive (91/676/EEC) and have their own nitrogen and pesticide management plans and programmes. These aim to reduce nutrient inputs and pesticide use in agriculture, and especially to protect soil and water sources from agricultural pollution. They encourage more sustainable agricultural practices in two ways. First, they enact regulations that set conditions for spreading and storage, prohibition periods, maximum quantities per parcel and per farm, and distances from watercourses. Second, they offer financial incentives. In Flanders, for example, farmers can receive funding (for up to five years) to cultivate crops with low risk of nutrient losses and therefore less nitrogen pollution in surface water and groundwater. For both regions and federal levels, measurable targets have been set for pesticides, but monitoring and enforcement of integrated pest management are inefficient (Chapter 4). The design of Belgium's Strategic Plan under the post-2020 Common Agricultural Policy is an opportunity to set more ambitious targets on water (Chapter 4). Belgium's share of agricultural land under contract to improve water management is below the EU average.

1.6.3. Biodiversity and ecosystems

The geographical and geological characteristics of Belgium have resulted in flourishing biodiversity, estimated at about 55 000 species. In addition to some 300 species of blue-green algae, Belgium is home to a few thousand species of bacteria. The best known organisms are the vascular plants, bryophytes, macro-algae and macro-lichens, vertebrates (fish, amphibians, reptiles, birds and mammals), carabids (ground beetles), butterflies, and dragon- and damselflies. Yet they represent less than 4% of the species living in Belgium. The main vegetation types found in the country are deciduous and conifer forests, grasslands, heathlands, peat bogs, wetlands, lakes and rivers, and marine ecosystems in the North Sea. About 80% of forested areas are in the southern part of the country, while semi-natural grasslands, wetlands, heathlands and coastal dunes are in northern Belgium (BCHM, 2019).

Protected areas

Belgium has almost met the 2020 Aichi targets (under the Convention on Biological Diversity) to protect at least 17% of land area and far exceeded the 10% target for coastal and marine areas. In 2020, protected areas covered 15% of Belgium's territory, a share lower than the OECD average (UNEP-WCMC, 2020). All three regions have protected areas under their nature legislation. Networks of areas under nature management have been set up (the Flemish Ecological Network and the integral nesting and support network in Flanders; the main ecological structure in Wallonia; the Brussels Ecological Network in the BCR), which include the Natura 2000 network (except in Flanders). However, only 2% in Flanders and the BCR and 1% in Wallonia are strictly protected and only a limited number of sites are managed effectively (BCHM, 2019). This is partly due to the strong artificialisation of land in Belgium, which makes it difficult to create large nature areas. The share of built-up area in total land area in Belgium is the highest in the OECD (OECD, 2020d).

The Belgian part of the North Sea is a sensitive ecosystem and one of the most densely used marine areas in the world. It faces significant pressures from sea-based activities (e.g. fishing, coastal defence, sand and gravel extraction, shipping, offshore energy, tourism) and land-based activities (agriculture, urbanisation, harbours, industry). Belgium has a limited coastline and the country's professional marine fishing fleet is relatively small (BCHM, 2019). Marine biodiversity is particularly threatened in coastal zone and shelf sea, where direct and indirect disturbances are concentrated. Two important threats are the overexploitation of marine resources and the adverse effects of certain fishing methods (in particular, bottom-affecting gear). These are employed not only by national fisheries, but also by foreign vessels fishing in Belgian waters. Despite several international instruments to regulate the fishery and its impact on the environment, the marine ecosystem and fish populations still face pressure. Both professional and recreational fishers are active at sea (BCHM, 2019).

The establishment of marine protected areas (MPAs) in the Belgian marine zone has been an important step. MPAs account for 37% of the Belgian part of the North Sea, most of which constitute the Natura 2000 network (UNEP-WCMC, 2020; Chapter 4). The Marine Spatial Plan (MSP), adopted in 2014, forbids a number of human activities in the Natura 2000 areas (e.g. industry) (BCHM, 2019). However, these measures did not manage to halt the loss of marine biodiversity and deterioration of habitats. A second MSP was released for 2020-26 (Chapter 4).

Habitat and species

Recent data show that many species are in decline or have even disappeared. Roughly 20-70% of species are threatened per main group of organisms. In Flanders, at least 7% of formerly recorded species are extinct. Of the remaining assessed species, 17% are endangered to critically endangered, while 29% are vulnerable to nearly threatened; only 52% are considered safe or at low risk. In Wallonia, 9% of the animal and plant species have already disappeared and 31% of them are critically endangered. The Belgian

marine area also suffers from severe declines in fish and crustaceans, in particular commercial species. In addition, bottom-disturbing activities have affected the quality of the structure and function of sandbanks and biogenic reefs (BCHM, 2019).

The status of habitats and species covered under Directive 92/43/EEC is bad and deteriorating: 74% of habitats are in bad status and 15% show inadequate status. The picture is a little more positive for species: a quarter are in good status. However, most are in bad (36%) or inadequate (31%) status (Chapter 4).

Belgium will not reach the EU 2020 target of halting the loss of biodiversity, either for the species under protection of the Habitat Directive or for those under the Bird Directive. The breeding populations of most bird species covered by the Bird Directive are stable or fluctuating or even increasing, but a significant amount of species are still decreasing (32% in the short term and 26% in the long term). The population of wintering species has also decreased significantly (18% in the short term and 31% in the long term) (country submission).

The most frequently identified pressures on species are agricultural intensification (affecting more than three-quarters of species), fragmentation of habitats and resulting loss of connectivity, pollution (especially eutrophication), land take (especially in the Atlantic area) and intensification of forestry in Wallonia. Biological invasions are the second most important cause of species extinction in Belgium after loss of natural habitats (BCHM, 2019). The development of tourism in natural and protected areas and other nature-based destinations adds more stress to fragile ecosystems (BCHM, 2019). In Flanders, Brussels and the marine area, changes in environmental quality due to eutrophication also impose heavy pressure on fauna and flora (BCHM, 2019).

1.6.4. Water management

Key plans and programmes

Belgium has four river basin districts (RBDs), of which the Meuse and Scheldt cover most of the territory. The Rhine and Seine RBDs cover a much smaller part of Belgium. In line with the EU Water Framework Directive (WFD) the country adopted the second River Basin Management Plans (RBMPs) between 2016 and 2017. Division of responsibilities results in several regional plans for the same river basins. In all, eight RBMPs were adopted by Flanders (Scheldt and Maas), the BCR (Scheldt), Wallonia (Escaut, Meuse, Rhine and Seine) and the federal government (North Sea). The three larger international RBDs on Belgian territory (Scheldt, Meuse and the Rhine) have international co-operation in place, including agreements and governing body (EC, 2019a).

The European Commission pointed to several weaknesses in the RBMPs, including the need for further co-ordination between regional, national and international levels (EC, 2019a). More efforts are needed to harmonise water status assessments and co-ordinate Programmes of Measures (PoM). To this end, a collaboration platform has been set up (SPW, 2016).

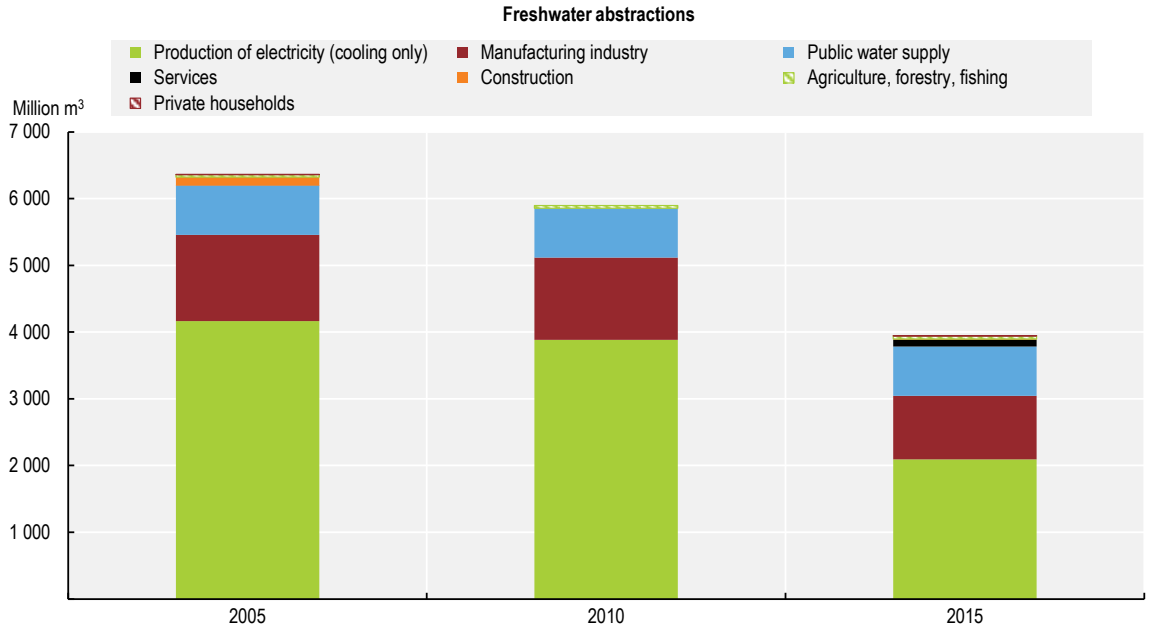
Although Belgium has made progress in the characterisation of pressures, further work is needed on their distribution and identification (hydromorphological and unknown anthropogenic pressures). Belgium still needs to address the links between status, individual pressures and the PoM. The European Commission recommended basing the assessment of the significance of pressures on numerical tools rather than expert judgement. Monitoring for status assessment is not complete and not frequent enough (EC, 2019a).

RBMPs should clearly identify the distance to good status for individual pressures and water bodies, and the PoM should close that gap. Belgium should also make clear financial commitments to implement the PoM. It should state clearly, to what extent, in terms of area covered and pollution risk mitigated, measures will contribute to achieving the WFD objectives, and identify appropriate sources of funding to facilitate their implementation (EC, 2019a).

Water resources

Belgium is relatively poorly endowed with freshwater resources in view of its high population density; distribution of water resources is uneven between the north and the south. The country is under moderate to medium-high water stress. It abstracts 33% of its internal resources and 17% of its renewable resources (Basic statistics). Per capita annual abstraction of freshwater was 354 m^3 in 2015, a decrease from 606 m^3 in 2005 and an intensity well below the OECD average of 710 m^3 (Basic statistics). Most freshwater abstractions (52%) are for the production of electricity (cooling), followed by abstractions from manufacturing industries (24%), public water supply (19%) and the service sector (3%). Most water abstractions (85%) come from surface waters (Figure 1.11). Groundwater is mainly abstracted for public water supply.

Figure 1.11. Most freshwater abstractions are used to produce electricity



Source: OECD (2020), OECD Environment Statistics (database).

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Between 2005 and 2015, water abstractions fell by 38% due to the 50% decrease in abstraction of cooling water for production of electricity (Figure 1.11). This was due, in turn, to the prolonged outages of several nuclear reactors during the period. Abstractions from manufacturing industries also diminished (- 26%) due to the restructuring of the metallurgy sector, as well as efficiency improvements. Abstractions for public water supply remained stable but jumped from 2 to 105 million m^3 for the service sector. Agriculture's abstractions increased by 28% but represent only 1% of total abstractions (Figure 1.11). However, both 2017 and 2018 were dry years, during which farmers faced water scarcity on an unprecedented scale.

Water quality

The second RBMPs show that diffuse agricultural sources represent the most significant pressure on rivers (affecting 96% of river water bodies in six RBDs). Atmospheric deposition is significant in all eight RBDs (affecting 82% of river water bodies) and point source pressures from urban wastewater affect 79% of river

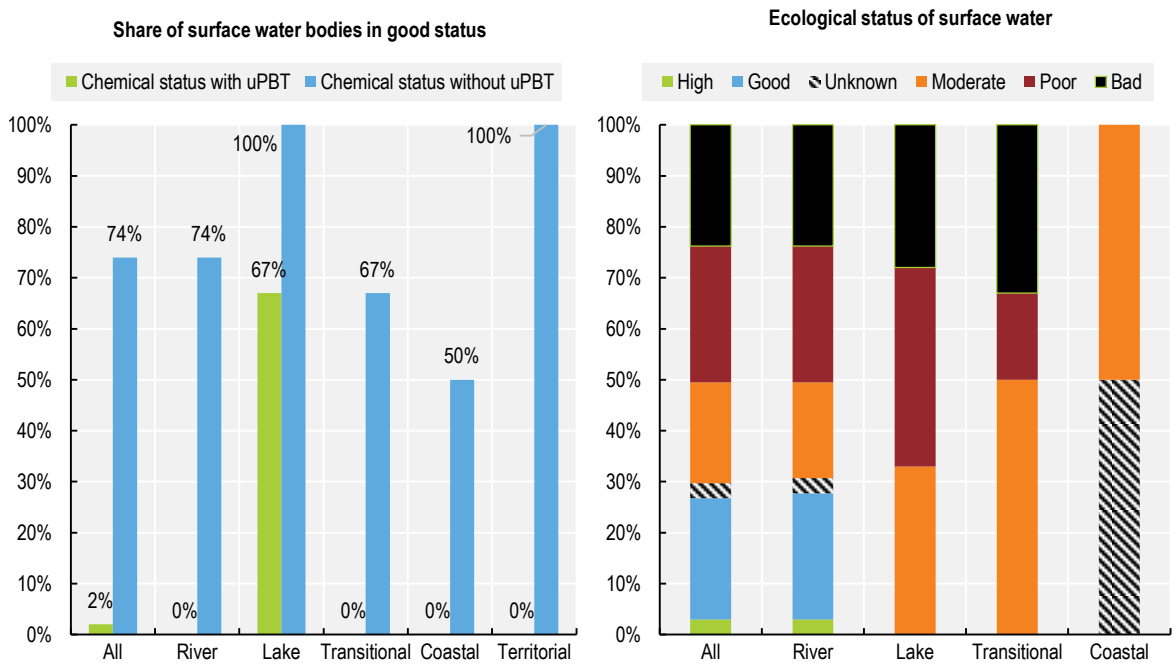
water bodies. “Diffuse agricultural pressures” affect 14 of the 16 lake water bodies, “physical alteration of channel/bed/riparian area/shore” affect another 4 and “diffuse atmospheric deposition” affect 3. All three of these pressures also affect all six transitional water bodies. The most significant pressure on groundwater bodies is “diffuse agriculture” followed by “contaminated or abandoned industrial sites” (EC, 2019a, Chapter 2).

Nutrient pollution has the most significant impact on all surface water (65% of surface water bodies) and on groundwater (44% of groundwater bodies). Chemical pollution is significant in surface water and groundwaters, and acidification also affects 89% of lakes (EC, 2019a).

Consequently, only 24% of surface waters in Belgium are in good ecological status and only 2% have good chemical status (vs. 40% and 38%,[14] respectively in the European Union). This is partly due to its high population density. This is also due to ubiquitous, persistent, bioaccumulative and toxic substances (uPBT[15]): 74% of surface waters are in good chemical status when removing uPBT from the assessment (vs. 81% in the European Union) (Figure 1.12). Most (67%) of Belgium’s lakes are in good chemical status, but none of them are in good ecological status. A quarter of rivers are in good ecological status, but none of them reached a good chemical status when including uPBT substances. None of the transitional and coastal waters reached a good ecological or chemical status (the status of half coastal waters was unknown). However, 67% of transitional waters and 50% of coastal waters are in good chemical status when uPBT substances are excluded (Figure 1.12). Nearly three-quarters (71%) of groundwater bodies are in good quantitative status, but only 37% are in good chemical status (vs. 86% and 70%, respectively, in the EU) (EEA, 2018). Belgium applied for a number of exemptions to extend the deadline for meeting the targets of good status for water bodies beyond 2015 and the timeframe for achievement is unclear.

Figure 1.12. Belgium has a long way to go to achieve the targets of good status for water bodies

Ecological and chemical status of surface water bodies from the second RBMPs



Notes: Ecological status is an assessment of the quality of the structure and functioning of surface water ecosystems. It shows the influence of pressures (e.g. pollution and habitat degradation) on the identified quality elements. The overall ecological status classification for a water body is determined, according to the "one out, all out" principle, by the element with the worst status of all the biological and supporting quality elements. Good chemical status for surface waters, means that no concentrations of priority substances exceed the relevant Environmental Quality Standards (EQS) established in the Directive 2008/105/EC (as amended by the Priority Substances Directive 2013/39/EU). EQS aim to protect the most sensitive species from direct toxicity, including predators and humans via secondary poisoning. A smaller group of priority hazardous substances was identified in the Priority Substances Directive as uPBT (ubiquitous [present, appearing or found everywhere], persistent, bioaccumulative and toxic). The uPBTs are mercury, brominated diphenyl ethers (pBDE), tributyltin and certain polycyclic aromatic hydrocarbons (PAHs).
Source: EEA (2018), "Ecological status of surface water bodies" and "Chemical status of surface water bodies" (dashboards).

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Overall, Belgium reached a compliance rate of 99.61% for all parameter groups of the Drinking Water Directive in 2011, 99.62% in 2012 and 99.64% in 2013 (ETC/ICM, 2016). However, this was before the 2020 revision of the directive to add new emerging substances to the list of criteria for determining water safety, in line with the latest scientific knowledge. This means that potential health risks were higher than accounted for (EC, 2018). Leakage rates for public water supply[16] reach 11% in the BCR (2019), 17% in Flanders (2018) and 33% in Wallonia (2017), compared to 23% on average in the EU (AquaWal, 2018; EC, 2018; Flanders Environment Agency, 2019; Vivaqua, 2020). This can lead to health problems[17] but is mainly an indicator of underinvestment in maintenance and renewal of the drinking water infrastructure (EC, 2018). It was estimated that more than 7% of Belgians were potentially at health risk due to non-safe drinking water in 2015 (EC, 2018). As the urban population increases, this proportion is projected to increase (OECD, 2019b).

Wastewater treatment

Belgium met the Urban Waste Water Treatment Directive (UWWTD) requirements in terms of collection (article 3) but not the objectives for treatment levels. By 2016, 99% of wastewater collected underwent secondary treatment (article 4) and 94% more stringent treatment (article 5) (EC, 2020c). Despite significant progress in reaching compliance, delays in implementing the UWWTD have had impacts on water quality. Diffuse pollution from non-connected dwellings affects nearly half of surface waters and 10% of groundwaters (EC, 2019b).

Floods risk

All Flemish municipalities have a significant flood risk. Furthermore, flooding cycles in Flanders can increase sharply as a result of climate and land-use change. As a result, the entire territory of Flanders has been re-designated as an area with a potentially significant flood risk. From the integral approach to water management in Flanders, the 11 basins (10 in the catchment area of the Scheldt and 1 in the Meuse) have been designated as flood risk management areas. This ensures the integration of the flood risk management plans into the RBMPs, whereby the basin-specific parts include area-specific aspects. The BCR is also located in a flood-prone area. The country will likely face increasing flood protection expenditures by 2030 if it aims to maintain flood protection standards (OECD, 2019b).

Recommendations on climate change and water management

- Adopt an inter-federal climate law setting long-term (2030 and 2050) national targets to achieve climate neutrality. Establish an independent expert body to define internal burden sharing of the 2030 objectives. Ensure that future revisions of the NECP present an integrated national overview instead of compilation of plans at different levels.
- Reinforce the implementation of the National Adaptation Plan measures; strengthen co-operation and develop synergies between regions and the federal state on adaptation issues.
- Continue to improve water quality monitoring to assess the status of water bodies in line with the Water Framework Directive.
- Identify key measures to tackle priority substances and assess their impact to clarify the timeframe for achieving water quality objectives.
- Strengthen water management objectives in the upcoming Strategic Plan to implement the post-2020 Common Agricultural Policy.

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Notes

[1] Formula set out in Annex II of the Governance Regulation.

[2] Measured in passenger-km.

[3] Motor coaches, buses and trolley buses.

[4] Excluding land use, land-use change and forestry.

[5] Including energy used in agriculture.

[6] If Belgium uses the flexibility mechanisms provided in the Effort Sharing Decision (2013-2020) and the Effort Sharing Regulation (2021-2030). Under the Effort Sharing Decision, member states are allowed certain flexibility in meeting their annual emission allocations (AEA): i) overachievement in a given year can be carried over to subsequent years, up to 2020; ii) an emission allocation of up to 5% during 2013-19 may be carried forward from the following year; iii) During 2013-2019, member states may transfer (for instance, by selling) part of their AEA for a given year to other member states under certain conditions. The Effort Sharing Regulation allows nine member states the choice to use a limited amount of ETS allowances for offsetting emissions in the effort sharing sectors in 2021 to 2030. This concerns member states that have national reduction targets significantly above both the EU average and their cost-effective reduction potential or that did not allocate any EU ETS allowances for free to industrial installations in 2013. The member states with this option are Austria, Belgium, Denmark, Finland, Ireland, Luxembourg, the Netherlands, Malta and Sweden.

[7] This refers to stations that are not considered for assessment of air quality under Directive 2008/50.

[8] The sum of domestic raw material extraction used by an economy and its physical trade balance (imports minus exports of raw materials and manufactured products).

[9] Material productivity designates the amount of GDP generated per unit of materials used (GDP/DMC). A rise in material productivity is equivalent to a decline in material intensity (DMC/GDP).

[10] The company sold part of its fleet and invested in new vessels. As a result, imports of metal-based products increased and exports increased even more.

[11] Here referring to recycling, composting and incineration with energy recovery.

[12] Physical removal or covering of soils with impermeable (impervious) artificial material (e.g. asphalt and concrete).

[13] The share of urban population residing outside the urban centres of the 11 Belgian Functional Urban Areas (FUA). A FUA consists of a densely inhabited city and a commuting zone whose labour market is highly integrated with the city.

[14] EU countries have used different approaches to monitor, model and extrapolate results, and to choose the monitoring matrix: water, sediment or biota (e.g. fish). Some (such as Belgium) extrapolated failure to meet the standard at monitoring sites to all water bodies, while others reported failure only where failure was confirmed. Typically, measurements of mercury in biota extrapolated to all similar water bodies lead to widespread failure to meet the Environmental Quality Standards.

[15] A smaller group of priority hazardous substances was identified in the Priority Substances Directive as uPBT (ubiquitous, persistent, bioaccumulative and toxic). uPBT substances persist in the environment, can be transported long distances and pose long-term risks to human health and ecosystems. Owing to widespread environmental contamination, achieving concentrations at or below the environmental quality standards for this group of substances can be particularly challenging. The uPBTs are mercury, brominated diphenyl ethers, tributyltin and certain polycyclic aromatic hydrocarbons.

[16] Measured as non-revenue water as a share of water produced. This might include water used for fire-fighting, network purges and cleaning of water facilities.

[17] The WHO points out that leakages often arise when water pressure is low, which is also a moment when hazardous substances or microbes can enter the pipes, making leakages a health issue.

2. Environmental governance and management

Belgium is a small country with a heavily regionalised system of environmental governance. The federal and regional governments use a wide range of good practices in environmental regulation, compliance assurance and promotion of green business practices. However, challenges remain in using enforcement tools to deter non-compliance. This chapter analyses the institutional and regulatory framework for environmental management. It subsequently examines the setting and enforcement of environmental requirements, including environmental liability. Finally, it reviews mechanisms of public participation in decision making, as well as access to environmental information, education and justice.

2.1. Introduction

Since the 1980s, environmental governance in Belgium has been strongly regionalised. The governance systems of the country's three regions – Flanders, Wallonia and the Brussels-Capital Region (BCR) – are institutionally and procedurally distinct. However, the dominance of European Union (EU) directives in the regulatory framework of all jurisdictions partly compensates for the effects of regionalisation of environmental policy.

The general regulatory quality and rule of law in Belgium are high and remained stable in 2008-18. However, government effectiveness decreased somewhat over the same period (World Bank, 2018). This decline was due to difficulties in forming a stable coalition government at the federal level and widespread hiring freezes in government agencies following the 2008 financial crisis.

2.2. Institutional framework for environmental governance

Belgium is a small federal country with four levels of government: federal, regional, provincial and municipal. The three regions are largely autonomous and have their own legislative and executive bodies. The Dutch-, French- and German-speaking communities – another element of the country's institutional architecture – have only language-related competences, such as education, culture and social assistance. The Flemish and Walloon regions are each divided into five provinces. Belgium has 581 municipalities: 300 in Flanders, 262 in Wallonia and 19 in the BCR.

2.2.1. Division of responsibilities

The regions are responsible for most matters related to environmental protection. Control of waste transit was the latest domain to be transferred from the federal jurisdiction to the regions in 2014. The regions also have "implied powers". These allow them, under certain conditions, to legislate on issues that go beyond their assigned competences. For example, the Flemish Region used these implied powers to create its own environmental courts.

The federal government is responsible for issues such as nuclear safety, product standards,[1] protection of the territorial sea and co-ordination of Belgium's international environmental policy. It also has residual competence for all matters not explicitly allocated to the regions or communities. The federal government's powers in fiscal, energy and transport matters also have a significant impact on Belgium's environmental policy.

The federal government and each region have their own environment minister. Each region also has a competent administrative authority responsible for the environment: Flanders Department of Environment and Spatial Planning (supported by nine agencies, including the Flemish Environment Agency and the Flemish Land Agency), Brussels Environment and the Walloon Directorate-General for Agriculture, Natural Resources and the Environment.

The regions delegate significant authority to local authorities, including land-use planning and environmental services (water supply, wastewater and municipal waste management). The provinces are also active in the policy fields of local jurisdiction and facilitate inter-municipal co-ordination. In Flanders, the provinces have limited regulatory responsibilities in the fields of nature protection and spatial planning. Municipalities and provinces also play an important role in issuing environmental and urban planning permits. Local governments in all three regions are associated in unions of cities and communes, which promote sustainable development as a key objective. Intercommunal entities have been created for water and waste services to increase economies of scale. For example, in the Walloon Region almost all municipalities participate in waste management intercommunal organisations.

2.2.2. Co-ordination mechanisms

Belgium has made some progress in implementing the 2007 Environmental Performance Review (EPR) recommendation to strengthen institutional co-operation between departments and between federal and regional governments. The federal government and the regions work closely together within the Co-ordination Committee for International Environmental Policy (CCIEP) managed by the federal administration. The CCIEP has monthly plenary meetings and several sub-groups on various issues. The National Climate Commission draws up the National Climate Plan and fulfils European and international reporting obligations related to climate. Finally, the Inter-ministerial Conference for the Environment is composed of regional and federal ministers whose remits include environment-related issues.

Co-operation agreements between the federal and regional governments address matters of mixed competence derived from Belgium's international commitments. Examples include agreements on implementation, monitoring and reporting under the National Climate Plan (2002), collaboration in the fields of environment and health (2003) and implementation of the REACH regulation on chemicals (2011). Co-operation agreements can include commitments to pool the authorities' scientific, administrative or financial capacities but can also establish harmonised rules on certain matters (such as major industrial accidents). If a co-operation agreement includes legally binding rules or financial obligations, it must be ratified by all parliaments concerned. These agreements are considered to be effective in some domains (EC, 2017). However, co-ordination is insufficient in several policy areas. River basin management plans are separate for each region's part of a common river basin. Climate change mitigation and adaptation plans and efforts are similarly disparate (Chapter 1). Co-operation also needs to be strengthened in waste management and circular economy (Chapter 5). Reaching inter-governmental decisions often takes significant effort and time.

The Inter-ministerial Conference on Sustainable Development was established in 2012 to oversee implementation of Belgium's 2030 Agenda on Sustainable Development and develop the National Sustainable Development Strategy (Chapter 3). It included representatives of all four levels of government but has been inactive since 2018. Sustainable development also provides a platform for horizontal co-ordination within each jurisdiction. At the federal level, the Inter-departmental Commission for Sustainable Development brings together sustainable development units of different ministries.

2.3. Setting of regulatory requirements

Environmental regulatory requirements of all Belgian jurisdictions are dominated by EU directives, but their transposition into subnational legislation differs across regions. For example, the Walloon Region's legislation relevant to the environment is part of the Environment Code and the Territorial Development Code (the latter is not yet completed). Overall, Belgium is in relatively good standing with regard to implementation of EU laws. It had 11 infringements against EU environmental directives in 2018, close to the average among member states (EC, 2019a). The European Commission last referred Belgium to the EU Court of Justice in 2015 for failure to meet air quality standards for particulate matter (Chapter 1).

2.3.1. Regulatory and policy evaluation

Regulatory impact assessment (RIA) is mandatory for all draft federal regulations. Its scope includes 21 themes with particular focus on policy coherence, administrative burden, small and medium-sized enterprises (SMEs) and gender. The Agency for Administrative Simplification (ASA) within the Prime Minister's Office, which is responsible for the federal government's better regulation policy, assesses the administrative burden of new regulations. The ASA is supported by an Impact Assessment Committee that advises on RIA at the request of the proposing ministry. It gives an opinion on the quality of the assessment but not on the policy decision itself. It reports annually on the quality of all federal-level RIAs (OECD, 2018).

Sustainable development impact assessment was introduced at the federal level in 2007. It was made part of RIA in 2014, which substantially enhanced its application. The assessment considers impacts on air quality, biodiversity, climate change mitigation and adaptation, mobility, energy and natural resources (EC, 2017). Still, the process remains largely formalistic, without significant impact on decision making (FPB, 2019).

At the same time, RIA is not conducted at the regional level, creating an important policy gap. RIA was abolished in the Flanders Region in 2019 and replaced by legal assessment of legislative quality. There is no RIA in the BCR either. In the Walloon Region, each regulatory project must indicate its contribution to sustainable development objectives. An Autonomous Unit for Advice on Sustainable Development issued opinions on draft regulations related to agriculture, energy, transport, public works, housing and environmental policies in 2014-18. However, this assessment was not systematic and occurred mostly upon request from regional ministries.

Belgian authorities integrate environmental concerns into sectoral policies through strategic environmental assessment (SEA). This is in line with the recommendation of the 2007 EPR and the OECD Council Recommendation on the Assessment of Projects, Plans and Programmes with Significant Impact on the Environment. Regional governments have been diligently implementing SEA for plans and programmes. Regional regulations mandate submission of draft land-use plans, zoning plans and other normative spatial planning decisions for SEA screening. In the BCR, some plans and programmes are automatically subjected to SEA. Others are examined case-by-case to determine any likely significant environmental impact. SEA has been carried out for many sectoral policies, including the regional Air-Climate-Energy Plan in 2015-16, and the Resources and Waste Management Plan and Sustainable Development Plan in 2017-18. The Flemish Region has separate SEA procedures for land-use planning (spatial implementation plans) and other plans and programmes. Plans and programmes with potential cross-border environmental impact (such as those related to energy grids) undergo SEA at the federal level.

Many SEA regulations also require *ex post* evaluation – an important good practice. The BCR mandates *ex post* evaluation of plans and programmes at least every five years to identify and appropriately address unforeseen adverse effects. *Ex post* evaluation requirements in the Walloon Region are less strict. However, Wallonia has evaluated several plans in recent years such as those focused on pesticide reduction and rural development. In Flanders, SEA reports require monitoring measures in case of potentially significant environmental impacts. The Sustainable Development Task Force of the Federal Planning Bureau also conducts *ex post* evaluations.

2.3.2. Environmental impact assessment and permitting

Since 2014, environmental impact assessment (EIA) in Flanders has been integrated with the environmental permitting procedure, which in turn integrates building, allotment and environmental permits. For complex projects involving spatial planning, EIA and SEA are integrated into a single procedure. In the BCR and the Walloon Region, EIA is closely linked to the environmental and urban permitting system.

The EIA and permitting regime in each region uses a classification system to determine the level of applicable regulatory requirements. Class 1 installations are regulated by regional law that transposes EU directives. They usually require an EIA (only the highest-risk 1A does in the BCR). In the Walloon Region, class 2 installations may be subject to EIA on a case-by-case basis. EIA always considers alternative project options. In the BCR, for example, all project proposals are modified in some way (technological solutions, mitigation measures) as a result of the EIA. There is growing co-operation between federal and regional focal points for cross-border consultation on EIA.

In Flanders, provincial authorities issue environmental permits for Class 1 installations except for large strategic projects, which are handled by the Flemish Environment Agency. In the BCR, Class 1 facilities receive their permits from Brussels Environment; in Wallonia, with some exceptions, local governments

grant them based on an opinion from the regional environmental authority. In all regions, municipal governments issue permits for Class 2 installations. In the Walloon Region and the BCR, Class 3 facilities only need to notify the municipal government and do not require a permit. This reduces the administrative burden significantly. However, the municipal authority may impose additional conditions on the declaring operator if needed.

The Flemish and Walloon governments have adopted general and sector-specific environmental conditions – general binding rules (GBRs) – for all classes of installations to serve as a foundation for environmental permits. Wallonia uses the term "integral conditions" with regard to low-impact (Class 3) facilities. All GBRs are based on best available techniques. This is a good international practice, with an increasing number of OECD member countries (e.g. Latvia, Greece) using GBRs for low-impact installations. At the same time, BCR regulations leave the possibility of setting tailor-made environmental conditions even for installations that do not require a permit – to guarantee the application of best practices.

2.3.3. Land-use planning

Regions have complete autonomy in land-use decisions as a result of the decentralisation of spatial planning in the last two decades of the 20th century. The federal government has no authority to co-ordinate land-use plans.[2] Regions adopt framework legislation on spatial planning but delegate many tasks to lower levels of government. They develop regional spatial development plans, which provide strategic guidelines for land-use policies (a new one for Flanders is being elaborated). In Flanders, the regional government can also adopt zoning plans for specific areas of development projects. Flanders also has structure plans and implementation plans prepared by provincial governments. Wallonia has no provincial-level land-use planning, although provinces have infrastructure and housing responsibilities. In all of Belgium, local governments prepare municipal structure plans and detailed municipal implementation plans. Local responsibility for land-use decisions has been recently strengthened, particularly in Flanders, although the provincial government can suspend a municipal spatial implementation plan.

Belgium has one of the highest shares of developed land among OECD member countries (Chapter 1). Pressures from urbanisation and land fragmentation have increased. Belgium has made progress in implementing the 2007 EPR recommendation to strengthen the review of municipal land-use plans by regional authorities. These efforts aim to increase the effectiveness of these plans in addressing environmental objectives and to enhance land-use planning co-operation across regions. There is a strong link between urban planning law and environmental law: urban planning permits have environmental conditions attached to them. The BCR actively integrates environmental considerations into land-use plans through integrated management of rainwater, promotion of green mobility and other aspects of sustainable urban planning (Box 2.1). The 2019 Walloon Regional Policy Declaration makes limiting urban sprawl and restoration of biodiversity key priorities of the regional government.

Box 2.1. Developing sustainable neighbourhoods in Brussels

Brussels Environment has developed a platform around tools for sustainable neighbourhoods: www.besustainable.brussels. It includes four tools that help integrate environmental considerations into local land-use planning:

- a charter consistent with the BCR regional sustainable development plan and other regional strategies (for nature, water, noise, mobility, etc.)
- a Quickscan checklist of 50 questions for a rapid assessment of neighbourhood development plans
- a Compass tool for a more in-depth sustainability assessment and monitoring
- a Memento compendium of guidance documents on different sustainability elements (nature, water, resources, energy, stakeholder participation, etc.).

This initiative reflects the BCR government's policy of designing all new large-scale urban development projects from a sustainability perspective.

Source: https://besustainable.brussels/.

Planning procedures generally require consultation with other levels of government to ensure vertical co-ordination. Sometimes local governments of neighbouring jurisdictions are also consulted. The BCR consults with the other two regions in the design phase of every spatial plan and follows up after five years of implementation. Still, spatial planning co-ordination across the regions remains insufficient (OECD, 2017).

2.4. Compliance assurance

The Flemish Region has taken the lead in Belgium in integrating compliance assurance into its institutional framework. Until its integration into the new Department of Environment and Spatial Planning in 2020, the Flemish High Council for Spatial Planning and Environment (VHRM) had been responsible for elaborating enforcement policies for the environment (since its creation in 2009) and spatial planning (since 2014). The VHRM organised systematic consultation among all competent Flemish authorities on environmental and land-use enforcement and advised the Flemish government and parliament on environmental enforcement matters. It also developed five-year environmental and land-use enforcement programmes, including priority notes on prosecution policy, and published annual reports for these two work streams. Some of these good practices have been taken up by the inspectorate arm of Brussels Environment.

The Flemish Department of Environment and Spatial Planning has incorporated VHRM's former functions within its remit. It is planning to establish an enforcement forum to promote the exchange of knowledge between all actors in the field. However, the elimination of a separate enforcement entity could lower the political profile and visibility of this important line of work.

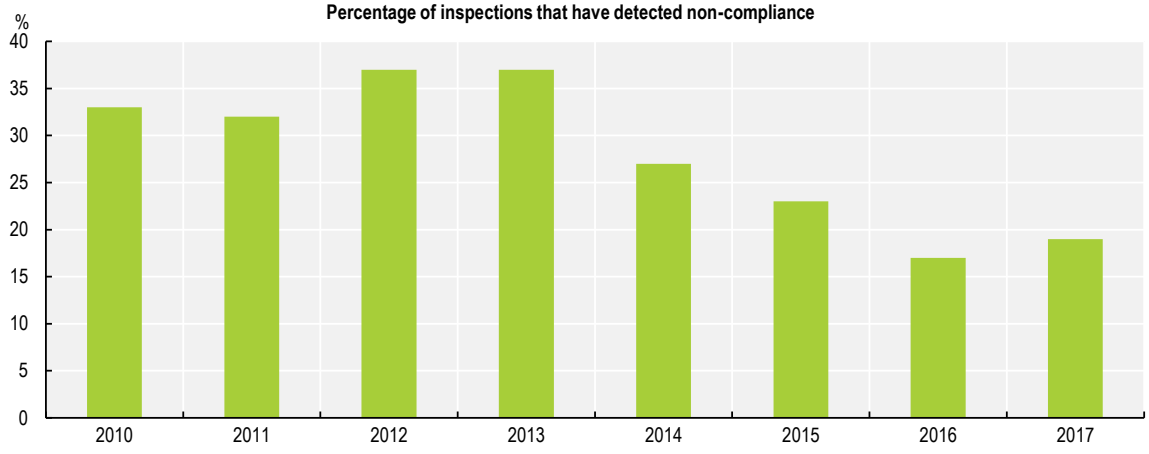
2.4.1. Environmental inspections

Belgium has increased the effectiveness and efficiency of inspections in line with the 2007 EPR recommendation. The number of inspections has been stable in the three regions over recent years. Inspection plans and installation-specific inspection reports are available to the public in all three regions, and the BCR even posts them on line. The frequency of inspections is based on systematic assessment of environmental risk posed by the installation. For Class 1 installations, frequency varies between one and three years. At the same time, the BCR is complementing risk-based inspections with inspection

campaigns of small businesses based on a representative sample. These aim to increase deterrence by influencing through communication the uninspected part of the regulated community. This approach was tested in 2014-18 in a non-domestic waste management campaign. It resulted in a tenfold decrease of offenders' average time of return to compliance but required significant resources. A new campaign is focused on household waste management (e.g. single-use plastic bags).

The Flemish Region has a large number of authorities with compliance monitoring and enforcement powers operating under the same enforcement legislation. These include the Environmental Inspectorate of the Department of Environment and Spatial Development, Environment Agency, Public Waste Agency, Nature and Forest Agency, and Land Agency. Protocols and partnerships ensure co-operation between these authorities. A potential merger of the inspection services is under discussion. In 2017, over 37 000 environment-related inspections were performed at the regional level. Meanwhile, municipal supervisory bodies conducted more than 4 500 similar inspections, 68% of which responded to complaints and accidents. Relatively little attention has been dedicated to enforcement of nature protection laws due to the limited capacity of the Nature and Forest Agency (Paquet, Maréchal and Gerritsen, 2019). The number of inspections that identify non-compliance has been declining: from 37% to 19% over 2013-17 (Figure 2.1).

Figure 2.1. Non-compliance is declining in the Flemish Region



Source: Country submission.

StatLink https://doi.org/10.1787/888934230851

In the BCR, a co-operation agreement on environmental inspections has been drafted and signed by Brussels Environment, the Association of the City and Municipalities of Brussels (Brulocalis) and 8 of the region's 19 municipalities. There is also some degree of collaboration between environmental compliance monitoring entities across Belgium's regions based on a 2010 Memorandum of Understanding.[3] In addition, environmental enforcement authorities co-operate with the federal judicial police, which has established a central unit focused on combating serious environmental crime.

Inspections have become more efficient in recent years due to the digitalisation of many procedures and better performance management. The inspectorate arm of Brussels Environment has established performance indicators and implemented a quality assurance system in accordance with the ISO 9001 standard. These indicators focus primarily on outputs, including the efficiency of the agency's administrative processes. Performance measurement is output-oriented in the other two regions as well. Flanders and the BCR have considered introducing intermediate outcome indicators of behaviour of the regulated community. These efforts should be pursued.

2.4.2. Enforcement

Belgian regional environmental enforcement authorities collect, analyse and publish substantial amounts of data on both administrative and criminal enforcement. This puts them among the frontrunners in performance management across OECD member countries. However, they do not yet measure the impact of their enforcement actions on the behaviour of the regulated community.[4]

In the Walloon Region, 35-40% of inspections discover some sort of non-compliance. This is a high non-compliance rate, only partly attributable to risk-based inspection targeting. In 2019, 12% of inspections resulted in a notice of infringement (procès-verbal). In roughly 15% of site visits, inspectors issued a written warning to the operator. They issued a compliance order in another 17% of cases. These ratios have been relatively stable over the last four years. In the BCR, on the other hand, the number of notices of infringement issued by Brussels Environment, municipalities and the police rose sharply from 403 to 1 022 over 2014-19. This was partly a result of waste-related inspection campaigns (Section 2.4.1). Still, most infringements are addressed without a formal notice of infringement or penalties. When competent authorities identify environmental non-compliance, they often grant a grace period to rectify the situation without imposing any sanctions (Box 2.2). This is more likely to happen if the situation does not present any risk for the environment or human health.

Box 2.2. The BCR Inspection Code represents a good tool for proportionate enforcement

The Inspectorate of Brussels Environment operates within the framework of the Inspection Code. The Code, in force since 2015, merged two pieces of legislation on environmental inspections and environmental liability for better consistency. It also strengthened the right of defence against administrative sanctions. Finally, the Code made enforcement more proportionate by linking penalties to execution of compliance orders: fines are imposed if the offender does not return to compliance as prescribed by the Inspectorate.

All environmental offences provided for in the Inspection Code may be subject to an administrative fine as an alternative to criminal penalties. There are plans to modify the Code to allow the offender to pay an administrative fine to avoid criminal prosecution. This would increase the efficiency of enforcement by allowing the administrative penalty to proceed without waiting for the prosecutor's office to decline to pursue a criminal case.

Source: Country submission.

In all three regions, administrative and criminal fines cannot be imposed for the same offence. Competent authorities can impose an "alternative" administrative fine if the public prosecutor has not opened a criminal case within a certain period (usually several months) after receiving the notice of infringement. Public prosecutors generally advise environmental enforcement authorities of their decision to pursue a criminal case or not. This in itself is a good practice rarely seen in other OECD member countries. If the criminal case goes forward and the offender is convicted, criminal fines can amount to several million euros.

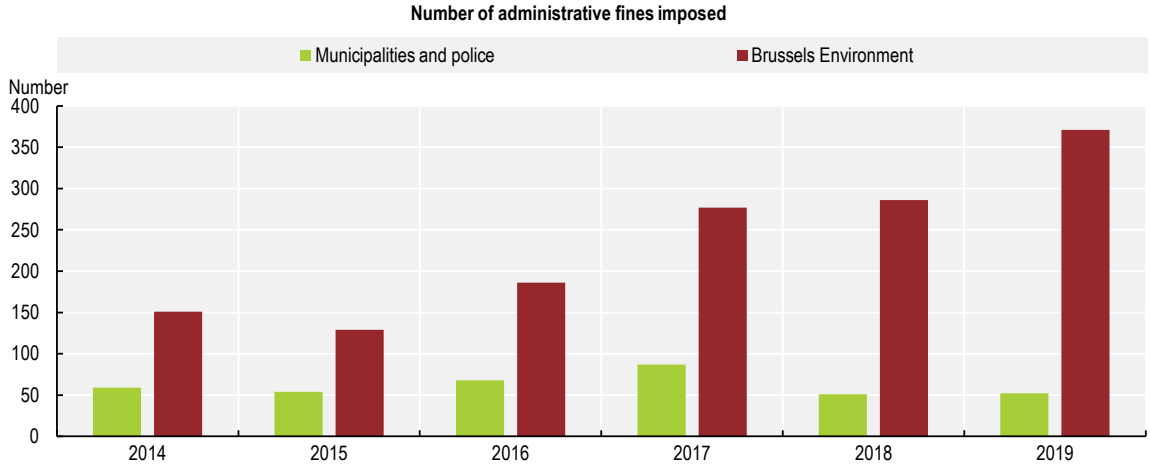
In an interesting example of good practice, an Environmental Expertise Network has been created across the offices of the country's public prosecutors. It aims at co-ordinating criminal enforcement actions with regard to issues of federal jurisdiction (e.g. transit and export of hazardous waste). It also disseminates expertise among public prosecutors' offices and supports prosecutors dealing with environmental cases (Paquet, Maréchal and Gerritsen, 2019).

The vast majority of environmental offences are not prosecuted and are punished by alternative administrative fines. In Wallonia, once an administrative fine has been paid, the breach can no longer be criminally prosecuted. The BCR expected to introduce a suspension mechanism for administrative fines

(a “conditional fine”) in 2020. This would allow Brussels Environment to impose a fine but to suspend and cancel the obligation to pay, subject to further conditions. The Flemish Region also has “exclusive” administrative fines. These are imposed for mild breaches that involve only limited environmental impact that does not warrant criminal prosecution. It could be advisable to define in a regulation which offences are punished by administrative sanctions only, thereby decriminalising less serious violations.

In the BCR, administrative fines can be up to EUR 125 000. Their level depends on the nature, gravity, context, frequency and duration of non-compliance, as well as mitigating and aggravating circumstances. Over 2014-19, the average administrative fine per notices of infringement issued by Brussels Environment was about EUR 9 500, whereas the average fine for breaches reported by municipalities and the police was about EUR 400. Both amounts are high by international standards. The number of administrative fines imposed in the BCR has increased significantly since 2014 (Figure 2.2).

Figure 2.2. The use of administrative fines is rising in the Brussels-Capital Region



Source: Country submission.

StatLink https://doi.org/10.1787/888934230870

In Flanders, the collection rate for administrative fines was less than 75% at the end of 2017. If the offender does not pay the fine after receiving a formal notice, the file is transferred to the tax administration to recover the amount. This is a good practice conducive to higher collection rates and increased effectiveness of monetary penalties.

2.4.3. Environmental liability

All three regions have transposed requirements of the EU Environmental Liability Directive (ELD, 2004/35/EC) and adopted laws regulating liability for soil contamination. The regions demonstrate several effective approaches to remediation. For example, Flemish law requires remediation to achieve limit values for non-contaminated land. If that is not possible with best available technology and at a reasonable cost, then the requirement is to only manage the risks related to the contamination. The Flemish Region distinguishes between “new” and “historic” contamination. The latter pertains to damage occurring before October 1995, i.e. the entry into force of the previous clean-up statute. New contamination must be cleaned up if the established limit values for pollutant concentrations in the soil are exceeded. Remediation of historic damage is required only if it presents a significant public health and environmental risk. Similar provisions exist in Wallonia, with a time threshold of the 2007 transposition of the ELD, and in

the BCR, with reference to a 1993 ordinance. The BCR's remediation standards vary depending on the sensitivity class defined for each cadastral parcel of land in the regional land-use plan.

All three regions make the owner of the contaminated land responsible for remediation (with a few exemptions) even if the land owner has not caused the damage (Payá Pérez and Rodríguez Eugenio, 2018). The land owner can then legally pursue the responsible party to recover the remediation costs. This regime allows the government to readily assign responsibility for remediation. In this way, it avoids dealing with "orphan" contaminated sites where the party that caused the damage cannot be found or is financially insolvent – a challenge many OECD member countries struggle with.

Each region has set a target for remediation of contaminated sites. The deadline for remediating all sites with historic soil contamination is 2029 in the BCR and 2036 in Flanders (Payá Pérez and Rodríguez Eugenio, 2018). In Wallonia, there is a 2022 deadline for cleaning up priority contaminated sites. The Flemish Public Waste Agency (OVAM) has an extensive programme for registration and risk assessment of contaminated sites. It has already investigated about 45% of all sites in the Land Information Register (LIR) with potential risk of contamination. The LIR is fed by municipalities providing information about site locations, risks and investigation results. Of investigated sites, 84% did not require remediation. OVAM has also developed a publicly accessible online map that identifies all locations of soil investigations or remediation projects. OVAM claims to be on track with its remediation plans.

Equally good progress has been achieved in the BCR, where Brussels Environment has developed good practice codes for investigation and remediation experts to raise and standardise the quality of their work. The Brusoil web platform contains all data and information on soil assessment and remediation work. It allows direct interaction with soil contamination experts, notaries, companies and citizens. Like Flanders, the BCR has an online soil condition map based on a comprehensive inventory completed in 2015 and regularly updated.

According to the Flemish government, the private sector will bear about 70% of environmental remediation costs with the remainder borne by the public sector. Flanders has among the lowest shares of public burden of environmental remediation in the European Union (Payá Pérez and Rodríguez Eugenio, 2018). To complement effective enforcement of environmental liability, OVAM has developed an innovative procedure to deal with contaminated sites. Remediation costs can sometimes exceed the value of the land ("black fields"), which would force land owners into bankruptcy. OVAM can buy such a site for the symbolic price of EUR 1, finance and carry out the soil investigation and remediation, and then resell the land. Although the financial balance of these acquisitions is negative, the government recovers at least part of the remediation costs. This approach, applied on about 50 sites, as well as subsidies of up to EUR 200 000 per site for remediation works by land owners, require a significant budget. This expenditure is only partly funded through fees that OVAM charges for issuing "soil certificates",[5] the rest coming from the general budget.

The other regions use even more public funds to pay for remediation efforts. In Wallonia, the private sector covers less than 40% of remediation costs, with EU funds contributing more than 20% (Payá Pérez and Rodríguez Eugenio, 2018). The BCR uses a different combination of financing tools to deal with soil contamination: grants, public treatment and sectoral funds (Box 2.3).

Box 2.3. Brussels-Capital uses a variety of financial tools to clean-up contaminated sites

The BCR financial assistance system for the study and treatment of soil contamination aims at increasing aid for orphan soil contamination, accelerating clean-up efforts, promoting the conversion of brownfield sites and facilitating property transactions.

Grants

The BCR has been using grants to help SMEs fulfil their soil clean-up obligations since 2007. Since 2014, all soil contamination assessments are eligible for grants, and so are remediation works as long as they concern orphan sites. The total amount of grants increased by 50% over 2015-19 from EUR 1.2 million to EUR 1.8 million.

Public treatment

Brussels Environment uses revenues from administrative fees for soil certificates (legal documents required for land transactions) to fund the full cost of studies and treatment of orphan sites. In 2019, the budget devoted to public treatment was EUR 165 000.

Sectoral funds

Several sectoral funds have been created to deal with specific contamination. A 2004 inter-regional and federal co-operation agreement established the Belgium-wide Bofas Remediation Fund to clean-up the soil of petrol stations. It is financed by a contribution levied on, and included in the price of, petrol and diesel. This fund was supposed to expire in 2019 but has been extended for a few more years.

Promaz is another country-wide fund. The fund, intended to address contamination due to spills from heating oil tanks, was expected to be launched in 2020. It will be financed from the surplus budget of the Bofas fund.

In addition, Brussels Environment is exploring sectoral funds for garages (car repair shops) and dry cleaners to deal with contamination of soil and groundwater by hydrocarbons and chlorinated solvents.

Source: Country submission.

The Walloon Region's 2018 Decree strengthened legal provisions on soil management and remediation. However, the region has an issue with the government's ability to recover remediation costs from private responsible parties. SPAQUE, Wallonia's public company charged with most soil remediation projects, does not attempt to recover such costs, and neither does the regional government (Court of Audit, 2019). This is contrary to the ELD requirements and the polluter pays principle and puts an additional financial burden on taxpayers.

Although no regulation obliges companies to insure activities with high risk to the environment, many buy such insurance voluntarily. Two types of insurance dealing specifically with environmental liability are available in Belgium: pollution liability insurance, which also covers historic contamination; and remediation cost cap insurance, which covers remediation cost overruns. However, these insurance products are less commonly used than regular all-risk insurance.

2.4.4. Promotion of compliance and green practices

Environmental authorities are paying increasing attention to promotion of compliance and green business practices. Environmental authorities, including inspectorates, have published various guidance documents on their websites. For example, online information helps farmers comply with requirements on fertiliser use

and nature protection (EC, 2019b). Wallonia and the BCR also support SMEs with advice and guidance. For example, Wallonia has a network of eco-advisers to help companies in all sectors in environmental matters. Brussels Environment distributes flyers on good waste management practices.

2.4.5. Voluntary business initiatives

The federal government has three sectoral agreements with industry to promote greener products. The first two agreements, signed in 2011, sought to increase the supply of eco-labelled detergents and wood products. The third, signed in 2018, aimed at stopping the use of micro-plastics in cosmetics and oral products. These agreements last a maximum of ten years.

Flanders has been at the forefront of developing voluntary agreements, using the experience of neighbouring Netherlands. Known as "Green Deals", these agreements are forged between the regional government and other parties, including industry, local governments, non-governmental organisations (NGOs) and universities. The initiative has been running since 2017 and has involved over 1 000 parties (Box 2.4).

Box 2.4. Green Deals promote sustainability and good management in Flanders

As of early 2020, Flanders was implementing seven Green Deals in different economic sectors. They cover, among others:

- Shared mobility – over 100 companies, municipalities and NGOs committed to promoting car-pooling and bike sharing.
- Brewers – 15 breweries, including large multinational companies, engaged in measures to reduce water use in beer production.
- Wood heating – all relevant industrial actors signed up to measures to reduce air pollution by installing and maintaining more performant stoves.
- Biodiversity in business parks – more than 200 companies engaged in redesigning and greening their grounds to promote biodiversity.

Other Green Deals address circular procurement (134 parties), circular buildings (over 200 signatories) and sustainable urban delivery logistics (40 parties). Eight more Green Deals are being elaborated.

Source: Country submission.

Both Flanders and Wallonia have second-generation (2014-20) voluntary agreements with industry on energy efficiency (Chapter 1). The Walloon government and the region's most energy-intensive industries (represented by their federation) have strengthened their agreement. It now covers renewable energy and includes an accounting system for CO_2 emissions associated with companies' products and services. Participating industries were also invited to present their strategies to achieve specific targets for energy efficiency and emissions reduction by 2050 (Economidou et al., 2016).

Voluntary agreements are also used in the agricultural sector. As of 2018, over 3 000 farmers joined a management agreement with the Flemish Land Agency to enhance nature conservation and biodiversity protection on farmland. In return, farmers received an annual fee for giving up arable land. Flemish farmers are also part of a covenant to reduce enteric emissions from cattle, which contributes to the implementation of the region's climate plan. As experience in the Netherlands has shown, voluntary agreements tend to produce mixed results in achieving environmental objectives. They cannot guarantee that agreed-upon goals will be met and lack effective sanctions if they fall short of these goals (OECD, 2015). Therefore, more challenging commitments have to be monitored more closely.

2.4.6. Environmental management system certifications

The annual number of new ISO 14001 certifications in Belgium almost doubled between 2007 and 2014 but has been slightly declining since (ISO, 2019). As of October 2019, Belgium had 74 organisations covering 742 sites certified to the EU Eco-Management and Audit Scheme (EMAS), placing it fifth on this score in the European Union (EC, 2020). There are few regulatory incentives for obtaining an environmental management system (EMS) certification. EMAS certification is considered in deciding on inspection frequency. In Flanders, operators that must perform an environmental audit have this requirement waived if they have a certified EMS. An EMS is also sometimes a factor in public procurement. However, more could be done to encourage EMS adoption.

The Belgian regions have been developing their own environmental certification programmes. For example, the BCR has created an Ecodynamic Company Label. It rewards public and private sector companies, non-profit organisations and institutions that reduce their environmental impact through initiatives in waste prevention and circular economy, rational energy use, staff mobility management and sustainable food.

2.4.7. Greening public procurement

The new federal law on public procurement (2016) emphasised life-cycle analysis of products and the use of labels in procurement procedures. In accordance with this law, the regions have developed their own green public procurement initiatives. The Flemish Region adopted a co-ordinated policy on public procurement in 2016. A central contact point in the government helps buyers make their public contracts more sustainable. In the Walloon Region, 110 public and private organisations signed a Green Deal on Circular Procurement to change their purchasing practices in November 2019. Both Flanders and Wallonia have set a target of 100% sustainable public procurement by 2020. However, this target was purely inspirational and will not be achieved, and progress is not adequately monitored. In Flanders, key government bodies have been reporting on procurement contracts valued at more than EUR 30 000 since January 2018. However, more systematic reporting on its sustainability aspects is not available. Wallonia recently created an Observatory of Public Procurement to obtain quantitative and qualitative reporting on awarded public contracts and set more realistic targets.

The BCR has developed a web platform for all bodies subject to the law on public procurement. It includes information on environment-related specifications for different product categories (office supplies, IT equipment and services, green electricity and vehicles). In addition, it offers newsletters, a helpdesk service on integrating environmental criteria into public procurement contracts, an agenda of relevant training courses, etc. The region has also adopted a Green Food label as part of its sustainable canteen programme for all public institutions.

2.5. Promoting environmental democracy

Belgium ratified the Aarhus Convention in 2003, and its Pollution Release and Transfer Register Protocol in 2009. Its federal and regional authorities implement open government and open data policies, which largely determine the mechanisms for public participation and access to environmental information.

2.5.1. Public participation in environmental decision making

Public participation is a major part of environmental decision making in Belgium. The EIA process includes a 30-day public consultation period and often a public hearing. Permit applications are subject to a public enquiry during which interested citizens can provide written remarks to the competent authorities, which

the latter must consider. The final decision is also made public and can be appealed. SEA of provincial and local land-use plans is also open to public participation.

The Belgian website for implementation of the Aarhus Convention offers a one-stop platform. It provides information on open and past public consultations on draft legislation, plans and programmes at the federal and regional levels. The same is planned for a single Brussels Environment's consultation webpage for the BCR. The Federal Council for Sustainable Development is a civil society forum with an important role in reviewing national environmental and sustainable development policies. Strategic advisory councils in Flanders provide opinions on both draft regulations and policy development documents such as green and white books. All five Flemish provinces and hundreds of municipalities have their own environmental advisory councils. Citizens also have a right to submit policy proposals.

The federal and regional governments provide financial support to NGOs, as well as trade unions in their environmental activities. This practice is in line with the 2007 EPR recommendation to reinforce partnerships between the government and non-governmental stakeholders. For example, the Walloon Trade Union Network for Environmental Awareness (*Réseau intersyndical de sensibilisation à l'environnement*) has been receiving financial support from the regional government since its creation in 1996 to support environmental management in enterprises. The Flemish government issued a 2015 regulation on supporting environmental NGOs (Paquet, Maréchal and Gerritsen, 2019).

2.5.2. Access to environmental information

The 2006 federal law on access to environmental information guarantees the right of access. It also provides for appeals before the Federal Commission of Appeal for access to environmental information against refusal of an information request or an insufficient response. The three regions have regulations similar to this federal act. For instance, the BCR has a regional commission for access to administrative documents, Wallonia – an appeal commission on access to information on environmental matters. All jurisdictions allow commercial confidentiality exemptions but not for information on pollution releases into the environment, which is always open to the public. Inspection reports are generally not published (except for EU-regulated large industrial installations) but are available upon request.

The federal and regional governments have established their own environmental information systems, including geoportals. They publish regular environmental and sustainable development reports. For example, the Flanders Environment Agency publishes regular analytical reports on the state of the environment, scenarios and outlooks, building on about 200 indicators. Belgium has also made significant progress in implementing the EU INSPIRE Directive (2007/2/EC) with regard to data policies, dataset identification and documentation of data and in creating a spatial data collection and dissemination infrastructure (EC, 2019b). The INSPIRE implementation has improved the comparability of environmental information across regions, as recommended by the 2007 EPR. However, insufficient comparability remains a problem in many data sets. The use of environmental data in economic and social policy making could also be improved.

2.5.3. Access to justice

Belgium has continued to improve citizens' access to justice in environmental matters in accordance with the respective 2007 EPR recommendation. Citizens can invoke article 23 of the Belgian Constitution, which provides a right to the protection of a healthy environment, directly in administrative and judicial procedures. NGOs are often involved in legal proceedings as they have the right to challenge any act or decision by the authorities. They can also demand the cessation of activities harmful to the environment. Finally, they can report potentially criminal acts to a public prosecutor who then decides whether to open a criminal case. However, there is no legal or financial assistance available to citizens on environmental

matters, which may complicate access to justice for lower income individuals (Paquet, Maréchal and Gerritsen, 2019).

The highest and most important general administrative court in Belgium is the Council of State. It is the ultimate appeals authority after all other administrative appeals have been exhausted. However, the appeal procedure before the Council of State is quite long.

Flanders has two special administrative courts relevant to environmental management, both operating since 2009. The Environmental Enforcement Court hears appeals against administrative sanctions imposed for violations of environmental law. Its decisions can be appealed before the Council of State. The Flemish Council for Permit Disputes deals with disputes regarding building and environmental permits, which is relevant to land use. The BCR has an Environmental Appeals Board (*Collège de l'environnement*), which has a right to review, overturn or modify permitting decisions of Brussels Environment. Administrative appeals involve much lower costs and shorter processing times than court actions.

It is not necessary to participate in the public consultation phase of an EIA, SEA or permitting procedure and to make comments during that period to have standing before the courts. Several changes to the Flemish legislation in 2017 made it impossible for citizens or NGOs to object to permits unless they filed a complaint during the public consultation period (EC, 2019b). However, the Constitutional Court overturned these changes in 2019.

An ombudsperson can be related to an administrative authority, a sector or a certain public company. There are ombudspersons designated by federal and regional law. The competent federal or regional ombudsperson investigates individual complaints of citizens concerning decisions and behaviour of certain administrative authorities or public companies, mediating between the parties. In general, a citizen can only complain to the ombudsperson after having unsuccessfully complained to the public authority (European e-Justice Portal, 2020).

2.5.4. Environmental education

The communities (responsible for education policies) and the regions (responsible for environmental policies) collaborate closely in the field of environmental education. For example, a 2011 co-operation agreement between the Walloon Region, the BCR and the French Community establishes compulsory environmental education and promotes sustainable development activities. About 85% of French-speaking schools report implementing sustainability practices. Since 2018, all Wallonia schools have free access to the learning platform *Drôle de planète* (Funny Planet). The francophone Academy for Research and Higher Education supports sustainability initiatives in universities and colleges, as recommended by the 2007 EPR. Flanders is implementing similar programmes for schools (Circular Edu-Action) and higher education (Ecocampus).

Regional governments actively support environmental awareness raising. The Walloon Region provides grants of up to EUR 20 000 to NGOs for such activities, for a total of EUR 4.3 million in 2018. Wallonia has 11 regional centres of initiation to the environment, which have engaged over 1.5 million people in the 20 years of their existence. BelExpo in Brussels, inaugurated in 2018, reaches out to 10-14 year-old children on climate change and urban environmental issues. The BCR also holds an annual Environment Festival and a Zero Waste Fair. The public's high environmental awareness manifests itself in volunteer activities. For example, Flanders has 20 000 citizen science volunteers who collect information on air pollution (EC, 2019b).

Recommendations on environmental governance and management

- Increase the effectiveness of co-ordination between the federal government and the regions, as well as among the regions, particularly in the fields of climate change, water resources management, and waste management and circular economy.
- Enhance formal environmental assessment of draft regional laws and regulations by integrating it into other procedures for regulatory quality assurance.
- Continue to reduce non-compliance by expanding the application of administrative fines that can be imposed without first resorting to prosecution and by improving collection of monetary penalties; consider decriminalising less serious offences by making them liable only to administrative sanctions.
- Strengthen performance management by environmental enforcement authorities by introducing outcome indicators of behaviour of the regulated community.
- Reduce the public burden of environmental remediation by ensuring that land owners or other responsible parties either clean-up contaminated sites directly or pay fees to constitute public funds earmarked for remediation.
- Further expand efforts to promote green business practices by creating regulatory incentives (e.g. inspection frequency) for environmental management system certification and scaling up and monitoring implementation of sustainable public procurement.
- Further enhance access to justice by providing legal and financial assistance to citizens on environmental matters.

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Notes

[1] There have been controversial cases where certain products (e.g. glyphosate, single-use plastic bags) were authorised by the federal authority on the basis of the European legal framework but prohibited by one of the regions.

[2] In line with its jurisdiction over Belgian territorial waters, the federal government adopted a Marine Spatial Plan for the Belgian part of the North Sea in 2014.

[3] The Police and Inspections Department of the Directorate-General of Agriculture, Natural Resources and Environment is Wallonia's environmental enforcement authority. The Federal Environmental Inspectorate, part of the Federal Directorate-General for Environment, is responsible for checking compliance with legislation on shipments or release on the market of dangerous products.

[4] The Flemish Department of Environment and Spatial Development planned a study in 2020 on intermediate outcome measurement for its extensive inspection and enforcement competences.

[5] Soil certificates are required for land transactions to show that land is not contaminated. The Flemish Region is proposing to double the fee for such certificates (from the current EUR 54) to increase the revenue used to finance remediation activities.

3. Towards green growth

This chapter reviews Belgium's efforts to mainstream environmental considerations into economic policy and to promote sustainable development and green growth. It analyses progress in using economic and tax policies to pursue environmental objectives, as well as steps taken to reform environmentally harmful subsidies. The chapter reviews efforts to scale up investment in environment-related and low-carbon infrastructure. It also examines the country's eco-innovation performance and opportunities for green industry.

3.1. Introduction

Belgium performs well in many economic and well-being dimensions. However, the high level of public debt and population ageing, rising skill shortages and low productivity growth create vulnerabilities (OECD, 2020a). Economic activity has been moderate but steady in the five years preceding the coronavirus outbreak. It was accompanied by strong employment growth. As of December 2020, it was expected that gross domestic product (GDP) would shrink by 7.5% in 2020, the sharpest contraction since the Second World War, before slowly recovering (4.7% in 2021 and 2.7% in 2022) (OECD, 2020b). The public debt (Maastricht definition) was anticipated to rise from 98% of GDP in 2019 to 116% in 2020, and the unemployment rate to grow from 5.4% to 5.7%.

In the past decade, Belgium has made progress in decoupling greenhouse gas (GHG) and air pollutant emissions, energy and material consumption, municipal waste generation and water abstractions from economic growth (Chapter 1). However, progress is not sufficient to reverse the depletion of natural capital stock, putting well-being's sustainability at risk. Land take, landscape fragmentation, intensive agricultural practices and road traffic are putting pressures on the environment and human health. As the COVID-19 emergency passes, recovery efforts should focus on putting the country back on track to meet the Sustainable Development Goals (SDGs).

3.2. Ensuring a strong, resilient and green economic recovery

Following the generalised lockdown in early 2020, the federal government introduced a fiscal package equal to 3.9% of GDP (OECD, 2020b). It consists mainly of deferrals of tax and social security payments, along with some direct income support measures that were effective in protecting jobs and businesses and in sustaining economic activity. The authorities made it possible to defer the repayment of credits and introduced a guarantee scheme for new credits and credit lines (which amounts to 10.7% of GDP). These measures, along with the European Central Bank's accommodative monetary policy and prudential policy easing by the National Bank of Belgium, have supported aggregate demand. With the economy on a recovery path, some measures were phased out progressively in early autumn. However, the federal government reintroduced emergency measures following the tightening of containment measures in early November. The recovery will be temporarily disrupted and is expected to continue being hampered by potential restrictions imposed in response to sporadic outbreaks of the pandemic until vaccination against the virus becomes general in late 2021. As Belgium gradually shifts from addressing the health emergency and large losses of income to recovery, governments could build on lessons learnt from the 2008 global financial crisis to design stimulus measures that support a more inclusive and resilient society (Box 3.1).

Green measures, mostly subsidies for energy efficiency investment, accounted for 10% of the 2009-11 recovery package (Pollit, 2011). The package was relatively small in scale, hence both economic and environmental impacts were modest. The new federal government has to co-ordinate with the regions to draw up a national recovery plan that would benefit from the "Next Generation EU" (which would allocate more than EUR 5 billion to the country). At least 37% of the plan's expenditure should contribute to climate objectives (EC, 2020a). Investing in low-carbon and natural infrastructure, promoting innovation and circular economy, strengthening carbon prices and phasing out environmentally harmful subsidies should be key components of the package to accelerate the green transition.

The federal and regional governments do not have a green growth strategy but have taken steps to promote a green and inclusive economy. Energy and mobility are priorities of the 2018 National Pact for Strategic Investment (NPSI) that aims at boosting productivity and innovation (Section 3.5.2). Monitoring progress in low-carbon investment in the pact would be useful for setting priorities in the recovery plan. While the Flemish government announced a EUR 4.3 billion recovery plan focusing on sustainable economy and digitalisation, a co-ordinated plan between the federal and regional governments would have

higher economic multiplier effect and climate impact. A wealth of regional initiatives promote investment, innovation and employment in energy efficiency, green chemistry and circular economy (Section 3.6.1). Co-ordinating efforts and improving synergies in these fields will be essential in pursuing a green recovery (Chapter 5).

Box 3.1. Lessons learnt from past green stimulus packages in OECD countries

- Investment support without long-term carbon price signals is not sufficient to achieve continued investment in low-carbon technologies. The removal of fossil fuel subsidies, as well as carbon pricing, can help align price signals with green stimulus packages.
- Feed-in tariffs and production tax credits have been relatively successful at supporting the development, diffusion and adoption of renewable energy. The post-2008 policy measures, together with declining prices, contributed to the increased share of renewable energy use.
- Investment in energy-efficient building and retrofitting can contribute to successfully maintaining jobs and economic activity in the construction sector, while contributing to reducing emissions.
- Governments need to take risks by providing financing to businesses working on emerging technologies further from the market, while minimising the risk of fraud.
- The design of policies needs to carefully consider countries' domestic settings (level of development, talents, skills, firms, infrastructure). Previous industrial policies adopted as part of green recovery packages paid more attention to the demand side than the supply side.
- Distributional impacts of green stimulus policies need to be carefully considered. Managing distributional outcomes is important to ensure a people-centred policy response and to achieve public buy-in for policies.
- Governments should build *ex ante* and *ex post* evaluations into green stimulus packages to improve programme monitoring and evaluation.

Source: OECD (2020), COVID-19 and the low-carbon transition, Impacts and possible policy responses.

3.3. Enhancing policy coherence for sustainable development

Belgium has a long-established strong institutional set-up for sustainable development. The 1997 law on the co-ordination of the federal policy on sustainable development defined periodic planning and reporting mechanisms. It created a consultative process supported by the Inter-departmental Commission for Sustainable Development. Belgium reinforced its commitment in 2007 through the Constitution: an article was added stating that every federal entity pursue the objectives of sustainable development in its social, economic and environmental dimensions, and consider solidarity between generations.

In 2016, the Inter-ministerial Conference on Sustainable Development, composed of representatives of all four levels of government, was mandated to follow up implementation of the 2030 Agenda. This included the preparation of the 2017 National Sustainable Development Strategy (Box 3.2). However, sustainable development is not a priority for inter-governmental co-operation and policy coherence needs to be enhanced to achieve the SDGs (FPB, 2019a). Inter-federal initiatives are not sufficiently supported, have limited ambition, and – as in the case of the National Energy and Climate Plan (NECP) – do not demonstrate an integrated systemic vision (CFDD, 2020).

Box 3.2. Reviving inter-governmental co-operation after the 2017 National Sustainable Development Strategy

The National Sustainable Development Strategy aims to create the basis for a coherent policy approach towards sustainable development. It consists of an overall framework text and the strategic documents of the various entities: the 2013 federal Long-term Vision to 2050 and the federal Sustainable Development Plan 2004-08; Vision 2050 – A long-term strategy for Flanders (the third Flemish Strategy, 2016); the second Walloon Strategy for Sustainable Development (2016); the Sustainable Development Plan of the Brussels-Capital Region (2018); and the second Regional Development Plan of the German-speaking Community (2014).

The text provides a common vision of the desired future of Belgium regarding SDG implementation. It lists six priorities for enhanced co-ordination: sustainable food, sustainable building and housing, sustainable public procurement, means of implementation, awareness raising and follow-up of the SDGs. However, several advisory councils have criticised it for lacking ambition. Mobility, circular economy, energy and air quality, which are major challenges for 2030, are not listed in co-ordination priorities.

According to the strategy, authorities have to report collectively on the implementation of the 2030 Agenda twice per government term and to engage in a broad public dialogue. Belgium presented the voluntary national review on implementation of the 2030 Agenda at the 2017 UN High-level Political Forum on Sustainable Development. However, there was no follow-up report issued.

Although Belgium has implemented policies related to the various dimensions of sustainable development, it needs to enhance policy coherence to achieve the SDGs by 2030. This includes a systematic assessment of the impact of regulations on sustainable development (Chapter 2). A number of commitments remain to be implemented: the federal Sustainable Development Plan should have been updated ten years ago and the SDGs could be better integrated into strategic and guidance documents. Co-operation within the Inter-ministerial Conference on Sustainable Development has come to a standstill since the end of 2017.

Source: FPB (2019), Quelle priorité pour un développement durable?, Rapport fédéral pour le développement durable 2019.

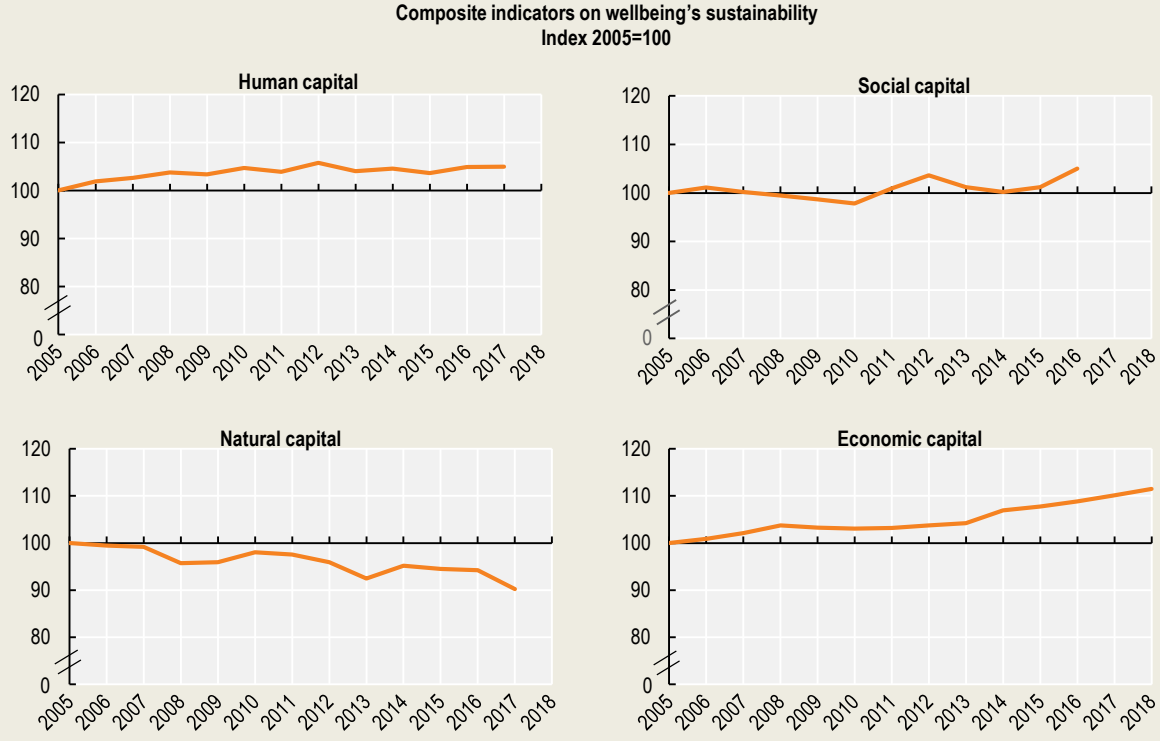
Belgium is not on track to achieve SDG targets by 2030 (Chapter 1). In 2019, less than one-third of the 51 SDG monitoring indicators were given a favourable evaluation and most have no quantitative targets (FPB, 2019a). Belgium is a frontrunner in developing “beyond GDP” indicators (Box 3.3). According to the Federal Planning Bureau, the depletion of natural capital threatens well-being’s sustainability.

Box 3.3. Belgium is a frontrunner in measuring well-being's sustainability

Since 2016, the Federal Planning Bureau (FPB) has been reporting on "beyond GDP" indicators annually in the framework of the 2014 law on complementary indicators. Every year, the FPB presents the results in a public meeting of the Chamber of Representatives. The National Bank of Belgium publishes a summary of results in its annual report.

To summarise the information, the FPB has developed composite indicators. These measure current well-being in Belgium (Here and Now); the well-being of future generations (Later); and the well-being of people living in other countries (Elsewhere). The Later dimension measures well-being's sustainability by using the stock of capital passed on to future generations. It monitors the trends in human, social, natural and economic capital (Figure 3.1).

Figure 3.1. Natural capital is deteriorating



Source: FPB (2020), Mesurer la soutenabilité du bien-être.

StatLink https://doi.org/10.1787/888934230889

The Later dimension shows the depletion of natural capital puts well-being's sustainability into question. Natural resource stocks (air, water, land and biodiversity) have been steadily declining. While many indicators have been improving (e.g. GHG emissions, pesticide use or municipal waste generation), their improvement is insufficient to reverse the changes in the natural capital stock (e.g. atmospheric carbon dioxide concentrations or biodiversity).

Source: FPB (2020), Indicateurs complémentaires au PIB.

3.4. Greening the tax system

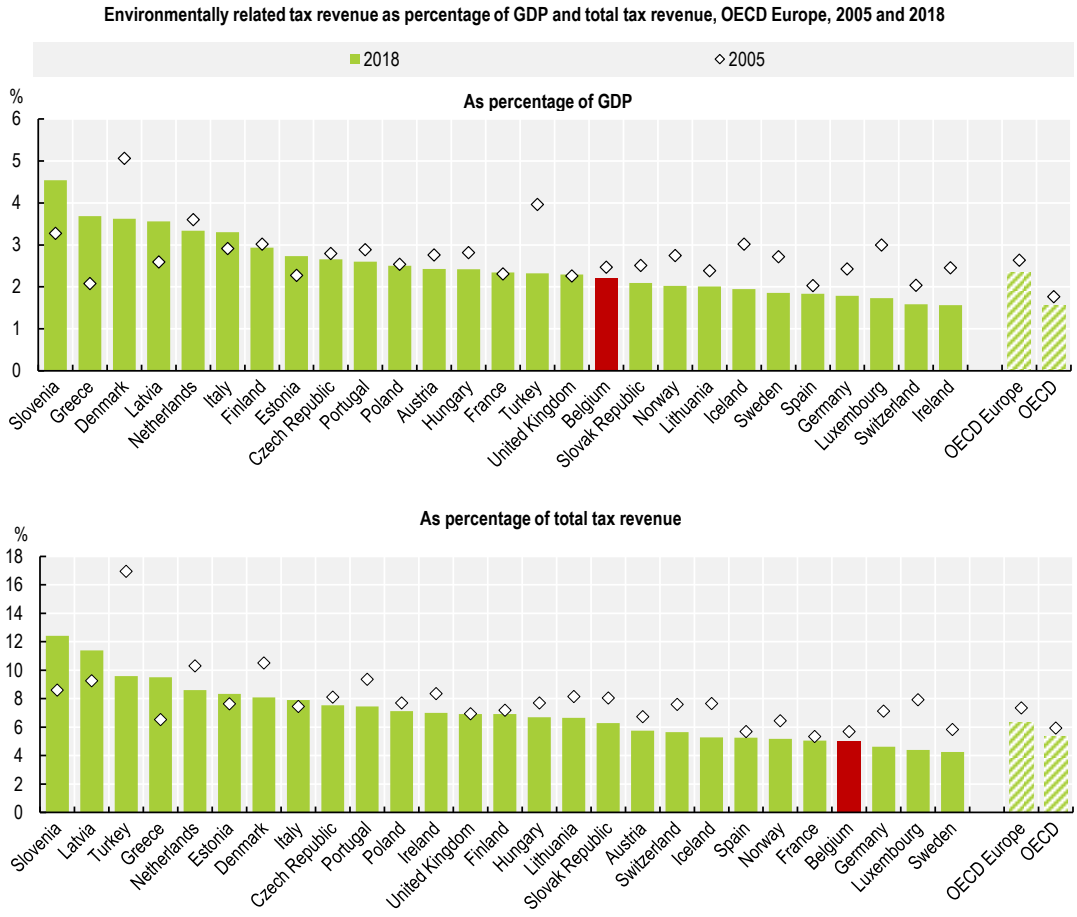
There is scope to make the tax system more growth- and environmentally-friendly as recommended in previous Environmental Performance Reviews and Economic Surveys. In 2018, Belgium's tax-to-GDP ratio was 44.8%, one of the highest in the OECD (OECD, 2019). The tax structure is skewed towards labour, which penalises growth and employment. The less distortive environmentally related taxes account for a small part of revenue. In addition, tax expenditures narrow the tax base and reduce incentives to save energy. In 2015, Belgium started a reform to reallocate taxes from labour to less distortive consumption and environmental taxes. However, further efforts are needed to boost employment and improve resource allocation (OECD, 2020a).

The National Debate on Carbon Pricing has identified options to implement a carbon tax in sectors not covered by the European Union Emissions Trading System (ETS). However, the carbon tax remains to be implemented, along with the plan to reform fossil fuel subsidies. Co-operation across governments will be key to align fiscal policies with environmental objectives and address potential adverse impacts on vulnerable households. A multi-stakeholders' mechanism to monitor and support a reform of environmentally related taxes and harmful subsidies could help move the reform forward.

3.4.1. Environmentally related taxes: An overview

In 2018, environmentally related tax revenue was below the OECD Europe average as both a share of GDP and of total tax revenue (Figure 3.2). These ratios were also below 2005 levels. In recent years, however, revenue from energy taxes has been rising. This has been due mostly to increased diesel taxation (Figure 3.3). Taxes on energy products represent a smaller part of environmentally related tax revenue than the OECD Europe average (65% vs. 75%). Taxes related to transport (excluding fuels) generate relatively high revenue (30% vs. 21% in OECD Europe). Taxes on pollution, including packaging, landfill and incineration taxes, generate the remaining revenue. The federal government collects energy taxes, while regions collect taxes on vehicles (since the 2014 reform of the state) and pollution.

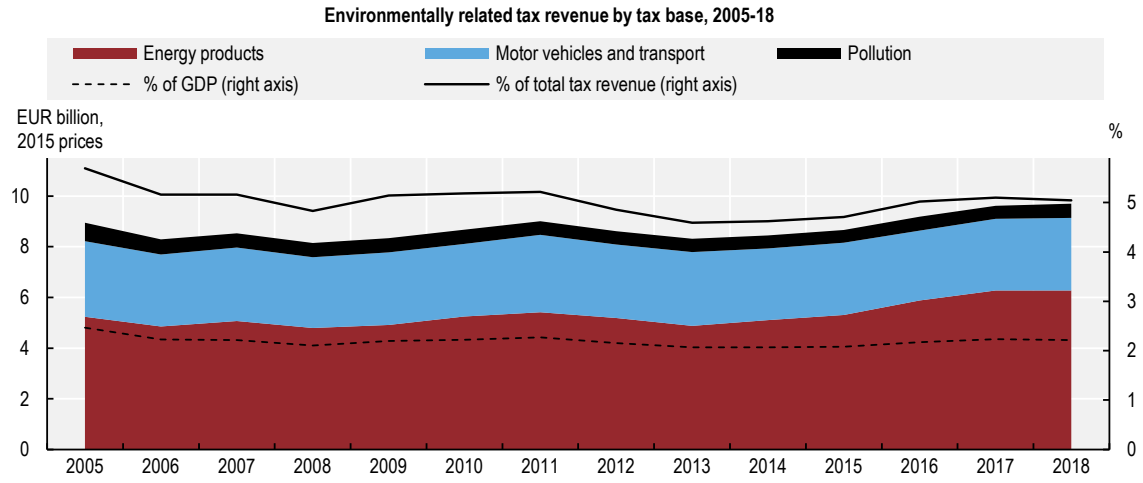
Figure 3.2. Environmentally related tax revenue is below the OECD Europe average



Source: OECD (2020), OECD Environment Statistics (database).

StatLink https://doi.org/10.1787/888934230908

Figure 3.3. Revenue from energy taxes has been increasing with diesel taxation



Sources: EC (2020), "Data on Taxation", National Tax List (database); OECD (2020), OECD Environment Statistics (database).

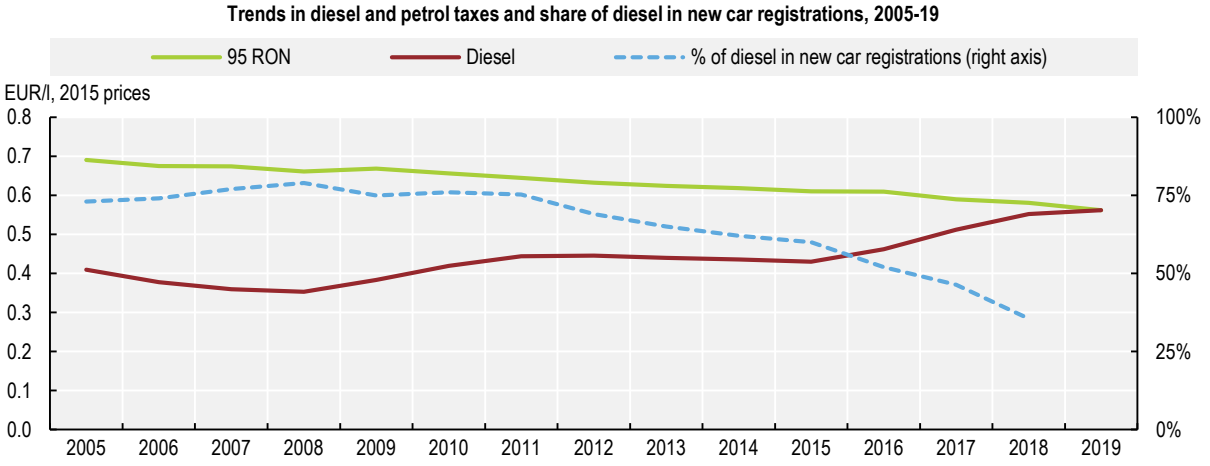
StatLink https://doi.org/10.1787/888934230927

3.4.2. Taxes on energy use and carbon pricing

Taxes on energy

Energy taxes are set in the framework of the EU Energy Taxation Directive. As in other OECD member countries, road fuels are taxed at higher rates than fuels used for other purposes (heating, industrial process, agriculture). This can be justified by higher external costs from road transport (OECD, 2018). Belgium significantly raised the tax rate on diesel over 2008-12 and 2015-19 so that it became one of the highest in the EU (Figure 3.4). At the same time, the tax on petrol remained steady, which means it decreased when adjusted for inflation. As a result, Belgium became one of the three OECD members (with Australia and the United Kingdom) to tax diesel and petrol at the same rates in 2019. This is welcome as diesel has higher carbon content than petrol and diesel engines generally generate higher local air pollution cost. The share of diesel in new car registrations decreased significantly.

Figure 3.4. Taxes on diesel and petrol were aligned in 2019



Sources: ICCT (2019), European Vehicle Market Statistics: Pocketbook 2019/20; IEA (2020), IEA Energy Prices and Taxes Statistics (database).

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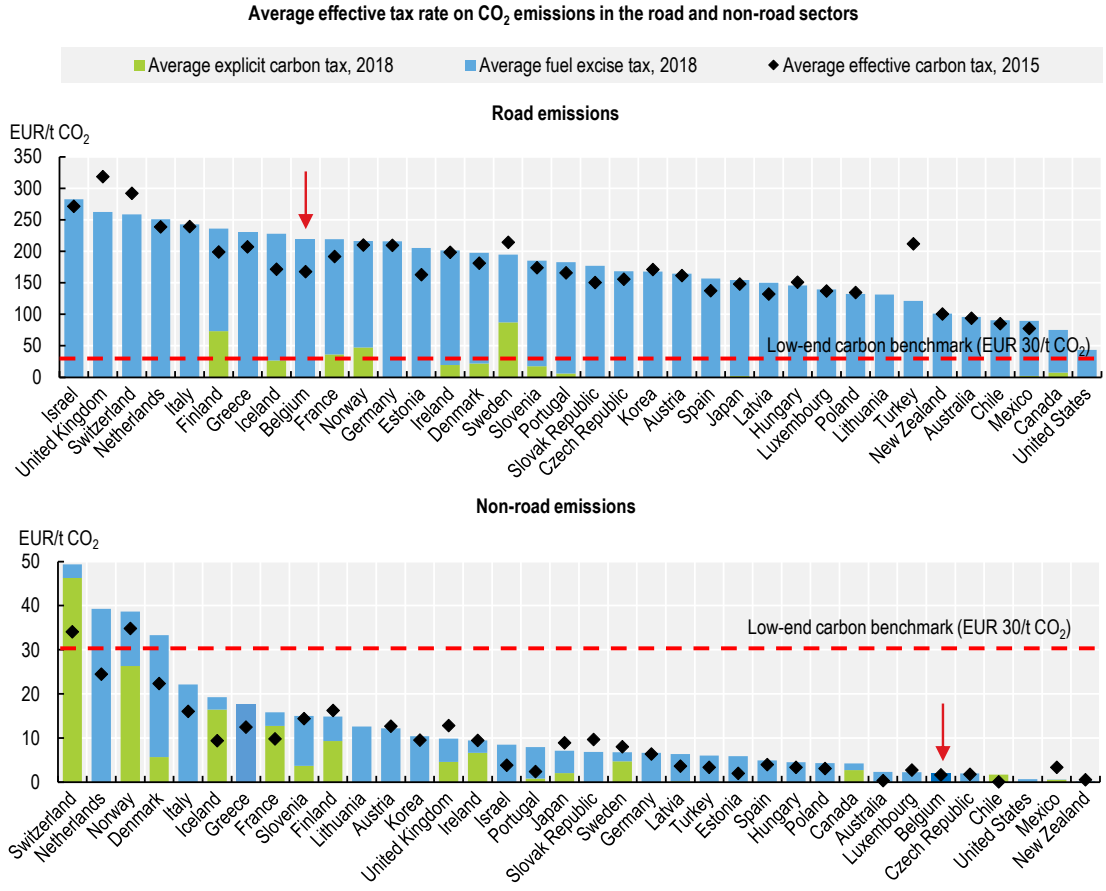
However, taxes on energy products do not reflect the environmental cost of energy use. Effective tax rates[1] on carbon dioxide (CO_2) emissions from energy use are low, especially in non-road sectors (Figure 3.5). Several exemptions to energy taxes apply, such as a partial refund of tax on diesel for commercial use and reduced tax rates on heating fuels (gas oil, natural gas) (Section 3.4.3) (EC, 2020b). A reduced value-added tax (VAT) rate applies to the use of coal and coke. Energy use in the agriculture and fisheries sector is not taxed. Company car taxation also undermines carbon price signals in road transport (Section 3.4.4). The National Debate on Carbon Pricing identified options to implement a carbon tax in non-ETS sectors (Box 3.4). However, it remains to be implemented. The federal government noted the need for additional feasibility studies and announced a plan for 2021 (CONCERE-NCC, 2019).

Figure 3.5. Effective tax rates on CO_2 emissions are low, especially in non-road sectors



Notes: Tax rates as applicable on 1 July 2018. CO_2 emissions are calculated based on energy use data for 2016 from IEA (2018), World Energy Statistics and Balances. Emissions from the combustion of biofuels are included. The average effective carbon tax rate in 2015 is the sum of the average explicit carbon tax rate in 2015 and the average fuel excise tax rate in 2015.
Source: OECD (2019), Taxing Energy Use: Using Taxes for Climate Action.

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Box 3.4. The National Debate has identified options for carbon pricing and should be followed up

In Belgium, only 37% of GHG emissions are priced via the EU ETS. The remaining emissions, mainly from transport and buildings, are not subject to any explicit carbon price. In 2017, the federal Minister of Energy, Sustainable Development and Environment launched a national debate on the potential modalities for implementing a carbon price in non-ETS sectors, a key move towards climate neutrality. The process was based on a thorough exchange among Belgian and foreign experts covering the public, private, academic, associative and trade union sectors. The approach was fact-based, fed by benchmarking analyses and was organised around a series of high-level events, technical workshops and bilateral meetings.

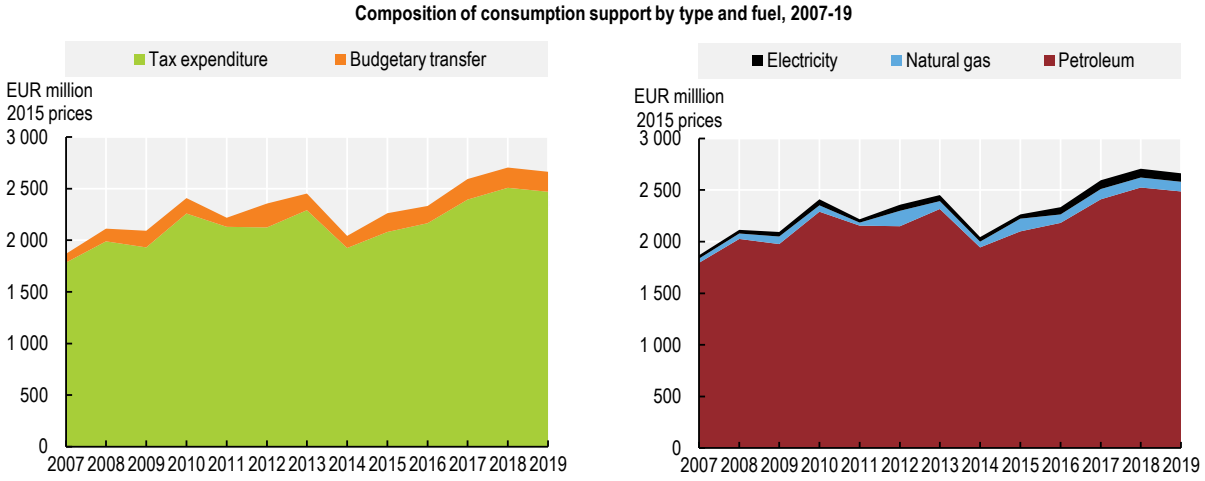
The debate was guided by the principles of budget neutrality, the long-term orientation of price signals and the concomitant implementation of a broad package of measures. Options considered to introduce an additional carbon component to excise duties with the possibility, in the transport sector, to shift to road pricing. Three price trajectories were assessed, starting from EUR 10/tCO_2 in 2020 to EUR 40, EUR 70 or EUR 100/tCO_2 in 2030. The analysis showed the impact of carbon pricing is manageable, especially when additional fiscal revenue (up to EUR 2.6 billion annually by 2030 at EUR 70/tCO_2) is used to compensate for potential adverse impacts and to finance complementary measures. Such a shift would have positive effects on employment and GDP. The debate highlighted the need to co-ordinate actions across governments and to align other policies such as fossil fuel subsidies. A public survey revealed potentially high support of the Belgian population for carbon pricing, provided compensatory measures are implemented.

Source: FPS Health (2018), Belgian National Debate on Carbon Pricing.

3.4.3. Removing environmentally harmful support to fossil fuel consumption

Support to fossil fuel consumption represented 40% of energy tax revenue in 2018, among the highest shares in the OECD. It is mostly made of tax preferences for the use of oil products, particularly lower taxation of heating oil and partial refund of excise duty on diesel for commercial use (Figure 3.6). Tax expenditure rose significantly in the past decade as forgone revenue from tax concessions increased with excise duties on diesel.

Figure 3.6. Support to fossil fuel consumption: Tax expenditure increased with diesel taxes



Notes: Data need to be interpreted with caution. Fossil fuel subsidy data may be partial and data record tax expenditure as an estimate of revenue that is foregone due to a particular feature of the tax system that reduces or postpones tax relative to a jurisdiction's benchmark tax system, to the benefit of fossil fuels. Hence, tax expenditure estimates could increase due either to greater concessions, relative to the benchmark treatment, or to a raise in the benchmark itself. It is important to note that definitions of tax expenditure, and the benchmarks used to estimate the size of the expenditure, are nationally determined and may hamper international comparisons; 2018-19 data include preliminary estimates.
Source: OECD (2020), OECD Inventory of Support Measures for Fossil Fuels (database).

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These tax preferences undermine the carbon price signal and discourage an efficient use of energy resources, as recognised in the National Debate on Carbon Pricing. Belgium has committed to rationalise inefficient fossil fuel subsidies as part of SDG 12, which calls for ensuring sustainable consumption and production patterns. Like other EU members, Belgium had to report on actions to phase out fossil fuel subsidies in the NECP. However, the NECP shows no progress and Belgium postponed its phase-out plan to 2021 (CONCERE-NCC, 2019).

Belgium should adopt a sequential approach to minimise the political backlash and risk of backtracking that often accompanies reforms of fossil fuel subsidies. First, it should identify and estimate support measures for fossil fuels and document their objectives. Second, it should measure the relative distortion of support measures and prioritise them for reform. Third, it should evaluate the distributional effects of reform. Finally, it should identify alternative policies that increase the efficiency and improve the distributional impact of government intervention (OECD, 2020c).

The country regularly monitors progress in this area through the list of tax expenditures attached to the annual federal budget bill. However, it lacks details and only partially covers regional tax expenditure. Belgium has not implemented the 2007 recommendation to establish a Green Tax Commission. The High Council of Finance envisages the reform of some environmentally related taxes and subsidies as part of its advice on the tax shift (HCF, 2020). However, all governments need to agree on recommendations. Establishing a multi-stakeholders' mechanism to monitor and support the reform of environmentally harmful subsidies, as was done in France, can help move the process forward (OECD, 2016).

3.4.4. Transport-related taxes and charges

Vehicle taxes

Since 2014, regions have set vehicle taxes. Registration taxes are based on cylinder capacity and age (Brussels-Capital Region [BCR]); fuel, age, emission standards and CO_2 emissions (Flanders); and cylinder capacity, age and CO_2-based bonus/malus scheme (Wallonia) (ACEA, 2020). The annual circulation tax provides the largest revenue from vehicle taxes. For passenger cars, the tax is based on cylinder capacity in all regions. In Flanders, it also varies with CO_2 emissions, fuel type and emission standards (vehicles registered since 2016; electric and hydrogen vehicles are exempted). For commercial vehicles, it is based on weight in the BCR and Wallonia, and on weight, CO_2 emissions, fuel type and emission standards in Flanders since 2017; vehicles submitted to the distance-based charge are exempted.

Combined with increased fuel taxation, vehicle taxes have helped reduce the share of diesel in the fleet and the reported average air pollutant emissions of new vehicles. However, the growing number of vehicles and the longer distances travelled resulted in GHG emissions from road transport increasing over 2013-18 (FPB, 2020a). Monitoring stations exposed to vehicle emissions in Antwerp and Brussels continue to exceed annual limit values for NO_2 concentrations. Vehicle taxes can steer towards cleaner vehicles, but setting appropriate rates is difficult. Experience suggests such taxes risk high abatement costs and high forgone revenue (van Dender, 2019).

Antwerp (2017), BCR (2018) and Ghent (2020) introduced low emission zones with stricter access conditions over time. In the BCR, diesel cars will be banned by 2030 and other petrol vehicles (including liquefied petroleum gas) by 2035. The three regions provide financial incentives to replace old vehicles and acquire electric, hybrid or fuel-cell road vehicles. In addition, the federal government provides personal income tax reduction (15% up to a maximum amount) on the purchase price of electric vehicles (ACEA, 2020). In 2019, electric and plug-in hybrid electric vehicles accounted for 3.4% of new car registrations, on par with the EU average (EAFO, 2020). The Energy Pact aims at reaching 20% in 2025 and 50% in 2030 with one public charging point for ten electric vehicles. The main barrier to adoption of electric cars is their expected autonomy, the availability of a charging infrastructure and delays in delivery rather than total cost of ownership (FPB, 2019b).

Road pricing

In 2016, Belgium abolished the Eurovignette and introduced distance charges for trucks (above 3.5 tonnes). All roads are toll roads; most of the local and regional roads are charged at a zero tariff; the main road network has a paying tariff. Rates increase with pollutant emissions (EURO standards) and weight, but do not vary with time. They are almost the same on Wallonia, Flanders and Brussels motorways, but are significantly higher on Brussels inner-city roads (ACEA, 2020). In Flanders and the BCR, the distance charge revenue goes to the general budget; in Wallonia, it is earmarked for funding road construction and maintenance (ITS, 2020). Truck traffic does not seem to have shifted to secondary roads (FPB, 2020a). However, the traffic of light duty vehicles increased significantly after introduction of the charge. This calls for expanding the system to other vehicles.

While fuel taxes are well-suited to reflect external costs from CO_2 emissions, distance-based charges depending on vehicle characteristics and the place of driving can help address air pollution (van Dender, 2019). Differentiated kilometre charge by time and place is the best option to address external costs of congestion. Belgium bears one of the highest congestion costs across EU members, equivalent to 2.4% of GDP in 2016[2] (EC, 2019a). For both passenger and freight transport, the country's tax system (including road fuel taxes, vehicle taxes and road charges for trucks) is not aligned with traffic concentration on some roads in Brussels and Antwerp agglomerations at peak hours (FPB, 2019c). Belgium would gain substantial time and environmental benefits by differentiating the distance charge by space and time for

truck and expanding the system to light duty vehicles and cars (FPB, 2020b). This would require a co-operation agreement between regions.

Tax treatment of company cars and commuting allowances

Belgium encourages the use of passenger cars through favourable company car tax taxation. This policy contributes to congestion, GHG emissions and air pollution. Moreover, it is costly to public finance. In 2016, forgone revenue was estimated at between EUR 2 billion and EUR 3.75 billion annually (or between 0.5% and 0.9% of GDP) (EC, 2017b; FPB, 2019a; May, Ermans and Hooftman, 2019).

For the employee, the taxable benefit of using a company car for private purposes is computed as a percentage of the price, CO_2 emissions, fuel type and age of the car (EC, 2017b). However, the imputation rate is low and does not vary with private mileage. Moreover, the employer often bears fuel costs, giving the employee incentive to drive more. In addition, the in-kind benefit is not subject to employee social security contribution (SSC). For the employer, the non-cash remuneration is also exempted from SSC. Instead, companies pay a solidarity charge, which varies with CO_2 emissions of the car and the type of fuel. However, it is lower than SSC and has no link with the mileage or overall remuneration level. Evidence shows the system particularly benefits men with high incomes (May, Ermans and Hooftman, 2019). Car expenses are deductible from corporate income tax. Financing costs are fully deductible and fuel costs are partially (75%) deductible. Meanwhile, the deductibility of other car expenses (insurance, repair and maintenance) depends on CO_2 emissions of the car and the type of fuel. Finally, companies can deduct the VAT charged on the purchase of a car or on the fee paid to a car leasing company.

In 2018 and 2019, Belgium introduced the “cash-for-car” and “mobility budget” to allow employees to choose alternative options such as additional net pay or more sustainable transport modes. However, they were not successful. Furthermore, the “cash-for-car” system has been ruled unconstitutional for favouring company car owners (EC, 2020c). Company car taxation continues to provide adverse incentives for road transport. The new federal government has committed for a full decarbonisation of the company car fleet by 2026. However, favourable company car taxation would continue to contribute to car use, congestion and non-exhaust air emissions (e.g. from tyres and brakes).

3.4.5. Taxes and charges on pollution

Pollution taxes account for 6% of environmentally related tax revenue, above the OECD Europe average (4%). They include taxes on packaging, landfill and incineration; on discharge of wastewater, and on water pollution. Landfill taxes have played a key role in promoting recycling and incineration, but incineration taxes seem too low to promote recycling (Chapter 5).

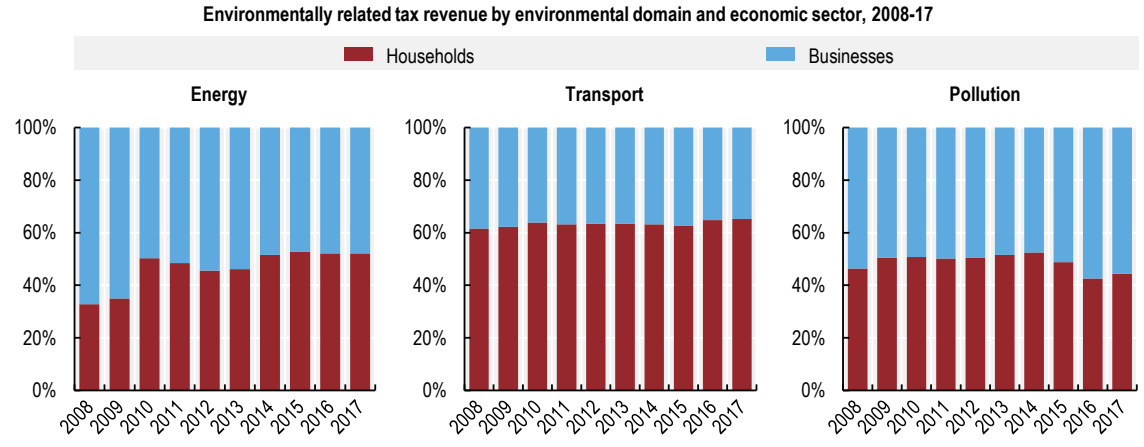
Regions have implemented economic instruments to address pollution from agriculture. Flanders has a system of tradable nutrient emission rights (Chapter 4). Agricultural enterprises are taxed based on the number of pollution units (depending on how the water is used) multiplied by a fixed rate independent of the water source (OECD, 2020d). Farmers abstracting more than 500 cubic metres of underground water each year pay an additional levy. Wallonia has a tax on the environmental load generated by farms. It is based on a nitrogen coefficient applied to the number of heads per livestock species and a coefficient applied to land-use type and area. The first component of the tax is rational to reduce livestock effluents. However, it is unclear how the second component can limit use of fertilisers and pesticides as the tax is also imposed on meadows and organic crops. Instead of basing the tax on pesticide use, the tax should reflect the risks of pesticides to health and the environment, as in Denmark (Chapter 4). The federal authority applies reduced VAT rates for fertilisers (6%) and pesticides (12%).

3.4.6. Distributional implications of environmentally related taxes

Belgium has an effective social redistribution system, but 20% of households were at risk of poverty or social exclusion in 2017. This rate was higher than that of neighbouring countries with similar levels of public social spending. Better targeting low-income households could improve the efficiency of spending (OECD, 2020a).

Attention should be paid to the potential adverse impact of tax increases and exemption removals on vulnerable households. Over the past decade, households have borne an increasing share of the burden of environmentally related taxes (Figure 3.7). In 2017, they contributed more than half of fuel tax revenue and nearly two-thirds of vehicle tax revenue but pay less in pollution taxes than businesses.

Figure 3.7. Households have contributed an increasing share of energy-related tax revenue



Source: FPB (2019), Environmental Taxes by Economic Activity.

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While there are no national indicators on energy poverty, an estimated 14% of Belgian households in 2018 faced challenges in affording energy[3] – a rate that has remained stable since 2009 (KBF, 2020). The issue was more pronounced in Wallonia (21%) than in the BCR and Flanders (11%) due to higher gas prices, harsher climate, and generally larger and less energy-efficient dwellings. Water poverty[4] affected about 14% of households with higher rates in the BCR (21%) and Wallonia (19%) than in Flanders (10%). About 9% of households faced both energy and water affordability issues.

Belgium has introduced measures to mitigate energy and water poverty: reduced tax rates on heating oil and social tariffs for electricity, natural gas and water. In 2019, around 9% of Belgian households benefited from the social electricity tariff and 9% of households connected to the natural gas network benefited from the social gas tariff (CREG, 2019). However, social tariffs often do not correctly target the most in need (Court of Audit, 2018; Brugel, 2020). They distort prices and do not encourage people to reduce energy and water use. They also reduce investment capacity in key infrastructure. Providing direct support to vulnerable households, decoupled from energy consumption, would better address environmental and equity issues.

3.5. Investing in the environment and low-carbon infrastructure to promote green growth

Belgium has made some progress in strengthening public finances since 2011. However, in 2019, total public expenditure remained among the highest in the euro area and was projected to increase due to population ageing (EC, 2020c). Support measures in response to the COVID-19 pandemic will contribute to fiscal sustainability risks. The public debt was anticipated to rise from just below 100% of GDP in 2019 to 116% in 2020.

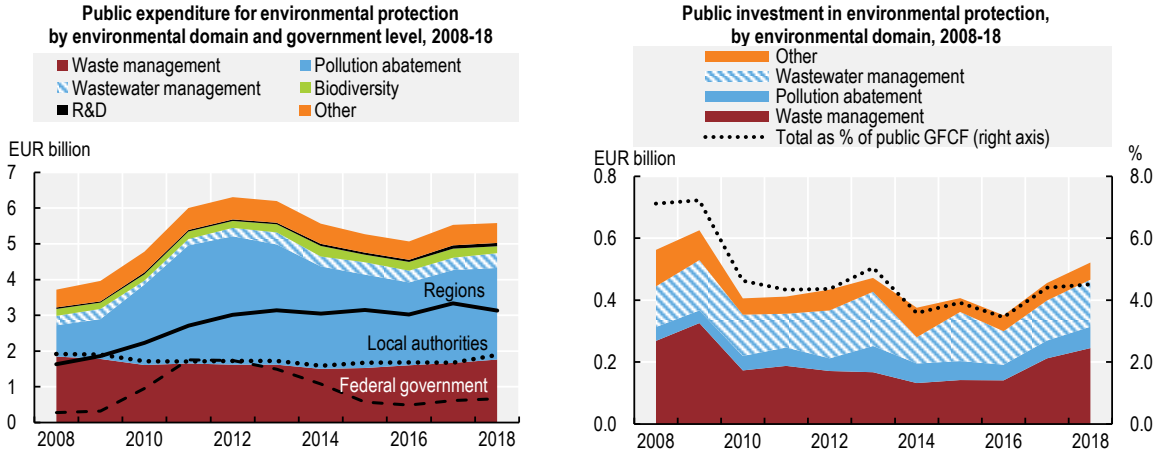
Despite good performance of private investment, low public investment has affected the quality of national infrastructure over the past decade (EC, 2020c). This is due to the fragmentation of competencies regarding investment between multiple layers of government combined with the need to pursue fiscal consolidation. Improving the composition and efficiency of public spending, notably through spending reviews and better co-ordinating fiscal policies by all levels of government could create room for increasing public investment.

3.5.1. Public expenditure for environmental protection

According to national accounts, federal government current expenditure on environmental protection increased significantly between 2009 and 2011-12. It has since decreased with the reduction of tax credits for energy-saving investments in personal income tax (insulation, green loans, etc.) (Figure 3.8). Regional government spending rose between 2007 and 2013 driven by generous green certificates systems[5] (Section 3.5.2). In 2018, public expenditure on environmental protection accounted for 1.3% of GDP. This was well above the EU average of 0.8% due to the unusual predominance of pollution abatement, which mainly includes subsidies for renewables (Eurostat, 2020a). Public expenditure on waste (0.4% of GDP) and wastewater management (0.1% of GDP) are in line with EU averages while spending for biodiversity protection is lower (less than 0.1%).

Public investment in waste and wastewater management is mostly carried out by municipalities. Waste investment has varied with additional incineration capacity in Wallonia and the development of separate collection in the three regions (Chapter 5). Public investment in wastewater treatment is surprisingly stable, while Belgium has completed its sewerage system and improved wastewater treatment. Complying with the Urban Waste Water Treatment Directive and the new Drinking Water Directive and reducing distribution losses will require additional investment. According to OECD projections, Belgium needs to increase annual expenditures for water supply and sanitation by 36% by 2030 (OECD, 2020e). Revenues from tariffs essentially cover the costs of providing water services; the public budget subsidises less than 20%. Belgium should be able to continue relying on tariffs for financing. However, there is scope for greater transparency in water pricing policies, estimated investments and investment needs (EC, 2019b).

Figure 3.8. Public expenditure for environmental protection increased with support to sustainable energy



Notes: General government expenditure according to the Classification of the Function of Government and expressed at 2015 prices. The trend in regional expenditure is driven by support to green certificates (recorded under pollution abatement), but the systems are mostly financed by consumers via the electricity bill.
Source: OECD (2020), OECD National Accounts (database).

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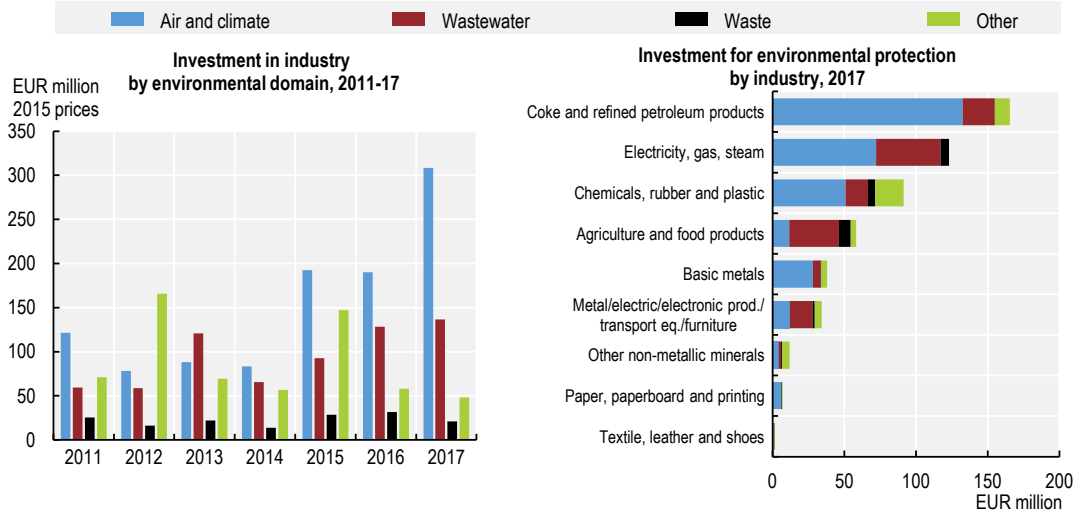
Industrial investment for environmental protection has increased significantly since 2011. Investment has focused on emission abatement and wastewater treatment to comply with emission limits under the Industrial Emissions Directive (Figure 3.9). Energy-related and chemical industry in the Flanders Region are the largest investors.

Figure 3.9. Industrial investment for environmental protection increased significantly



Note: Total industry including codes 5-35 of the Statistical classification of economic activities in the European Community (NACE Rev. 2).
Source: Statbel (2019), Environmental Protection Expenditure of Enterprises.

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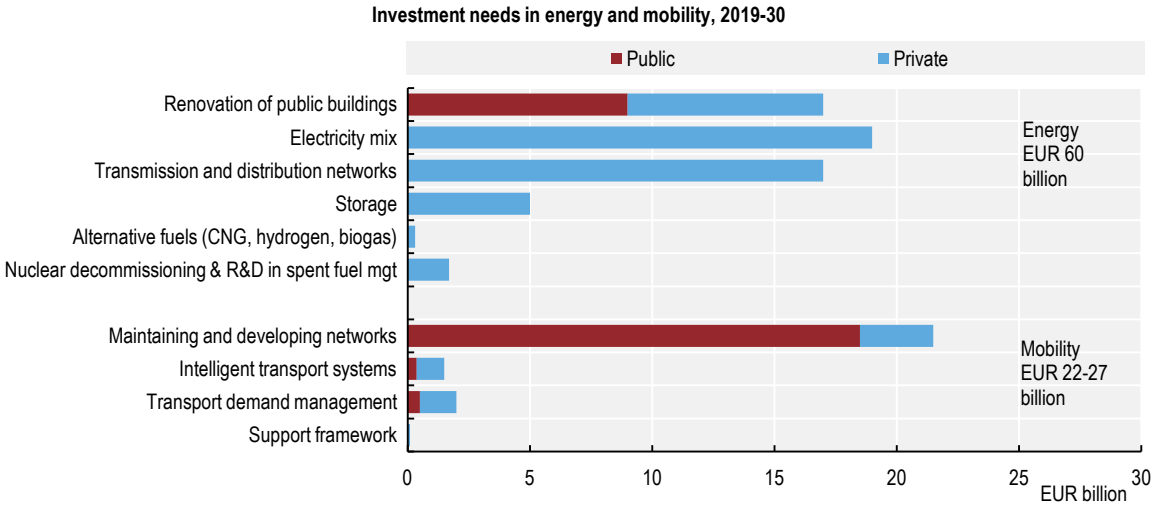
3.5.2. Promoting investment in sustainable energy and mobility

Investment needs in sustainable energy and mobility are significant (Figure 3.10). The commitment to phase out nuclear energy by 2025 involves major investments in power generation, cross-border interconnection capacity, smart grids, storage and demand response. Moving towards decarbonisation of buildings by 2050 demands large renovation works. Reducing congestion involves developing integrated infrastructures to improve access to Brussels and Antwerp, shifting from roads to rail and soft modes.

Figure 3.10. Investment needs in sustainable energy and mobility are high



Notes: The pact only considers public buildings. Total investment in building energy renovation is estimated at EUR 11 billion annually. Electricity mix, of which EUR 16 billion in renewables and EUR 2.9 billion in gas-fired power plants. Developing transport networks: EUR 13 billion, of which EUR 7 billion in rail and EUR 2 billion in waterways.
Source: Strategic Committee (2018), National Pact for Strategic Investment.

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Energy and mobility are among the six priorities[6] of the NPSI that aims at boosting productivity and innovation (Strategic Committee, 2018a). Related investment needs over the next decade are estimated at almost 2% of 2018 GDP annually. However, no follow-up report has been published since 2018. In addition, the coherence between the NPSI and regional investment needs estimated in the NECP is unclear. With limited fiscal space, governments should co-ordinate efforts to set ambitious national long-term climate targets, develop a consistent mobility vision, improve synergies across federated entities and strengthen carbon prices to guide investors.

Renewables

Discussions continue on extending the operation of a limited number of nuclear power plants beyond 2025. Such a decision should be made soon to ensure nuclear safety and a more predictable energy investment environment (EC, 2020c). By 2021, Belgium intends to launch a capacity remuneration mechanism to support investment in alternative electricity capacity required by the nuclear phase-out and to ensure security of supply. The mechanism, which is under investigation by the European Commission, is planned to be technology-neutral. However, Belgium should ensure its design does not favour fossil fuel technology or reduce incentive for energy efficiency and demand management. Future investment in renewables will also depend on the ability of federated entities to agree on ambitious 2030 targets.

Belgium has made significant progress in developing renewable energy, especially wind and solar photovoltaic (PV). More than EUR 22 billion was invested in renewables excluding large hydro over 2010-19 (Frankfurt School-UNEP Centre/BNEF, 2020). However, in 2018, the share of renewables in gross final energy consumption (9.4%) was too low to reach the 13% target for 2020. Although the country has made progress on renewable electricity, it is unlikely to meet targets on heating and cooling, and transport (Chapter 1). Renewable energy is a regional matter, but the federal government is in charge of offshore wind, ocean energy, hydropower and biofuels standards and quotas.

Electricity generation from renewable sources is mainly promoted through a quota obligation on suppliers with tradable (or green) certificates complemented by investment support (IEA, 2016). Regional systems vary according to the quota obligation, the basis for granting green certificates, technology-specific support levels, calculation of minimum price levels, duration of support and tradability. Consumers finance the systems via the electricity bill. As in other OECD member countries, generous support systems combined with a drop in costs (especially for solar PV) led to overcompensation and excess demand for installations. This made Belgium a world leader in terms of residential solar PV capacity per capita (IEA, 2019). However, support costs for renewable electricity increased more than fourfold between 2008 and 2016 before stabilising around EUR 2 billion, with significant impact on electricity prices. In 2012-14, regions reduced support levels several times (with regular reviews to ensure a given rate of return on capacity investment instead of compensating for volumes generated). The federal level also reduced support. These changes have led to uncertainty for investors. New small solar PV installations have not received any direct subsidy from Flanders since June 2015. Wallonia replaced green certificates with an annual grant for five years to small solar PV installed between 2014 and 2018; It has stopped subsidies for units installed after this date. Small solar PV installations benefit from net metering in the three regions.

Belgium needs a clear and predictable support system to maintain investor confidence, while continuing to address the cost-effectiveness of its renewable energy policies (IEA, 2016). As technology costs decrease, regions should gradually integrate renewables into the electricity market to reduce support costs. Offshore wind is supported through a federal feed-in premium with variable price since 2014. A 2019 law introduced a competitive bidding process that should reduce support level. The Marine Spatial Plan 2020-26 established three new zones for renewable energy, bringing the area close to 15% of the Belgian part of the North Sea. The target is to double offshore wind capacity to 4 gigawatts in 2030 (CONCERE-NCC, 2019). Regional efforts to remove administrative barriers to new renewable energy projects should also continue.

There is room to further promote renewable heat and transport fuels. In the NECP, regions want to promote renewable heat pumps and expand district heating. However, Wallonia could clarify its targets and require minimum levels of energy from renewable sources in renovated buildings. Removing tax incentives for fossil fuel heating would encourage the uptake of renewable technology.

Energy efficiency in buildings

Energy efficiency measures in the residential and tertiary sectors are expected to have the largest climate change mitigation impact in non-ETS sectors by 2030 (CONCERE-NCC, 2019). Buildings are major energy consumers and GHG emitters (Chapter 1). The housing stock is old and among the least efficient in Europe (BPIE, 2017). Natural gas and oil (especially in Wallonia) are the main heating sources (SPF Économie, 2019). Regions have developed long-term renovation strategies and implemented a wide range of measures to promote energy-efficient buildings. These measures include energy performance standards, tax incentives and subsidies for renovation, as well as information tools. Residential and commercial energy consumption has decreased in the past decade thanks to energy efficiency improvement. However, progress is insufficient to reach an average energy performance factor under 100 kilowatt hour per square metre (kWh/m²) for residential building by 2050 (compared with more than 250 kWh/m² currently) and to make public buildings energy-neutral by 2040, as committed in the

Inter-federal Energy Pact. Additional measures are needed to raise the renovation rate of public buildings from the current level of less than 1% to the 3% required by the Energy Efficiency Directive (NBB, 2020).

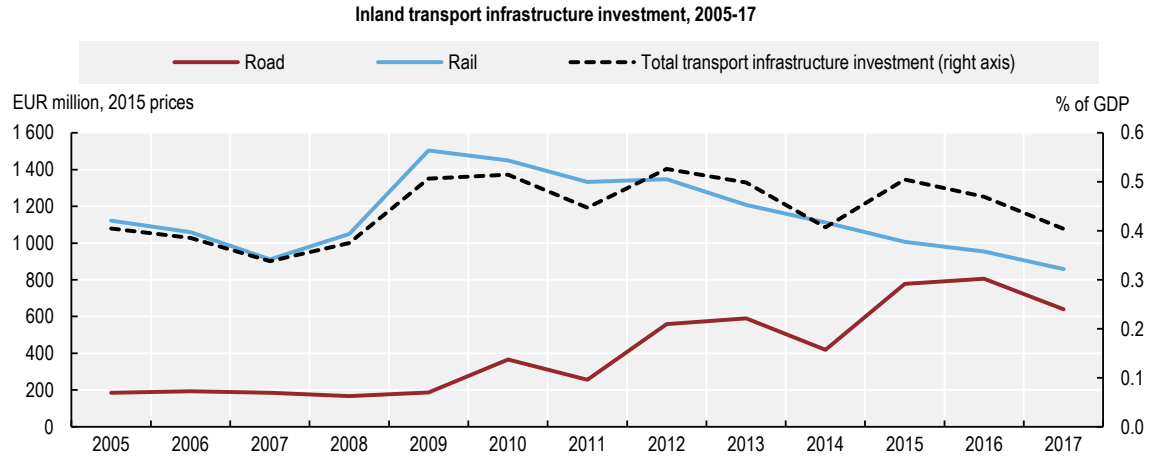
Reduced VAT (6%) applies to renovation of old residential buildings. The federal government is considering extending the measure to demolition and reconstruction of private dwellings (subject to European Commission approval), which is already the case in some cities (CONCERE-NCC, 2019). Reduced rates narrow the tax base and contribute to low efficiency in VAT collection (OECD, 2020a). In addition, lower VAT on construction is regressive as the well-off receive larger benefits (HCF, 2020). Extended to demolition and reconstruction, it could also increase construction waste and energy use from production and transport of construction materials. There is room to further encourage renovation investment. This could be done by reducing property taxes conditional upon energy efficiency improvement, as planned in the long-term renovation strategies (such discounts already apply in Flanders). Granting rental income tax deduction to maintenance and renovation costs could also help (EC, 2020c). Low natural gas and oil heating prices (Section 3.4.2) do not provide sufficient incentives to renovation projects. A major drop in global prices following the COVID-19 outbreak is an additional brake. Gradual introduction of carbon pricing would be more cost-effective in triggering energy efficiency investment.

Total investment cost for attaining a full energy-efficient housing stock by 2050 is estimated to range between EUR 140-200 billion for Flanders, at EUR 28.8 billion for Brussels and EUR 63 billion (residential buildings only) for Wallonia. The regional long-term strategies envisage developing private funding via energy service contracts, crowdfunding and EU funds. The Flemish Community issued a sustainable bond in 2018 (raising EUR 500 million) to build affordable homes and finance passive schools.

Sustainable transport and mobility

Since 2010, investment in transport has varied around 0.45% of GDP, a low rate by international standards that has affected the quality of road infrastructure and rail services. Over the past decade, investment in rail has shifted to road (Figure 3.11). Despite dense road and rail networks, infrastructure is insufficient to meet the growing demand for transport. Road transport is predominant, congestion is projected to rise and public transport is insufficient.

Figure 3.11. Investment in rail has shifted to road



Source: ITF (2019), ITF Transport Statistics (database).

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The NPSI aims at investing in multimodal mobility systems, strengthening and improving public transport, and encouraging the use of soft mobility. Regions have developed multiannual transport investment plans. The BCR plans to invest EUR 6 billion investment in public transport to 2028 and allocated EUR 0.5 billion from the 2020 initial budget (of which more than 70% for public transport) to the Good Move 2020-30 strategy. For its part, Wallonia plans to invest EUR 2 billion in the mobility and infrastructure plan 2020-26 (of which 20% for public transport and soft mobility). In 2020, Flanders was to allocate 17% of the EUR 2.2 billion investment in transport to cycling infrastructure, public transport, climate and noise. Investments in rail, a federal competence, remain to be defined in the context of the formation of the new federal government. However, major investment in the regional express train network around Brussels will continue until 2031 (EC, 2020c).

The 2007 recommendation to adopt a national transport plan and ensure the various (e.g. federal and regional) transport plans are consistent, mutually supportive and well implemented is still valid. The Executive Committee of Mobility Ministers has not managed to co-ordinate a consistent vision across the federated entities. While the BCR and Wallonia have long-term mobility plans, there is no national transport plan and transport-related plans are fragmented in Flanders (MORA, 2020). Flanders lacks a long-term vision on mobility integrated with spatial planning and climate plans.

Belgium should strengthen the Executive Committee of Mobility Ministers by, for example, setting up an independent project evaluation body to help assign priorities. Cost-benefit analysis of infrastructure projects are ad hoc (OECD, 2017a). Ministries or public entities at different levels apply their own practices, leading to lack of consistency and co-ordination (Strategic Committee, 2018b). Structures have limited resources and their opinions are optional.

Belgium should strengthen transport demand management through spatially and temporally differentiated road charges and removal of fiscal incentives for road use (Section 3.4.4). Increased revenue could help fund low-carbon transport infrastructure. Compared with similar railway companies in other countries, the Belgian SNCB has the lowest revenue and the highest subsidy rate per passenger kilometre. This puts pressure on the budget and the capacity of the public transport system in peak periods (OECD, 2020a). Using higher fares for peak times in public rail transport, together with targeted subsidies to lower income groups, could generate funds to help upgrade infrastructure.

3.6. Promoting eco-innovation and green markets

3.6.1. Eco-innovation policy and performance

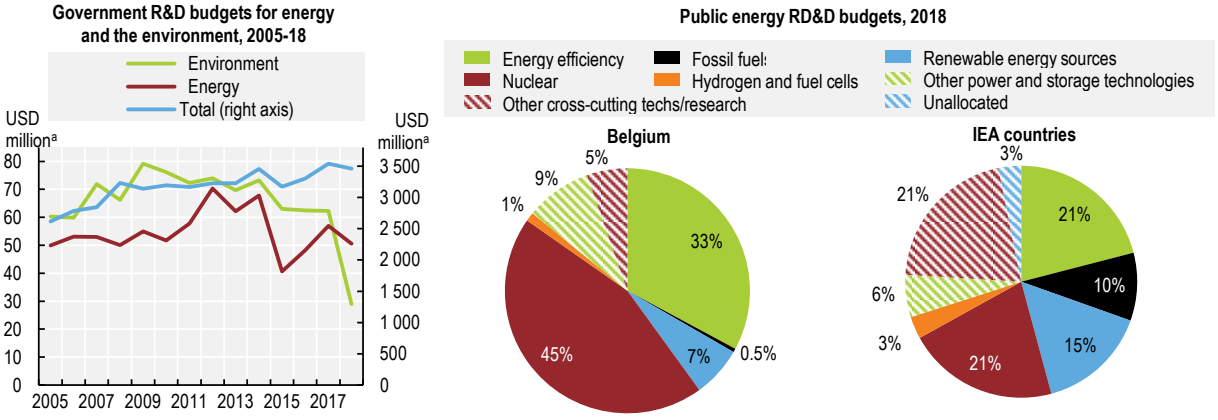
Belgium is a strong innovator. It has a highly skilled workforce, an attractive research system with a solid science base, strong universities and good public-private collaboration (EC, 2020c; Kelchtermans and Robledo-Bottcher, 2018). Research and development (R&D) intensity increased from 1.8% of GDP in 2005 to 2.8% in 2018. This was well above the OECD average of 2.4% and on track to meet the Europe 2020 target of 3%. Private businesses invest most of the R&D, which is concentrated in a few large companies, notably in the pharmaceutical and chemical sectors. Public funding of R&D (excluding tax incentives) is relatively low, as is the share of high-growth innovative enterprises in the economy. There is a shortage and mismatch of human resources for research and innovation (Kelchtermans and Robledo-Bottcher, 2018).

By contrast, Belgium's eco-innovation performance is modest, ranking in the bottom third of EU countries in 2018 (EC, 2018). It scores far below the EU average for eco-innovation activities due to a low number of ISO 14001 certified companies. However, it performs better on resource efficiency outcomes, especially material productivity. Belgium is gradually integrating sustainability goals into economic policies. It also has strong universities, research labs, well-trained human capital and a growing demand for green technology. However, eco-innovation initiatives are mostly limited to individual regions (EC, 2017a).

The BCR Innovation Plan 2016-20 focuses on energy efficiency, green chemistry, mobility and circular economy. Circular Flanders, a partnership involving government, local authorities, companies, civil society and researchers, promotes innovation through Green Deals on circular purchasing and circular construction (Chapter 5). The Walloon Region supports clusters such as GreenWin dedicated to collaborative innovation projects in green chemistry, building materials and processes, and the environment. However, regional best practices are not disseminated at national level and co-operation in this area is not a priority (EC, 2017a). Low carbon prices, skills shortage, limited control over the design of imported products and insufficient market for recycled products are other barriers to eco-innovation.

Government R&D budget on environment and energy decreased in recent years (Figure 3.12). However, in 2018, public budget on energy-related research, development and demonstration (RD&D) per unit of GDP was among the ten highest in the IEA. This was due to the high share of spending on nuclear power and, to a lower extent, on energy efficiency. Renewable energy sources accounted for a low share of spending compared with the IEA average. This share has decreased in recent years, while that of cross-cutting RD&D (e.g. energy system analysis) rose in 2018.

Figure 3.12. Government R&D budget on environment decreased, while energy RD&D budget targets mostly nuclear



a) At 2015 prices and purchasing power parities.
Sources: IEA (2020), *Energy Technology RD&D Budgets* (database); OECD (2020), *OECD Science, Technology and R&D Statistics* (database).

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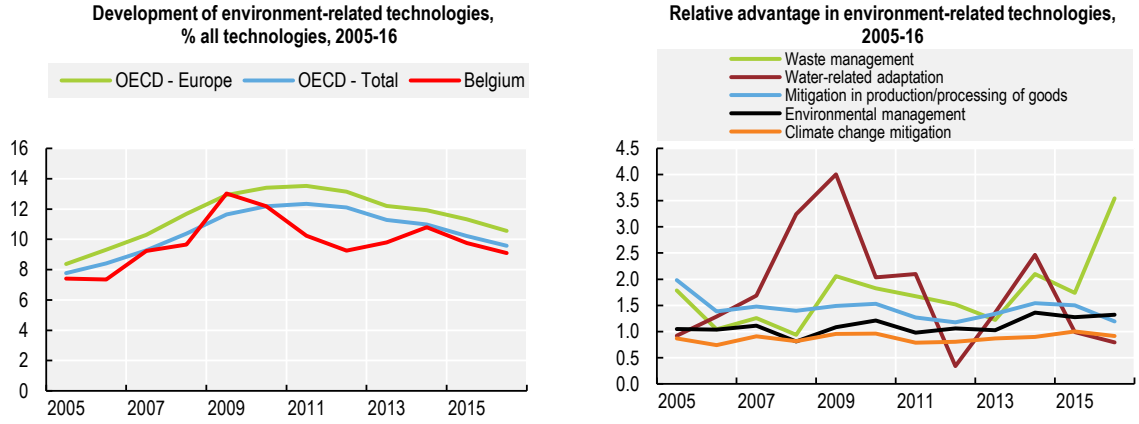
Patent applications for environment-related technology reflect the decrease in public R&D support (Figure 3.13). After a sharp increase over 2005-09, patent applications decreased more rapidly than in other OECD member countries. In recent years, the share of patent applications in all technologies was on par with the OECD average but below OECD Europe. Nevertheless, over the past decade, Belgium has specialised in environmental management technology, especially related to waste. The country has maintained a relative advantage in water-related adaptation technologies and climate change mitigation technologies in the production or processing of goods. However, overall Belgium is not specialised in climate change mitigation technologies. It should strengthen R&D and innovation to achieve climate neutrality.

Figure 3.13. Belgium has specialised in waste management technology



Notes: Patent statistics are taken from the Worldwide Patent Statistical Database of the European Patent Office, with algorithms developed by the OECD. Data refer to patent applications filed in the inventor's country of residence according to the priority date and apply solely to inventions of high potential commercial value for which protection has been sought in at least two jurisdictions. Environment-related technologies cover all the domains related to the aggregate categories: environmental management, water-related adaptation and climate change mitigation.
The relative advantage in environment-related technologies is an index of the specialisation in environmental innovation of a given country relative to the world average. An index equal to 1 means that a country innovates as much in "green" technologies as the world on average; an index above 1 indicates a relative technological advantage, or specialisation, in environment-related technologies compared to the world average.
Source: OECD (2020), OECD Environment Statistics (database).

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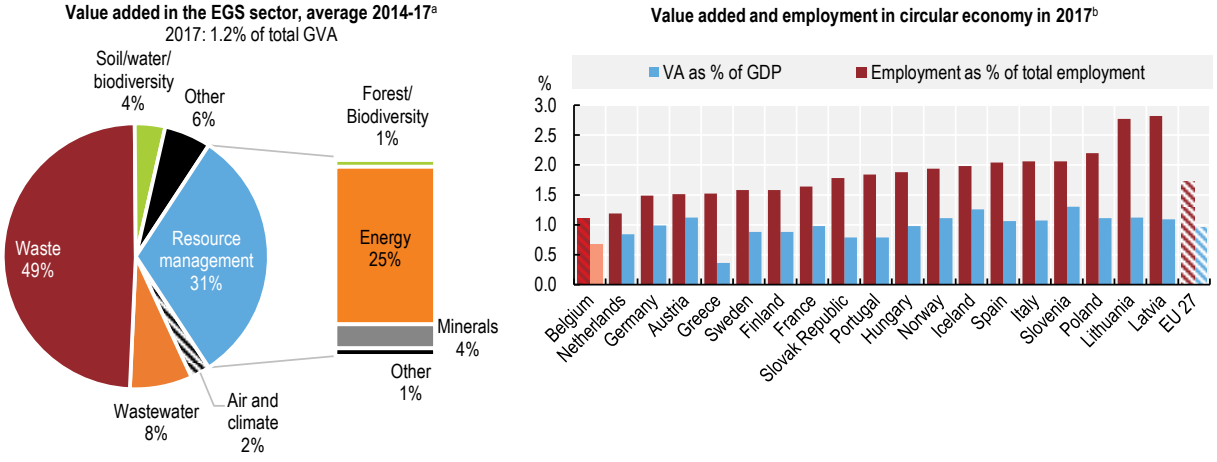
3.6.2. Expanding environment-related markets and employment

The environmental goods and services (EGS) sector[7] is small, accounting for 1% of employment and 1.2% of total value added in 2017, on par with the EU average (FPB, 2019d; Eurostat, 2020b) (Figure 3.14). Waste and energy resource management (production of renewable energy and energy-saving measures) dominate the sector. However, the sectors of recycling, repair and reuse, and rental and leasing seem to have room for development compared with other EU countries. Although figures vary with definitions, it was estimated that circular economy could create between 15 000 and 100 000 jobs by 2030 (PwC Belgium, 2016).

Figure 3.14. Waste management is an important sector, but circular economy has room for development



a) Gross value added in market activities of the environmental good and services (EGS) sector.
b) Recycling sector, repair and reuse sector and rental and leasing sector.
Sources: Eurostat (2019), Circular Economy Monitoring Framework (database); FPB (2019), Environmental Goods and Services Sector Accounts 2014-2017.

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Flanders has a wealth of initiatives such as Circular Flanders to gear up the employment and skills system needed to boost the transition towards a green and circular economy (OECD, 2017b). However, local initiatives are not always aware of each other and may lack the critical mass to make a significant impact. The multiplication of initiatives could also undermine business participation. The construction sector has been actively co-operating with training agencies and universities to adapt skills to stricter building energy performance standards. The chemicals industry faces a structural shortage of high technical skills. It has started collaborating with the education system to build a talent pipeline for sustainable chemistry. By contrast, the agro-food sector has limited awareness of the green economy transition.

Wallonia has been promoting employment-environment alliances to seize opportunities in the sustainable construction sector. The construction sector has created or maintained about 500 job positions annually over 2012-14 due to energy-saving support measures (IWEPS, 2017). In the BCR, the construction sector, trade unions and public authorities established the Professional Reference Centre for Construction to address skills shortages in renovation and retrofitting (IRENA, 2020). The three regions also provide subsidies to develop employment in social enterprises active in the circular economy (Chapter 5). For example, the Resource Reuse Observatory has recorded a doubling of jobs in Wallonia and the BCR since 2004, reaching more than 2 050 full-time equivalent jobs in 2018.

Recommendations on green growth

Enhancing policy coherence for sustainable development and green growth

- Reinvigorate inter-federal co-operation on sustainable development by regularly reporting on implementation of the national strategy, adopting a new Federal Sustainable Development Plan, translating SDGs into time-bound specific quantitative targets and systematically integrating SDGs into regulatory impact analysis and strategic and policy documents.
- Develop a recovery plan with ambitious climate and environmental targets, co-ordinated between the federal and regional governments, building on the assessment of progress and gaps in low-carbon investment in the National Pact for Strategic Investment and the National Energy and Climate Plan.

Greening the system of taxes and subsidies

- Establish a multi-stakeholders' mechanism to track and support the reform of environmentally related taxes and subsidies. Swiftly develop a plan to phase out fossil fuel and other environmentally harmful subsidies.
- Introduce a carbon tax for sectors not subject to the EU Emissions Trading System and develop compensatory measures for vulnerable households. Improve information on energy poverty.
- Vary the road distance charge by space and time for trucks and expand the system to light duty vehicles and cars. Abolish the favourable tax treatment of company cars.

Promoting low-carbon investment and eco-innovation

- Enhance inter-federal co-operation and develop a common vision of mobility laid out in a national mobility plan giving priority to sustainable mode, consistent with related plans at all levels of government.
- Systematically conduct cost-benefit analysis of public investment projects and ensure it is considered in decision making. Consider establishing an independent evaluation body to assess cross-regional projects and harmonise practices.
- Create a clear and predictable support system while gradually integrating renewables into the electricity market as technology costs decrease.
- Accelerate building renovation by developing private funding via energy service contracts, crowdfunding and EU funds. Consider making property and rental income tax reductions conditional upon energy efficiency improvement.
- Promote knowledge sharing and partnerships across regions to encourage eco-innovation.

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Notes

[1] Effective tax rates on energy use translate excise and carbon tax rates into rates per tonne of CO_2.

[2] Congestion costs in terms of delay costs.

[3] Households in bottom five income deciles spending more than 11.7% of disposable income (net of housing costs) on gas and electricity bills.

[4] Households in bottom five income deciles spending more than 2.6% of disposable income (net of housing costs) on water bill.

[5] Reported as subsidies in National Accounts, but the green certificate systems are mostly financed by consumers via the electricity bill.

[6] Along with digital transition, cyber security, education and health.

[7] Employment and gross value added related to market output of the EGS.

Part II. Progress towards selected environmental objectives

4. Biodiversity

This chapter assesses Belgium's performance in protecting its marine and terrestrial ecosystems and managing its trade impacts on global biodiversity, as well as the combination of biodiversity policy instruments. The chapter examines spatial planning policy, agricultural policy, forest policy and climate policy as key catalysts for mainstreaming biodiversity into decision making.

4.1. Introduction

Although it is a small territory, Belgium has a remarkable diversity of species. The total number of species living in Belgium is probably over 55 000. However, the Royal Belgian Institute of Natural Sciences estimated in 2013 that between 20% and 70% of species per main group of organisms were threatened, depending on the group and the region of the country (RBINS, 2013).

Economic considerations call for a more proactive policy in favour of biodiversity. For example, the Flemish Institute for Technological Research (VITO) and the universities of Antwerp and Ghent have assessed the value of the Natura 2000 network in Flanders. The 168 000 hectares (ha) of the network have been shown to provide the following benefits, among others: over 34 million tonnes of carbon dioxide (CO_2) stored each year, 4 000 to 8 000 tonnes of fine dust removed from the air each year, 16 million cubic metres of water purified each year, a gain of 2 100 years of healthy life years (for approximately 1.8 million people), and of 26 to 43 million visitors per year. The authors concluded that Natura 2000 areas in Flanders have a total value to society of EUR 800 million to 1.2 billion. This is considered an underestimate as only 11 of the 36 known ecosystem services were considered (RBINS, 2019).

4.2. Institutional and policy framework

Nature conservation in Belgium is under the responsibility of the three regions with the exception of two exclusive federal competencies: the import, export and transit of non-native plant species, as well as non-native animal species and their remains, and nature conservation at the North Sea. In 2006, the Federal Committee for Sustainable Development approved the first Belgian National Biodiversity Strategy for a period of ten years (NBS 2006-16). The implementation of the strategy was evaluated at mid-term in 2011. However, it is difficult to have a synthetic overview of the progress made for terrestrial ecosystems in the absence of common monitoring indicators between the regions (FPSHFCSE, 2019a). In 2013, the Inter-ministerial Conference for the Environment, composed of the competent ministers of the federal government and the three regions, approved the updating and extension of the NBS until 2020. The extension, under the title "*Biodiversity 2020, update of Belgian NBS*", sought to align with the Aichi targets of the United Nations Convention on Biological Diversity (CBD) (RBINS, 2013).

Belgium's updated NBS includes quantitative targets, as recommended in the 2007 OECD Environmental Performance Review (EPR). In particular, operational objectives under strategic objective 3 of "maintaining or restoring biodiversity and ecosystem services in Belgium in a favourable state of conservation" require the following:

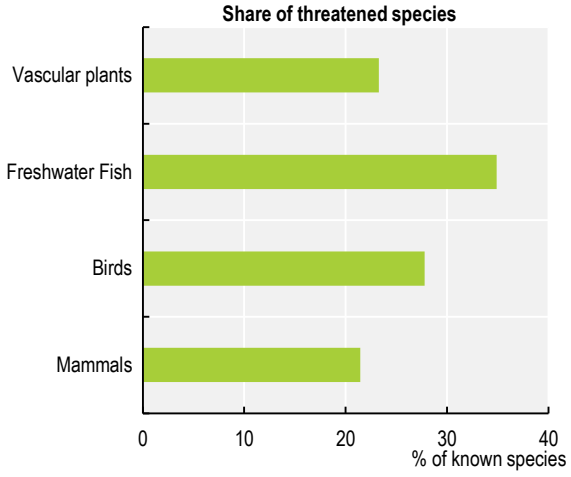
- At least 17% of terrestrial and inland water areas and at least 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and are integrated into the wider landscapes (seascapes for coastal and marine areas).
- Ecosystems, their resilience and their services are maintained and enhanced by establishing, inter alia, a green infrastructure and restoring at least 15% of degraded ecosystems.

Belgium will have to align its NBS and regional biodiversity policies with the ambitions of the new EU Biodiversity Strategy for 2030. At EU level, this new strategy aims to turn 30% of land and sea into protected areas; strictly protect 10% of land and sea, including all old growth forests; plant 3 billion trees; restore 25 000 kilometres (km) of rivers to a free-flowing state; halve pesticide use; reduce fertiliser use by 20%; and turn 10% of agricultural area into high-diversity landscape features and 25% into organic farming (EC, 2020a).

4.3. State, pressures and trends

The state of biodiversity is not good, as evidenced by the high percentage of threatened species. According to OECD data,[1] more than a third (35%) of freshwater fish species are threatened, 28% of bird species, 23% of vascular plant species and 21% of mammal species (Figure 4.1). In 2013-18, the share of habitat types of (European) Community interest in favourable conservation status was low (7% in Flanders, 2% in Wallonia). The same was true for the share of species of Community interest (26% in Flanders, 14% in the Atlantic biogeographic region and 21% species in the continental biogeographic region for Wallonia). Compared to 2007-12, the number of species in an unfavourable conservation status increased in both regions.[2]

Figure 4.1. A significant number of species are threatened



Note: 2016 data or latest available year.
Source: OECD (2020), OECD Environment Statistics (database).

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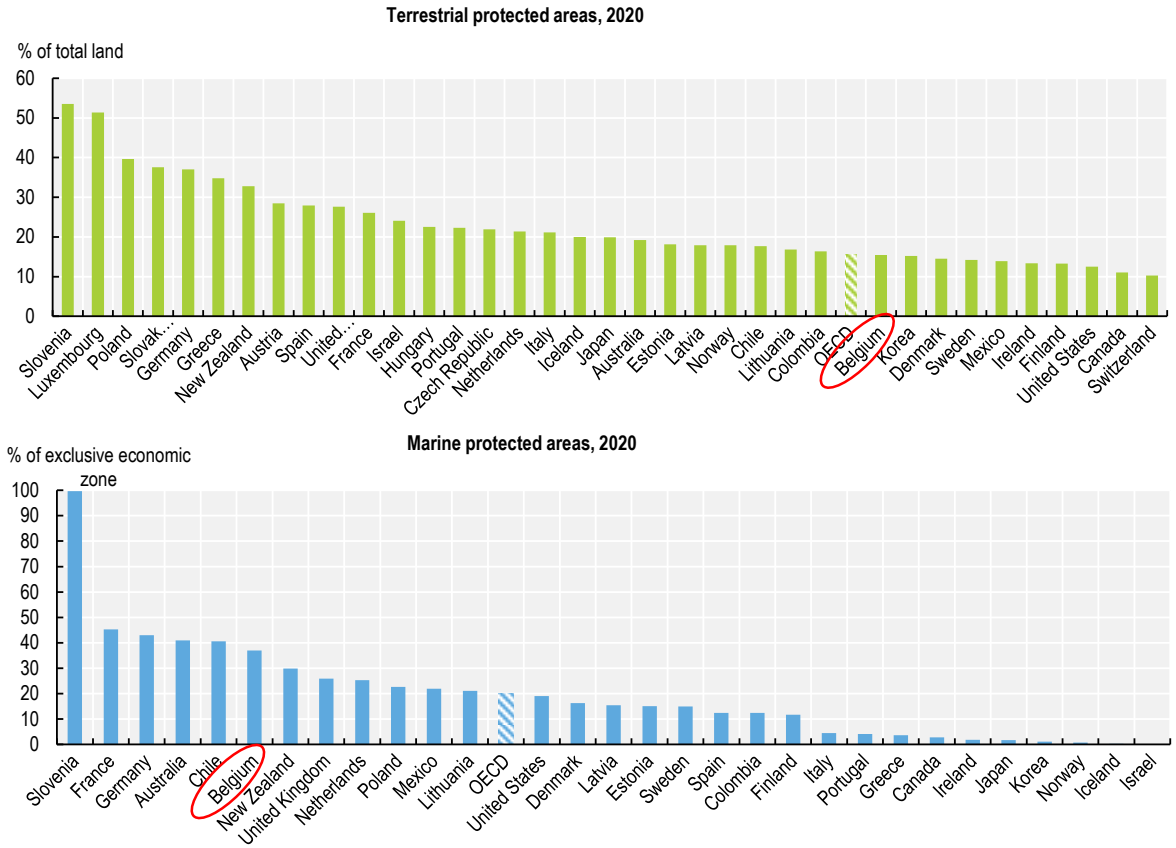
Overall, protected areas have increased significantly in Belgium since 2007. In 2020, the coverage of protected areas almost meets the Aichi target of 17% of land area and far exceeded the 10% target for coastal and marine areas (Figure 4.2). However, none of the marine protected areas and only 1% (Wallonia) to 2% (Flanders, Brussels-Capital) of terrestrial protected areas have an effective (strict) level of protection. The harmonised system of differentiated nature management plans (NMPs) recently implemented in Flanders is a step in the right direction by allowing increased levels of ambition on biodiversity. This new approach of shifting public financial support from land acquisition to management of nature responds well to the 2007 OECD EPR recommendation to strengthen the management of protected areas through agreements with landowners/land users.

Figure 4.2. Protected areas have increased



Source: OECD (2020), OECD Environment Statistics (database).

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Efforts have also been made to respond to the 2007 OECD EPR recommendation to strengthen connectivity between protected areas through enhanced regional co-operation (Box 4.1). According to the Digital Observatory of Protected Areas of the European Commission's Joint Research Centre, the connectivity of terrestrial protected areas is relatively high compared to EU-27 countries: 18.55% of Belgian territory is covered by "protected and connected lands".[3]

However, at 195 m^2/km^2 between 2012 and 2018, land converted to artificial land ("land take") is high by EU-28 standards despite progress in re-cultivation of urban areas to semi-natural land (66 m^2/km^2 during the period) (EEA, 2019). Landscape fragmentation remains a major concern in Belgium; it is among the highest in the EU-27 and continued to increase between 2009 and 2015 (EEA, 2019). Defragmentation is a top priority for the Flemish government. In Wallonia, the fragmentation of the landscape is mainly due to the conversion of permanent meadows to annual crops or to temporary meadows (SPW, 2017a). The planting of grass strips in annual crops, with the support of agricultural policy, has helped to mitigate this trend somewhat. The Brussels Ecological Network seeks coherence between nature protection and land-use planning. It is nonetheless essential, in the three regions, to further mainstream biodiversity policy into other policies – notably land use, agricultural and forestry policies (Section 4.5) – and to extend connectivity management to the management of green infrastructure and ecosystem services

(nature-based solutions). It is about managing nature wherever possible, including in agricultural, forest and urban areas, and not just in protected areas.

Box 4.1. The Sonian forest: An example of regional co-operation

In 2008, the three Belgian regions approved a framework document to co-ordinate the management of the 5 000 ha of the Sonian forest and associated parks (Solvay park, Tervueren park) by public administrations and stakeholders. The Flemish Region (the Agency for Nature and Forests, ANB) administers 56% of the Sonian forest, the Brussels-Capital Region (Brussels Environment) 38% and the Walloon Region (Nature and Forests Division) the remaining 6%. The Tervueren park is managed by the Royal Donation and the Solvay park by the Solvay Foundation. The framework document has been translated into site management plans and, recently, the regions have created a legal person (the Sonian Foundation) to ensure co-ordination. The challenge is to strengthen the protection of the ecological core of the forest and stem the fragmentation due to the transport infrastructure (restoration of dry valleys, creation of "ecoducts"). Efforts are also needed to implement the Natura 2000 network and to involve relevant authorities. In 2017, the nature reserves of the Sonian forest were inscribed on the UNESCO World Heritage List, among 78 exceptional beech forests in 12 European countries.

4.3.1. Marine biodiversity

In 2016, a programme of measures was published to implement the 2008 EU Marine Strategy Framework Directive (EU MSFD) over a period of six years (2016-22). However, about 30% of the Belgian part of the North Sea (BPNS)[4] still does not reach the target of good environmental status set for 2020 by the EU MSFD, especially the coastal waters (first nautical mile) (FPSHFCSE, 2019b). This indicates problems of eutrophication and marine litter. Satellite monitoring of coastal water eutrophication has been set up (the MULTI-SYNC project). A risk assessment of eutrophication and marine litter pollution could be undertaken. This could follow the example of the North Sea pollution risk assessment carried out between 2012 and 2015 within the framework of the Bonn Agreement: Area-Wide Assessment of Risk Evaluations project.[5] The analysis should cover land-based sources of nutrients and litter from the Scheldt, the Rhine-Meuse basin and the Seine-Somme basin, which all influence the water quality of the BPNS (Belgian State, 2018a). This would respond to the 2007 OECD EPR recommendation to continue efforts to reduce pollutant releases to the North Sea.

Belgium has made significant efforts to improve protection of marine ecosystems through the creation of new marine nature reserves, as recommended in the 2007 OECD EPR. In 2010, marine protected areas (MPAs) increased from 10% to 37% of BPNS, beyond the new objectives of the EU Biodiversity Strategy for 2030. Four Natura 2000 sites have been designated in the BPNS. These include three special protection areas (SPA) under the 1979 EU Birds Directive along the coast (total area of 309 km²) and one special area of conservation (SAC) under the 1992 EU Habitats Directive at the French border (1 177 km²), partially overlapping (the Natura 2000 network covers 1 238 km² or 36% of BPNS). A 2016 royal decree regulates management of these sites, while a 2017 ministerial decree sets their conservation objectives. In early 2018, the competent minister adopted their management plans for 2018-23, after public consultation. Certain activities (such as fishing, sand and gravel extraction) are subject to restrictions to conserve or restore protected habitats (sandbanks, gravel beds and banks of sand mason worms) and measures are taken to limit disturbance of birds and marine mammals (porpoise, the common and the grey seal), including reduction of underwater noise (Belgian State, 2018b). However, their effective level of protection raises questions: the International Union for Conservation of Nature (IUCN) considers that they fall into either (low) protection category IV (habitat or species management area) or none of the six IUCN categories. Indeed, MPAs only exclude economic activities deemed likely to harm species and habitats, on the basis of an “appropriate assessment” (FPSHFCSE, 2020).

In 2014, the Marine Spatial Plan (MSP) with legal authority replaced the indicative "master plan" that had prevailed since 2003. Belgium was among the first countries to implement such an integrated and multipurpose sea-use planning on its territorial waters (12 nautical miles) and exclusive economic zone (200 nautical miles) (FPSHFCSE, 2020). The development of offshore wind energy (construction of wind farms) and the protection of designated Natura 2000 sites have been the main drivers for strengthening planning for the use of the sea. In terms of biodiversity protection, in addition to Natura 2000 sites, the MSP provides for the sustainable extraction of sand and gravel (prohibited during fish spawning seasons), the mapping of marine habitats, the protection of wrecks valuable for biodiversity and the management of land-based activities affecting the marine environment. Beyond the offshore wind farms and despite its small surface area, the BPNS supports many economic activities regulated by the MSP. These include commercial fishing, offshore aquaculture, maritime transport, dredging, sand and gravel extraction, pipelines and cables, military activities, tourism and leisure and science and research. The MSP undertook strategic environmental assessment (SEA). Cross-border consultation was carried out with the Netherlands, France and the United Kingdom. In 2019, following public consultation process in 2018, a second MSP was released for 2020-26. The new MSP provides for a new MPA at the Dutch border and to merge a Flemish nature reserve and a federal SPA to optimise monitoring, scientific research and enforcement. In addition, three “search zones” have been designated (mostly within the current MPA). These allow restrictions on activities that affect the seabed to ensure nature restoration and conservation.

4.3.2. Terrestrial biodiversity

Flanders

Protected areas

In 2019, considering overlaps, the areas with approved nature management (6.9% of Flanders), the Flemish Ecological Network (VEN) (7%) and the Natura 2000 network (12.3%) covered 17% of Flanders, reaching the CBD Aichi target of 17% for 2020. The areas under a management plan with clear objectives on biodiversity and/or nature conservation targets increased from 63 000 ha in 2011 to 94 060 ha in 2019. This increase responded to the 2007 OECD EPR recommendation to continue efforts to create nature management areas. However, areas under strict protection (i.e. nature reserves) represent only 1.9% of the land area, far from the EU target of 10% by 2030. The Flemish energy and climate plan 2021-30, published at the end of 2019, provides for 20 000 ha of additional areas under effective nature management by 2024. It also provides for 10 000 ha of additional forest by 2030[6] to implement the EU "no debit rule" for the land use, land-use change and forestry (LULUCF) sector.[7]

In 2017, the Flemish government approved the Natura 2000 programme for the first cycle 2016-20. However, to date, the Flemish Region still does not have a general nature conservation strategy. Yet, the Nature Decree (articles 11 and 12) provides for such a "nature plan". With around 29 000 ha of nature and forest reserves in 2019, Flanders is well below the target set in 1997 by the Spatial Structure Plan (RSV) of 38 000 ha. The target date of 2007 was postponed initially to 2012 and then until the next revision of the RSV (which is in progress). The 1997 RSV also aimed to increase the forest area by 10 000 ha. The second forest inventory (in 2009-19) revealed the Flemish forest area has remained practically unchanged since the first inventory (in 1997-99), at around 140 000 ha, or 10% of the territory.

The demarcation of the VEN is late. At the end of 2018, 74% of the VEN (93 000 ha) had been demarcated, against 87 000 ha in 2007, of which only 2 000 ha were covered by approved spatial implementation plans (RUPs). The RUP is the legally binding tool to implement spatial planning policy at regional level. The 1997 Nature Decree and the RSV, the strategic tool for spatial planning policy at regional level, provide for the delimitation of a VEN of 125 000 ha (9.2% of Flemish territory) by 2003. According to the Nature Decree, the VEN should be made up of sites where nature conservation takes precedence over all other activities.

In 2018, a new classification of nature management areas was adopted – based on types of NMP – in which all areas will be distributed by 2030. The logic is to shift public financial support (PFS) for nature conservation from the (costly) acquisition of land to incentives for landowners (to which all landowners are eligible upon request). The NMP types distinguish four levels of ambition for the protection of nature. In Type 1 areas, preserving existing nature is required, while higher nature quality is sought in Type 2, 3 and 4 areas. The higher the ambition, the higher the PFS (Table 4.1).

Table 4.1. Financial incentives increase with the level of nature protection in Flanders

Type	1	2	3	4
Main objective	Maintain current nature values	• Meet N2000 objectives on 25% of the area • Meet INM criteria	• Meet N2000 objectives on 90% of the area • Meet INM criteria	• Status "nature reserve" • Meet INM criteria with easement
Public financial support	n.a.	Inheritance tax exemption	Inheritance and gift tax exemptions	Inheritance, gift and property tax exemptions
	Visitor access: EUR 40/ha/year for roads and trails (EUR 70/ha the first year)	Same as Type 1 plus: • One-off support to draw up a NMP • Basic support for INM • Additional support[1] • Ad hoc support (up to 50% of the cost)[2] • 60% of purchase price of land for afforestation (up to EUR 2.5/m²)	Same as Type 2 plus: • Ad hoc support (up to 80% of the cost)[2]	Same as Type 3 plus: • Ad hoc support (up to 90% of the cost)[2] • 100% of purchase price of land to create a nature reserve

Notes: n.a. = not applicable. N2000 = Natura 2000. INM =integrated nature management (INM principles are enshrined in the Nature Decree – Chapter IIIbis, articles 12bis to 12 novies). NMP = nature management plan (Flemish government decrees of 2017 govern the preparation of NPMs, see www.natuurenbos.be/beleid-wetgeving/natuurbeheer/natuurbeheerplan/wetgeving/het-nieuwe-natuurbeheerplan-geldig-van).
1. For costs such as the conversion of a forest into a Natura 2000 site; protection of species; monitoring of performance indicators, reaching climax vegetation.
2. For specific measures aimed at achieving EU nature conservation objectives.
Sources: ANB (2019, 2018).

The ANB is progressively evaluating the management plans drawn up before 2019 for forests (basic plan and extended plan), forest reserves, nature reserves and parks (harmonious park and green space management plan) to convert them to NMPs. This should make nature planning more transparent (single procedure for all types of ecosystems such as forest, heather, open environments), organised (private owners, nature organisations and local governments use the same procedure[8]), linked to PFS and long term (the NMP is valid for 24 years,[9] with evaluation by the ANB every six years).

The NMP of land located in a SPA or in the VEN must be at least Type 2. The management of Type 2 habitats and beyond must comply with "integrated nature management" (INM) criteria approved by the Flemish government. In 2017, INM criteria replaced the criteria for sustainable forest management (SFM) on which they are based. Thus, forest management plans for Type 2, 3 and 4 areas must comply with the INM criteria.[10]

Connectivity

To counteract the fragmentation of nature areas and create larger and connected habitats for plants and animals, the Nature Decree and the RSV provide for supplementing the VEN with the "integral nesting and support network" (IVON) and other nature protection zones (such as forest areas). IVON is made up of nesting areas and connecting areas. In nesting areas, nature conservation takes place in parallel with other activities such as agriculture, forestry, military use or the abstraction of drinking water. The connecting

areas aim to allow the dispersion of plants and animals between the various nature protection sites; these are small linear or ribbon landscape elements. The Nature Decree set the target of demarcating 150 000 ha of nesting areas by 2003. By the end of 2018, only 5 700 ha, or 4% of the target, had been demarcated, compared to 1 000 ha in 2007.

Efforts have been made to respond to the 2007 OECD EPR recommendation to strengthen connectivity between protected areas through the use of rivers as biodiversity corridors (Box 4.2).

Box 4.2. Using rivers as biodiversity corridors

The Flemish Waterway (VW) manages and operates the navigable inland waterways. VW protects aquatic life by building spawning areas along the canals. It monitors their effectiveness in collaboration with the Nature and Forest Research Institute [INBO] and ANB. VW also protects aquatic life by facilitating migration by fish ladders along the Meuse (at the mouth of the tributaries). VW also applies ecological management of the vegetation on the edges (berms) of waterways and towpaths in accordance with the 1984 Roadside (verge) Decree that regulates the mowing dates. VW has approved roadside management plans for each of the canals under its management. Finally, VW restores natural flood plains as part of the Sigma plan (1977, updated in 2005, to be completed by 2030), which aims to protect Flanders from the floods of the Scheldt and its tributaries.

In addition to controlling the quantity and quality of surface water and groundwater, the Flemish Environment Agency (VMM) manages the main non-navigable inland waterways and aims for their ecological recovery, in particular by restoring the flood plains to limit flood damage.

Maintaining extensive meadows and planting trees on the banks of rivers in the Brussels-Capital Region, is provided for in the second water management plan (2016-21). This should strengthen ecological continuity between the Natura 2000 sites, nature reserves and forest reserves, as shown by an *ex ante* SEA. According to the SEA, the plan should also improve aquatic life by tackling the eutrophication of water bodies (Stratec, 2015).

Wallonia

Protected areas

With overlaps considered, the protected areas under the Nature Conservation Act (0.9% of Wallonia) and the main ecological structure (18%) cover 16.6% of Wallonia. This is close to the CBD Aichi target of 17% for 2020. Protected areas under the 1973 Nature Conservation Act increased from 10 400 ha in 2007 to 16 000 ha in 2019. This increase responded to the 2007 OECD EPR recommendation to continue efforts to create protected areas. However, in 2019, nature areas under strict protection (i.e. nature reserves) represented only 0.8% of the land area (1.1% if integral forest reserves under the Forest Code are included). This remains far from the EU target of 10% by 2030. Wallonia aims to provide its city dwellers with green spaces within a quarter of an hour's walk.

Connectivity

The main ecological structure (SEP) (around 300 000 ha) consists of Natura 2000 sites (221 000 ha or 13% of Wallonia) and sites of great biological interest (sheltering at least one rare, threatened or protected species or at least one rare, threatened habitat). It includes 46 500 ha of agricultural areas with high natural value (HNV) (6.1% of the utilised agricultural area, or UAA). [11] The SEP includes areas of current biological interest ("ecological infrastructure") or potential biological interest. It includes central zones (ZC), in which nature conservation has priority, and development zones (ZD), in which the conservation of species and

habitats goes hand in hand with economic activity. The SEP embodies the three key objectives of the EU Biodiversity 2020 Strategy: going beyond the framework of the Natura 2000 network; considering restoration of ecosystem services; and strengthening the contribution of agriculture and forestry to the protection of biodiversity. Wallonia aims to transform the SEP into a functional ecological network with legal status.

Brussels-Capital Region

Protected areas

With overlaps considered, the nature and forest reserves protected under the 1973 Nature Conservation Act (1.8% of Brussels-Capital) and the Natura 2000 sites (14.3%) cover 14.5% of Brussels-Capital. This is below the CBD Aichi target of 17% for 2020. Nature and forest reserves increased from 229 ha in 2007 to 291 ha in 2019, responding to the 2007 OECD EPR recommendation to continue efforts to create protected areas. However, in 2019, nature and forest reserves represented only 1.8% of the land area, far from the EU target of 10% for strict protection of nature by 2030. Only one Natura 2000 site, the Sonian forest, has a management plan (adopted in 2019). The site covers more than 70% of the surface area of Natura 2000 sites.

The region's first Nature Plan, adopted in 2016, sets targets for improving public access to green spaces by 2020. By 2020, each Brussels resident should have access to a green space within 200 metres of their home (400 metres for a green space of more than 1 ha) (Brussels Environment, 2016). This is a very ambitious target; on average, only 44% of the population is within 300 metres from a public park in EU-28 core cities (Maes et al., 2019). The forthcoming update of the State of Nature report, published at regional level for the first time in 2012, should assess the extent to which the target has been reached. Brussels-Capital could draw inspiration from the Japanese city of Yokohama which, since 2009, has imposed a green tax on residents – JPY 900 (EUR 7.5)/inhabitant/year – and on urban businesses (9% of the municipal tax) to finance development and management of green spaces (Takagi, 2015).[12]

The Regional Sustainable Development Plan (PRDD), last revised in 2018,[13] sets an aspirational goal of maintaining 50% of undeveloped land (not built) by 2040, despite the densification of housing that will occur. Green infrastructure (green spaces and natural and semi-natural ecosystems) occupy 54% of the region, including 44% of closed (dense) environments and 10% of open environments (Brussels Environment, 2013). This is above the EU average of 40% in core cities (Maes et al., 2019). There is, however, a huge disparity: the city centre (the pentagon) has few green spaces, while the periphery forms a veritable green belt around the city (the Sonian forest alone represents more than 10% of green spaces). According to the PRDD, the creation of new green spaces must be done primarily in the city centre; in the first ring, the “green islands” in both built and undeveloped land should be strengthened and in the second ring the "green belt" should be protected.

Connectivity

The fragmentation of green spaces is a source of concern, including in the green belt (Brussels Environment, 2013). The PRDD defines the Brussels Ecological Network (REB) as all nature reserves, forest reserves and Natura 2000 sites, as well as sites of high biological value in the sense of the Regional Land-Use Plan (PRAS, Section 4.5.1) and elements of the urban and rural landscape (isolated and linear) that favour the movement of species. The REB is made up of central zones, development zones and connection zones. However, the PRDD does not provide a quantified target for the REB. The green network (all green spaces) and the blue network (hydrographic network made up of rivers, ponds and wetlands) contribute to the implementation of REB. Both the PRDD and the Nature Plan aim to consolidate the regional green network. The PRDD also proposes to strengthen the continuity of the blue network, in particular to allow rivers to flow into the Senne. However, neither plan proposes to revisit the concept of

"green and blue network" developed in Brussels-Capital in 2001. This network is based on the principle that connecting different green spaces and bodies of water can contribute effectively to nature protection by creating biodiversity corridors.

4.4. Policy mix

The main instruments of biodiversity policy are direct environmental regulation and public financial support. Belgium has also used some pricing instruments (taxes, tradable permit systems) and payments for ecosystem services (PES), including Natura 2000 payments under agricultural policy (Section 4.5.2). Commendable efforts have been made to develop information measures and voluntary schemes (Table 4.2). The 2007 OECD EPR recommendation to introduce a local natural tax on building permits, as is the case in France, has not been followed up.

Table 4.2. A fairly diverse set of biodiversity policy instruments but few payments for ecosystem services

Type	Federal	Brussels-Capital Region	Flanders	Wallonia
DER	Nature Conservation Act (1973)	► Nature Conservation Act (1973) ► Ordinance on nature conservation (2012) ► Pesticides strictly prohibited in public spaces since 1 January 2019 and prohibited in sensitive private areas (proximity to fresh water, nature reserves)	► Nature Decree (1997) ► On-site inspection by forest rangers and ANB nature inspectors; failure to comply with the law is liable to administrative measures and non-compliance fines or even criminal prosecution (Environmental Enforcement Decree) ► EIA on the location of wind turbine masts	► Nature Conservation Act (1973)
T&C	From 2017, charge on offshore wind farm to finance marine pollution abatement and (EUR 100 000/year) nature		► Access fee for few high conservation value areas ► User charge for commercial activities in ANB nature areas (e.g. music festivals, nature runs, cyclo-cross) ► Fishing and hunting license fees allocated to funds dedicated to fishing ("Visserijfonds") and game management ("Jachtfonds")	► Municipal tax on wind turbine masts over 1 MW (EUR 12 500-17 500/year depending on the power) ► Tax on the environmental load from agriculture: EUR 10/unit of environmental load (EUR 1.1 million in 2019) ► Fishing and hunting license fees (EUR 12-37/year depending on type of fishing; EUR 223/hunting season) ► Inspection fees to be paid annually by organic farmers (to check compliance with Regulation (EC) 834/2007)
TPS			From 2007; tradable nutrient emission rights In 2019, feasibility study of a system of habitat banking (experiments to be set up)	
PFS	► In 2019, EUR 430 million to implement the Habitats and Birds Directives, the Marine Strategy Framework Directive and the federal action plan to combat marine litter in the BPNS (EUR 150 to 225 million in 2016-18) ► EUR 2 billion/year in ODA for	► In 2016-19, total of EUR 1.7 million to NGOs and EUR 0.6 million to municipalities for activities related to biodiversity ► From 2009, urban green roofs	► Until 2018, EUR 250-300/ha/year to manage nature reserves (EUR 7 million in 2015) ► From 2018, according to nature management plan in protected area (Table 4.1) ► In 2014-20, EUR 32 million/year by CAP Rural Development Programme (RDP III)	► From 1986, purchase of land to create nature reserves ► In 2010, DGARNE budget having a positive impact on biodiversity was estimated at EUR 60 million ► In 2014-20, EUR 51 million/year by CAP Rural

Type	Federal	Brussels-Capital Region	Flanders	Wallonia
	biodiversity ► African Elephant Fund under CITES ► African Carnivores Initiative under CMS ► International Whaling Commission (IWC) ► Marine Protected Area Fund under CCAMLR ► REDD+ under UNFCCC		(Table 4.7)1 ► 130 green jobs in nature areas and forests for people who have difficulty accessing the labour market due to limited skills or qualifications ► Protective enclosure to protect sheep from wolf attacks ► In 2019, EUR 2 million for urban green spaces (“Nature in Your Neighbourhood” programme) ► In 2001, Compensatory Afforestation Fund	Development Programme (RDP III) (Table 4.7)1
PES			Late mowing of meadows to protect nesting birds	From 2016, planting of hedges (+ 25% if it aims to improve biodiversity, landscape or soil quality or to produce biomass for energy)
IM	► "BiodiversiTree" Internet tool (concrete examples for companies wishing to become more involved in biodiversity) ► Capacity building of Belgian co-operation partners (CEBioS)	In 2018, a five-year structural biodiversity monitoring scheme was adopted	► Every two years, INBO report on the state of nature (NARA); the NARA 2014-19 cycle was designed as an ecosystem assessment ► State of the Environment Report (MIRA) covers biodiversity and biodiversity policy ► MINA and NARA jointly monitor the impact of climate change on nature[2]	State of the Environment reports have been published for 35 years; the last one in 2017
VS	► In 2017, #Bebiodiversity website platform (brings together administrations, business, trade unions and NGOs) to encourage voluntary initiatives from the private sector (respond to GPBB) ► In 2014, horticultural sector adopted a voluntary code of conduct (a charter) on IAS as part of the LIFE + project "Alternatives to IAS"	As part of the 2016 nature plan, BE has signed specific biodiversity agreements with other regional public administrations (Brussels Mobility for public transport, INFRABEL for the rail network, CITYDEV for urban renewal and Port of Brussels) and an agreement is being prepared with the Housing Corporation (SLRB)	► ANB finances a "contact point for private management" to foster co-operation with private landowners in nature and forest policies ► ANB has a specialised team and a consultation platform (“Natura2000 locally”) to foster co-operation with local communities ► In 2018-21, Omgeving, ANB and NGOs launched a "green deal business and biodiversity": 133 companies have voluntarily committed to increasing biodiversity on their land/business parks (1 900 ha)	From 1996, the Trade Union Environmental Awareness Network (RISE) has been promoting environmental action in businesses

Notes: T&C = Taxes and charges. TPS =Tradable permit system. DER = Direct environmental regulation. PFS = Public financial support. PES = Payments for ecosystem services. IM = Information measures. VS = Voluntary schemes.
Omgeving = Flemish Department of Environment and Spatial Development. ANB = Omgeving's Agency for Nature and Forests. INBO = the Nature and Forest Research Institute. SPW = Wallonia Public Service. DGARNE = SPW's Directorate-General for Agriculture, Natural Resources and the Environment (oversees environment, agriculture and forestry policies). BE = Brussels Environment (originally Brussels Institute for Environmental Management). BPNS = Belgian part of the North Sea. MINA = Flemish Environment and Nature Council.
ODA = official development assistance. CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora. CMS = Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention). CCAMLR = Commission for the Conservation of Antarctic Marine Living Resources. REDD+ = Reducing Emissions from Deforestation and Forest Degradation. UNFCCC = United Nations Framework Convention on Climate Change. GPBB = Global Partnership for Business and Biodiversity under the Convention on Biological Diversity. CAP = Common Agricultural Policy. IAS = invasive alien species. EIA = Environmental impact assessment. CEBioS = Capacities for Biodiversity and Sustainable Development (development co-operation programme implemented by the Royal Belgian Institute of Natural Sciences - RBINS).
1. Part of the RDP budget devoted to "restoring, preserving and enhancing ecosystems", which relates to improving biodiversity, soil and water quality.
2. Through four indicators: dragonfly species from southern Europe; development of oak and beech leaves; share of damaged forest trees; and peak moment of pollen production in birch and grasses
Source: OECD Secretariat.

4.4.1. Towards more payments for ecosystem services

Recent developments in the three regions could pave the way for more PES, a key instrument for financing biodiversity in a cost-effective way. In Flanders, the 2019 INBO report ("Nature Outlook 2050") assesses nature-based solutions for key environmental and well-being challenges (Table 4.3). Four scenarios reflect different visions of the future regarding nature and society. In the "letting nature find its way" scenario, natural spaces represent almost a quarter of Flanders, with a tendency to large contiguous forests. Nature also expands in the "working with nature" scenario, but the expansion is more targeted to meet local needs such as protection against erosion. In the "strengthening of cultural identity", natural spaces extend slightly (almost a fifth of the territory); the expansion consists not only of forests, but also of meadows, moors and dunes, forms of nature that correspond well to the regional identity of Flanders. Natural spaces hardly increase in the perspective of "using the economic flow", because many extensive meadows have an economic (agricultural) function.

Table 4.3 shows the prospects of "working with nature" and "strengthening cultural identity" are more promising than those of "letting nature find its way" and "using the economic flow". This shows that nature conservation policy must target not only the quantity of nature, and its connectivity, but also the quality of the environmental and well-being services provided. VITO[14], an independent Flemish research organisation, developed an online calculation tool in 2011 at the request of the Flemish Department of Environment and Spatial Development ("Omgeving") and the ANB. The "Nature Value Explorer" quickly assesses the monetary value of ecosystem services of green-blue spaces in cities and the countryside as a decision-making aid for spatial planning. Ecosystem services cover food production, cooling, recreation, water infiltration, air and water quality, and health benefits.

Table 4.3. Nature-based solutions to environmental and well-being challenges in Flanders

Environmental and well-being challenge		Perspective (scenario)			
		Strengthening cultural identity	Letting nature find its way	Using the economic flow	Working with nature
Halting the loss of biodiversity	Connectivity	↑	↑↑	~	↑
	Space	↑	↑↑	~	↑
	Environmental pressure	~	↓↑	↓	↑
Guaranteeing a healthy living and working environment	Air quality	~	~	~	~
	Heat stress	↑	↑↑	↑	↑↑
	Space	↑↑	↑↑	~	↑↑
Coexisting and living consciously	Safety and social cohesion	↑	↓↑	↓↑	↑
Using natural resources sustainably	Biomass	↑	↓	↑	↑↑
	Soil	↑	↓	↓↑	↑↑
	Water quality	↑	↓↑	↓↑	↑↑
	Water quantity	~	~	~	~
Dealing with a changing climate	Flood risk	↑	↑↑	↓	↑↑
	Resilience	↓↑	↑↑	↓	↓↑
	Carbon storage	~	↑	~	~
	Drought	↑	↑↑	↓	↑↑
Ensuring food security	Space	↓	↓	~	↓
	Resilience	↑	↓	↓	↑
	Dependence on imports	↓↑	↓	~	↓↑

Notes: Effect of green infrastructure on mitigating the challenge: very positive ↑↑, positive ↑, neutral ~; variable ↓↑; negative ↓.
Based on quantitative analysis and expert assessment.
Source: INBO (2019).

In Wallonia, in 2014, the Wallonia Public Service (SPW) and universities launched the Wal-ES platform to develop tools for public decision making using the concept of ecosystem service (ES). During its 2014-16 pilot phase, Wal-ES defined ES and how to evaluate it. A typology of ES adapted to the Walloon context defines ES as provisioning services, regulating services and cultural services. Mapping and evaluation of ES at regional level are underway. A tool for assessing the environmental and socio-economic impact of rural land development projects based on the concept of ES has been developed. Wal-ES has broad potential scope (e.g. cost-benefit analysis of green infrastructure projects for the regulation of run-off, mudslides and erosion, for socio-economic development in land-use planning and for the development of brownfields). Identifying the many ES of nature, many of which are not remunerated today, does not mean granting PFS to all. The PFS is only justified for ES that are not (or cannot be) remunerated by the market and go beyond legal requirements (no one is supposed to be paid to comply with the law). For example, PFS could apply to farmland that provides an ecological corridor service and nature reserves that provide a habitat service (ensuring effective conservation of biodiversity). In addition, PFS must not go against the polluter pays principle (e.g. when seeking a biodiversity co-benefit of PFS to mitigate water pollution or greenhouse gas [GHG] emissions).

Brussels-Capital plans to develop its own method of evaluating the ecosystem services provided by nature by involving regional urban planners. Beyond habitats for biodiversity, urban green spaces provide multiple ecosystem services that should be valued and managed (air purification, mitigation of heat islands and retention of stormwater, improving resilience to climate change). Nature also provides “well-being services” - the containment linked to the 2019 COVID-19 epidemic highlighted the essential contribution of the green and blue networks to the physical and mental health of the urban population - as well as “economic services” with nature contributing to urban attractiveness. For example, in 2017 VITO developed the “Green Tool” (Groentool) for the city of Antwerp. The tool aims to make better use of urban greenery and water bodies in urban developments. To that end, it assesses their impacts on air quality, heat stress, sound, water management, biodiversity, carbon capture and recreation, from street level to city scale. The tool can estimate the effects on property prices and the distributive effects of an improvement in the quality of the urban environment.

4.5. Mainstreaming biodiversity in other policies

4.5.1. Spatial planning policy

In the 1970s and 1980s, before regionalisation, Belgium adopted legally binding “sector plans” to plan the specific uses of land throughout the country. Most of the land use in Belgium is still planned by sector plans. From the mid-1990s each region introduced its own spatial planning system, a two-stage system (strategic plan and legally binding executive plan) supplemented by urbanistic rules at regional and local levels (Table 4.4).

Table 4.4. Each region has its own spatial planning instruments

Region		Brussels-Capital	Flanders	Wallonia
Legal framework		Brussels Spatial Planning Code (CoBAT) 2004	Flemish Code on Spatial Planning (VCRO) 2009	Spatial Development Code (CoDT) 2017
Regional level	Strategic plan	Sustainable development plan (PRDD)	Spatial structure plan (RSV)	Development scheme (SDT)
	Executive plan	Land-use plan (PRAS)	Spatial implementation plans (RUPs)	Sector plans (PS)
	Urbanistic rules	Planning regulations (RRU)	Planning regulations (GSV)	Planning guide (GRU)
Provincial level	Strategic plan		Spatial structure plan (PRS)	Development scheme (SDP)[1]
	Executive plan		Spatial implementation plans (RUPs)	
	Urbanistic rules		Provincial planning regulations (PSV)	
Municipal level	Strategic plan	Development plan (PCD)	Spatial structure plan (GRS)	Development scheme (SDC)
	Executive plan	Special land-use plan (PPAS)	Spatial implementation plans (RUPs)/ Special plans of construction (BPAs)	Local orientation scheme (SOL)
	Urbanistic rules	Planning regulations (RCU)	Planning regulations (GSV)	Planning guide (GCU)

Note: 1. Multi-municipal level (the province has no longer direct responsibility for spatial planning).
Source: Adapted from Hanocq (2011).

Brussels-Capital

Defined by article 16 of the Brussels Spatial Planning Code (CoBAT), the PRDD sets long-term objectives and priorities for spatial planning according to economic, social, environmental and mobility needs. The PRDD provides for the creation of new "quality districts" offering housing, public facilities, activities and green spaces (principle of reasoned densification). Another priority is to develop a pleasant living environment (public spaces, green networks, rivers, biodiversity, no noise and air pollution), manage the risks of flooding, and develop urban agriculture and circular economy. Although having only an indicative value, the PRDD is the regional development planning tool to which lower ranking plans or municipal plans must comply.

The PRAS, which came into force in 2001, is legally binding. It defines "green spaces" (vegetation and bodies of water) as spaces intended for the conservation of the natural environment whose development must preserve scientific or aesthetic interest or their social or educational role. Green spaces hosting rare animal and plant species or with significant biological diversity are declared to be of high biological value. Only developments for the protection of the natural environment, species or connection to the green network are authorised. PRAS defines "forest areas" as wooded areas whose development must preserve the ecological, economic and social functions of woods and forests. The "park areas" (vegetation, water bodies and relaxation facilities) have a social, recreational, educational, landscaping or ecological function.

PRAS provides legal protection of biodiversity, to varying degrees, to much of the region (Table 4.5). Creating new green spaces in the city centre, as foreseen by the PRDD, can prove to be extremely challenging. Instead, the region could entrust Brussels Environment with supervising nature management in the 5 000 ha of undeveloped land legally protected by PRAS, and not only in the 2 400 ha of reserves and Natura 2000 sites. With the blue network, these 5 000 ha would form the REB. A benchmark for ecological management of green spaces, which is being drawn up,[15] could lead to the certification of "sustainable green spaces". The value of landscape and biodiversity services could be estimated for each green space in PRAS (e.g. using the Nature Value Explorer tool).

Table 4.5. Spatial planning in Brussels-Capital regulates green spaces beyond just protected areas

Type	2015		
	ha	% land area	Provisions relating to the protection of biodiversity
Nature and forest reserves	296		Strict nature protection
Green areas of high biological value	179		Strict nature protection
Forest areas	1 680		Non-building area of 60 metres from the edge of the forest
Park areas	930		Ban on converting land to other uses
Royal domain	171		Strict nature protection
Agricultural areas	228		Ban on converting land to other uses
Outdoor sports or leisure areas	340		Ban on converting land to other uses
Cemetery areas	152		Ban on converting land to other uses
Sub-total[1]	*3 976*	*24.6*	
Natural heritage areas[2]	2 735	16.9	Strict nature protection
Drinking water abstraction zone[2]	770	4.8	Ban on fertilisers and pesticides

Notes: 1. Including Natura 2000 sites; 2. There is partial overlap between natural heritage areas, drinking water abstraction zone and other green spaces.
Source: Brussels Environment.

In addition, biodiversity should be mainstreamed into urbanistic rules. The region has already taken steps in that direction. In particular, beyond the protection of trees and hedges in gardens, regional planning regulations (RRU) provide for green roofs on constructions (renovations or new) with a flat roof of more than 100 m^2. Since 2009, green roofs have been subsidised for thermal insulation service through a renovation premium and an energy premium (EUR 15/m² for an extensive green roof, EUR 30/m² for an intensive green roof) up to 100 m² per dwelling and 50% of the cost. The tax credit of 40% of eligible expenses (up to EUR 2 650/year) has been abrogated, as in Flanders (it is still in force in Wallonia). Some municipalities offer a premium, ranging from EUR 7.5 to EUR 15/m². In addition to improving thermal insulation, green roofs improve biodiversity, air quality and the microclimate and slow the flow of storm water.

Brussels Environment awards up to EUR 15 000 for “sustainable district” projects. This aid is intended for groups of citizens, collectives or co-ownerships for projects relating to the environment and biodiversity (e.g. greening of façades, sidewalks and balconies to create “green neighbourhoods”). Since 2008, the region has subsidised the three-year process of launching the Local Agenda 21 (LA21) with up to EUR 50 000/year/municipality (the municipality is required to add 10%). This grant covers the salary of the LA21 co-ordinator and the costs of the participatory process and communication. One of the objectives of LA21 is the creation of a municipal nature plan (MNP). The MNP must respect the provisions of the region’s nature plan but is only an indicative management tool (not legally binding).

Beyond financial incentives, a number of information measures have promoted urban biodiversity. Brussels Environment, in collaboration with design offices, developed the Sustainable Building Guide to support construction professionals in the design of buildings of high environmental quality (42% of Brussels' green infrastructure is in buildings). The guide proposes to measure the coefficient of biodiversity by surface (CBS +).[16] This represents the ratio of areas promoting biodiversity to the total surface of the plot, including garden areas, wetlands, permeable mineral zones and green roofs. It does not, however, consider the fauna, the economic dimension, the cultural dimension or the green façades.

In addition, Brussels Environment has published simple technical sheets to promote the coexistence of biodiversity and buildings, for example in terms of fences, lighting, nest boxes and climbing plants. Be

Sustainable, a knowledge exchange platform created in 2020 at the initiative of the region, aims to help create "sustainable neighbourhoods". The platform offers a "quickscan" of sustainability criteria for neighbourhood projects that considers the protection of nature and the water cycle.

Flanders

According to the 1997 Nature Decree, spatial planning policy should concretise the VEN, the IVON and the other nature protection zones. The provinces are legally responsible for ensuring the connectivity of the VEN, through their spatial planning policy (articles 27 and 30 of the Nature Decree). In 1997 Flanders introduced a two-stage planning system (structure plan and implementation plan) at three administrative levels (region, province and municipality) (Table 4.4). The delimitation of the "agriculture and nature structure" (AGNAS) in the regional RUPs, which are legally binding, started in 2003. This was in pursuant to the regional RSV objective of increasing the area of forests and nature reserves. The AGNAS demarcation procedure underwent SEA.[17] The Flemish government approved the strategic vision for spatial policy planning in 2018. It proposes that consumption of additional space decreases from 6 ha/day or approximately 2 000 ha/year in 2013 to 3 ha/day by 2025 and 0 in 2040. This target, called "construction shift" ("bouwshift"), is more ambitious than the EU target of no net land take by 2050 (EC, 2016). The vision provides a basis for the ongoing development of a regional spatial policy plan (BRV) that is to replace the RSV.

Introduced in Belgium in the mid-1950s to improve agricultural productivity, the scope of the land consolidation policy has gradually been extended to other rural development objectives. Since 1978, 2% of the productive farmland concerned by a land consolidation project must be allocated to nature or leisure. In 1998, Flanders gave a legal basis to the concepts of "integrated land development" (ILD – "landinrichting") and "nature development" (ND – "natuurinrichting") as tools for implementation of spatial planning projects. Beyond promoting agricultural productivity, the ILD involves restoring the landscape, improving ecological functions (e.g. nature buffer strips along rivers), as well as infrastructure for water management, rural mobility and leisure. The Flemish Land Agency (VLM) implements the ILD and ND projects under the supervision, respectively, of Omgeving[18] and ANB. In general, VLM covers 50 to 70% of the investment costs for ILD projects and 100% for ND projects. In 2006, a land bank law instructed VLM to create local land banks to facilitate land consolidation projects.

However, this land consolidation policy with three instruments (ILD, ND and land bank) has proved difficult to implement. Acquisition by the land bank requires a lot of money and time, and expropriation is difficult to justify or has no local political support (Pauwels, 2014). A new land development law was passed in 2014 to facilitate access to a set of tools (toolbox) to acquire land, develop land and/or manage it in a certain way. The tools, which can be combined, include land development measures, land mobility such as land banking, pre-emption right (e.g. in land consolidation and in nature development), relocation or reconversion of farms, management agreements, compensations for loss of value, compensations for delivering services and ownership exchange in combination with an exchange of spatial zoning. The choice of tools is evaluated for each land development project. The law allows the provincial or municipal authorities to use the toolbox for their own land development projects. To that end, it introduced more flexible procedures under a three-pronged approach. First, provinces and municipalities can submit a request for a "land development" project to the Flemish government. Second, provinces and municipalities can draw up a "development note" in consultation with VLM; the approval process is simpler than for land development projects. Third, VLM can prepare a "management vision" for a specific area.

VLM's management agreements, introduced in 2000 as part of rural development policy (Section 4.5.2), have particular relevance for biodiversity. They aim to compensate financially, over a period of five years, land users who go beyond legal requirements to control soil erosion, manage water quality and, more particularly, protect biodiversity (for example, management agreements for flower strips, field birds, meadow birds, small landscape elements, species-rich grassland or parcel borders). The area under VLM

biodiversity management agreements increased from 4 000 ha in 2007 to 9 000 ha in 2020 and from 180 km to 500 km for hedges and hedgerows (planting and maintenance).[19] These increases responded to the 2007 OECD EPR recommendation to enhance nature conservation on farmland.

At the regional level, Omgeving supervises both spatial planning policy (through VLM) and biodiversity policy (through ANB), which facilitates joint governance of nature development and nature management. VLM can acquire land and execute development works on the ground. VLM also provides the secretariat of the land commissions which carry out land consolidation operations by virtue of the law and determine compensation for loss of land value and for the voluntary relocation of businesses. In 2014, the Flemish High Council for Environmental Law Enforcement, which started operating in 2009, was given additional spatial planning responsibilities. It became the Flemish High Enforcement Council for Spatial Planning and the Environment (VHRM). VHRM thus became responsible for enforcement of both the Nature Decree and the Flemish Code on Spatial Planning. In 2020, VHRM was integrated into Omgeving's new department on environment and spatial planning.

Wallonia

Built-up (artificialised) land has increased by almost 40% over the past 30 years (since 1985) to house a growing population. This has come mainly at the expense of agricultural land, which has decreased by 6%. The loss of agricultural land has decreased, however, from -23 km^2/year in 1985-95 to -18 km^2/year in 1995-2005 and -13 km^2/year in 2005-15 (SPW, 2017a).

The sector plan (PS) is the legally binding tool for managing the expansion of artificial land ("land take") at the regional level. The region is covered by 23 PSs, adopted between 1977 and 1987. According to the data available in 2015, the PSs allocate 15% of Wallonia to areas intended for urbanisation (AIU) (SPW, 2017a). In 2015, two-thirds of AIU was artificialised and a third still available for urbanisation (still used mainly for agriculture). The PSs also provide that 1.3% of the land, the "concerted municipal development zones" (ZACC), is left to municipalities that may want it for urbanisation. In 2015, most of this land was not yet artificialised.

Pursuant to the Nature Conservation Act (article 29), plans and projects having negative impacts on the biodiversity of Natura 2000 sites may be authorised provided they are of major public interest, including social or economic, that there are no alternative solutions and that compensation (offsetting) be provided to preserve the coherence of the Natura 2000 network. The offsetting principle was enshrined in legislation in 2005. In accordance with the Walloon spatial planning policy,[20] any new AIU with significant environmental impacts can be offset either at the planning level (by converting an existing AIU or ZACC into an area not intended to urbanisation) or on the ground.

The Permanent Conference on Territorial Development, a multidisciplinary research platform created by the Walloon government in 1998, has developed a methodology to identify the areas most suited to urbanisation. The establishment of the SEP should also guide land-use planning decisions, including offsetting decisions. Initiated in 1995, the Municipal Nature Development Plan (PCDN) contributes to the establishment of SEP at the local level. However, like the Brussels-capital MNP, the PCDN is a voluntary management tool. Only 100 Walloon municipalities (out of 262) have committed to the PCDN approach despite the regional incentive (up to EUR 5 000 per year) to carry out SEP projects. The PCDN should be an integral part of the development of a functional ecological network with legal status. This would speed up the establishment of the network and its consistency at the regional level. It could be inspired by Denmark's progressive development of a "green map" at the national level as municipal land-use plans are revised.

However, the introduction in 2017 of the Territorial Development Code (CoDT) put an end to binding land-use plans at municipal level (Table 4.6). The Walloon government argued that the binding nature of the plans led to countless derogations (SPW, 2017b). The CoDT has also weakened urbanistic rules, which are now only indicative (Table 4.6).

Table 4.6. Spatial planning policy has weakened in Wallonia

CoDT (2017)		CWATUP (2009)	
	Status	**Measure**	**Status**
Regional scale			
Regional development scheme (SDT)	Indicative	Regional space development scheme (SDER)	Indicative
Sector plan (PS)	Binding	Sector plan (PS)	Binding
Regional planning guide (GRU)	Indicative & binding	Regional planning regulations (RRU)	Binding
Supra-municipal scale			
Multi-municipal development scheme (SDP)	Indicative	n.a.	
Municipal scale			
Municipal development scheme (SDC)	Indicative	Municipal structure scheme (SSC)	Indicative
Local orientation scheme (SOL)	Indicative	Municipal simple development plan (PCA)	Binding
		Urban and environmental report (RUE)	Indicative
Municipal planning guide (GCU)	Indicative	Municipal planning regulations (RCU)	Binding

Notes: CoDT = Territorial Development Code; CWATUP = Walloon Code of Spatial Planning, Town Planning and Heritage; n.a. = not applicable.
Source: SPW (2017b).

Moreover, the CoDT replaced the principle of land sparing from its predecessor, the Walloon Code of Spatial Planning, Town Planning and Heritage (CWATUP), by that of "rational use of land". Land sparing meant that the inclusion of new AIUs in PSs should only take place in the most severe cases of land scarcity. The CWATUP's regional space development scheme (SDER) aimed to combat the dispersal of housing, to densify the AIU, to recycle abandoned land and to protect nature areas. The new (rational) approach to land use could jeopardise these laudable commitments.

The CoDT has simplified the procedures for revising the PSs. The establishment of the SEP must be an integral part of the revision process if Wallonia is to reach the EU target of no net land take by 2050 (EC, 2016).

4.5.2. Agricultural policy

UAA in Belgium increased by 2.3% between 2005 and 2016 compared to a decrease of 0.6% in the EU-28 (Eurostat, 2019b). Unlike the EU-28 average, arable land is increasing (+ 1.2% in 2005-16), while permanent grassland and meadows are decreasing (-7.9% in 2005-16). In 2016, arable land covered 63% of the Belgian UAA, meadows and permanent grassland 35% and permanent crops 2%. Livestock density increased by 1.7% from 2013 to 2016 to 2.8 livestock units (LU)/ha of agricultural area, among the largest shares in the EU-28 (Eurostat, 2019c). In 2016, 47% of livestock in Belgium was made up of cattle, 40% of pigs and the remaining 13% of poultry. The number of farms in Belgium decreased considerably (by 30%) in 2005-17 (UNFCCC, 2019). The share of mixed crop-livestock farms remained low: 20% of the UAA in 2016 compared to 51% of farms specialising in livestock and 29% in crops (Eurostat, 2019b).

The trend in agricultural biodiversity is not good. According to OECD data,[21] common farmland bird populations (39 species) declined by almost half (49%) in 2000-18, the worst trend among the 22 OECD countries with such data. This reflects strong pressures. In particular, in 2011-15, with nearly 5 kg/ha of agricultural land, pesticide sales were the highest in the OECD after Israel, Japan, Korea and the Netherlands (OECD, 2019). In 2012-14, the nitrogen balance/hectare of agricultural land (138 kg) was the highest in the OECD after Japan, Korea and the Netherlands and twice the OECD average (67 kg) (OECD, 2019).

The area of organic farming (converted and under conversion) increased from 60 000 ha in 2012 to 89 000 ha in 2018, reaching the Belgian 2020 target of 88 000 ha (Eurostat, 2020). In 2018, 6.6% of the Belgian UAA was in organic farming (compared to 7.5% for the EU-28). This broke down to 64% permanent

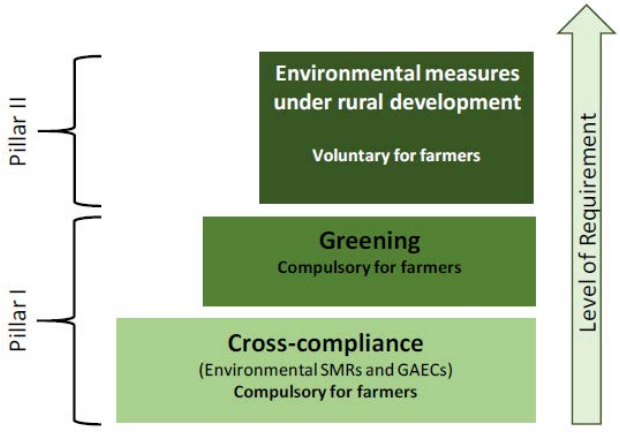
grassland, 35% arable land and 1% permanent crops (Eurostat, 2020). The share of Belgian UAA in organic farming rose to 6.9% in 2019 (11.5% in Wallonia) (Statbel, 2020).

In Wallonia, the General Directorate for Agriculture, Natural Resources and the Environment (DGARNE) of the SPW supervises both environmental policy and agricultural and forestry policies, which facilitates joint governance. In Flanders, agricultural and environmental policies are the responsibility of two different ministries, the Department of Agriculture and Fisheries (LV) and Omgeving respectively.

The framework of EU's Common Agricultural Policy

The EU's Common Agricultural Policy (CAP) influences biodiversity through the conditionality and greening of direct payments in Pillar I (which aims to support income) and the arbitration by member countries between the three rural development objectives of Pillar II – competitiveness, environment and climate, social inclusion (Figure 4.3). At EU-28 level, it is estimated that 30% of Pillar II spending (European Agricultural Fund for Rural Development – EAFRD)[22] and 12% of Pillar I (European Agricultural Guarantee Fund – EAGF)[23] contribute to the protection of biodiversity (EC, 2019).

Figure 4.3. Environmental provisions of the EU Common Agricultural Policy



Notes: SMR = Statutory Management Requirements; GAEC = standards for Good Agricultural and Environmental Condition of Land.
Source: Lotz et al. (2019).

All EU farmers are expected to comply with statutory management requirements (SMRs), irrespective of whether they receive support under the CAP. The SMRs cover compliance with the Natura 2000 legal framework (SMR3) and the 1992 Nitrates Directive (SMR1), the latter contributing to aquatic life by improving water quality. In addition to the SMRs, farmers receiving CAP support have to respect standards of good agricultural and environmental condition of land (GAEC). GAEC standards cover landscape features such as hedges, ponds, ditches, trees and field margins (GAEC 7) and contribute to the protection of water-dependent life through buffer strips along watercourses (GAEC 1) and the control of water withdrawal for irrigation (GAEC 2) and of groundwater pollution (GAEC 3).

The CAP 2014-20 supplemented the basic income support of Pillar I ("basic payment" based on the number of hectares cultivated) with "green direct payment"[24] (or "greening") to foster agricultural practices beneficial for the climate and the environment. Farmers receive green direct payment if they comply with three mandatory practices going beyond SMRs and GAEC standards: crop diversification (to make the soil more resilient), conservation of permanent grassland (to support carbon sequestration and protect

biodiversity) and ecological focus area – EFA (to create habitats for biodiversity). EU countries must allocate 30% of their Pillar I payments to "greening".

As part of greening, farms with more than 15 ha of arable land must devote at least 5% of the land to an EFA. The concept of EFA starts from the premise that many valuable habitats for biodiversity depend on appropriate farming practices not recognised by markets and therefore not reflected in the prices farmers receive for their produce (EC, 2017b). EFAs directly target biodiversity, such as fallow land, agroforestry, buffer strips, afforestation or landscape features, or indirectly, by reducing the use of inputs and/or improving soil protection, such as catch crops or nitrogen-fixing crops. The farm's EFA is based on the estimated impact of each type of EFA on biodiversity, using weighting factors between 0.3 (catch crops) and 2 (hedges), including 0.7 for nitrogen-fixing crops. In 2015, Belgian EFAs consisted mainly (87%) of catch crops and, to a much lesser extent, landscape features (4%), nitrogen-fixing crops (3%), fallow land (3%), buffer strips (1%) and bands along the forest (1%) (EC, 2017c).[25] Belgium is one of the few EU countries to impose additional criteria to improve the effectiveness of EFAs. Of the 31 EU-27 member states/regions, only Flanders, Wallonia, Germany and the Netherlands impose restrictions on inputs in catch crop areas (EC, 2017b).[26] However, the European Court of Auditors (ECA) has criticised the low level of requirements of the greening approach, which has not encouraged substantial changes in agricultural practices (ECA, 2017). The draft CAP 2021-27 proposes voluntary "eco-schemes" in Pillar I to support precision farming, organic farming, agro-ecology and agroforestry, as well as other approaches or specific practices relevant to climate change, management of natural resources and biodiversity (EC, 2020b).

Pillar II of the CAP (Rural Development Programme – RDP) encourages farmers (through specific direct payments on a voluntary basis) to implement biodiversity-friendly practices beyond those imposed by Pillar I (Figure 4.3). At least 30% of the Pillar II budget must be devoted to measures that benefit the environment and climate change. Belgium has gone beyond. More than half (52%) of the Belgian RDP 2014-20 budget (RDP III) is devoted to environment and climate, compared to 39% for competitiveness and 9% for social inclusion (Table 4.7). However, at 37%, the share of the RDP devoted more specifically to biodiversity, soil and water ("restoration, preservation and improvement of ecosystems") is lower than the EU-28 average (46%) (ENRD, 2016). This translates into a lower share of agricultural land under management to restore, preserve and improve biodiversity and landscapes[27] (11% compared to 18% at EU-28 level) (ENRD, 2016). In 2018, 7% of the Belgian UAA was under agri-environment-climate measures (AECM), well below the EU-27 average (13%)[28] and the Belgian target of 18.8% for 2020.

Table 4.7. Half of the Belgian rural development policy budget is devoted to the environment and climate

Measures of the Rural Development Programme 2014-20 (RDP III)	Policy priority[1]					Total	
	Competitiveness	Food chain organisation	Restoring, preserving and enhancing ecosystems	Resource efficiency and climate	Social inclusion and local development	(EUR million)	%
1. Knowledge transfer & information actions	28		11	2		41	3
2. Advisory services	11		11			22	1
3. Quality schemes							
4. Investments in physical assets	421	33	5	199[2]		658	42
5. Damage restoration & prevention actions							
6. Farm & business development	101			5	9	115	7
7. Basic services & village renewal			22		43	65	4
8. Investments in forest areas			5	7	4	16	1
9. Producers groups & organisations		2				2	0.1
10. Agri-environment-climate[3]			317	27		344	22
11. Organic farming			110			110	7
12. Natura 2000 & WFD			40			40	3
13. Areas with constraints			58			58	4
14. Animal welfare							
15. Forest-environment-climate							
16. Co-operation	0.5		0.5	0.5	14	15	1
17. Risk management		5				5	0.3
18. CLLD					65	65	4
Total EUR million %	561 (36%)	40 (3%)	579 (37%)	240 (15%)	135 (9%)	1 555 (100)	100
Of which, Flanders	386	16	223	236	55	924[4]	
Of which, Wallonia	175	25	355	5	79	654[5]	

Notes: WFD = EU Water Framework Directive. CLLD = Community-Led Local Development (initially known as LEADER from the French acronym for "Links between the rural economy and development actions").
1. No budget allocation shown for the priority “knowledge transfer and innovation”, as it is distributed across other policy priorities.
2. Including EUR 67 million for energy efficiency and EUR 131 million for GHG/ammonia mitigation.
3. Introduced in the early 2000s, the agri-environmental measures of the CAP were renamed agri-environment-climate measures (AECM) from the CAP 2014-20.
4. Including EUR 8 million in “technical assistance” and EUR 384 million in EU co-financing (EAFRD).
5. Including EUR 15 million in “technical assistance” and EUR 264 million in EU co-financing (EAFRD).
Sources: ENRD (2016); EC (2015a, 2015b).

There is, however, a great contrast between regions. In Flanders, the main priority of the RDP is to improve the viability and competitiveness of farms, in particular by supporting innovation and education, and young farmers (EC, 2015a). The RDP aims to help half of Flemish farms to restructure and modernise, while the

AECM aims to preserve biodiversity, water and soil on 8% of farmland (EC, 2015a). On the other hand, 44% of the Walloon RDP budget aims to protect the environment by supporting AECM, organic farming and Natura 2000 (EC, 2015b). Flanders pays as much attention to climate and air as it does to biodiversity, soil and water, which account for 26% and 24% of its RDP III budget respectively, compared to 1% and 54% respectively for Wallonia (Table 4.7). The Walloon RDP is more oriented towards the protection of biodiversity than water management (ADE-ULg-GxABT-Spices, 2019). The Walloon Region aims to put 20% of the UAA under management contract to enhance biodiversity against only 2% in Flanders (EC, 2015a, 2015b). The vast majority (92%) of the organic farming area in Belgium is in Wallonia (only 8% for Flanders). At the end of 2013, organic farming represented only 0.8% of the Flemish UAA (Flanders Government, 2015) against 11% for Wallonia (EC, 2015b). The same is not true for the Natura 2000 network, which covers around 5% of the Walloon UAA (Walloon Government, 2017) against 8% for Flanders. In 2018, the UAA covered 43% of the Walloon territory and the forests and moors 33% (SPW ARNE, 2020), against 31% and 14% in Flanders.

According to ADE-ULg-GxABT-Spices (2019), 15.5% of Walloon UAA was under biodiversity management contracts in 2017. This percentage includes AECM targeting biodiversity, Natura 2000 payments and part of organic farming, and considered the overlaps between them.[29] As provided for in Regulation (EU) 1305/2013, Natura 2000 payments have obvious benefits for biodiversity. They aim to compensate for additional costs and income forgone linked to the implementation of the Birds and Habitats directives. In accordance with the 2007 EU legislation on organic production,[30] organic farming also has a positive impact on biodiversity by limiting the use of synthetic pesticides. As AECM is based on the choice of agricultural practices and not on environmental performance (on results), it is less simple to assess its biodiversity effectiveness. As is the case for organic farming, Regulation (EU) 1305/2013 requires that AECM goes beyond the requirements of Pillar I and minimum requirements for use of fertilisers and pesticides established by national legislation, which can be expected to have a positive impact on biodiversity. However, Belgium should carefully identify the agricultural practices beneficial for biodiversity, including as co-benefits, based on the recent assessment by the European Court of Auditors of the effects of the CAP 2014-20 on biodiversity (ECA, 2020b). It is the most cost-effective way to steer agricultural policy towards incentivising biodiversity-friendly practices.

Farm nutrient management

Excessive use of nutrients in agriculture affects water-dependent biodiversity through water pollution (especially nitrates) and terrestrial biodiversity through air pollution (especially ammonia). Despite a 45% drop since 1990, ammonia emissions from Belgian agriculture remain well above the EU-28 average (44 against 20 kg/ha in 2015), among the highest levels of the EU-28 (Eurostat, 2017). In Flanders, the monitoring points for nitrates in surface water and groundwater with at least an overshoot of 50 mg/l were reduced from 36% in 2007 to 20% in 2015, but rose to 38% in 2018 (VLM, 2019). Nitrates pollution in Walloon groundwater has decreased, with poor quality monitoring points in the nitrates survey network decreasing from 8.2% in 2007-10 to 6.8% in 2015-18 (ADE-ULg-GxABT-Epices, 2019).

In response to the 2007 OECD EPR recommendation to revise nitrogen policies to reduce nutrient loading in water, several manure action programmes (MAPs) have been implemented since 2007. MAP 3 (2007-10) designated the entire Flemish territory as a nitrate vulnerable zone (NVZ) within the meaning of the EU Nitrates Directive. It also set up a system of tradable nutrient emission rights (NERs), administered by a manure bank.[31] MAP 4 (2011-14) introduced “focus areas” (“focusgebieden”)[32] where stricter standards for the use of manure apply depending on the type of soil and crop.[33] MAP 5 (2015-18) introduced the principle of in-depth evaluation of farms with the highest risk of nutrient loss (based on administrative data). Field checks of the NERs by the manure bank have been strengthened. MAP 6 (2019-22) is replacing the approach of the focus areas with a system of differentiation of watersheds into four types according to the distance to the EU Water Framework Directive (WFD) target. Type 0 watersheds are only subject to water quality monitoring. Requirements for catch crops or grassland apply

to watersheds of types 1, 2 and 3. Stricter N fertilisation standards apply to watersheds of types 2 and 3 and approved carriers must now transport the slurry. In addition, the second River Basin Management Plan (RBMP 2016-20) under the WFD delimits areas with insufficient surface water quality as spearhead areas ("speerpuntgebieden") and areas of attention ("aandachtsgebieden") depending on whether the WFD target of achieving good ecological status was set in 2021 or 2027.

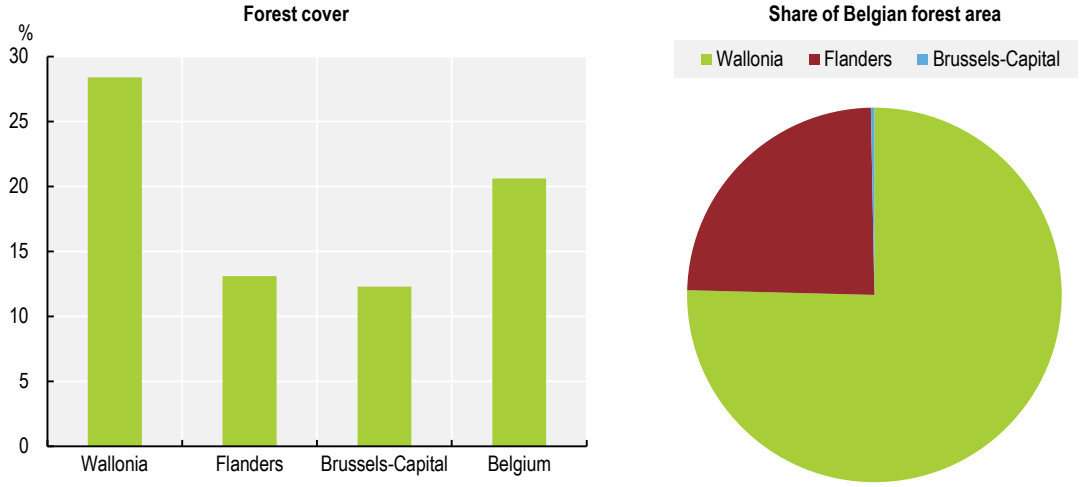
In Wallonia, the Sustainable Nitrogen Management Programme in Agriculture (PGDA) implements the Nitrates Directive. The third programme (PGDA III) has been in effect since 2014. NVZ covers 60% of the UAA. Each farm in the NVZ must have sufficient area to spread manure at an average rate of 170 kg N/ha/year. Restrictions also apply in terms of manure spreading periods and plant cover; in addition, residual nitrogen in the soil must be monitored each year in 5% of farms (Protect'Eau, 2017). In 2015, Wallonia introduced a tax on livestock effluents, fertilisers and pesticides (the "tax on the environmental burden generated by agricultural activities") (Section 4.4).

Manure policy in Flanders is largely based on direct regulation (Wiering et al., 2020). VLM is responsible for applying the 2006 Flemish Parliament Act on Manure.[34] In 2019, 47% of the administrative fines imposed by VLM concerned the stocking density (more animals than NERs), 25% nitrogen and phosphorus balances and 11% non-compliance obligations on manure processing (VLM, 2020). Flanders plans to introduce a "programmatic approach to nitrogen" (PAS) to regulate ammonia emissions from livestock farms located near the SACs. The approach is intended to be progressive so as not to jeopardise the continuity of operating licences; the PAS would provide for an initial period from 2020 to 2025, which could be extended to 2026-31. The measures (a combination of direct regulatory and financing instruments) would address housing standards, manure management and the quality of animal feed.

4.5.3. Forest policy

Three-quarters of Belgian forests are in Wallonia (Figure 4.4) and private forests (50% of Walloon forests, 60% of Flemish forests) are larger there than in Flanders (3.2 ha on average compared to 1.0 ha). Deciduous trees dominate in Wallonia (60% of the forests) whereas they are equally split with conifers in Flanders. Only 1 027 ha of the 544 000 ha of Walloon forests are forest reserves within the meaning of the law on nature protection, plus 5 544 ha of integral forest reserves under the Forest Code. Only 3 186 ha of the 140 000 ha of Flemish forests have the status of forest reserve, a status that will be re-evaluated according to the new types of nature management (Table 4.1). In addition, the trend in Belgian forest biodiversity is not good. According to OECD data,[35] forest bird populations declined by 18% in 2000-17, the worst trend of the 16 OECD countries with such data.

Figure 4.4. Three-quarters of Belgian forests are in Wallonia



Source: UNFCCC (2020).

StatLink https://doi.org/10.1787/888934231174

The Flemish Forest Decree of 1990 distinguishes only two categories of forests: public and private. Since 2016, the Flemish government has started mapping the "most vulnerable and valuable forests" (biological value), whose deforestation will be prohibited. Any deforestation of more than 3 ha must be compensated in kind. For stands that contribute to conservation objectives (according to article 2 of the Nature Decree), compensation must represent three times the area deforested. Deforestation of less than 3 ha can be compensated through a "contribution to forest conservation". This feeds a Compensatory Afforestation Fund (CAF), created in 2001, whose resources are allocated to afforestation by public entities. The contribution to CAF is calculated using a "forest offset factor", which can vary between 1 (an offset forest of the same size) and 3 (the offset forest is three times the size of the area felled) according to the type of forest and its ability to achieve conservation objectives. CAF money has been used since 2011 to fund afforestation projects that involve the purchase and afforestation of areas of at least 0.5 ha. Anyone who submits a project and meets these requirements is eligible for a grant regardless of the ecosystem services provided. The offset factor is applied to a fixed rate of EUR 3.66/m². However, a fixed rate does not guarantee the same number of hectares can be bought as that which has been deforested. Therefore, the contribution to the CAF should compensate for the market value of the land (deforested).

On the other hand, the Flemish RDP supports afforestation and reforestation to promote mixed forests compatible with the Natura 2000 objectives. For afforestation, the amount of aid is based on the average afforestation costs (plus compensation for loss of income for farmers) and management costs in the first years of afforestation. Flemish RDP III aims to afforest 1 400 ha of agricultural land and to reforest 1 900 ha with respective budgets of EUR 7.6 million and EUR 5.5 million over 2014-20. The financial support covers the planting and maintenance of trees and, for afforestation, the loss of agricultural income for 12 years after planting. VLM management contracts support the protection of biodiversity in 0.6% of productive forests (EC, 2015a). In 2016, Wallonia introduced a reforestation subsidy (up to 3 ha/forest owner) to stem the trend of deforestation in small private forest properties (less than 5 ha). RDP III supports the creation of long-term agroforestry systems (for at least ten years) and plans to increase their area by 150 ha for Flanders and by 3 000 ha for Wallonia.

The Walloon Forest Code provides for exemption from inheritance and gift taxes and, for Natura 2000 sites, from property taxes. In Flanders, inheritance, gift and property tax exemptions are linked to the extent

of nature protection (Table 4.1). The exemption from inheritance tax based on the value of standing timber, as is the case in Wallonia, encourages long-lived forest species. In Wallonia, the first 20 years of planting (or natural regeneration) are almost exempt from the property tax (EUR 2.5/ha/year).

In 2006, Flanders opted for group certification of forests within the framework of a regional scheme of the Forest Stewardship Council (FSC) managed by the ANB. In 2018, 14% of the Flemish forest was FSC-certified, including public and private forests. FSC certification requires a forest management plan according to the criteria for SFM set by the Flemish government. Wallonia is committed to the Programme for the Endorsement of Forest Certification (PEFC) for SFM. In 2014, 54% of the Walloon forest area was PEFC-certified (including more than 90% of public forests managed by the Department of Nature and Forests). The federal law of 1999 supported the creation of forest groups (FG), non-profit organisations that receive provincial support for their contribution to SFM.[36] In all, 37% of Flemish private forests and 4% of Walloon private forests have entrusted their management to FGs. This responds well to the 2007 OECD EPR recommendation to promote joint management of private forests to create economies of scale and foster SFM.

A 2011 voluntary agreement between the Federal Public Service Health, Food Chain Safety and Environment (FPSHFCSE) and the wood industry provides that at least 35% of primary wood products (round wood, sawn timber, wood-based panels) sold on the Belgian market come from sustainably managed forests by the end of 2018. The target was quickly exceeded, with a share of 40.5% in 2012. A new agreement is being prepared to extend the scope to secondary wood products (furniture, paper). Since 2015, Flemish communities have been encouraged to use certified wood in their public procurement, on a voluntary basis; the ANB has developed information material for this purpose.

In Wallonia, the 2008 Forest Code prescribes leaving dead or fallen trees in place, keeping at least one tree of biological interest per 2 ha, and the creation of integral forest reserves in deciduous stands. The Code recommends a forest of mixed species and ages for better resistance to storms, droughts and heat waves. Flanders decided in 2017 to gradually merge, by 2024, the Forest Decree of 1990 and the Nature Decree of 1997. Since 2017, the INM criteria have replaced the SFM criteria for the management plans of natural forest areas in Type 2, 3 and 4 (Section 4.3). In Flanders, the right to collect seeds from seed stands can be auctioned. The selection of seed stands in old growth forests is a good way to protect forest biodiversity; these stands are de facto protected and often harbour abundant biodiversity due to their age. Belgium is an active member of the OECD Scheme for the Control of Forest Reproductive Material Moving in International Trade, which advocates the delimitation of seed stands in the participating countries.

4.5.4. Climate policy

A means of private financing for biodiversity is to remunerate the service of carbon sequestration by ecosystems. Three levers can reduce GHG emissions/increase removals from the LULUCF sector, all of which can be expected to have co-benefits for biodiversity:

- carbon stocks in forests – sustainable forest management, afforestation, changes in forestry practices, adaptation to climate change, protected areas, incentives for long-term use of wood (harvested wood products)
- agricultural practices – increase long-term carbon storage in soils or reduce soil emissions (reduced fertilisation and associated N_2O emissions)
- replace fossil fuels with sustainably produced biomass.

Forests remain the largest carbon sink in Belgium (-1 250 Gt CO_2 eq in 2018), followed by grasslands (-810 Gt CO_2 eq), whose carbon removal has increased steadily since 1990 (UNFCCC, 2020). Harvested wood products remain a sink (-280 Gt CO_2 eq) despite a significant reduction in removal since 1990. Wetlands are carbon neutral. GHG emissions from cropland have increased steadily since 1990, reaching +840 Gt CO_2 eq in 2018. The steady increase in urbanisation since 1990 has resulted in emissions from

soil carbon stocks of + 500 Gt CO_2 eq. Nitrous oxide (N_2O) and methane emissions increased steadily from 2-3% in 1990 to around 6% of LULUCF sources in 2018, mainly due to N_2O emissions from agricultural soils. Overall, LULUCF removals have decreased significantly from 3 200 to 1 000 Gt CO_2 eq between 1990 and 2018.

Several CAP measures are expected to help improve LULUCF carbon uptake. In cropland and grassland, the key voluntary carbon removal measures are the AECM and organic farming (Pillar 2 of the CAP), in addition to the greening and cross-compliance requirements (Pillar 1 of the CAP). In cropland, nutrient management to improve water quality also helps mitigate GHGs as a co-benefit.

Under the EU Effort Sharing Regulation (ESR), Belgium must reduce its GHG emissions outside the EU Emissions Trading System (ETS) by 35% between 2005 and 2030 (Chapter 1). Non-ETS emissions cover the agriculture, housing, transport and waste sectors. The 35% reduction target does not apply to emissions and removals from LULUCF, which are covered by the Kyoto Protocol of the United Nations Framework Convention on Climate Change and from 2021 by the LULUCF Regulation.[38] The LULUCF regulation requires that emissions from land use be fully offset by an equivalent removal in the land-use sector (the "no debit" rule), while allowing for some flexibility. In particular, “managed forest land flexibility” can be used to comply with the LULUCF no debit rule, up to 2.2 million tonnes of CO_2 offset for 2021-30 (compared to a 1990 baseline of forest emissions).

LULUCF net emissions can be transferred to the ESR (i.e. in non-ETS sectors) to meet the “no debit” commitment. This means that emissions from deforestation can be offset by reducing emissions in the agricultural sector. Conversely, efforts in the LULUCF sector (increasing removals or reducing emissions) can contribute to the agricultural sector's compliance with the ESR. Flexibility also translates into the possibility of exchanging (borrowing of transferring) net removals between EU countries.[39] It is an incentive to remove CO_2 beyond the no debit commitment and therefore to afforest, but also an opportunity to offset net LULUCF emissions and therefore to deforest.

In Belgium, exceedances of the annual allocation for non-ETS emissions can be offset by removals from the LULUCF sector up to 3.8 million tonnes of CO_2 over 2021-30, provided these removals result from the no debit rule and no net removals have been acquired from other member states. The LULUCF sector includes the following components: afforested land, deforested land, managed cropland, managed grassland, managed forest land and managed wetland.

The revision of the EU ETS directive in 2009 (addition of article 24a) opened the possibility of offsetting ETS emissions by reducing non-ETS domestic emissions. In other words, carbon credits can be used for compliance purposes within the framework of the EU ETS. The objective is to facilitate the achievement of the EU reduction commitment economy wide (the non-ETS sectors represent around 55% of all EU’s GHG emissions).[40]

The Belgian National Energy and Climate Plan (NECP) aims to prevent the LULUCF sector from being a net source of emissions (thus complying with the EU no debit rule) (CONCERE-NCC, 2019). Any LULUCF net carbon sink can be used to offset emissions under the ESR, with a cap. Conversely, any LULUCF net carbon emission must be offset within the ESR. However, the NECP does not quantify the removals required for each LULUCF component, or the measures to achieve it, for the sector to remain a net sink until 2030.[41]

Flanders has set the target of a neutral or positive LULUCF balance (satisfying the no debit rule) in 2021-30 (CONCERE-NCC, 2019). Therefore, neither the purchase of an additional LULUCF emission quota in Belgium or in other EU countries, nor drawing from the annual ESR (non-ETS) emission allowances should be necessary. To comply with the no debit rule, a LULUCF action plan will be drawn up by 2021. The measures envisaged include the development of a soil carbon monitoring network and short- and medium-term strategies in the fields of forestry and nature, agriculture, water and space.

In Wallonia, forest management, the largest carbon sink, aims to avoid being a net source of emissions (CONCERE-NCC, 2019). Recent measures encourage the adaptation of Walloon forests to climate change to maintain or improve their carbon sequestration. This includes information measures (treatment standard for black spruce, Walloon Forest Health Observatory since 2011, "Climate change and its impact on Walloon forests" published in 2017, ecological file of species[42] revised in 2017), as well as provincial incentives for reforestation. However, future land-use changes, in particular the conversion of forests and grasslands, could make the LULUCF sector a (relatively low) source of emissions rather than a carbon sink. The 2008 Walloon Forest Code introduced incentives for better conservation of forests and forest carbon (Section 4.5.4). Incentives for the production of high quality wood fosters wood as a substitute for less carbon-friendly materials. Shorter rotation conifer plantations aim to increase the supply of wood and the storage of carbon in harvested wood products.

4.5.5. Pesticide policy

Pesticide sales in Belgium decreased by 5% between 2011-13 and 2016-18.[43] Three-quarters of sales are fungicides and herbicides. Belgium is one of the few EU countries (along with Denmark, France, Greece and Germany) to have set high-level measurable targets for pesticides as part of its National Action Plan for the sustainable use of pesticides (NAPAN) (EC, 2017a). However, the data collected to measure the environmental risks and impacts of the use of plant protection products are not sufficient to allow effective monitoring (ECA, 2020a).

Since 2013, NAPAN has brought together the objectives and measures of pesticide reduction programmes at the federal and regional levels[44] and includes joint actions. NAPAN covers a period of five years (2013-17 and 2018-22).[45] Federal and regional authorities are responsible, within their respective areas of competence, for implementing NAPAN. Co-ordination is ensured by a NAPAN Task Force comprising representatives of each competent authority. Stakeholders are represented on the NAPAN Advisory Council, which meets quarterly. NAPAN implements Directive 2009/128/EC establishing a framework for Community action to achieve sustainable use of pesticides.

Directive 2009/128/EC requires farmers to apply integrated pest management (IPM)[46] and non-chemical alternatives. This means they should only turn to pesticides if prevention and other methods fail or are ineffective. Although it is mandatory for farmers to apply IPM, they are not required to keep records of how they applied it and enforcement is weak (ECA, 2020a). The CAP encourages the sustainable use of pesticides by supporting advisory services, the acquisition of precision farming and mechanical weeding equipment, organic farming, AECM and Natura 2000 sites. However, IPM is not part of the cross compliance or green payment requirements. In Brussels-Capital, subsidies for the Good Food Strategy[47] (EUR 2.5 million in 2018) are subject to compliance with the IPM. Wallonia is setting up pilot farms to disseminate the IPM practice for the main crops. In Flanders, IPM is required by law through the 2013 Decree on Sustainable Use of Pesticides; agricultural practice centres ("praktijkcentra") disseminate IPM guidelines (IPM-richtlijnen). The main agricultural organisations, processors and traders in Belgium set up in 2003 a common quality control system called "Vegaplan", which covers IPM. More than 44% of Belgian farms are Vegaplan-certified. The Vegaplan standards reproduce the sector guides of the Federal Agency for the Safety of the Food Chain (AFSCA); AFSCA annual fees and inspection frequency are reduced for Vegaplan-certified farmers.

NAPAN provides for the development of IPM directives and, more generally, directs risk management on direct regulation and information measures. In addition to wildlife protection measures (Table 4.8), NAPAN regulates the inspection of sprayers, the handling and storage of pesticides, and the use of pesticides in public spaces. NAPAN also applies to drinking water protection areas, which contributes to the preservation of water-dependent ecosystems.

Table 4.8. The national pesticides action plan addresses the protection of wildlife

Competent authority	Target	NAPAN 2018-22 measures	Key success factor
Federal	Pollinators	Pesticide authorisation procedure (DER)	Second Federal Action Plan for bees
Brussels-Capital	Protected natural areas	Raise awareness of the ban on pesticides in these areas (IM & DER)	List of residents and neighbours within 60 m of protected natural areas
		Limit derogations to the Pesticides Order (DER)	Use of pesticides authorised by derogation
	New potential areas for the REB	Raise awareness of the biodiversity benefits of protecting these areas from pesticides (IM)	Communication on the list of areas of interest for the REB
	Pollinating insects	Monitor habitat and nesting areas (IM)	Adopt an action plan for bees and wild pollinators
Flanders	VEN	Raise awareness of the ban on pesticides in VEN (IM & DER)	Awareness-raising materials developed
	Protected species	Raise awareness of the benefits for protected species of restricting the use of pesticides in their habitat (IM)	Create an inventory of protected species' habitats affected by pesticides
Wallonia	Buffer zones along watercourses	Simplify and harmonise technical prescriptions (regulations on nitrates, pesticides, cross compliance, ecological focus areas) (DER)	Amend legislation, where appropriate

Notes: NAPAN = National Action Plan for the Sustainable Use of Pesticides. DER = direct environmental regulation; IM = information measure. REB = Brussels Ecological Network. VEN = Flemish Ecological Network.
Source: FPSHFCSE (2018).

Measures have been taken to follow up on the 2007 OECD EPR recommendation to bolster efforts to reduce pesticide contamination of water sources. In Brussels-Capital, the ban on the use of pesticides in close protection zones for drinking water intakes, in force since 2013, was extended to the entire protection zone in 2016. In Wallonia, in 2019, “prevention and surveillance zones” were defined around drinking water intakes. These zones prohibit use of pesticides and fertilisers 6 m on each side of watercourses (a buffer zone covered with permanent vegetation is set up for this purpose).

Since 2013, Wallonia has prohibited use of pesticides in public spaces (“zero phyto”). Municipalities must report annually on the use of pesticides to the SPW (by keeping a register). In 2018, the federal government banned the use of synthetic herbicides such as glyphosate for home gardens.

In 2015, Wallonia introduced a tax on livestock effluents, fertilisers and pesticides (the “tax on the environmental burden generated by agricultural activities”). The initial tax rate of EUR 10 per “environmental load unit” (UCE) is indexed annually to inflation. The UCE for livestock is estimated by applying a coefficient to each type of livestock based on annual nitrogen production, with decreasing rate from cattle to pigs and poultry. The crop UCE applies a multi-criteria coefficient (residual nitrogen in the soil, use of pesticides, risk of soil erosion) with a reduced rate for organic farming (by half) and for meadows (five times lower than for annual crops). The calculation of the UCE does not apply to farms with manure storage facilities conforming to the law and to the first 30 ha of crops; a derogation is granted. Tax revenue increased from EUR 0.9 million in 2016 to EUR 1.1 million in 2019. The instrument aims to reduce water pollution by nitrates, pesticides and soil erosion. However, even with a reduced rate, the tax goes against the CAP financial support for organic farming as prescribed by Regulation (EC) 834/2007. It does not consider the possible side effects of nitrate abatement measures on air pollution (ammonia) and GHG emissions (N_2O) given the nitrogen cycle.

At the federal level, however, reduced VAT rates are granted to fertilisers (6%) and pesticides (12%). Pesticide taxation is a regional responsibility, with the federal government ensuring that pesticides on the market comply with health and environmental standards. The principle of risk-based taxation of pesticides, as implemented in Denmark (Box 4.3), could be introduced as part of the Belgian strategy for the protection of pollinators, which is being drawn up (Box 4.4).

Box 4.3. The Danish tax on pesticides

In 2013, the pesticide tax – introduced in 1996 – was changed from a value tax to a weight tax differentiated according to load indicators. The new tax has four elements:

- health tax (for the health of farmers spraying the pesticides)
- environmental tax (for the toxic effects on biodiversity)
- general pollution tax
- basic tax of DNK 50 (EUR 6.7)/kg or l of active substance.

The rates and the many factors and parameters used to calculate the load are calibrated so that the basic tax is 10% of total revenue and the three other taxes are around 30% each.

For health effects, each effect (e.g. toxic is swallowed, toxic is inhaled, may cause harm to breast-fed children) is assigned a load value. The loads for all effects that apply to a given pesticide are added and multiplied by the tax rate (DNK 107 (EUR 14.4)/kg of pesticide). For environmental effects, each species (birds, mammals, bees, earthworms, fish, aquatic plants, algae, daphnia) is assigned i) a reference value; ii) a parameter specific to the pesticide; and iii) a load factor set in the tax bill. For each species, the load is the division of the first two multiplied by the third. The loads of all species are added and multiplied by the tax rate (DNK 107 (EUR 14.4)/kg of active ingredient). For general pollution, each effect (persistence, risk of leaching into groundwater, bioaccumulation) is assigned i) a pesticide-specific value; ii) a reference value; and iii) a weight. The load is the division of the first two multiplied by the third. The loads for the three effects are added and multiplied by the tax rate (DNK 107 [EUR 14.4]/kg of active ingredient).

The tax rates will increase in 2021 and 2024, respectively DNK 52.75 and 55.65 (EUR 7.1 and EUR 7.5) for the basic tax and DNK 112.88 and DNK 119.09 (EUR 15.2 and EUR 16.0) for the other three taxes.[48] Tax revenues are returned to farmers through reduced property taxes.

Box 4.4. Belgium pays special attention to pollinators

NAPAN 2018-22 pays particular attention to pollinators, following the adoption in 2017 of a new national risk assessment procedure for bees.[49] A working group on pollinators created within the framework of the federal plan 2012-14 "The health of bees, our health too" has become the national concertation body for the preservation of bees (wild and domestic). The second federal bee plan 2017-19 is under evaluation.

Brussels-Capital is working on a pollinator strategy to prevent honeybees from depriving wild bees of floral resources. Neonicotinoid insecticides have been banned since 2017 and similar active substances (such as sulfoxaflor and flupyradifurone) since 2019. An atlas of wild bees in the region (wildbnb) is in preparation (193 species listed in late 2019). Several research projects focus on urban pollinators, stressors and conservation measures (Brubees, Urbeestress, Toxiflore, StreetBees).

4.5.6. Economy, development co-operation, science policy and transport

The 2009-13 Federal Plan for the Integration of Biodiversity in Four Key Federal Sectors (PFIB) was drawn up in response to the second Federal Sustainable Development Plan 2004-08 (FPSHFCSE, 2015). In the PFIB, the federal government proposed developing action plans to integrate biodiversity into the economy,

development co-operation, science policy and transport. Discussions are underway to follow up on the PFIB as part of the implementation of the updated NBS.

4.5.7. Trade and biodiversity

Positive steps have been taken to better control trade in endangered species, invasive alien species and illegal timber. Belgium could usefully assess the effectiveness of such measures to reduce the risk of a global health crisis. It could consider, as appropriate, introducing criteria of co-benefits for human health in trade measures to protect biodiversity.

In 2017, a "species inspection" unit was created within the Directorate-General for the Environment of the FPSHFCSE. This unit monitors compliance with i) the EU Wildlife Trade Regulations (1997, 2006),[50] which implement the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); ii) the EU Timber Regulation (2010),[51] which promotes due diligence in placing timber on the EU market to avoid the marketing of illegally harvested timber inside or outside the EU; and iii) the EU Invasive Alien Species Regulation (2014). This has led to a considerable increase in the number of inspections and of sanctions. The implementation of CITES is co-ordinated at the federal level between the FPSHFCSE, Customs and Excise (C&E) and the Federal Agency for the Safety of the Food Chain (FASFC). However, there is still no co-operation agreement between the federal authority and the regions on the distribution of powers (in particular, issuing permits and organising controls). This hampers more effective implementation of the CITES Convention, which is all the more necessary: it is a means of reducing the risk of a pandemic linked to contact between wild species and humans in the tropics.

Since 2006, federal authorities can only buy certified wood from sustainably managed forests as part of their procurement policy. A circular sets the criteria to be respected by wood certification systems. Federal controls and sanctions imposed on the import and marketing of illegally harvested timber have been strengthened. This contributes to reducing the destruction of natural environments and the migration of wild animals due to deforestation. Therefore, it also reduces the risk of transmission of human infectious diseases by wild animals in the tropics.

In 2018, a co-operation protocol was signed between FPSHFCSE, C&E and FASFC to improve border controls to prevent the introduction of invasive alien species (IAS) in Belgium. In early 2019, a co-operation agreement was signed between the federal level, the regions and the communities[52] on preventing the introduction and managing the spread of IAS. In 2017, an innovative partnership between public agencies, academics and non-governmental organisations gave birth to the Tracking Invasive Alien Species (TrIAS) research project. TrIAS assesses the impact of climate change on the emergence of new IAS and the risk they may represent for Belgium (Vanderhoeven et al., 2017). The National Adaptation Plan (to climate change) 2017-20 resulted in federal funding[53] for the expanded TrIAS project (2017-21).

Recommendations on biodiversity

Institutional and policy framework

- Align objectives of the Belgian National Biodiversity Strategy and regional biodiversity policies with those of the EU Biodiversity Strategy for 2030; mainstream the new biodiversity objectives in Belgium's strategic plan to implement the post-2020 Common Agricultural Policy by setting biodiversity targets for agriculture and identifying beneficial agricultural practices to achieve them.

Policy mix

- Extend biodiversity and climate policy to a nature-based solution approach, combining the objectives of environmental services and well-being with that of protecting nature; promote payments for these nature-based environmental and well-being services.
- Introduce a tax on the use of pesticides based on health and environmental risks (as in Denmark); accelerate the development and adoption of a Belgian pollinator strategy introducing the principle of risk-based pesticide taxation.
- Introduce a tax on grey infrastructure (e.g. tax on building permits as in France, housing tax as in Japan), the proceeds of which could be used to finance nature protection.

Mainstreaming biodiversity in other policies

- Further mainstream biodiversity in spatial planning, in particular to improve ecological connectivity and avoid further fragmentation of habitats; in Flanders, speed up the release of the regional spatial policy plan to achieve the objective of no net land take by 2040; in Wallonia, extend the concept of "Main Ecological Structure" to that of a functional ecological network with legal status; in BCR, protect and manage nature on undeveloped land for which the Regional Land-Use Plan provides for legal protection of biodiversity.
- Assess and promote the biodiversity co-benefits of policy measures aimed at achieving net carbon sequestration in the land use, land-use change and forestry sector.
- Develop a national policy on the trade in exotic animals and plants to promote synergies between federal and regional policies for a more effective implementation of the CITES Convention.
- Develop a national policy to tackle imported deforestation; consider joining the Amsterdam Declarations Partnership.

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[3] https://dopa-explorer.jrc.ec.europa.eu/ (accessed 7 June 2020).

[4] The BPNS covers 3 454 km².

[5] The Bonn Agreement (1969) aims to combat pollution of the North Sea by oil and hazardous and noxious substances.

[6] Targets in line with the new 2019-24 coalition agreement; the plan also provides for carbon sequestration in agricultural soils, the preservation of open spaces, the multifunctional management of wetlands and the greening of cities.

[7] EU law requires that GHG emissions from the LULUCF sector be offset by actions in the sector during 2021-30.

[8] Local governments can only develop NMPs of Type 2 and higher.

[9] In case of sale of the land, the NMP is transferred to the new owner.

[10] The creation of ANB in 2006 enabled joint governance of biodiversity and forestry.

[11] High nature value (HNV) farmland indicates the area where farming systems are sustaining a high level of biodiversity.

[12] https://translate-en.city.yokohama.lg.jp/kurashi/koseki-zei-hoken/zeikin/midorizei/midorizei.html.

[13] Following the PRDD of 1992 and 2002.

[14] VITO stands for Vision on Technology for a Better World.

[15] Inspired by that developed by Plante & Cité in France.

[16] Drawing on the CBS tool developed in Berlin.

[17] Other SEAs have been carried out or are in progress concerning SIPs relating to energy, transport and agricultural infrastructure.

[18] Land and Soil Protection, Subsoil and Natural Resources Division (ALBON).

[19] www.inbo.be/nl/natuurindicator/oppervlakte-beheerovereenkomsten-met-natuurdoelen (accessed 7 July 2020).

[20] Within the Wallonia Public Service (SPW), the Directorate General for Agriculture, Natural Resources and the Environment (DGARNE) oversees environmental policy (as well as agricultural and forestry policies), while spatial planning policy is the responsibility of the Directorate General for Territory, Housing, Heritage and Energy (DGTLPE).

[21] http://dotstat.oecd.org/ (accessed 6 June 2020).

[22] Regulation (EU) 1305/2013 of the European Parliament and of the Council on support for rural development by the EAFRD.

[23] Regulation (EU) 1306/2013 of the European Parliament and of the Council on the financing, management and monitoring of the CAP (CAP horizontal regulation).

[24] Regulation (EU) 1307/2013 of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the CAP.

[25] Denmark, Germany, Luxembourg and the Netherlands also mainly use catch crops for their EFAs.

[26] Wallonia also imposes restrictions on inputs in areas of nitrogen-fixing crops.

[27] Including Natura 2000 areas, areas facing natural or other specific constraints and high nature value (HNV) farmland.

[28] https://agridata.ec.europa.eu/extensions/DashboardIndicators/Environment.html?select=EU27_FLAG,1 (accessed 23 October 2020).

[29] 23.4% of the AECM surface is part of the Natura 2000 network.

[30] Council Regulation (EC) No 834/2007 on organic production and labelling of organic products.

[31] In 2018, 20% of the 310 million NERs available were not used (VLM, 2019).

[32] Areas where nitrate concentrations exceed 50 mg/l in surface water or do not improve sufficiently in groundwater.

[33] Derogations by plot are possible, as long as the limit of 170 kg manure N/ha/farm imposed by the Nitrates Directive in the NVZ is not exceeded; in 2018, 14% of agricultural land requested derogations.

[34] Law on the protection of water against pollution caused by nitrates from agricultural sources.

[35] http://dotstat.oecd.org/ (accessed 6 June 2020).

[36] Each forest owner can join a FG free of charge and without obligation.

[38] Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land-use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0841&from=EN.

[39] Up to 10% of the annual allocation for the following year between 2021 and 2025 and up to 5% from 2026 to 2029.

[40] Unlike Clean Development Mechanism (CDM) and Joint Implementation (JI) credits, this mechanism is independent of the Kyoto Protocol.

[41] See https://ec.europa.eu/energy/sites/ener/files/documents/necp_factsheet_be_final.pdf.

[42] A tool to assess the suitability of species for different ecological conditions.

[43] http://dotstat.oecd.org/?lang=en (accessed 12 September 2020).

[44] The Federal Plan for the Reduction of Plant Protection Products, the Brussels-Capital Region Pesticide Reduction Programme, the Flemish Action Plan for the Sustainable Use of Pesticides and the Walloon Pesticide Reduction Programme.

[45] The first five-year federal action plan on pesticides was launched in 2005; it was extended until 2012.

[46] IPM involves agricultural practices (for example, crop rotation, stale seedbed, date and density of sowing, under-sowing, conservation tillage, balanced fertilisation) and protection of beneficial organisms by ecological infrastructures.

[47] Co-funded by EU cohesion policy, the strategy promotes local food supply chains (targeting producers in the Flemish provinces neighbouring Brussels).

[48] https://skat.dk/skat.aspx?oid=1946630 (accessed 12 September 2020).

[49] https://fytoweb.be/fr/nouvelles/nouvelle-approche-nationale-pour-levaluation-du-risque-pour-les-abeilles.

[50] The “suspension regulation” (2019) updates the list of species whose introduction into the EU is prohibited, with an indication of their country (ies) of origin.

[51] Timber and timber products covered by permits under the Forest Law Enforcement, Governance and Trade FLEGT Regulation (2005) or CITES are considered to comply with the requirements of the EU Timber Regulation; in late 2016, Indonesia became the first country to issue FLEGT licences.

[52] Dutch, French and German speaking communities.

[53] Via the Belgian Science Policy Office (BELSPO), who manages research programmes on behalf of the federal government, under the BRAIN programme (Belgian Research Action through Interdisciplinary Networks).

5. Waste, materials management and the circular economy

Belgium's regions have used an effective mix of policy instruments to achieve high levels of recovery and recycling of municipal waste and other waste streams. However, further efforts will be needed to increase recycling and composting in coming years. Belgium has also undertaken pioneering initiatives for the transition to a circular economy, addressing key sectors including construction and food. This chapter gives an overview of trends in material use and waste generation and of related policies. It reviews the effectiveness of policy instruments for waste management and the circular economy, and it identifies opportunities for further progress towards a circular economy.

5.1. Introduction

This chapter provides an overview of trends in material use and in waste generation and treatment. It presents each region's policy objectives and institutional settings. It then reviews the effectiveness of the policy instruments used to encourage waste prevention, reduction and recycling, as well as to manage the transition towards the circular economy.

The three regions of Belgium develop separate waste management and circular economy policies as part of their wider environmental competence. Their roles were strengthened over the evaluation period: in the most recent reform of federal and regional powers (2012-14), for example, the regions gained competence on waste shipments. In Flanders and Wallonia, municipalities and inter-municipal organisations collect and treat municipal solid waste.

Belgium has nearly eliminated landfilling of municipal solid waste. All three regions have policies and plans to reduce waste volumes, increase waste reuse and separate collection and recycling, and promote the transition to the circular economy.

Already in 2007, Belgium recycled or composted more than half of its municipal waste. The recycling rate has risen slightly, but the share of composting did not increase over the evaluation period. Belgium appears to have already met the 2020 recycling targets of the European Union (EU). However, recycling and composting will need to increase further to meet future domestic and EU goals.

Brussels-Capital and Flanders have been pioneers among OECD regions for their circular economy initiatives. Wallonia has addressed the circular economy in its recent waste and resources plan and other initiatives. A key challenge for all three regions will be to reduce the volumes of materials consumed and waste, including those generated by the construction sector.

The three regions and the federal government have established committees and platforms to exchange information and co-operate on waste and circular economy issues. In 2020, Belgium was considering new circular economy initiatives at both federal and regional levels.

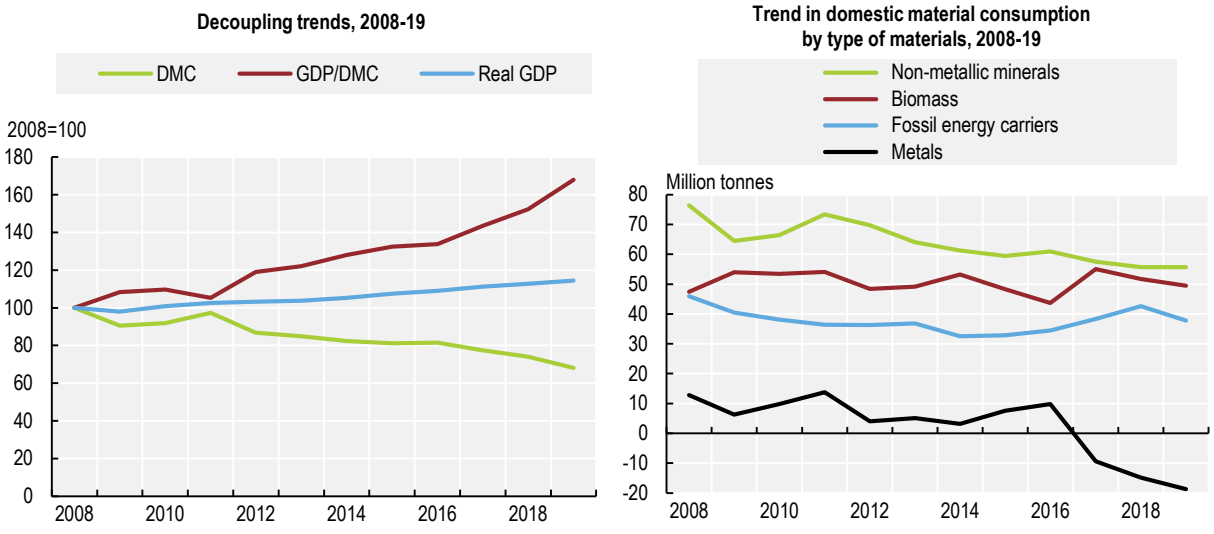
5.2. Trends in material consumption and waste management

5.2.1. Trends in material consumption

Belgium is a transit country with a major European port in Antwerp. It has a small economy, highly dependent on trade: imports account for more than 70% of material inputs. Non-metallic minerals (construction materials) and biomass are the only materials extracted in the country. Fossil energy materials and metals consumed are imported.

In 2019, non-metallic minerals made up the largest share (45%) of domestic material consumption (DMC),[1] followed by biomass (40%), fossil energy (30%) and metals (-15% as exports exceeded imports). Since 2011, DMC has declined. This drop was due to the combined effect of decreasing consumption of both construction materials and metals since 2016, the latter due to the renewal of a shipping company fleet[2] (FPB, 2019) (Figure 5.1). Consumption of fossil energy declined until 2014 and then increased because of rising gas imports. Overall, DMC was decoupled from gross domestic product (GDP) growth resulting in improved material productivity[3] (Figure 5.1). DMC is one of the few national sustainable development indicators moving in the right direction (Chapter 1): Belgium set a goal to reduce DMC but did not set a target value for this indicator.

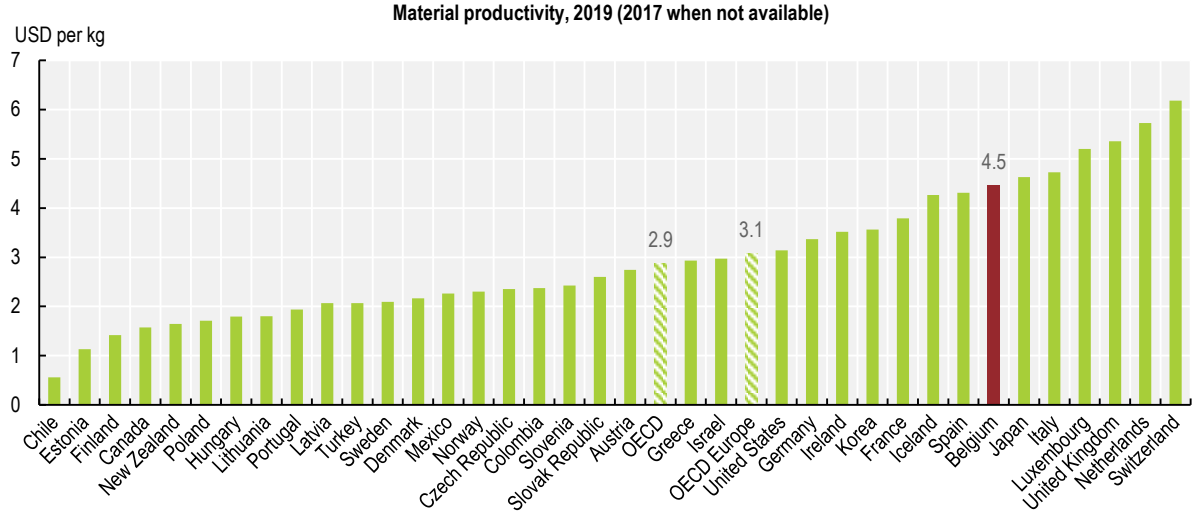
Figure 5.1. Material productivity improved as consumption of construction materials declined



Note: Gross domestic product (GDP) at 2015 prices and purchasing power parities.
Source: OECD (2020), OECD Environment Statistics (database).

StatLink https://doi.org/10.1787/888934231193

Figure 5.2. Material productivity is above the OECD Europe average



Source: OECD (2020), OECD Environment Statistics (database).

StatLink https://doi.org/10.1787/888934231212

Belgium has a highly service-oriented economy, generating more economic value per unit of materials used than the OECD Europe average (Figure 5.2). The country consumed fewer materials per inhabitant

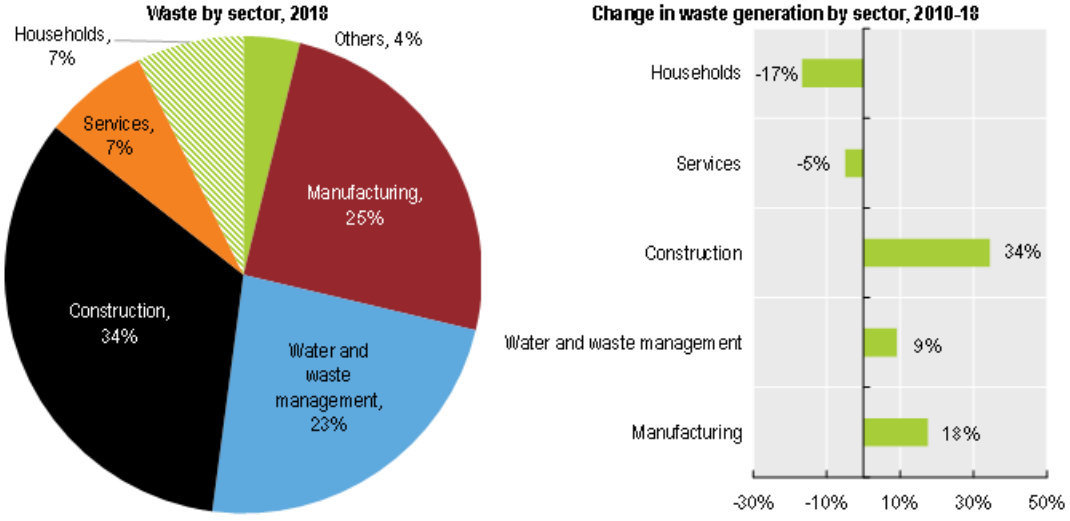
than the OECD Europe average (11 vs. 13 tonnes). However, its consumption is higher when considering materials extracted abroad to meet final demand (24 vs. 23 tonnes in the OECD Europe average).[4] Moreover, while DMC per capita fell over the evaluation period, the trend is flat when considering materials extracted and processed abroad.

5.2.2. Trends in waste generation and management

Total waste

The generation of waste from all sources increased by 10% from 2010 and 2018. The construction sector is the largest source of total waste, followed by manufacturing; waste and water collection; households; and services (Figure 5.3).

Figure 5.3. Construction generated one-third of total waste in 2018 and has grown since 2010



Notes: "Others" category includes electricity, gas, steam and air conditioning supply; wholesale of waste and scrap; mining and quarrying; and agriculture, forestry and fishing.
Source: Eurostat (2020), "Generation of waste by waste category, hazardousness and NACE Rev. 2 activity".

StatLink https://doi.org/10.1787/888934231231

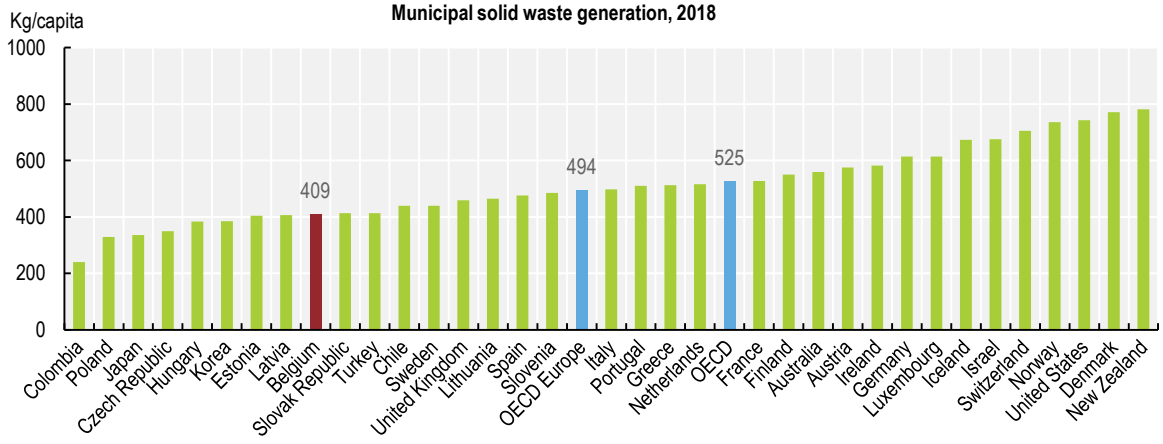
Over 2010 to 2018, construction and demolition waste increased (Figure 5.3); although building construction was flat in this period, civil engineering works increased (Eurostat, 2020a). Waste from waste and water collection, treatment and disposal also rose, influenced in part by Belgium's growing compliance with EU wastewater treatment requirements (Chapter 1). Manufacturing waste increased, while household and service sector waste fell. Among other waste streams, mining and quarrying waste (both minor shares of total primary waste already in 2010) fell significantly; one factor was a decrease in the extraction of sand and gravel (FPB, 2019). Among other sectors with small shares, agricultural waste rose, while waste from electricity general fell, the latter trend due in part to the reduction in fossil fuels in electricity production and the growth of renewables, particularly wind power (Chapter 1).

Municipal waste

Belgium generates less municipal waste per capita than the OECD and OECD Europe averages; indeed, the levels reported are below those of other high-income OECD member countries in Europe such as

neighbouring France, Germany, Luxembourg and the Netherlands (Figure 5.4). However, comparability between the countries is not always straightforward. This is due to the differences in the definitions and the scope of municipal waste, as well as the methods for collecting data. In Belgium, data for municipal waste include household waste and waste from service sector enterprises contracting with public collection services; other enterprises, however, contract directly with private waste collection services and their waste is not included.

Figure 5.4. Municipal waste generation is low



Note: 2018 or most recent data available.
Source: OECD (2020), OECD Environment Statistics (database).

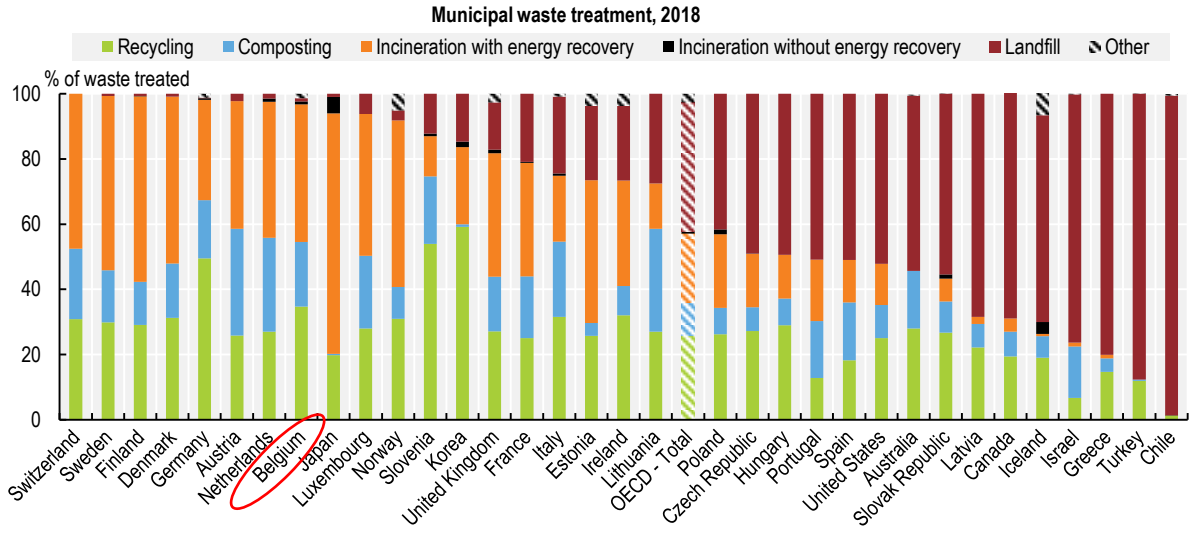
StatLink https://doi.org/10.1787/888934231250

The total quantity of municipal waste fell by 7% between 2005 and 2018. As Belgium's population increased in this period, municipal waste per capita fell by 15%. This decrease may be linked in part to waste reduction policies (Section 5.3); there was, however, a change in data methodology in 2014 that contributed to these reductions.

Direct landfilling of municipal waste, which already accounted for only about 10% of municipal waste treatment in 2005, fell to 1% by 2011 and has since fallen further, due to landfill bans and taxes (Section 5.4.1). This is one of the lowest rates of landfilling among OECD member countries (Figure 5.5). Belgium's levels of recycling and composting in 2018 – 35% and 20%, respectively – were significantly higher than the OECD averages of 26% and 10%, respectively. Belgium nonetheless is behind frontrunners such as Germany and Slovenia in recycling, and Austria and Lithuania in composting. Furthermore, the recycling share in Belgium has increased slowly since 2008, and the composting share has not changed. While recycling and composting levels vary across the three regions, municipal waste recycling is among the national sustainable development indicators that follow a positive trend (Chapter 1).

Since 2005, the share of incineration with energy recovery has increased from 34% to 42% of municipal waste treatment in 2018, twice the OECD average (21%); in Belgium, incineration without energy recovery largely ended over the evaluation period due to policy measures, including high taxes on this type of treatment (Section 5.4.1).

Figure 5.5. Belgium recovers, recycles and composts nearly all of its municipal waste



Notes: 2018 or most recent data available. For Belgium, the category "other" refers to mechanical biological treatment inputs.
Source: OECD (2020), OECD Environment Statistics (database).

StatLink https://doi.org/10.1787/888934231269

Industrial waste

From 2010, the volume of waste from the manufacturing sector increased by 18% (Figure 5.3) while the sector's production index also grew. In the Flanders and Walloon regions, the locations of nearly all Belgium's manufacturing, waste and production increased broadly in parallel after 2013 despite a relative decoupling in the first years of the decade.

In Flanders, two sectors accounted for 69% of total manufacturing waste generated in 2018: the production of basic metals and of fabricated metal products (46% of the regional total) and food processing (23%).

In Wallonia, three sectors accounted for 81% of total manufacturing waste volumes in 2017: food processing (37% of the regional total), wood products (28%) and metallurgy (16%). From 2007 to 2017, production in the first two sectors grew and their waste generation increased in step. Meanwhile, production and waste generation in metallurgy, once the largest source of manufacturing waste in Wallonia, declined sharply after the 2008 financial crisis (Wallonia Environment, 2017).

The share of industrial waste recycled and recovered increased in both regions. For example, it rose in Flanders from 58% of the total in 2007 to 68% in 2018 (OVAM, 2019).

Hazardous waste

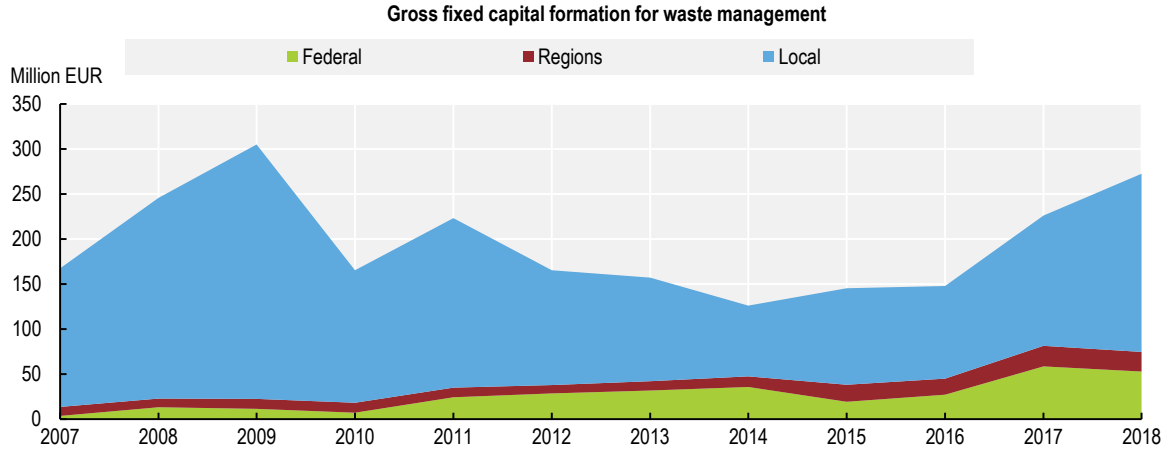
Hazardous waste accounted for 6% of total waste generated in 2016. The level of waste generation in 2016, close to 350 kilogrammes (kg) per capita, was higher than the EU average. Generation of hazardous waste has fluctuated since 2010 due in part to variations in contaminated soils excavated at construction sites, including large infrastructure projects. In Wallonia, for example, about 1.5% of excavated soils are contaminated. Belgium has included hazardous waste generation among its sustainable development indicators (Chapter 1), but a clear trend has not been seen.

Three sectors generated three-quarters of hazardous waste: manufacturing (33% of the total); waste collection, treatment and disposal activities, and materials recovery (27%), including hazardous waste from both wastewater treatment and solid waste incineration; and construction (15%). Soil is a large source of hazardous waste from construction. In 2016, 50% of all hazardous waste went to landfills; 33% was recycled and the remaining 17% was incinerated.

Waste expenditures and financing

In 2018, 73% of public waste investments in Belgium were made at local level, including both municipalities and inter-municipal organisations (Figure 5.6). The inter-municipal organisations own many waste facilities, including most of Belgium's municipal waste incinerators.

Figure 5.6. Public investment for waste management has fluctuated, but local governments have remained the main investors



Source: Statbel (2020), "Government spending by functions and transactions", National Bank of Belgium Online Statistics (database).

StatLink https://doi.org/10.1787/888934231288

Households in Belgium spend less for waste management than those in neighbouring countries and in most other OECD Europe countries: about EUR 46 per capita in 2016 compared to, for example, EUR 78 per capita in Germany and EUR 78 per capita in France. In Flanders and Wallonia, household waste fees cover at least operational costs for collection and treatment. Public sector current and capital transfers for the sector, about EUR 13 per capita, are higher in Belgium than all other OECD Europe countries except Lithuania (OECD, 2020a).

In coming years, public investment in waste facilities is expected to continue to play an important role. The Walloon Region's investment plan for 2019 to 2024, for example, foresees EUR 75 million in spending for waste and resources projects (Walloon Government, 2019a).

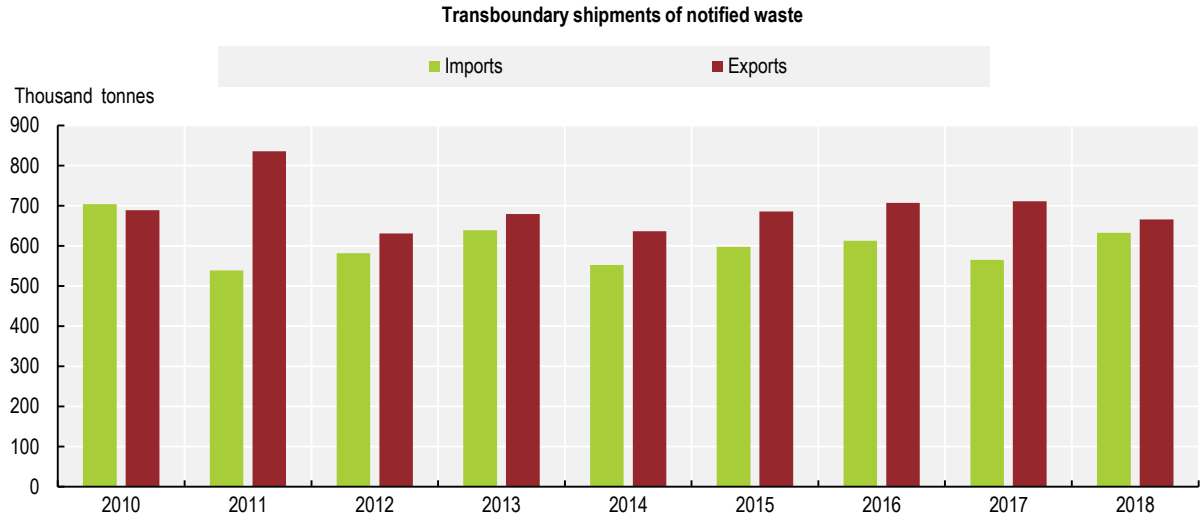
Waste shipments

Since 2010, Belgium's exports of hazardous waste have been fairly stable, just above 700 000 tonnes, except for a peak in 2011 (Figure 5.7). Almost all hazardous waste exports recorded have gone to neighbouring France, Germany and the Netherlands: in 2018, these three countries took 96% of Belgium's

exports (Eurostat, 2020b). Illegal exports of hazardous and non-hazardous waste, in particular outside of the European Union, are a concern (Section 5.4.4).

Imports of hazardous waste declined slightly from 2010 to 2018. France, Germany and the Netherlands accounted for almost 70% of Belgium's imports in 2018. Most other hazardous waste imports arrived from other European countries, although Belgium also imports small quantities from Canada, Mexico and the United States, as well as a range of developing countries. Belgium's hazardous waste imports for treatment and disposal include, among others, solvents and other chemicals, oils and sludge, lead-acid batteries and hazardous waste from waste electrical and electronic equipment (WEEE): companies in Flanders have specialised in the treatment of these hazardous wastes (country submission).

Figure 5.7. Both imports and exports of hazardous waste have remained fairly stable since 2010



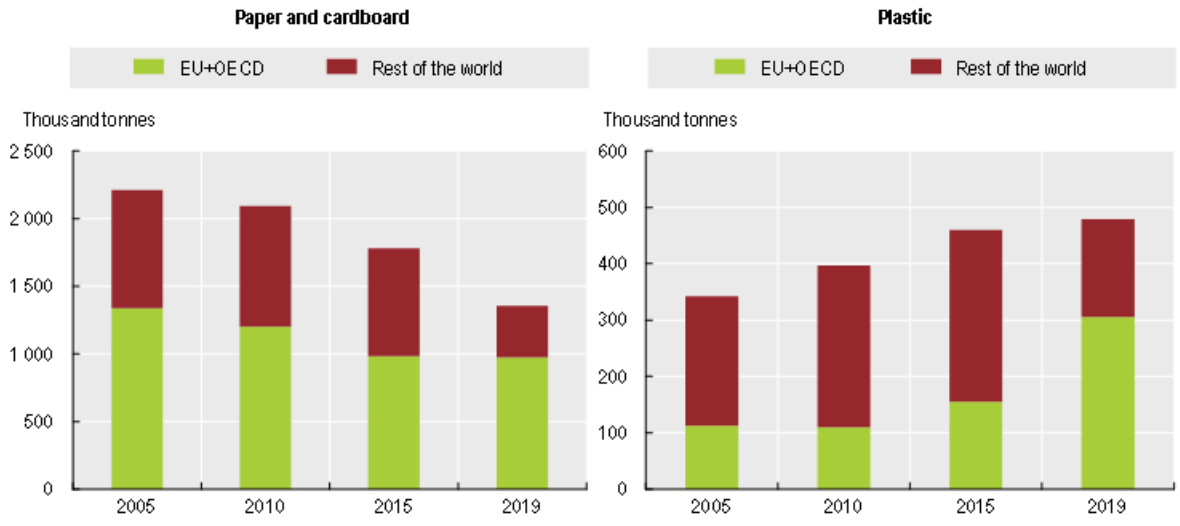
Source: Eurostat (2020b), Transboundary Shipments of Notified Waste by Partner, Hazardousness and Waste Management Operations (database).

StatLink https://doi.org/10.1787/888934231307

Belgium also exports and imports several streams of *non-hazardous waste*. It sends low-value ferrous metals, for example, to Egypt and Turkey, while sending most of its non-ferrous metals to Germany and the Netherlands. Imports include ferrous and non-ferrous metals for recycling, wood waste for recycling and incineration, and refuse-derived fuel for incineration. Belgium's imports of ferrous and non-ferrous metal scrap both exceeded its exports in 2019.

In contrast, Belgium's exports of both paper and cardboard waste and plastic waste exceeded its imports in 2019. Moreover, until recently, Belgium sent a high share of its paper and cardboard waste exports, and especially of plastic scrap exports, to developing countries. Following waste import restrictions in the People's Republic of China, Belgium has exported less waste outside of the European Union and OECD member countries (Figure 5.8). Its exports of plastic scrap to Turkey, an OECD member country, have grown rapidly, for example. Exports to some developing countries have also grown. For example, Belgium increased exports of paper and cardboard waste to India and Thailand; it also sent more plastic scrap to Malaysia. Recent amendments to the Basel Convention on Transboundary Movements of Hazardous Waste broaden the range of plastic wastes classified as hazardous. Belgium will need to strengthen controls on these shipments.

Figure 5.8. Exports of paper and cardboard waste declined, but exports of plastic scrap grew



Source: Eurostat (2020c), EU trade since 1988 by HS2-HS4 (database).

StatLink https://doi.org/10.1787/888934231326

5.3. Objectives, policies and institutions for waste, materials management and the circular economy

5.3.1. Policy framework and objectives

Waste management policies and targets

The three Belgian regions have developed separate waste management plans but share several common aims. These include reducing the generation of municipal solid waste in total and of key waste streams; increasing levels of waste recycling and reuse; and, especially in the most recent plans, supporting the transition to the circular economy by linking waste to resources.

The plans in the three regions set numerous targets for key waste streams and also seek to achieve EU targets (Table 5.1). With its high level of recycling and composting, Belgium as a whole appears to have met the EU's 2020 target for household recycling; however, levels vary across the three regions. Moreover, calculation methods are being updated: nonetheless, it appears that targets for municipal waste as a whole for 2025 and beyond had not yet been met in 2017 (latest data available).

The Brussels-Capital and Walloon regions have developed plans covering both waste and resources. The Waste Prevention and Management Plan for the Brussels-Capital Region (BCR) was in place from 2010 to 2017. Among its provisions, the plan called for reductions in household waste generation (Brussels Environment, 2010). Data were not found to indicate if the region met these goals. The region's next plan, for 2018 to 2023, sets further targets on waste reduction and reuse; calls for more sustainable and more circular consumption; and encourages enterprises to undertake circular economy actions (BCR, 2018). In Wallonia, the 2018 Waste-Resources Plan (Wallonia Environment, 2018a) contains targets and actions for 2025 for household and similar waste and for industrial waste. It followed the second regional waste plan (Wallonia Environment, 2010), which was adopted in 1998. This second plan had targets for 2010 that called for waste prevention, together with higher levels of waste reuse and recycling.

Table 5.1. Belgium has met the EU's 2020 recycling targets, but performance on key regional targets has varied

Waste stream	2010	2013	2020	Beyond 2020	Progress
EU targets					
Paper, metal, plastic, glass in household waste: preparing for reuse and recycling			50%		Achieved. In 2017: Brussels – 43% Flanders – 64% Wallonia – 43% Belgium as a whole – 56%
Municipal waste: preparing for reuse and recycling				2025: 55% 2030: 60% 2035: 65%	Under revised calculation methods and for 2017 data, these targets have not yet been met.
Brussels-Capital Region					
Reduction in household waste per capita (vs. 2017)				2023: 5% 2030: 20%	*Data not found*
Recycling rate for total household waste			50%		2017 level: 43%
Household waste reuse per capita				2023: 3 kg/cap, 2030: 6 kg/cap	2023 target was met in 2018
Flanders					
Max. generation of MSW				2022: 502 kg/cap	Met by 2018 (468.5 kg/cap)
Max. generation of residual waste (in MSW)	150 kg/cap (2007)			2022: 138 kg/cap differentiated by municipality 2030: 100 kg/cap	2007 target met in 2018 (146 kg/cap) In 2018, about one-third of municipalities met their 2022 targets
Household waste reuse				2022: 7 kg/cap	5.4 kg per capita (2018)
Wallonia					
Separate collection of household waste	65%				Target reached in 2008 2015 level: 70%
Recovery, recycling and reuse of household waste	54%				*No data found*
Max. household and similar waste generation per capita (not including inert, bulky and yard waste)	292 kg/year				Target met: 2010 level was 278 kg/cap
Max. household and similar waste generation per capita (including inert, bulky and yard waste)	445 kg/year			2025: 501 kg/year	2010 target not met 2018 level: 518 kg/cap
Reuse, recycling and recovery of industrial waste	85%				Target reached 2015 level: 96%
Household waste to landfill	6% (maximum)				Target met 2018 level: 1.7%

Sources: Brussels Environment (2010); BCR (2018); country submission; Flanders Government (2020a); OVAM (2017); Wallonia Environment (2020, 2018a, 2010).

Flanders established two plans for 2008 to 2015: the Implementation Plan for Environmentally Responsible Household Waste Management and the Plan on Separate Collection of Industrial Waste from Small Enterprises. These were followed by the Implementation Plan for Household Waste and Comparable Industrial Waste (2016-22), which sets targets by waste stream and for overall municipal solid waste generation (this target of 502 kg per inhabitant was reached in 2018).

Policies and targets for the circular economy

Belgium has put in place ambitious plans and objectives for the circular economy; in all three regions, these plans have been linked to economic development plans.

The BCR adopted its Programme for the Circular Economy in 2016, encouraging economic activities for resource circularity. The Brussels Good Food Strategy, also from 2016, calls for reducing food waste and recovering unsold food. This plan also promotes urban farming in Brussels to reduce the distance from farms to consumers (Brussels Environment, 2016). The region's fifth Resources and Waste Management Plan (2018) supports the transition to the circular economy and includes targets relevant for this objective. For example, the plan states the volume of electric and electronic appliances repaired and reused should increase 50% by 2023, compared to the 2017 level.

In Flanders, the Materials Programme (2011) called for the long-term development of an economic model with closed material cycles. The region's Vision 2050, published in 2016, identifies the transition to a circular economy as one of its seven transition priorities: purchasing, urban actions and entrepreneurships are its three action areas for the circular economy. The Circular Flanders programme, launched in 2017, has put in place initiatives in the three areas identified by Vision 2050 (Circular Flanders, 2019). The Flemish Energy and Climate Plan 2021-2030 links climate and circular economy objectives and aims at a material footprint reduction of 30% by 2030.

In Wallonia, the Regional Development Plan for 2015-19 (also known as Marshall Plan 4.0) called for the development of a circular economy and improvement of resource efficiency among its priorities. The second Walloon Sustainable Development Strategy (Walloon Government, 2019b) identifies three priority areas – food, energy and resources – and calls for more sustainable production and consumption patterns. The Third Regional Waste and Resources Plan of 2018 includes the circular economy among its guiding principles. The government's Regional Policy Statement, adopted in September 2019, identifies the circular economy and zero waste among its broad objectives. It calls for greater recycling within the region along with new public procurement initiatives (Walloon Government, 2019c). In July 2020, the region presented a circular economy strategy, Circular Wallonia, for consultation, aiming for its adoption by the end of 2020.

At federal level, the environment and economy ministries published the Circular Economy Roadmap that featured 21 measures that focus on product policy and consumer protection, policy areas where the federal government rather than the regions has competence. While regional governments and stakeholders provided input to the roadmap, this policy initiative was separate from work at regional level. In October 2020, the programme of Belgium's new national government called for the development of a federal action plan for the circular economy, to be developed in agreement with the three regions.

5.3.2. Legal framework

Each of the three regions sets legislation for waste management, and each transposes EU legislation into its legal framework. The regions have held informal contacts to co-ordinate their transposition of EU waste legislation. For packaging waste, formal co-ordination via the Inter-regional Packaging Commission (IRPC) (Section 5.3.3) has harmonised legislation through a co-operation agreement. Overall, however, as the regions transpose EU legislation separately and each develops its own legal framework, waste laws differ across the three regions. These differences increase costs for companies that operate across different regions (Box 5.1).

Box 5.1. Regional differences for end-of-waste criteria hinder the circular economy

A study for the Flanders Region identified obstacles related to the "end-of-waste" criteria defining when to treat recycled or reused waste as a product or raw material. EU legislation provides the framework for this legal step. For a few types of metal scrap and glass, the European Commission's Joint Research Centre has identified common EU criteria; for other types of waste, member states set criteria. In Belgium, the regions have set some criteria, as is the case for soil waste from construction and demolition activities. Differences, however, have limited inter-regional movements. The study recommended addressing the issue at EU level (as does the European Commission's new Circular Economy Action Plan).

Sources: EC (2019); Vanheusden and Mouligneau (2019).

In the BCR, the principal legal basis is the Waste Ordinance (adopted in 2012 and since amended). This legislation transposes EU waste requirements and targets, providing the legal basis for extended producer responsibility (EPR) schemes. It also includes broad objectives to use resources more efficiently and reduce the impacts of resource use. A number of regulations and executive orders support the ordinance, notably the Waste Collection Regulation and Brudalex (i.e. Bruxelles/Brussel-Déchets-Afvalstoffen-LEX). These govern the separate collection of household and non-household waste, respectively.

The Flanders Decree on the Sustainable Management of Material Cycles and Waste (or the Materials Decree) of December 2011 replaced the previous Waste Decree. The 2011 legislation more strongly supports a shift towards sustainable resource use. The 2012 Flemish Regulation on the Sustainable Management of Material Cycles and Waste provides implementing rules for the Decree. Both the Decree and the Regulation have been amended regularly.

In Wallonia, the main waste legislation is the Decree of 27 June 1996 on waste. It has since been amended and supplemented by implementing measures.

5.3.3. Institutional framework and governance

The three regions have waste management authorities, while inter-regional bodies exchange information and support co-operation (Figure 5.9). In Flanders and Wallonia, the local level manages municipal waste.

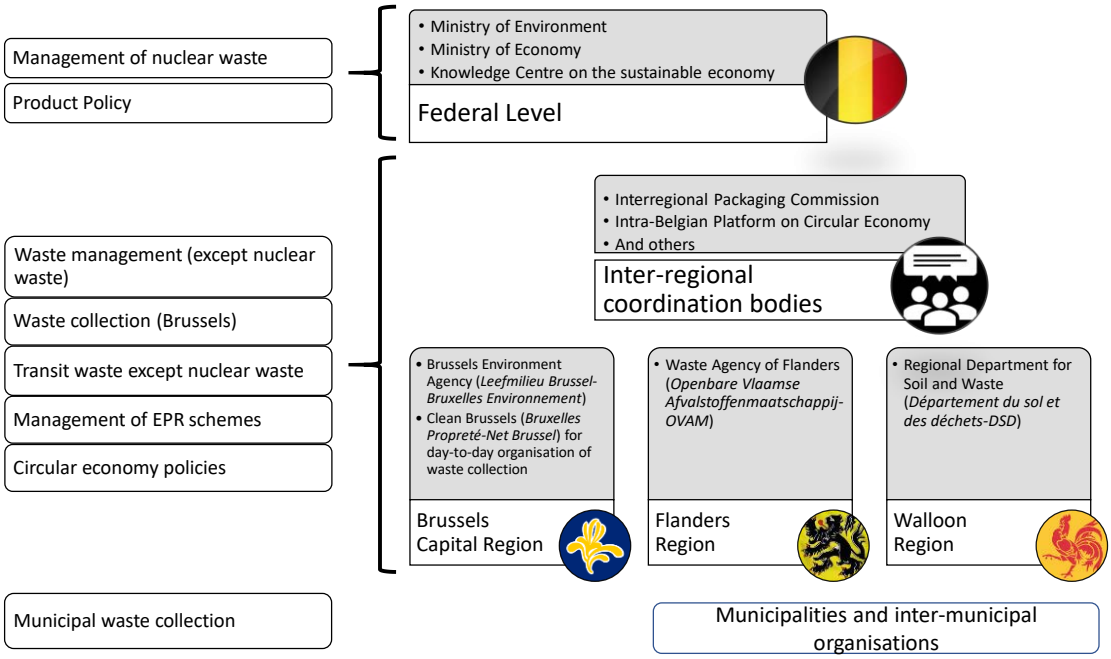
Brussels Environment is responsible for waste management, including implementation of policies and data gathering on waste streams. Another important actor is the Agence Bruxelles Propreté–Net Brussel (ABP), a regional agency responsible for the collection and treatment of municipal waste; the cleaning of regionally managed streets and other public spaces; and the ownership and operation of several waste treatment facilities, including an incinerator. The 19 local municipalities in Brussels clean smaller municipal streets and public spaces. They work with ABP on certain waste collection activities such as the removal of bulky waste.

In Flanders, waste management, soil remediation and the transition towards the circular economy is the responsibility of the Public Waste Agency of Flanders (OVAM). This independent agency leads policies, initiatives and projects for waste management and soil remediation. With the entry into force of the 2011 Materials Decree, OVAM has also led on the transition to the circular economy. The Flemish Compost Organisation has promoted composting in households, as well as facilities for bio-waste composting and anaerobic digestion. Among other key institutions, the Flemish Institute for Technological Research focuses on circular economy strategies, waste recovery methods, and product and process innovations.

In the Walloon Region, the Soils and Waste Department of the regional Directorate-General of Agriculture, Natural Resources and the Environment leads the development and implementation of policies for waste, resources and soils, and it issues permits for waste management companies. The Sustainable Development Unit and the Economic Policy Unit co-ordinate circular economy policy and its implementation.

In Flanders and Wallonia, municipalities and inter-municipal organisations collect and treat household waste and related municipal waste; some outsource to private companies, in particular for collection. In Flanders, the inter-municipal organisations handle most municipal waste collection; a few cities, including Antwerp, organise collection by themselves. In Wallonia, seven inter-municipal organisations organise municipal waste collection. In both regions, the inter-municipal organisations own municipal waste treatment facilities, such as, for example, eight of the nine incinerators in Flanders.

Figure 5.9. Responsibilities for waste management and the circular economy across federal, regional and local levels



Source: Based on country submissions.

The regions co-operate on EU and international waste policy and on EU circular economy policy via the Co-ordination Committee for International Environmental Policy. The IRPC works to ensure harmonised management of packaging waste across the regions. It was established under a 2008 Co-operation Agreement on the prevention and management of packaging waste. The agreement applies to all regions and partly transposes the EU Directive on packaging waste. There are ongoing discussions to strengthen co-operation on other EPR waste streams.

In 2015, the responsibilities of the IRPC were expanded to cover the management of transit waste. It now handles waste shipments that do not originate in and will not be processed in the country, including shipments travelling through one of the regions only. (Regional agencies are responsible for waste shipments originating in Belgium or processed and treated within the country).

The intra-Belgian Platform on Circular Economy, created in 2018, brings together officials from regional bodies and the federal government twice a year to exchange information and identify possible common

actions. The platform was created as the division of competences across different levels had been identified as an obstacle for the circular economy (OECD Working Party on Urban Policy, 2019).

5.3.4. Monitoring and information systems

The three Belgian regions each have their own information system on waste, collecting data from waste operators, inter-municipal organisations, producer responsibility organisations (PROs) and other sources. The regions report to the federal government, which seeks to ensure harmonisation among data collection methods, as do regional co-operation mechanisms. The IRPC is responsible for reporting on the production and treatment of packaging waste. Brussels Environment, OVAM in Flanders and the Walloon government have together established BeWeee, a common reporting platform for PROs and individual actors managing WEEE. Co-operation between the regions has brought a common monitoring system for reusable packaging and regular information sharing on data collection for waste shipments via the IRPC. Efforts to harmonise data across the three regions continue; these include, for example, calculation methods for EU targets on recycling (Section 5.3.1).

The regions have addressed gaps in some areas of waste data. The BCR, for example, has been updating its waste information system to gather more accurate and more detailed data from enterprises and institutions, particularly on industrial waste and on construction and demolition waste.

5.3.5. International co-operation and outreach

Belgium's federal government has supported work by international organisations on waste and resources management, as well as pursued its own technical assistance projects. For example, the Belgian Development Agency helped improve waste collection in the city of Sikasso, Mali, from 2002 to 2017; another project supported better waste management in the city of Saint-Louis in Senegal from 2003 to 2013. Moreover, the federal government's 2014 Strategic note on environment in development co-operation identified waste management as a key area for support.

All three regions of Belgium can participate in international co-operation on their own terms. Brussels is one of five pilot cities – together with Cape Town, Dongguan, Recife and Sorsogon City – in the United Nations Environment Programme's Global Initiative for Resource Efficient Cities, a platform launched in 2012 to share knowledge and tools. Belgium has been a member of the Steering Committee of the UN International Resource Panel since 2012: Flanders has paid the yearly financial contribution. In addition, the regions and some local governments participate in EU projects and networks.

5.4. Promoting waste reduction and recycling

5.4.1. Reducing and recycling municipal waste

Waste reduction

The national decrease in municipal waste generation per capita (Section 5.2.2) has been reflected in regional trends.

In Brussels, the total volume of municipal waste has remained fairly stable over the evaluation period, while the region's population has increased (Brussels Environment, 2020a). In Flanders, household waste per capita fell by 7% from 2013 to 2018; this followed an estimated 6% decrease from 2007 to 2013, based on a different methodology. The region met its objective of decoupling between household budgets and waste generation (OVAM, 2020). In Wallonia, household and similar waste per capita fell from 2009 to 2018 by about 5% (to 518 kg per capita) (Wallonia Environment, 2018a). The region met its 2010 target to reduce household and similar waste – not including inert, bulky and yard waste. However, the region did not meet

a separate 2010 target that included these three waste fractions (Table 5.1); trends suggest the Walloon Region should reach its less stringent 2025 target for household and similar waste including the three fractions.

The three regions have applied a combination of actions to encourage waste reduction, including raising awareness and using economic instruments, such as pay-as-you-throw (PAYT) mechanisms (described below). All three have taken actions to reduce food waste (Section 5.5.4). As part of raising awareness, the BCR has promoted zero waste initiatives (Box 5.2), and from 2017 to 2019, the Walloon Region supported 20 municipalities in testing zero waste actions.

Box 5.2. The Brussels-Capital Region encourages zero waste lifestyles

In 2018 and 2019, Brussels organised Zero Waste Fairs for businesses and members of the general public who wish to learn about opportunities, exchange information and develop new initiatives. The fair attracted about 10 000 visitors each year.

The Zero Waste Challenge targets households and provides coaching for a transition to a zero waste lifestyle. In 2019, 50 households participated in the challenge: this trial showed it was possible to reduce household waste by 75%. Organisers planned to expand the challenge to 180 households in 2020. A regional website encourages other households to adopt zero waste goals. While municipal waste per capita has fallen in Brussels, the small scale of these initiatives suggests they have not had a major impact on overall trends.

Source: Brussels Environment (2020b).

Waste collection

All three regions have established separate collection for recyclable waste streams such as paper, metal, plastic and glass, supporting high levels of recycling of municipal solid waste (Section 5.2).

Since 2010, households in Brussels were required to separate paper, plastic and cartons, glass and garden waste; small enterprises and institutions had to do so from 2013. The region provides door-to-door collection of these waste streams, except glass, as well as residual waste and yard waste. Glass, textiles and used cooking oils are collected via local containers. In 2017, the region introduced door-to-door collection of food waste from households and other establishments on a voluntary basis. As a result of separate collection, the recycling rate for household waste has increased significantly – from 25% in 2005 to 43% in 2017 (although most of the improvement occurred in the years to 2012).

Brussels, however, has lacked sufficient collection points for bulky waste, WEEE and hazardous waste (Merta and Vuorinen, 2016). It has only two permanent sites, although municipalities within the region organise temporary collection points. Moreover, the BCR has not used fee systems that provide incentives to reduce waste generation or encourage separate recycling.

In Flanders, municipalities and inter-municipal organisations have organised door-to-door collection of recyclable paper and cardboard, plastic and metal packaging, and cartons plus residual waste. Many locations also collect glass, yard and organic kitchen waste door-to-door. In many parts of Flanders, both inhabitants and businesses using public waste collection must buy specially designated bags; a higher price per bag for residual waste (up to two euros) encourages waste separation. In other parts of Flanders, waste is weighed. About half of household waste charges reflect a PAYT element, with the other half fixed (Card and Schweitzer, 2016). Some municipalities seek to offset the costs for low-income residents or families with new-born children, for example by providing set numbers of free bags per year.

The region has a network of collection points for bulky waste, WEEE and hazardous waste from households. It is expanding this network with smaller sites, aiming for all residents to have a collection point within 5 kilometres of their homes (EEA, 2019). In Flanders, separate collection covered 69% of municipal waste in 2017 and nearly all (about 64%) was recycled or composted. Recent studies suggest that separate collection can be further increased; some recyclable waste has been found in samples of household residual waste bags.

Parts of Wallonia also use the system of different coloured bags for waste separation and door-to-door collection. However, some municipalities use containers that are activated by a chip card and that weigh bags of waste. Each municipality sets household fees under a regional, two-part system with a fixed charge plus a variable charge. They collect the variable charge either via the price of waste bags, a requirement for stamps on waste bags or the weighing containers. Moreover, the regional government has required municipalities to recover between 95% and 110% of the operational costs for collection and treatment since 2012 (Wallonia Environment, 2018b).

Wallonia significantly increased separate collection and recycling under its second waste plan, meeting its 2010 target for separate collection already in 2008 (Table 5.1). It accomplished this goal in part due to the expansion of the network of container parks, as well as joint efforts with EPR schemes and increased landfill taxes (see below). Municipalities can receive regional subsidies to finance investments for separate collection, such as building container parks and introducing weight-based payment schemes. Moreover, municipalities must pay the region a sanction if the amount of residual waste per capita exceeds a threshold; the thresholds were lowered from 2008 to 2011, and since 2010 municipalities have almost always reached their thresholds. In total, the share of separate collection of household and similar municipal waste increased by 31% between 2000 and 2015 (Wallonia Environment, 2017). In turn, the quantity of residual waste from households and similar sources fell from 174 kg to 145 kg per capita between 2007 and 2016 (IWEPS, 2020).

Incineration is the leading method of waste treatment – and recycling will need to increase further.

In all three regions, government entities have owned most waste treatment facilities. This includes incinerators, which take the largest share of Belgium's municipal waste and almost all residual waste. The BCR operates a waste incinerator, a bio-methane facility (located outside the region) for food waste and a composting facility for garden waste. The region also sends municipal waste to Flemish facilities for treatment. In the Flanders Region, inter-municipal organisations operate eight incinerators, as well as other treatment facilities. One privately operated incinerator in the region takes both municipal waste and some streams of industrial waste. In Wallonia, inter-municipal organisations own incinerators.

Taxes, together with landfill bans, have played a key role in reducing landfilling; moreover, Wallonia used taxes to support a shift to incineration with energy recovery (Box 5.3).

Box 5.3. Taxes have almost eliminated landfilling but have not led to a shift from incineration to recycling

Landfill taxes have provided incentives for the shift from landfilling to incineration, together with bans on landfilling of certain waste streams. Flanders had a landfill tax in place before the evaluation period; the 2018 tax rate was EUR 57 per tonne for residual household waste that cannot be incinerated (Table 5.2). Flanders had raised these taxes by 50% in 2015 for budgetary reasons, increasing yearly revenue to EUR 4.5 million. Flanders applies these taxes to waste exported for landfilling; however, any taxes paid in the recipient country can be deducted from the tax paid in Flanders (a similar system is used for waste exported for incineration).

Table 5.2. Incineration and landfill taxes for municipal solid waste in Belgium, France and the Netherlands

Tax	Rate (EUR/t)
Incineration taxes (for incineration with energy recovery)	
BE-Brussels (2020)	6.53
BE-Flanders	
General waste	8.18
Recycling residues	2.34
BE-Wallonia (2018)	11.76
France (2015)	14
Netherlands	13
Landfill taxes	
BE-Flanders (2018)	57.21
BE-Wallonia (combustible waste, 2018)	115.40
BE-Wallonia (non-combustible waste, 2018)	63.47
France (2015)	32-40
Netherlands	17

Note: Depending on the region or country, these tax rates may also cover other non-hazardous waste.
Sources: OECD (2020c); OECD (2020), PINE (database); Fiscalité Bruxelles (n.d.); Paleari (2016); country submission.

Wallonia introduced a landfill tax for non-hazardous household waste of EUR 20 per tonne in 2008, raising it to EUR 78 per tonne in 2015 and then, from 2017, setting different rates for combustible and non-combustible waste (Table 5.2). This increase had a major influence in reducing municipal waste sent to landfill in the region. The rate is significantly higher than landfill taxes in France and the Netherlands. In Flanders, the rate is lower; here (as in the Netherlands), a ban on landfilling most types of municipal waste has supported a low rate of landfilling.

Both Flanders and Wallonia have incineration taxes, ranging from EUR 2.3-11.8 per tonne, depending on region and waste stream (Table 5.2). Wallonia, for example, introduced incineration taxes for non-hazardous waste in 2008 at EUR 3 per tonne, doubling them in 2010. They have risen steadily since. Brussels also recently established an incineration tax. Wallonia has applied a much higher rate to incineration without energy recovery (EUR 25 per tonne in 2010 rising to EUR 65.43 per tonne in 2018). This tax played a key role in shifting incineration to include energy recovery. However, taxes on incineration have not led to a shift from incineration to recycling; the share of municipal waste incinerated increased (Section 5.2.2). The rates are close to those in neighbouring France and the Netherlands.

Sources: Country submission; OECD (2015).

While 2017 data show that Belgium as a whole was on track to meeting the EU's 2020 recycling targets, the Brussels and Walloon regions still had some distance to go. Regional policies call for increased separate collection and recycling: for example, all three regions are seeking to reduce food waste and will strengthen requirements for its separation (Section 5.5.4); the regions also plan to boost separate collection of other waste streams such as textiles. Brussels and Wallonia both plan to increase the number of container parks to collect waste that can be recycled and reused, and to further support social enterprises preparing furniture and other bulky waste for reuse (Section 5.5.5); they are working with PROs to increase separate collection under EPR schemes, including for packaging waste (Section 5.4.2). Further enforcement is being planned: in Brussels, for example, waste separation in enterprises that use private waste collection is a concern.

Brussels could also consider introducing PAYT tariffs, for example, by increasing the cost of bags for residual waste; Wallonia might further develop municipal PAYT systems to increase incentives. Increases in incineration taxes should also be considered.

Further growth in recycling and composting is likely to reduce waste incineration. The Flanders Region has estimated the potential decrease in energy and carbon emissions from its incinerators to 2030 and beyond, due to the planned fall in waste generation and an increase in recycling. The Brussels and Walloon regions are studying the likely reduction in demand for incineration. This work will be valuable to inform policies and avoid excess incineration capacity in coming years; moreover, reductions in incineration can support policy goals to cut greenhouse gas emissions.

Raising public awareness to address littering

All three regions have tackled ongoing littering problems and illegal dumping. The BCR has organised awareness-raising campaigns against littering and illegal dumping. The region encourages residents to organise "clean-up days" together with street sweepers around World Clean-Up Day (19 September in 2020). It also supports non-governmental organisations (NGOs) raising awareness among primary and secondary school students for the cleanliness of public spaces. The *Mooimakers* (Beauty Makers) campaign in Flanders supports local actions by schools, citizen groups, companies and local authorities. Surveys suggest that littering fell slightly from 2014 to 2018 in Flanders. The region has set a goal of achieving a 20% reduction by 2024, compared to 2014 figures (OVAM, 2020). Further efforts will likely be required to achieve this target.

In Wallonia, a non-profit organisation, *Wallonie Plus Propre* (Cleaner Wallonia), has aimed to raise awareness of littering and promotes better cleanliness of public spaces. Its social media and TV campaigns have targeted littering in the streets, empty drink cans in natural areas and textile waste around containers to collect used textiles. For instance, a pilot project for cans rewarded EUR 5 per 100 cans collected, collecting 1.2 million cans in 15 months. To 2019, the amount of litter collected during "Spring Cleaning" days has been decreasing over the years, which is considered a sign of improvement (BeWaPP, 2018).

Waste management during the COVID-19 pandemic

The pandemic created difficulties for waste management. In Brussels, for example, fewer personnel were available for waste collection and ABP temporarily collected plastic and paper waste together with residual waste. Inhabitants were asked to ensure that waste bags were properly closed and only three-quarters full to avoid breakage. In Flanders and Wallonia, recycling parks closed for several weeks. During this period, there were reports of increased littering in some locations. In Flanders, household waste increased as people stayed home, though company waste fell. An increase in the use of one-way packaging was noted, while the fall in oil prices made recycled plastic less competitive. Stockpiles of used textiles grew as local sales and exports for reuse fell. Public authorities also took steps to anticipate potential problems: Flanders, for example, expanded storage capacity for medical waste. At national level, guidelines for the disinfection of single-use face masks were developed to allow reuse. The BCR launched an information

campaign on how to dispose of face masks and plastic gloves used for protection from COVID-19, as this was identified as a growing problem. Throughout the country, regular waste collection continued.

In sum, waste management in Belgium responded to the pandemic. Reflecting OECD analysis that called for effective waste management (OECD, 2020b), the country's response included actions to address increased medical waste. Temporary measures reduced separate collection and recycling. This may affect Belgium's waste results in 2020.

5.4.2. Extended producer responsibility

Belgium has established EPR for batteries, end-of-life vehicles (ELVs), mineral oils, photovoltaic (PV) panels, packaging, tyres and WEEE. Belgium thus goes beyond EU requirements, which do not include EPR for oils or tyres. Across all these schemes, producers and importers can choose between ensuring waste collection and recovery themselves or establishing a joint non-profit PRO to fulfil the obligations. Members of a PRO pay fees to fund the collection, treatment, recycling and administrative responsibilities of their waste stream.

The EPR schemes are implemented via regional legislative frameworks – along with the inter-regional accords for packaging – but most PROs are national. Regional authorities establish permits for the PROs and conclude agreements with them, usually for five to six years. All PRO agreements were renewed in 2019. The regions monitor the EPR schemes, except for packaging waste, which is managed at inter-regional level by the IRPC. The PROs report to the regional authorities annually, providing information about their operations. Since 2019, vehicle producers and PV panel producers must submit waste management plans to the regional authorities for approval.

Packaging waste

More than 5 000 companies are members of Fost Plus, the PRO for *packaging waste*. In addition, 124 companies reported fulfilling EPR for packaging themselves. Beverage producers, supermarkets and other retailers operate a deposit-return system on some glass bottles, principally those for beer. Consumers pay an extra charge for glass bottles that are part of the system, to be paid back upon return. There are no official figures regarding the results of the deposit-return scheme, although overall Belgium reports that glass packaging recycled is equal to the volume placed on the market.

Fost Plus helps promote door-to-door collection of paper, glass, metal and plastic packaging from households. For example, it co-organises awareness-raising campaigns with municipalities and inter-municipal organisations. Together with OVAM and local authorities, Fost Plus also supports the *Mooimakers* programme to tackle littering (Section 5.4.1).

By 2017, Belgium had met the EU's 2030 targets for recycling glass, paper and cardboard, metal and wood packaging (Table 5.3). Room for improvement remains, in particular for plastic packaging.

Table 5.3. Belgium has already met many of the EU's 2025 and 2030 targets for packaging waste recycling

Type of packaging waste	Belgium: National recycling rate 2017	EU target (2008)	EU target (2025)	EU target (2030)
Glass	100%	60%	70%	75%
Plastic	44.5%	22.5%	50%	55%
Paper and cardboard	92.9%	60%	75%	85%
Metal	98.5%	50%	70% ferrous 50% aluminium	80% ferrous 60% aluminium
Wood	98.3%	15%	25%	30%
Other	6.2%			
Total	83.8%	55%	65%	70%

Sources: Eurostat (2020d), Recycling rates for packaging waste by type of packaging; EU Directive 94/62/EC as amended.

The Co-operation Agreement among the regions on packaging waste is being renewed and would propose new targets for 2021. These targets are more ambitious than the EU's 2030 targets. However, some have already been achieved: the proposed overall recycling rate, for example, is 80%, just below the level achieved in 2017 (Table 5.3).

Other waste streams

The PRO for automobile batteries is Febelauto, and Bebat is the organisation for portable batteries. Belgium has met its 2018 target level for the collection of portable batteries (Table 5.4).

Febelauto is also the PRO for ELVs. It has met the EU target of 95% for the recovery, recycling and reuse of ELVs collected, together with the EU target of 85% for reuse and recycling (Febelauto, n.d.).

A key problem, however, is the low collection rate for ELVs. The number of ELVs sent to licensed centres has fallen. This is partly explained by the longer life cycles of vehicles (the average age of ELVs was just above 16 years in 2018). In addition, unlicensed operators are not reporting ELVs. Traceability of vehicles is a challenge for this EPR scheme. In Belgium, license plates are linked to the owner, not the vehicle. This makes it more difficult to trace vehicles across their lifespans, particularly in cases of resale; the high number of actors involved in recycling vehicles, both authorised and unauthorised, also make it difficult to track ELVs (country submission). Many EU member states have low ELV collection rates, and the upcoming evaluation and revision of the EU Directive is expected to address this issue. Nonetheless, Belgium's rates appear lower than the EU average. Belgium should urgently consider reforms based on good practices in other European countries (Box 5.4).

Box 5.4. Belgium can consider European good practices to address problems with ELV collection

As ELVs contain metals and other materials with a resale value, many European countries face problems with vehicles escaping EPR. A study for the European Commission estimates that in 2014, about 4.7 million vehicles exited the vehicle stock for unknown whereabouts; many were discarded or dismantled improperly. Another 6.1 million vehicles entered approved ELV schemes. The study highlights several potential avenues to address the problem.

- Raising public awareness of ELV requirements and the steps owners should take (an example of good practice is the elves.ie website in Ireland).
- Ensuring effective tracking of vehicles and their ownership: Germany and the Netherlands are cited for their systems to ensure full tracking.
- Strengthening inspection and enforcement: among good practice examples, France established a national action plan against illegal ELV sites and activities in 2013, including co-ordination across ministries and enforcement bodies.

Economic incentives can also play a valuable role: in Denmark, owners receive payments for consigning an ELV to an authorised facility; a tax on vehicle liability insurance covers these payments.

Source: Mehlhart et al. (2018).

As new capacity and expertise will be needed, an upcoming challenge will be the collection and recovery of batteries and engines from electric and hybrid vehicles. This waste stream is expected to gain importance from 2025 (Wallonia Environment, 2018a), when larger numbers of electric and hybrid automobiles start to be retired.

With respect to mineral oils, Belgium has a high collection rate, 101% of oil estimated as collectable (as over one-third of mineral oils are estimated to be consumed during use). The total volumes collected have not changed significantly over the evaluation period. For Belgium as a whole, 90% of oil collected was recycled and 4% was incinerated for energy recovery (Valorlub, 2019).

The EPR for PV panels covers conventional panels, as well as those integrated into buildings. Some regions are advancing faster than others regarding this EPR scheme. In Flanders, it has been in place since 2016, whereas it started in Brussels in 2019. Although the PRO, PV-Cycle, submits annual reports to the regional authorities, there are few data available yet; PV panels have a long lifespan, usually about 30 years. Consequently, the only panels collected to date are faulty ones and those damaged by weather.

The EPR scheme for used tyres covers all tyres except those part of ELVs (see above) and bicycle tyres. In 2018, the volume of used tyres collected was higher than that of new tyres placed on the market. Total recycling and reuse has increased steadily since 2009, reaching 96% in 2018, though reuse has fallen from a high of 14.6% in 2011 (Recytyre, 2019).

In 2018, the collection rate of WEEE was just below the EU target for 2016-18 and significantly below the target of 65% for 2019. Collection rates were lower in Brussels than in Flanders or Wallonia. Significant effort will be needed to increase collection in all regions. In Brussels, it may be difficult to meet an ambitious regional target to double the volume of WEEE collected per capita in 2023, compared to 2017 levels. Table 5.4 provides an overview of EPR targets and results.

Table 5.4. Belgium has met EU collection rate targets for several key waste streams

Waste stream	Placed on the market	Collection rate 2018	EU target rate
ELVs	200 000 tonnes	10%	
Mineral oils	3 335 tonnes	101%	65%
Portable batteries	5 000 tonnes	67%	50%
Tyres	75 tonnes	115%	85%
WEEE	240 000 tonnes	44%	45% (2016-18)

Sources: FebelAuto (2019); Recyctyre (2019); Valorlub (2019); Eurostat (2020e), Waste electrical and electronic equipment (WEEE) by waste management operations.

While the PROs are national, the schemes are managed regionally. When it comes to implementation of EPR schemes, regions may have additional measures and varying performance.

The regional approach allows the regions to develop solutions for their context. In Brussels, the 2018 Waste-Resources Plan proposes establishing extended responsibility for furniture, mattresses, textiles and packaging containing hazardous waste. In Flanders, an EPR scheme for mattresses is planned for 2021, and other EPR schemes – such as for textiles – are under consideration. Flanders also plans to promote greater recycling of plastic waste – as a feedstock in the chemical industry, for example. Regional management, however, increases costs; moreover, the approach hinders solutions to problems such as the low collection rate of ELVs, as vehicle registration is handled at national level while the EPR scheme is managed at regional level. The BCR has faced challenges. It has had a lower level of collection for several EPR waste streams – including WEEE, mineral oils, ELVs and tyres – compared to the other two regions (BCR, 2018). Its administration has also lacked capacity for stronger governance and enforcement of EPR schemes.

5.4.3. Managing contaminated sites and old landfills

All three regions have comprehensive approaches to identify, investigate and plan the remediation of contaminated sites and provide information on potentially contaminated sites via online maps (see also Chapter 2 on financing for site clean-up).

The BCR identifies potential contamination issues when a site is sold; when an economic activity in a risk category starts or ceases; or after contamination is known (e.g. after an accident). The region maintains an inventory of potentially contaminated sites, together with those cleaned up and those assessed as clean: key information can be consulted via an online map. Between 2005 and 2018, 6 662 potentially contaminated sites were the subject of an exploratory analysis. This led to 2 780 detailed studies where contamination appeared likely and, finally, 863 remediation and risk management projects. As a result, 608 ha of land were remediated; this work has accelerated in recent years, and 44% of remediation was carried out after 2014. Activities related to metal degreasing and dry cleaning were most frequently identified as sources of pollution. Across all sites needing clean-up, the most commonly used remediation technique has been removal of contaminated soil for off-site treatment. However, on-site remediation methods have also been used, including draining and treating underground water, bio-remediation and vapour extraction (Brussels Environment, 2018a).

A large share of sites – 79% of those assessed from 2010 to 2016 – has been categorised as “orphan”, requiring public funds for clean-up. The BCR has a goal to manage all its orphan contaminated sites by 2029 (Payá Pérez and Rodríguez Eugenio, 2018): the region expected to meet this goal, as long as public funding continues (country submission). The region is considering expanding soil policy to protect soil health and increase its multifunctional benefits (Box 5.5).

Box 5.5. The Brussels Good Soil Strategy addresses soil sealing and soil health

The Brussels-Capital Region is developing a Good Soil Strategy to protect and manage soil resources as a climate sink, a basis for urban agriculture (Section 5.5.4) and a foundation for biodiversity (Chapter 4). Current work includes developing a map of soil quality across the region and preparing a policy plan that could be launched in 2024, possibly to be followed by legislation.

The plan may propose a regional goal to stop soil sealing (about half of the region's land is already sealed). The region is also considering the inclusion of a mechanism by which any new soil sealing is compensated by improving other areas. The plan may provide financial support for brownfield redevelopment and for actions to address soil compaction, organic matter loss, erosion and other types of soil damage. It may also propose information activities for private owners and associations to improve soil condition, including via composting, which can also address food waste (already in 2016, the region published a soil guide with suggestions for private gardens and activities).

Source: Country submission.

Flanders has identified several types of sites as potentially contaminated. Former industrial areas such as four metal smelters have left heavy metal contamination both on site and in their surroundings. Manufacturing plants, such as chemical and petrochemical plants, may contaminate the soil. In service stations, hydrocarbons may have leaked from underground storage tanks and above-ground operations to the soil. Finally, many small, historical manufacturing sites may have left contaminants. The total number of sites that need or might need remediation fell from 36 468 in 2011 to 18 591 in 2016. Most sites were removed from the list when investigations did not identify contamination issues; nonetheless, the number of sites where clean-up actions had been completed rose from 2 187 to 3 509 over the same period.

Flanders has set soil quality standards for contamination since 1995; it uses risk assessment techniques for older contamination. About half of contaminated soils are remediated on the site. Most of the rest are sent to soil treatment plants in Flanders that use biological, physical, chemical and physical-chemical techniques. The plants also treat soil imported from other regions of Belgium and from nearby countries, including France and the United Kingdom.

The region aims to start remediation on all historical contaminated sites by 2036 (Payá Pérez and Rodríguez Eugenio, 2018). Where possible, OVAM requires that site owners finance clean-up. However, public financing is provided for sites where this is not possible; current levels of public financing have been estimated to be insufficient to meet the 2036 goal (Chapter 2).

In a related issue, Flanders Region has a legacy of about 3 300 former landfills to manage. These include sites containing inert waste, such as construction and demolition waste; former municipal landfills, many of them small; and some sites that contain hazardous waste. Where serious soil contamination problems are suspected, former landfills are included in the list of contaminated sites. Nonetheless, other issues, such as leaching of organic matter into groundwater, are not given high priority. This is partly because a high share of groundwater in Flanders is assessed to be in poor status due to agricultural chemicals and other pressures. OVAM has developed several decision-support tools to assess their contamination risks. It has investigated the potential to extract resources for recovery via "landfill mining". This work, in turn, has led to methods for "dynamic landfill management" that can support better placement of waste in landfills. As yet, landfill mining itself has not been proven commercially viable (country submission).

Flanders has launched an initiative to identify and remove asbestos in buildings (Box 5.6), which can have direct impacts on human health. The rest of Belgium has similar concerns due to the prominent use of asbestos in construction in the second half of the 20th century (it was banned in 2001). Some other

countries and regions in Europe, such as Poland, have put in place asbestos inventories and removal programmes. However, few have set targets or timelines for clean-up as in Flanders.

Box 5.6. Flanders has set targets to remove high-risk asbestos in buildings

Prior to 2001, Flanders had a major asbestos industry with 20 processing sites. Moreover, OVAM estimates at least a 70% to 90% chance that asbestos is present in buildings from before 2001, including homes, schools, companies and agricultural buildings. This estimate is based in part on samples across different building categories. In 2018, Flanders launched an Asbestos Reduction Action Plan with the aim to be "asbestos-safe" by 2040. The plan requires owners to make an inventory of asbestos in buildings sold by 2022 and in all buildings by 2032. By 2034, the highest-risk asbestos applications must be removed from buildings and homes, particularly asbestos in outer shells of buildings. By 2040, all other asbestos in poor condition must be removed. Besides new regulations, the plan includes several instruments to encourage owners in the removal of asbestos. In 2019, the asbestos reduction policy was linked to the Flemish building renovation and climate strategies (2030-50) as a win-win approach to combine asbestos removal with energy efficiency measures in buildings.

Source: Country submission.

As one of the first regions for the Industrial Revolution, Wallonia contains a large number of former industrial sites. It estimated in 2014 that up to 18 000 sites were potentially polluted. These included brownfield sites, historical industrial areas and former landfills, as well as currently operating industrial plants and retail service stations. Information on soils and on current and former activities that create risks of contamination are inventoried on an online database accessible to the public. The database also tracks major movements of excavated soils. Wallonia's revised Soil Decree, in force from January 2019, sets out five types of triggers for site investigation. Since then, the most common types of triggers have been voluntary requests and closures of potentially polluting activities (these two triggers were not included in the previous 2008 Soil Decree). The other types of triggers are requests for urban permits for land identified on the online database, environmental damage and decisions of authorities in case of major threats. Wallonia's Soil Decree sets screening values, which were updated in 2018, and remediation is carried out based on risk assessment.[5] By March 2017, 1 682 sites had been cleaned up (Wallonia Environment, 2017). Wallonia has a target to complete remediation for priority sites handled by SPAQuE, a regionally owned company, by 2022 (Payá Pérez and Rodríguez Eugenio, 2018); information on progress to this target was not found, however.

5.4.4. Enforcement and inspection of waste shipments

OECD's 2007 Environmental Performance Review of Belgium identified environmental enforcement as an area for attention in the country. Illegal shipments of hazardous waste continue to be a concern, especially for waste exports via Belgium's ports. Between 2013 and 2015, Belgium accounted for almost a quarter of all illegal shipments reported in the European Union (644 cases). Belgium, which has one of Europe's largest ports, also has one of the most severe penalties for illegal shipments (EC, 2018). Limitations to staff and budgets have been identified as obstacles to better management and inspection of hazardous waste exports (EFFACE, 2016).

Belgium's three regions have taken steps to fight against illegal shipment of waste. Brussels, for example, integrated a waste shipment inspection plan into its framework of annual environmental inspections in 2017. It focused inspections on the two areas with the most infractions: the illegal export (and occasionally import) of WEEE and ELVs without notification (e.g. claimed as second-hand goods) and shipments of construction waste (Brussels Environment, 2018b). The region has increased administrative fines from

around EUR 1 250 to EUR 5 000 on average for greater deterrence. The Walloon Region has also increased its inspection efforts. For instance, it trained an additional 25 inspectors to focus on illegal shipments via road (country submission).

In Flanders, two separate teams carry out port and road inspections. Road inspections mainly deal with administrative infractions. Port inspections, however, regularly identify a range of illegal exports. It remains a challenge to provide adequate enforcement and inspection, particularly in the large Port of Antwerp (Box 5.7).

Box 5.7. Resource constraints limit inspections in the Port of Antwerp

Belgium has two main seaports: Antwerp, the second busiest in the European Union, and Zeebrugge. In 2019, the waste shipment inspection team carried out 642 inspections of exports. Illegal shipments identified at Antwerp have included WEEE for Africa and plastic scrap to both Asian countries and Turkey. Other illegal shipments have ranged from ELVs and lead batteries to metal scrap for export. About 75% of illegal shipments came from outside Belgium, most from neighbouring EU member states. Moreover, some shipments classified as Belgian originated outside the country but were stored in Belgium before export. Inspectors found violations in about 35% of both Belgian and external shipments.

Personnel constraints have limited inspection of exports. The Flanders Region has 4.5 waste inspectors for the two ports (these inspectors also co-operate with federal maritime police on joint inspections and with federal customs for imports). The Port of Antwerp is open, meaning that vehicles are free to enter. Furthermore, competition with other EU ports leads to rapid processing of shipments to attract business. As a result, it is difficult to identify potentially illegal shipments.

About 95% of the violations identified are sanctioned with an administrative fine; the Flanders Region, however, has a backlog in processing these fines. The remaining cases are dealt with in criminal court. When companies in other EU member states are responsible for violations, Belgium needs to co-ordinate with those countries' authorities. In most cases, co-operation is good; it is weaker with some member states, including neighbouring France. Moreover, individuals rather than companies are listed as owners of some illegal shipments and tracing them has been difficult in cases.

Source: Country submission.

The three regions co-operate via a committee on waste shipment (Section 5.3.3), as well as informally. The regions work with inspectors in other EU member states via the EU Network for the Implementation and Enforcement of Environmental Law.

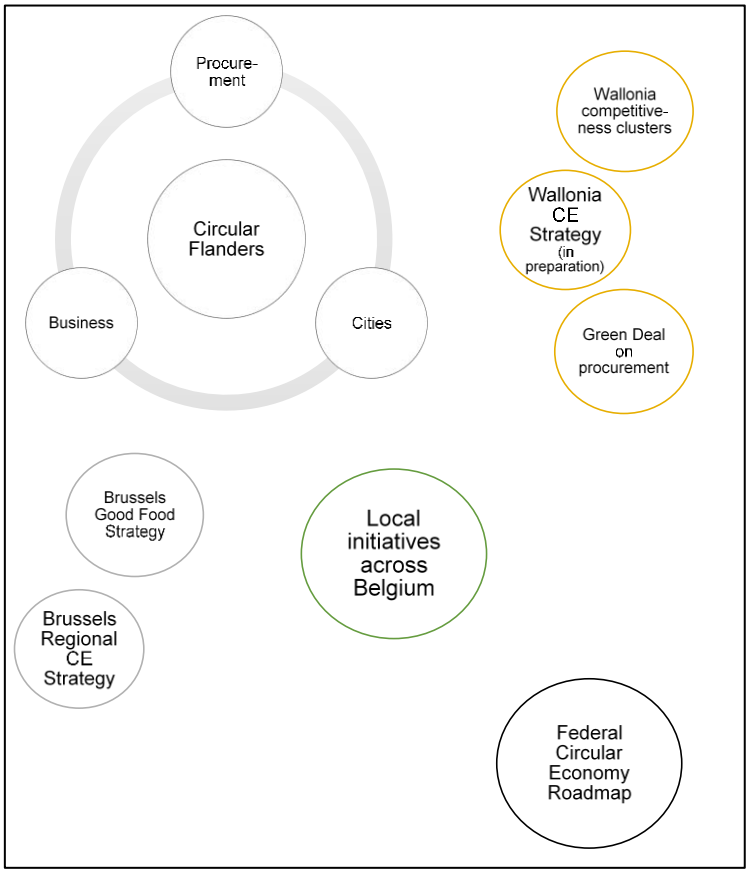
Consequently, while Belgium has made some progress in the enforcement of waste shipments, it has not fully implemented the recommendation of the 2007 Review in the area of waste exports via its ports. Further efforts are needed to match enforcement efforts with the level of illegal shipments.

5.5. Promoting the circular economy

5.5.1. Circular economy initiatives

All three regions, as well as the federal government, have launched a range of programmes and policies to support the transition to the circular economy (Figure 5.10).

Figure 5.10. Belgium's different levels of government have launched a range of circular economy initiatives



Source: Based on key initiatives discussed in the text.

The Brussels Regional Programme for a Circular Economy (BRPCE) builds on the region's 2025 strategy for the economy (Be Circular, 2016). This strategy, initiated in 2015, calls for a transformation of the linear economy into the circular economy. The programme has three concrete overall goals:

- Environment: transform environmental objectives into economic opportunities.
- Economy: encourage economic activities within Brussels boundaries to maximise resource circularity, while boosting entrepreneurship.
- Social: create new employment opportunities in Brussels.

The programme's 111 actions include regional financing for projects, advice to companies, support for employment in social enterprises and co-operation with sectoral organisations. The BCR has brought together 91 public and private organisations in partnership for its implementation.

By 2018, more than 200 enterprises, mainly in the building sector, had received technical advice on the circular economy. The programme had established strong co-operation among key actors in government bodies and the private sector but was dispersed across many activities. Moreover, the regional scale limited work. In response, the region introduced thematic co-ordinators in 2019 to provide a clearer focus. The update sought to strengthen synergies with other initiatives such as the region's Good Food Strategy (Section 5.5.4) and its work on urban renewal and the regional waste management plan. In 2020, Brussels started preparing a new economic plan for 2030, incorporating objectives of the BRPCE (country submission).

In Flanders, OVAM established the Flanders Materials Programme in 2011 with three main areas of action: a circular economy hub (Plan C) to develop a long-term vision; scientific research, led by the Policy Research Centre for Sustainable Materials Management; and a set of 45 projects involving public and private organisations. Of these projects, 10 were led by OVAM itself, 20 by industry associations and 15 by other bodies, including government departments, research organisations and an NGO. Key areas of focus were construction, bio-economy, plastics and critical materials (Ellen MacArthur Foundation, 2016). A review found the programme provided a "unique meeting place for policy makers, researchers and entrepreneurs" working on the circular economy, with high-level representation and a focus on short-term projects. In practice, however, engaging stakeholders beyond their core business and interests was difficult. While the programme carried out many actions, work was fragmented and results were not shared to develop common understanding (Courtois, 2017).

In 2017, Circular Flanders took over the work of the Materials Programme (Circular Flanders, 2019). Circular Flanders brings together regional government bodies – including OVAM, the Department of Environment and the Department of Economy, Science & Innovation – as well as universities, research organisations and industry associations. In 2017 and 2018, Circular Flanders undertook 200 circular economy actions; as of March 2019, 135 projects financed by this programme were underway (Vlaams Parlement, 2019).

Its first two-year workplan was structured around three strategic themes: circular procurement, circular cities and circular businesses (Circular Flanders, 2019). The centrepiece of work in the first area was the Green Deal Circular Purchasing project (Section 5.5.2). For circular cities, the programme researched urban material flows in a study that included the BCR. It also supported projects on the reuse of buildings to reduce new construction, as well as forums to exchange information (Section 5.5.2). The work on circular business has included funding for start-ups from a public investment company (Flemish Environmental Holding), work on eco-design at OVAM and promotion of "spearhead clusters". These clusters bring together enterprises, research institutions and government bodies working on sectors including agri-food. In addition, OVAM has developed information technology (IT) tools for the circular economy (Box 5.8).

Box 5.8. Flanders has developed IT tools to reduce waste and support circularity

In Flanders, OVAM has developed a series of tools for companies to better manage their waste streams, including from manufacturing processes. These tools include three online platforms. Cirkeltips provides tailored feedback on waste and resources management (in Dutch). Ecolizer is an eco-design tool (in Dutch, English, French and German). Finally, Circulator provides information on circular strategies for the raw materials industry and on the potential reuse of materials (in English). By early 2020, 600 users had explored the Circulator tool in depth. An overview of the results of these tools, such as the business uptake of new methods, was not available.

Source: Country submission.

The Walloon Region has integrated the circular economy into its initiatives for economic development. For example, the region has set up competitiveness clusters to generate synergies in innovative projects, with the circular economy as a cross-cutting priority. Each cluster brings together companies, training centres and research bodies. Examples include metal recycling technology (NEXT Programme–Circular Economy), plastics circularity (PEPIT), marketability of products using spelt (Wallep), bio-based chemistry (Le Coq Vert). In July 2020, the Walloon government released a preliminary version of the regional strategy for the circular economy, Circular Wallonia. The strategy addresses key sectors, including construction, plastics, the food chain, transportation, water management, textiles and metallurgy.

The federal government's Circular Economy Roadmap (2016) covers 21 measures, focusing on product policy, where the federal government leads. These measures have included, among others, studies on opportunities for reusing government products and waste, on options to promote extended product lifecycles and on criteria for product repairability. The work also included new product guidance sheets for public purchases relating to circular economy, and social and ethical issues, among others (Section 5.5.2). Knowledge gained has supported EU-level discussions on circular economy and the work of the European Committee for Standardization. There have been some voluntary agreements with industry, for example, to end the use of microplastic beads in certain cosmetic products, reducing their impact in waste and as litter. An overview of the uptake of the studies and methodologies developed, however, is not available.

Several inter-regional and inter-departmental bodies support work on the circular economy. An inter-regional platform has exchanged information and established working groups on indicators, on requirements for recycled content in products, and on legal barriers to circular initiatives.

Other bodies have contributed to national policy development for the circular economy. The Federal Council for Sustainable Development, for example, has organised working groups on product norms, innovative economic models and strategies for sustainable development. It has also provided inputs to the Circular Economy Roadmap. In 2014, the Central Economic Council created a resource efficiency platform to encourage recycling and bring together authorities at regional and federal levels.

At local level, city governments have launched circular economy initiatives. Antwerp, for example, is developing a circular economy strategy and has focused on using artificial intelligence to identify actions in the energy and building sectors (OECD Working Party on Urban Policy, 2019). Mechelen has refurbished an old industrial site, De Potterij, for circular economy businesses. It also participates in an EU project, CECI, to support citizen involvement in the circular economy.

In sum, Belgium has undertaken a range of circular economy initiatives. Brussels and Flanders have been "pioneers" in this field (OECD Working Party on Urban Policy, 2019). Poor co-ordination across different levels of government and among the regions, however, has been a weakness. The recently created inter-regional platform provides an opportunity for greater communication and co-ordination (CCE, 2020). The federal government that took office in October 2020 has proposed to develop, together with the regions, a national action plan for the circular economy: this could strengthen co-ordination and also develop common, national policy goals in the key areas of the European Commission's new Circular Economy Action Plan. This initiative could consider targets, including for the reduction on material consumption and material footprint: a key challenge for the next phase of circular economy actions in Belgium will be to demonstrate results towards such long-term environmental targets.

5.5.2. Public procurement for the circular economy

Public procurement represents about 15% of Belgium's GDP, and thus could play a key role in promoting the circular economy. All three regions and the federal government have initiatives for green public procurement (Chapter 2). Between 2011 and 2016, almost one-fifth of more than 140 000 federal and region public procurement notices had environmental requirements. However, in any one year fewer than 10% referred to circular economy criteria (Grandia and Kruyen, 2017).

More recently, the three regions have developed actions to use public procurement as a stronger lever for the circular economy. In Flanders, a key initiative for both public and private procurement is the voluntary Green Deal on Circular Procurement (Box 5.9). The Walloon Region launched a Green Deal on Circular Procurement in 2019 based on the Flemish and Dutch models. By June 2020, over 150 public and private organisations had signed up to this voluntary agreement, which calls on each participant to undertake two new actions supporting circular procurement.

Box 5.9. Flanders has promoted circular purchasing in both enterprises and government

The implementation of the Flanders Materials Programme identified a lack of attention to circular criteria in public procurement as an obstacle. Its follow-up, Circular Flanders, launched a Green Deal Circular Purchasing Project in 2017. This brought together 101 procuring organisations (including government bodies and businesses) plus 52 "facilitators" to support the work, such as business federations. Each participating organisation pledged to undertake two circular purchasing projects that reduce materials, extend the life of products and promote their reusability and recyclability.

By 2019, 115 projects were underway with 165 participants. Circular Flanders can finance up to half of project costs. In 2017 and 2018, Circular Flanders financed 15 of 27 projects that requested funding. A review of this and other Green Deals in Flanders found strong collaborations among participants; however, an overview of outcomes in terms of project results or overall material reduction was not available.

Sources: Ellen MacArthur Foundation (2016); VPO (2019).

These initiatives provide a basis for further work. There is significant scope across levels of government in Belgium to implement circular public procurement, including via further awareness raising and training for procurement officers. The programme of the new federal government (October 2020) addresses this opportunity, as it calls for integrating circular economy principles throughout public procurement.

5.5.3. Promoting the circular economy in the construction sector

Construction and demolition waste represents over one-third of all waste in Belgium (Section 5.2.2). While a high share is recovered (95% in 2016 for Belgium as a whole), most construction and demolition waste is recycled as low-value products. Stony waste, for example, is used to make aggregate for road foundations. All three regions have addressed construction and demolition waste in their circular economy programmes. Their targeted initiatives seek to reduce this waste stream and promote greater reuse and higher value recycling.

In Brussels, the dense building stock and urban infrastructure networks makes construction and demolition waste management more difficult. Most construction and demolition activity occurs on small parcels, often via the renovation of existing buildings. However, public works are also an important waste source. Most waste is sorted on site. About 90% of the region's construction and demolition waste is recycled, with around 80% of this used in road foundations (Brussels Environment, 2017).

The region's 2018 Waste-Resources Plan identifies the construction sector as a key area for the transition to the circular economy. Among its main action points are extending the lifespan of buildings; developing eco-design to make buildings adaptable; and encouraging practices of selective deconstruction, reuse and recycling. Other initiatives include a regional platform for the reuse of building elements. This brings together actors involved in construction, facilitates exchange of information, organises working groups and raises awareness. It also provides information on offers and requests for reusing construction materials. In addition, the region has provided support for construction enterprises that adopt circular practices (Brussels Environment, 2017). The region, together with stakeholders, prepared a roadmap that was launched in 2019. It calls for further voluntary measures to 2025 and introduction of regulations on waste recycling and reuse for the public sector buildings in 2030 and for private buildings in 2040 (Be Circular, 2019).

In Flanders, a 2014-20 programme for the construction sector sets out several ambitions. It seeks to minimise use of primary materials; use materials efficiently; eliminate or reduce dangerous substances;

lower building footprints; and promote more modular and adaptable construction. In 2014-16, the action plan for this programme included the preparation of a framework for monitoring demolition, developed by OVAM and the Flemish Confederation for Construction. A pre-demolition audit became part of the application for a building permit.

The second action plan (2017-18) launched a web-based calculation tool for the environmental impact of materials called TOTEM (www.totem-building.be). This tool, developed with programmes in Brussels and Wallonia, is intended to help architects, designers and builders choose materials with lower resource impacts (OECD Working Party on Urban Policy, 2019). The tool, which counts over 3 000 registered users, is being refined to improve the precision of results and broaden coverage of materials. Additionally, an initiative called TWOL has proposed 24 "Design for change" guidelines and developed a catalogue of circular construction elements for architects.

The third action plan (2019-20) was integrated with the Circular Building initiative under the Circular Flanders Programme. This included an agreement on a Green Deal on Circular Construction in 2019. It will be implemented through early 2023 by manufacturers, architects, property developers, building federations and government bodies, among others. A "living lab" will support projects. The Flemish Environmental Holding has provided finance. In addition, the Flemish Agency for Innovation and Entrepreneurship has supported circular economy activities, starting with six projects for clusters that bring together private companies, research institutes and government bodies.

These policy initiatives appear to have yielded some results. The recovery of construction and demolition waste in Flanders increased slightly, from 96.4% to 96.9% over 2010-16. Production of aggregates from the stony fraction of demolition waste has increased further. However, there has been limited progress in terms of waste streams such as sheet glass, gypsum and cellular concrete, which are not as easily recycled. However, use of alternatives for primary materials in construction rose by 22% between 2010 and 2015. Meanwhile, landfilling of inert waste fell by 88% between 2012 and 2018 (OVAM, 2020).

The Walloon Region's 2018 Waste and Resources Plan calls for more recycling of construction and demolition waste and awareness raising of sustainable practices for the construction sector. Its actions include, among others, measures for the sorting of construction and demolition waste and its traceability, and guidelines for professionals, as well as digital tools to promote waste reduction and waste reuse (Wallonia Environment, 2018a). Within the region's Development Plan (2015-16), an Employment-Environment Alliance includes objectives for construction and actions to promote reuse and recycling of construction materials (SPW, 2020).

Like other OECD member countries, Belgium faces challenges to improve higher value recycling and reuse of construction and demolition waste. Regular evaluation of initiatives underway together with exchanges across Belgium and within the European Union and OECD would help identify and disseminate successful approaches.

5.5.4. Reducing food waste and food loss

Food loss and food waste are a concern for all three regions. The Brussels regional government estimated in 2015 that households, food service providers, markets and food wholesalers discarded about 134 000 tonnes of food each year. Moreover, most of this food waste could still have been used (Fermault, 2015). In Flanders, households throw away 88 kg of food each year, representing about 8% of their food purchases and equivalent to 140 kg of carbon dioxide emissions per household (Flanders Government, 2018).

The three regions have encouraged the separate collection of food waste. In the early 1990s, Flanders began promoting home composting for fruit, vegetable and garden waste; by 2015, about half of the population was engaged in composting (Merta and Vuorinen, 2016). All municipalities collect garden waste and many also separately collect fruit and vegetable food waste. As a result of these measures, bio-waste

in household residual waste fell by 80% between 1995-96 and 2013-14 (OVAM, 2020). Businesses have been required to separate garden waste and used cooking oils.

All three regions have established ambitious programmes to reduce food waste overall and to further increase its separate collection. Moreover, they support the achievement of target 12.3 of the Sustainable Development Goals, to cut retail and consumer food waste by half and reduce food losses along production and supply chains.

In its Good Food Strategy (2016), the BCR set targets to reduce food waste by 30% overall and by 40% from households and in public canteens by 2020 (Fermault, 2015). Through voluntary agreements under the strategy, distribution of unsold food from supermarkets to food aid operators nearly tripled over 2015-18 – from 4 000 tonnes to almost 12 000 tonnes (country submission). Moreover, more than 100 jobs were created under the strategy. The enVie project, for example, uses fresh vegetables that are not accepted for wholesale distribution to prepare soups for sale in local supermarkets. The project hires long-term unemployed.

The Good Food Strategy also calls for producing locally 30% of the fruits and vegetables consumed in the region by 2035. The strategy has promoted local food production; about 1 000 citizens participated in 50 projects. The BCR acknowledges its local production target is ambitious given its highly urbanised character. Mostly small plots are available, although the target also permits fruit and vegetables produced nearby (e.g. in Flanders). A mid-term review of the strategy found the plan's high ambitions were not matched by resources; gaps were seen in the integration across the region's administrative departments and in co-ordination among projects launched (Brussels Environment, 2019). Based on preliminary estimates, moreover, household food waste has not changed significantly.

Flanders has continued to expand separate collection of food waste: from 2019, animal by-products could be collected along with fruit and vegetable waste. From 2021, restaurants, as well as institutions such as schools, hospitals and prisons, will have to separate their food waste. Flanders will seek to extend the collection of bio-waste to all sectors by the end of 2023. The region is also considering a shift from the use of bags for food waste to reusable containers, which seem to have greater household acceptance.

The region's Food Supply Chain Roadmap on Food Loss 2020, published in 2015, seeks to reduce food loss in regional supply chains from farms to final consumers. Specifically, it aims to reduce the approximately 3.5 million tonnes of food wasted in 2015 by 15% by 2020 and by 30% by 2030. Actions include reducing food loss on farms, ensuring that fruit and vegetables below cosmetic standards are not discarded, and increasing unsold food distributed to vulnerable groups. Data collected in 2017 did not provide clear indications on trends, partly because methodologies had changed since 2015. Difficulties were found in co-operation with stakeholders and in reproducing good practice examples (Vlaams Ketenplatform Voedselverlies, 2017). A new study was scheduled for 2021, while a new action plan covering 2021-25 was under development.

In Wallonia, 150 of 262 municipalities separated collection of food waste by 2015. Since 2014, large food retailers (greater than 2 500 m^2 surface area) have had to establish plans to manage their unsold food. Wallonia's Sustainable Food Strategy, adopted in 2015, addresses food loss and food waste among its actions. It seeks to raise awareness; engage stakeholders; act, support and train actors; measure progress; and acquire better knowledge. The Plan REGAL for the reduction of food loss and food waste has implemented many of these actions. The plan sets a target to reduce food waste by 30% in Wallonia across the supply chain between 2015-25. The plan was updated in 2018, maintaining the 30% reduction target. The updated plan reports that farmers, food industry enterprises, restaurants and canteens had started actions in 2015; it sets out further actions to achieve the 30% target, including initiatives to raise awareness, engage stakeholders, support activities and measure results (Wallonia Environment, 2018b). Moreover, the 5th Walloon Plan for Waste-Resources (2018) identifies food waste and food loss as a key area for attention. It sets further goals to extend the separate collection of household food waste to all

municipalities, nearly doubling amounts collected from 2013 to 2020, as well as increasing home composting (Wallonia Environment, 2018a).

A recent study estimated a 19% reduction in household food waste in 2017 and 2018 compared to levels in 2009 and 2010. An assessment of progress towards the 2025 reduction target for the whole supply chain was, however, not available (Wallonia Environment, 2019).

In sum, all three regions have made progress in increasing the separate collection of food waste. Other results include increasing the collection and distribution of unsold food from retailers. The BCR encountered difficulties, however, in reducing household food waste. Across all three regions, further progress will contribute to achieving the sustainable development goal in this area as well as EU and regional goals. While the three regions are at different stages, further awareness-raising efforts and greater separate collection of food waste, including from retailers, restaurants and other enterprises, will be valuable. The regions should pay attention to reducing waste and loss along food production and distribution chains. Further regional co-operation will be valuable as these chains are intertwined among the three regions.

5.5.5. Supporting social enterprises

All three regions have promoted citizen groups and social enterprises in their circular economy initiatives, in particular to help reach their objectives for the reuse of municipal waste (Table 5.1).

The Resource Reuse Observatory is a network of 61 social enterprises for waste reuse, recovery and upcycling in Brussels and Wallonia. These include second-hand shops, repair points and sorting centres. Members contributed to the collection of 165 400 tonnes of material in 2018 (double the amount in 2005), of which 28% was reused and 62% recycled (Ressources, 2020). Quality schemes seek to encourage consumers to trust refurbished articles: electroRev provides a label and a one-year warranty for refurbished household electronics; and Rec'up, an enterprise standard, had been granted to 21 social enterprises working at 44 sites.

The Flemish government set up a supporting facility for social economy enterprises, including management advice, support for innovative projects and tailored financing. Many of these enterprises work on circular economy initiatives. For example, social enterprises play an important role in maintaining the extensive network of second-hand shops and in managing "toy libraries" that lend to children. About 24 000 people have such "sustainable jobs" in Flanders (Flanders Government, 2020b).

These initiatives have had a small but positive impact on employment. For example, the Brussels Good Food Strategy supported the creation of 100 new jobs between 2015 and 2018 (Brussels Environment, 2019). New social enterprises for waste recycling and reuse in Brussels and Wallonia employed 2 050 people (full-time equivalent) in 2018, double the number in 2004 (Ressources, 2020). One concern, however, is that many social initiatives remain dependent on direct government support.

5.5.6. Monitoring and assessing circular economy results

Many of the circular economy indicators used so far in Belgium have focused on programme results. For example, the BRPCE contains 15 proposed indicators to monitor its results. These indicators focus on actions undertaken, such as the number of enterprises receiving financial support, unemployed persons trained and legislative barriers reformed. Indicators on underlying waste and resource trends are not included (BRC, 2016).

More recent work has looked at broader economic indicators. Under Circular Flanders, OVAM and the Flemish Circular Economy Policy Research Centre (CE Centre) are developing a monitoring approach for the transition to the circular economy (Circular Flanders, 2020). It has structured indicators of waste levels and materials consumption along four key societal needs: housing, nutrition, consumer goods and mobility;

a report using the initial set of indicators was published in June 2020 (OVAM, 2020). This approach thus focuses on the consumption rather than the production side of the circular economy. In this way, it is oriented to the region's open economy with a high level of imports of products and materials. The CE Centre was preparing a full monitoring study on the circular economy progress for 2021. The Flanders Region was also working on methods and statistics to assess interactions between circular economy actions and climate change impacts. In addition, it was studying ways to measure the loss of materials from the economy via landfilling and incineration and to strengthen tracking of waste exports.

At national level, the Intra-Belgian Circular Economy Platform has a working group on indicators to establish a common understanding of the circular economy. It is identifying indicators to assess progress and identify data and information available from different institutions to populate these indicators. The first set of proposed indicators was to be finalised by the end of 2021 (country submission). The platform has thus started information exchange and common work on indicators. To that end, it will be valuable to harmonise key indicators for the circular economy, taking into account work on indicators underway at EU level for the new Circular Economy Action Plan.

Indicators can support further evaluation of circular economy initiatives. Belgium has undertaken pioneering work for the transition to a circular economy, and evaluations of recent initiatives, also drawing on indicator work, can strengthen further actions within the country. Moreover, such evaluations will be valuable for other OECD member countries: the OECD Working Party on Resource Productivity and Waste and the OECD Roundtable on the Circular Economy in Cities and Regions provide forums for sharing such information. A key challenge for Belgium will be to build on the initiatives undertaken so far and show long-term results in terms of material consumption and footprints.

Recommendations on waste, materials management and the circular economy

Policy instruments

- Increase regional incineration taxes to create further incentives for waste recycling.
- Continue efforts to increase separate collection and recycling of household waste, particularly in Brussels and Wallonia. Follow through with plans in all three regions to increase the separate collection of food waste, and increase stakeholder engagement and public awareness raising to reduce food loss and food waste.
- Strengthen measures to reduce the number of end-of-life vehicles dismantled outside the extended producer responsibility scheme, for example by improving the traceability of motor vehicles, strengthening public awareness and government enforcement in this area and introducing economic incentives.
- Strengthen inspection and enforcement of waste exports, in particular at the Port of Antwerp, to address the level of illegal shipments.
- Explore opportunities across government levels to broaden the mix of regulatory and economic instruments for moving further up the waste hierarchy and for promoting the transition to a circular economy, including taxes on raw materials and differential value-added tax rates for recycled and reused materials. Take further steps to integrate circular economy criteria into green public procurement standards and to promote their use across all levels of government.

Planning and co-ordination

- Strengthen regional co-ordination on common challenges for extended producer responsibility schemes.
- Strengthen co-ordination on waste and circular economy policies, and knowledge sharing in challenging areas such as the reuse of construction and demolition waste. Develop common national policy goals for the circular economy in the national action plan in preparation, in key areas of the EU's 2020 Circular Economy Action Plan. Consider setting headline targets for the reductions in material consumption and footprints.

Monitoring and assessment

- Continue to improve the comparability of data on waste management and the circular economy across regions to support performance assessment. Further develop monitoring and analysis of materials and circular economy trends across Belgium. Carry out regular evaluations of the outcomes and costs of circular policy initiatives to identify the most effective approaches and the lessons learnt, to further improve actions within Belgium and to inform initiatives in other OECD member countries, including via the OECD Working Party on Resource Productivity and Waste and the OECD Roundtable on the Circular Economy in Cities and Regions.

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Notes

[1] This refers to the amount of materials directly used in an economy, or the apparent consumption of materials. DMC is computed as domestic extraction used plus imports (i.e. material inputs) minus exports.

[2] The company sold part of its fleet and invested in new vessels. As a result, imports of metal-based products increased and exports increased even more (FPB, 2019).

[3] Material productivity designates the amount of GDP generated per unit of materials used (GDP/DMC). A rise in material productivity is equivalent to a decline in material intensity (DMC/GDP).

[4] This measure, material footprint per capita, refers to raw materials extracted globally to meet the final demand of the economy, including materials processed abroad for intermediate and final products.

[5] Risk assessment is carried out based on regional guidelines: the *Code Wallon de Bonnes Pratiques* and the *Compendium Wallon pour l'Echantillonnage et l'Analyse.*

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Belgium has made progress in decoupling several environmental pressures from economic growth, in improving wastewater treatment and in expanding protected areas. Regions have achieved high levels of recovery and recycling, and have pioneered circular economy policies. However, further efforts are needed to progress towards carbon neutrality, reduce air and water pollution, reverse biodiversity loss and consolidate results of circular economy initiatives. Strengthening co-ordination between the federal government and the regions, and among the regions, as well as enhancing policy coherence will be key factors of progress.

As the COVID-19 emergency passes, recovery efforts should focus on putting the country back on track to meet the Sustainable Development Goals. Investing in low-carbon and natural infrastructure, promoting circular economy, strengthening carbon prices and phasing out environmentally harmful subsidies should be priorities.

This is the third Environmental Performance Review of Belgium. It evaluates progress towards sustainable development and green growth, with special features on biodiversity and waste, materials management and the circular economy.

PRINT ISBN 978-92-64-41981-0
PDF ISBN 978-92-64-40034-4

2021