Country profile

More from less — material resource efficiency in Europe

2015 overview of policies, instruments and targets in 32 countries

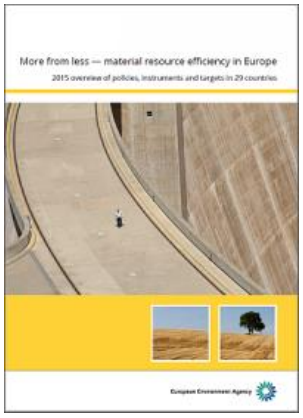
Belgium

May 2016

European Environment Agency

This country profile is based on information collected by the Belgian NFP through the Belgian Eionet network. This document should not be seen as an official list of government priorities and is not necessarily an exhaustive list of all national material resource efficiency policies, objectives, targets or activities in place. The information is current as of June 2015.

This country profile was prepared as part of the 2015 EEA review of material resource efficiency policies, that aimed to collect, analyse and disseminate information about the development and implementation of material resource efficiency policies in EEA member and cooperating countries. The work resulted in the following outcomes.



32 short country profiles (this document) – self assessments prepared by countries, describing the current status of material resource efficiency policies including key strategies and action plans, policy objectives, instruments, targets and indicators, and the institutional setup. Countries were also invited to share reflections on the future direction of resource efficiency policies.

EEA report *More From Less – material resource efficiency in Europe* – prepared by the EEA and ETC/WMGE, the report analyses trends, similarities and differences in policy responses, showcases selected policy initiatives from the countries, and offers some considerations for the development of future policies.

The EEA report *More from less – material resource efficiency in Europe* and the 32 country profiles are available at: http://www.eea.europa.eu/resource-efficiency

For information about trends and policies on municipal waste management in the participating countries, please visit: http://www.eea.europa.eu/publications/managing-municipal-solid-waste

Information about EU Member States' waste prevention programmes can be found at: http://www.eea.europa.eu/publications/waste-prevention-in-europe-2015

For information on climate- and energy-related policies, including those on energy efficiency, in the participating countries, please visit: http://www.eea.europa.eu/themes/climate/ghg-country-profiles

Belgium, facts and figures

Source: Eurostat

GDP: EUR 401 billion (2.9 % of EU-28 total in 2014)

Per person GDP: EUR 32,500 (in purchasing power standard)
(119 % of EU-28 average per person in 2014)

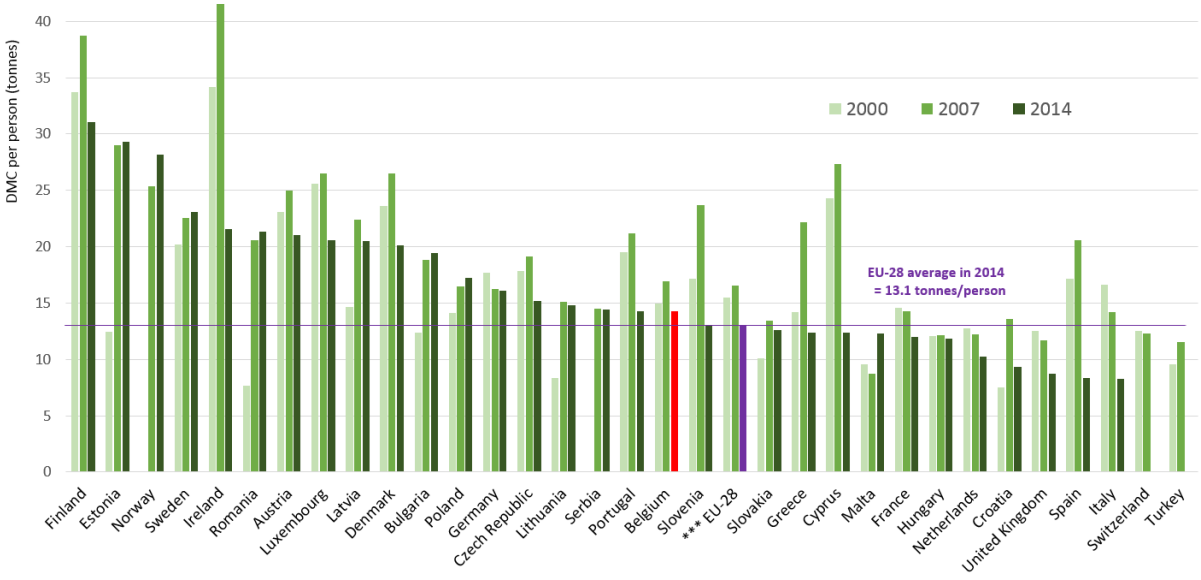
Use of materials:
160 million tonnes DMC (2.4 % of EU-28 total in 2014)
14.3 tonnes DMC/person (109 % of EU-28 average per person in 2014)
Resource productivity 2.36 EUR/kg (119 % of EU-28 average in 2014)

Structure of the economy:
agriculture: 0.8 %
industry: 21.1 %
services: 78.1 % (2014 est.)

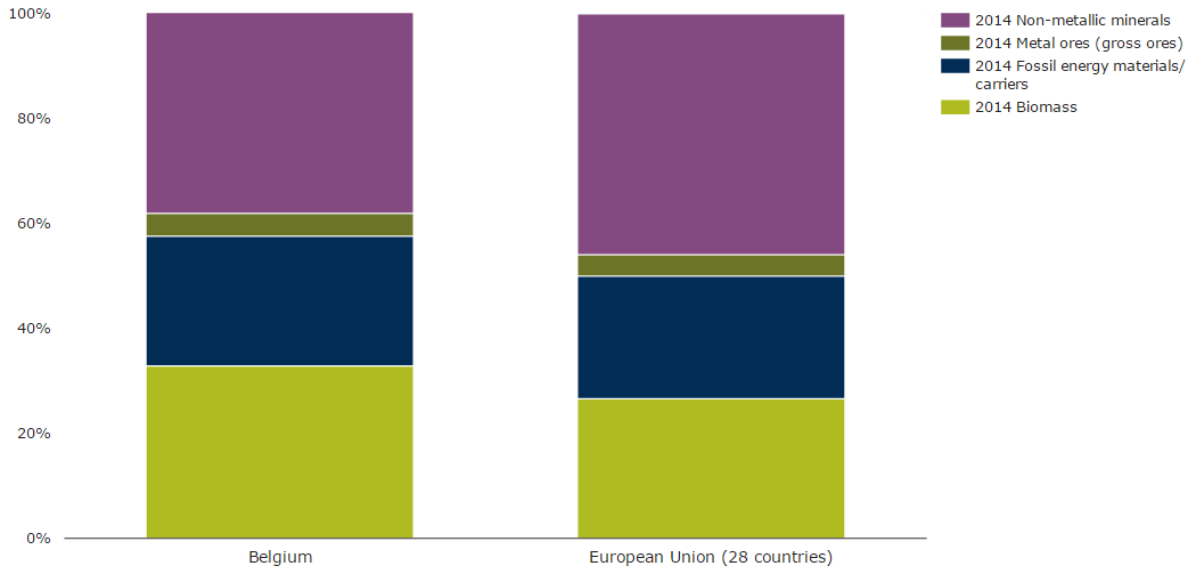
Surface area: 30,500 square kilometres (0.7 % of EU-28 total)

Population: 11.2 million (2.2 % of EU-28 total)

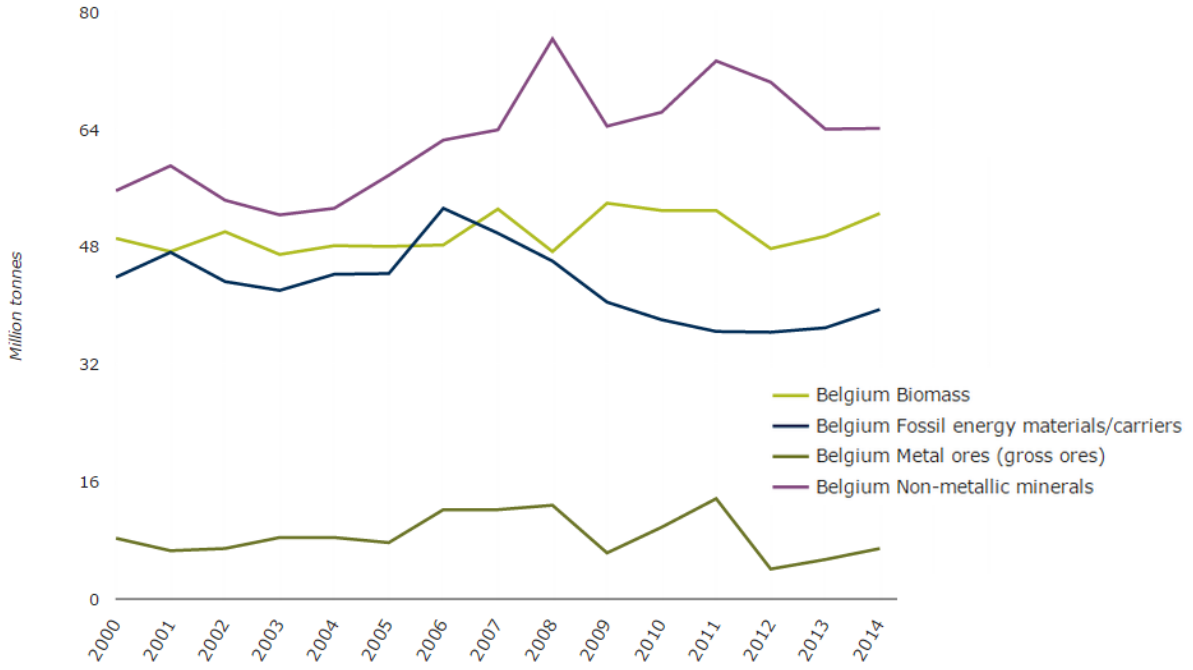
Use of materials (DMC) per person, participating countries and EU-28 (2000, 2007 and 2014)



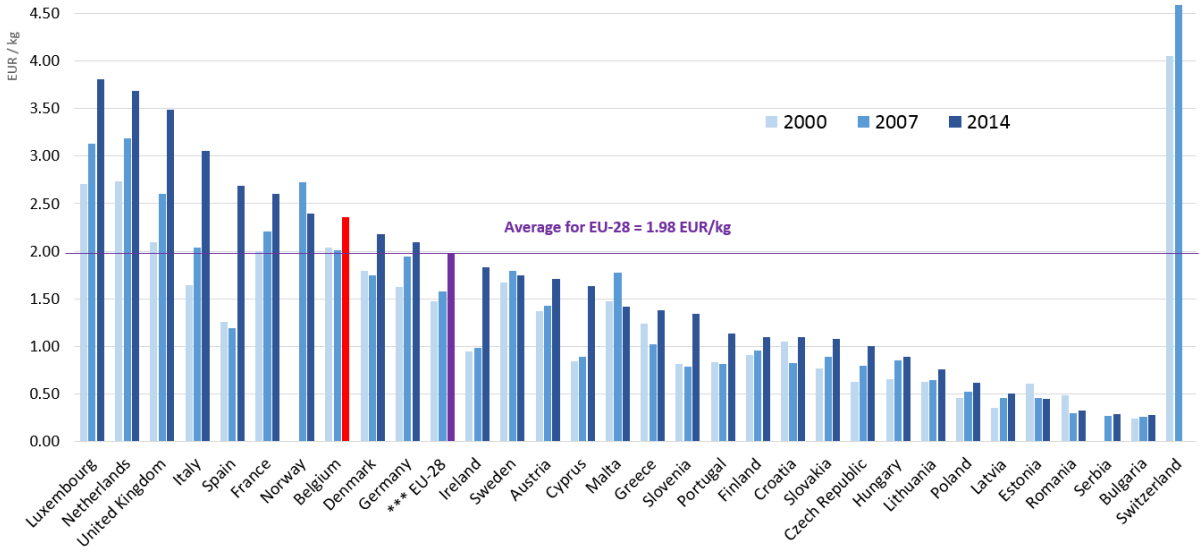
Domestic material consumption by category, EU-28 average and Belgium (2014)



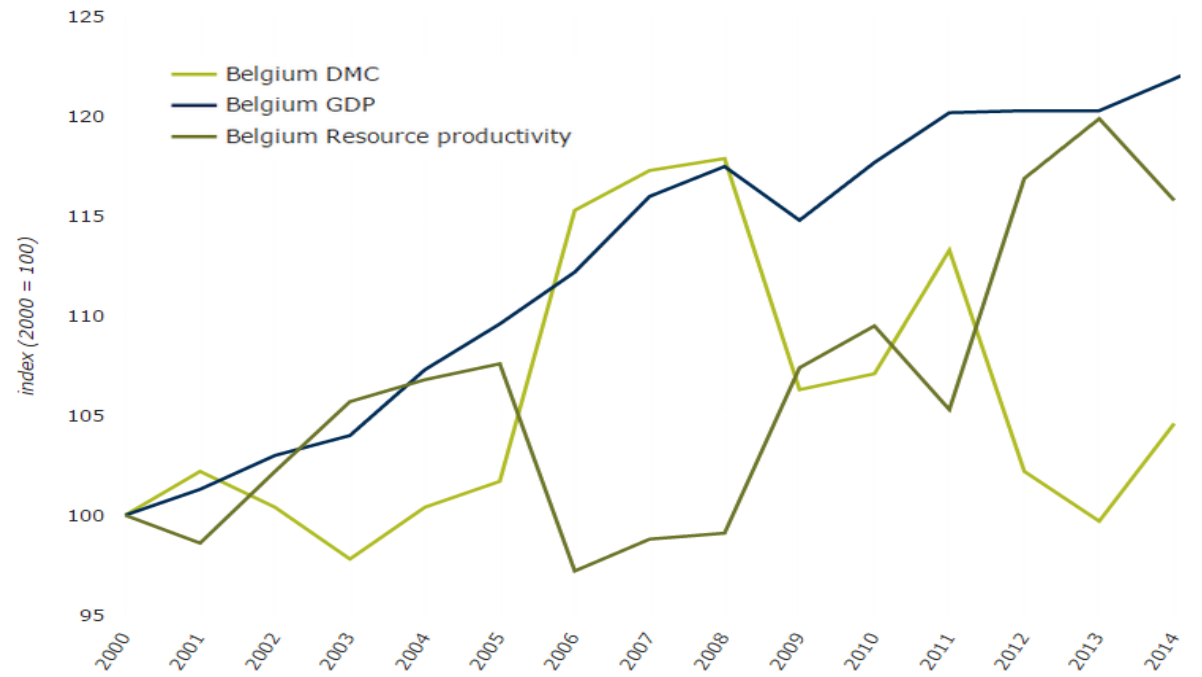
Trends in material consumption, Belgium by category (2000–2014)



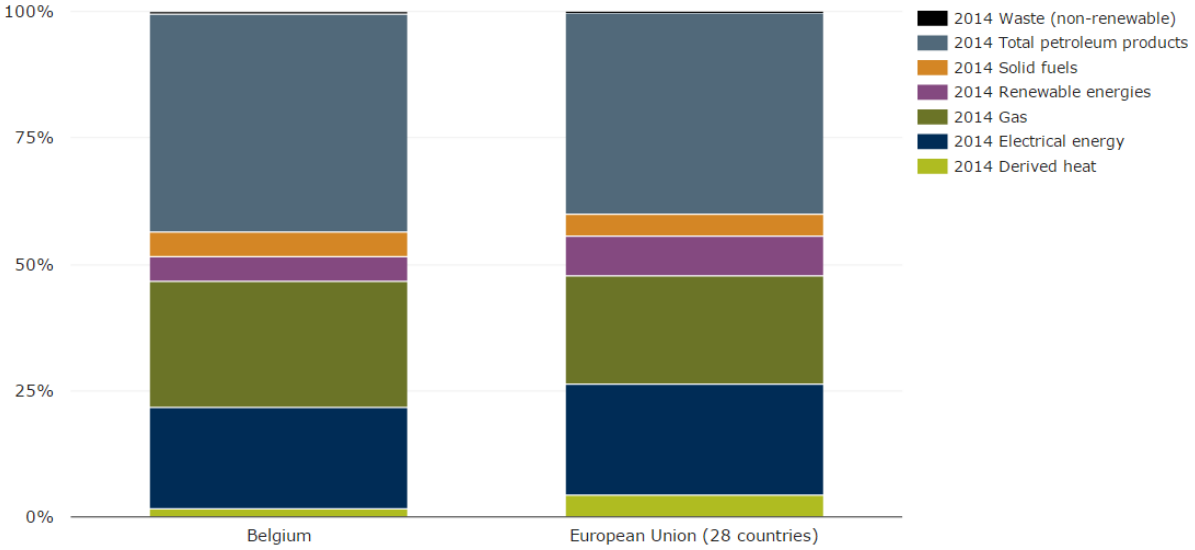
Resource productivity (GDP/DMC), participating countries and EU-28 (2000, 2007 and 2014)



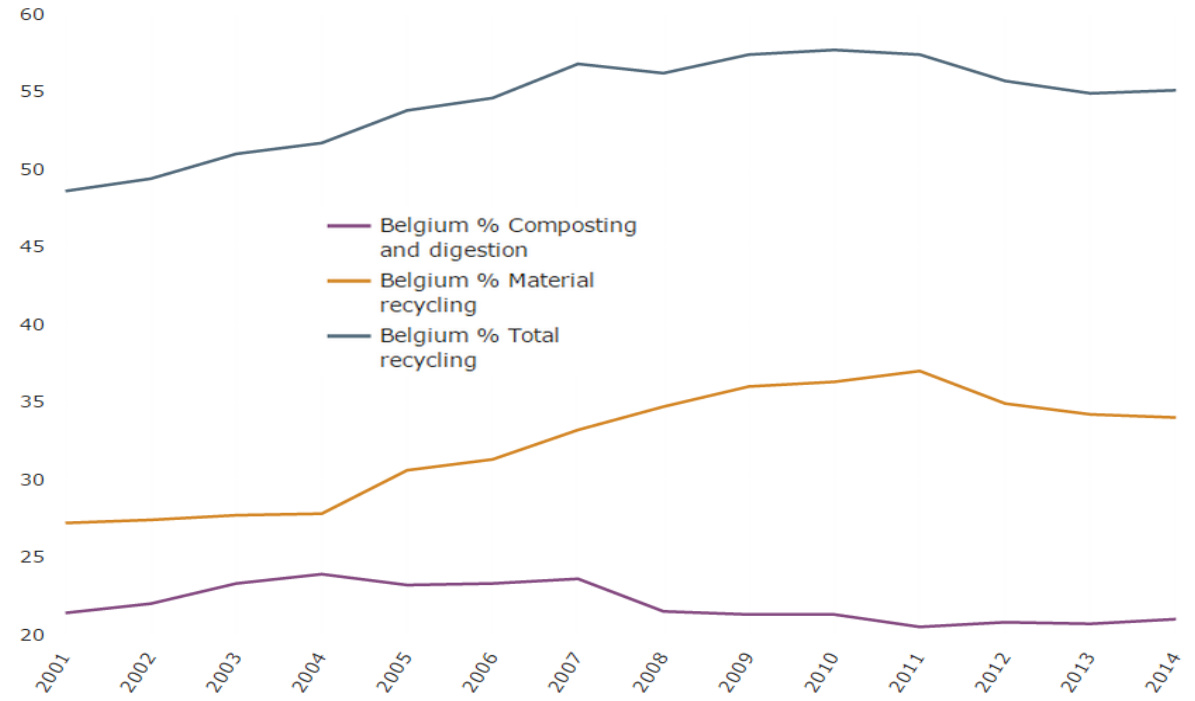
GDP, DMC and resource productivity trends, Belgium (2000–2014)



Share of final energy consumption by fuel type, EU-28 and Belgium (2014)



Recycling of municipal waste, Belgium (2001–2014)



Introduction

NOTE: Belgium does not have a dedicated *national* resource efficiency strategy or action plan, mainly due to its constitutional set-up (see section on Institutional set-up for more detail). The contributions of the Walloon and Flemish regions are described in this document as well as input from the federal level. Each entity mainly focuses on its own competences.

Flanders

Flanders has an Environmental Policy Plan (MINA) that covers many of the topics mentioned in the EU Roadmap to a Resource Efficient Europe. MINA 4 defines the environmental policy in Flanders. Currently, a new Plan (MINA 5) is under preparation.

Furthermore, the Flemish Materials Programme and the Executive Plan on Municipal Waste deal with challenges concerning materials and moving towards a circular economy.

Wallonia

Wallonia has not elaborated a specific resource efficiency strategy. This issue is integrated throughout different plans and current policies, as outlined in this document.

Scope of material resource efficiency

Federal[1]

Last year, we set up a working group at the federal level (members of the Ministries for the Environment and Economy). This group aimed at defining proposals for action in the field of resource efficiency and the circular economy.

The working group defined its scope as follows: the efficient use of abiotic raw materials (except fuels). Particular emphasis lies on minerals (including chemical products) and metals. Raw materials from biomass (biotic primary materials) are only considered if they can substitute so called 'classical' raw materials.

Besides, at the federal level, a certain distinction is still being made between policies related to raw materials and those related to efficient use of resources. This is mainly due to the distinction made at the EU level. Thus, the experts in charge of raw material policy actively participate in the activities at regional level. The opposite is less true.

[1] Federal responses mainly focus on activities at the federal level according to its competences.

Flanders

Flanders does not have definitions for raw materials/material resource efficiency, nor are they defined separately.

Flanders does however have a definition for materials, the material cycle, prevention (of waste and harmful associated impacts), recycling and (preparing for) reuse and recovery. These definitions are to be found in the Decree on the sustainable management of material cycles and waste (Materialsdecree) (https://navigator.emis.vito.be/pdfservlet?woId=41707&woLang=en&version=2015-03-30&compareVersion=2015-03-30&lang=en).

These definitions are different from the broad scope of resource efficiency as it only concerns a substance that is or has been extracted, obtained, cultivated, processed, produced, distributed, put into use, discarded or reprocessed, or any object that is produced, distributed, put into use, discarded or reused, including the waste originating therefrom. In addition, the MINA definitions are broader than just efficiency as they cover every stage of the life cycle.

Wallonia

Wallonia has not yet defined the concept of 'resource efficiency' in a specific resource efficiency strategy.

Driving forces of material resource efficiency

Federal

Drivers of resource efficiency at the federal level include:

- **environmental issues** including impacts on biodiversity, intensive land use, energy consumption, soil pollution, water and air, related to raw material production and associated processes.
- **economic issues** include security of supply, price volatility, raising competitiveness (cost reduction) and new market opportunities.

Flanders

Drivers of resource efficiency include:

- the increasing scarcity of resources;
- the potential to create more jobs and stimulate growth;
- maintaining the frontrunner position in the world.

Wallonia

As in other EU countries, scarcity of resources, concerns over environmental degradation and the need to protect public health and support job creation are the original drivers of resource efficiency policies in Wallonia.

The legacy of Wallonia's industrial past (including overexploitation of geological resources and soil pollution), the particularly heavy road traffic resulting from the central geographical position of the country in the EU and high population density are the key factors that have contributed to the definition and orientation of different resource efficiency policies.

Resource efficiency is clearly one of the major political priorities in Wallonia, as reflected in the Regional Policy Statement 2014–2019, and is part of several policies initiatives, including the Marshall Plan 4.0; the first employment-environment alliance in the area of sustainable construction; the Walloon Sustainable Development Strategy; the future Walloon Waste Plan 2020; and development of the NEXT programme focusing on the effective management of resources across all sectors.

With its Marshall Plan 4.0, the new economic restructuring programme, the Walloon government intends to use the circular economy as a powerful impulse for economic development. The final objective of the strategy is to support the sustainable use and complete valorisation of the resources used in Wallonia by Walloon companies throughout their life cycle.

Priority material resources, sectors and consumption categories

Priority materials

Federal

For the time being there is a special focus on plastic, and building materials are also of concern.

At federal level, in direct connection with the plastic sector, various projects have been started, including a definition of product criteria enabling the content of recycled products to be guaranteed, analyses of the sources of microplastics present in water (with a view to possibly setting product standards), analysis between the REACH legislation (Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals) and the recycling of plastics (in particular).

Various initiatives have been undertaken at federal level regarding building materials, including legislation on environmental product declaration (EPD), development of life-cycle assessment tools, and legislation determining maximum emissions of pollutants for floor and wall coverings.

Flanders

In the Flemish Materials Programme, there are four main material categories that have been prioritised for the coming years (2014–2019):

- critical metals (as defined by EU);
- chemicals and plastics;
- Biowaste , food losses and waste water;
- construction and demolition materials.

http://www.vlaamsmaterialenprogramma.be/sites/default/files/atoms/files/VMP_ENG_brochure_150PPI.pdf

Wallonia

Waste

WALOSCRAP Project 1: with the support of the Wallonia Ministry of the Environment and the Wallonia Office for Waste (OWD), the WALOSCRAP Project 1, over a period of 21 months (July 2013 – April 2015), aimed to analyse the potential for economic recovery of stocks and local flows of secondary materials which are presently poorly exploited, or are exported when they could be reused in Wallonia.

The emphasis was mainly on stocks/flows of:

- used tyres;
- plastic waste;
- residues from thermal operations;
- construction and demolition waste (flat glass, gypsum, PVC, wood, etc.);
- electrical and electronic waste;
- metal waste;
- animal and plant waste;
- sludge from wastewater treatment plants and industrial processing;
- used oils.

(http://www.greenwin.be/en/projets/waloscrap)

BATILOOP Walloon project: within the mass of industrial waste requiring special attention (in view of how it is generated, its volume, and its potential as future component materials in the context of industrial development) one finds construction and demolition waste.

GreenWin[2]: in collaboration with the Walloon Construction Confederation, GreenWin is undertaking a task to:

- determine what flows generated from construction waste should be the subject of a particular approach with a view to better reuse in industrial sectors;

[2] One of the six sectoral competitiveness clusters which focuses on the competitiveness of green chemistry and sustainable materials as well as on the treatment and valorisation of waste and effluents.

- identify the specific features of products generated from construction waste to meet the expectations of industries using the materials in production processes;
- search for partners;
- establish recommendations regarding the best treatment techniques available (from sorting to reuse);
- carry out a feasibility study on these materials and support the construction of projects to reuse them.

(http://www.greenwin.be/fr/projets/batiloop**)**

Reverse metallurgy project: on 24 April 2014 the Walloon government approved a project on reverse metallurgy (a technology innovation related to metals recycling), based in Liege. This project will develop actions related to smart steels, new surfaces, and so on (http://www.gre-liege.be/reverse-metallurgy/).

Finally, we can mention the promotion of the **valorisation of sewage sludge from urban wastewater treatment plants** in agriculture.

- The Walloon standards (limit values for heavy-metals in sewage sludge recovered for agriculture), as defined in the Walloon Order of 12 January 1995 implementing EC Directive 86/278/EEC (see Annexes 1A and 1B of the AGW 12 January 1995 http://environnement.wallonie.be/legis/eau/easur102.htm), are more stringent than the standards of the EU Sewage Sludge Directive 86/278/EEC. In addition, limit values for some organic contaminants are imposed through the permit system. The quality of sludge recycled to land is also regulated at the federal level by Royal Order (28 January 2013) covering the use of fertilisers (http://www.favv-afsca.be/productionvegetale/engrais/_documents/2013_01_28_AR_KB_Engrais_Meststoffen_MB13032013_FR_NL.pdf). Limit values for heavy metals and polychlorinated biphenyls (PCBs) in sludge are defined in this regulation (see Annexe 1, Chapter VIII of the Royal Order).
- Consolidated version of the Sewage Sludge Directive 86/278/EEC: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01986L0278-20090420&qid=1434538078334&from=EN; DG Environment website on sewage sludge: http://ec.europa.eu/environment/waste/sludge/.
- In accordance with the principles of the EU waste hierarchy that **material recovery has to be favoured over energy recovery** (Waste Framework Directive 2008/98/EC – http://ec.europa.eu/environment/waste/framework/, Article 4), the same principles are set in the legal framework for waste management in Wallonia – the updated 1996 Waste Decree (http://environnement.wallonie.be/legis/dechets/degen019.htm). The reuse of sewage sludge in agriculture is imposed through the system of permits issued to all wastewater treatment works.
- In 2013, **53 % of sewage sludge was incinerated with energy recovery** and **47 % was recovered for agriculture** (material recovery) as long as the sludge was compliant with Walloon and federal regulations.
- Since 1 January 2007, the **disposal of sewage sludge in landfill is totally forbidden** in Wallonia, as mentioned in the Order of 18 March 2004 (§4 of the order http://environnement.wallonie.be/legis/dechets/decen008.htm). In addition, the Order of

14 June 2001 encourages the recycling of certain wastes and its Article 13 creates a legal framework for non-dangerous wastes (other than sludge) to be recycled to land.

- (https://dps.environnement.wallonie.be/home/matieres/boues-depuration.html; http://etat.environnement.wallonie.be/index.php?mact=tbe,m54ade,default,1&m54adealias=Gestion-des-boues-de-stations-d-epuration-collectives_2&m54adereturnid=49&page=49)

Water

The availability of abundant groundwater resources of good quality is one of the main assets of Wallonia.

As regards groundwater intakes, a total volume of 377 million cubic metres was abstracted in 2011 and 80 % of this was used for the public supply of drinking water. Despite a density of 22 355 cubic metres per square kilometre annually, the Water Exploitation Index (new WEI+) was estimated at 6 % in 2011, below the European threshold for water stress.

As regards surface water, most of the water intakes from surface water (83 % in 2011, out of a total volume of 1 753 million cubic metres) are used as cooling waters in power plants and returned to the river after use. Between 2000 and 2011, surface water volumes abstracted by industries decreased by 42 % due to a variety of factors, including closed-loop operations, business closures, and a fall in the production of power plants.

It should also be noted that Wallonia exports about 40 % of the drinking water it produces to the two other regions of Belgium (Brussels and Flanders).

Timber

There is a political will to expand the Walloon wood sector by using indigenous wood of quality. The creation of the Walloon Economic Wood Office (OEWB), launched officially in January 2012 on the initiative of the Walloon government, demonstrates this political aim (http://www.oewb.be/).

Energy

In the field of energy, one of the priorities relates to the development of renewable energies: valorisation of biomass (waste and other materials), hydroelectricity, wind and solar.

Priority industries and economic sectors

Federal

The chemical and building sectors were identified by a working group (of the Central Council of Economy) that brings together all relevant federal and regional administrations with regard to environment and economy issues. The goal of the working group is to identify shortfalls as well as the leverage that the federal government and federated entities can activate to favour more efficient use of resources.

Based on a set of criteria – including the importance of markets/sectors in terms of the percentage of GDP they represent, the potential for improvement in terms of resource use within these sectors, the potential for environmental benefits, the Belgian position with regard to direct competitors, and possibilities for action, particularly for the federal power – the working group has identified plastics, building and, to a lesser extent, non-ferrous metals as priority sectors.

Flanders

The priority economic sectors of Flanders are:

- **construction;**

In Flanders the construction industry is the largest consumer of materials. Therefore, sustainable materials management in this sector will make a big difference. This will be the new standard: sustainable buildings and infrastructure that require less energy and materials, that are easily modified and the components of which can eventually be readily reused or recycled. The project owner will reap the long-term benefits of this approach, and this is how choosing sustainable construction and living solutions will become the obvious choice. Within the Flanders' Materials Programme we are looking for a profitable system to collect windowpanes (flat glass) that are being replaced to meet Flemish and European energy efficiency targets, in order to produce new glass.

A materials methodology for building components is being developed as a measurement tool that helps architects, contractors and engineers in making conscious material choices. This materials methodology is already being tested in a series of innovative construction projects, as a stepping stone for large-scale application in the construction industry. However, sustainable construction extends beyond using the right materials. Pilot projects on flexible construction are now being initiated in social housing. This is how we assess the possibilities of the technique of dynamic construction, which allows buildings to be adapted to changing societal needs.

The Government of Flanders owns and rents quite a number of buildings. In the future, the government must exert more influence on the construction methods through Invitations to Tender and competitions. To determine objective criteria for the sustainable management of construction materials, OVAM is working within the Flanders' Materials Programme context to develop instruments to measure the environmental impact of building components.

- **bio-economy;**

In a bio-economy the building blocks for all materials, chemicals and energy are derived from renewable resources, instead of fossil resources such as petroleum. A bio-economy encompasses the entire value chain: production of renewable raw materials, industrial transformation into sustainable products and marketing them. An ambitious goal, which can only be realised by a coherent, cross-sector policy. The challenge is to ensure sufficient access to sustainably produced biomass to cater to all our needs. In a sustainable bio-economy we succeed in reconciling food production with valorising materials and energy generation from biomass. Within the Flanders' Materials Programme we mainly want to contribute to realising a bio-economy in Flanders by giving biomass residues a second life. The interdepartmental work group bio-economy has drafted a vision and strategy to pave the way to a sustainable bio-economy through a dialogue between government and the sector. Demonstration projects on phosphor recovery from waste water,

sewage sludge, and manure, are in the making. Through intense collaboration between the Flemish policy domains within the interdepartmental work group bio-economy, we are bringing the needs of the bio-economy to the fore in the process of updating the Flemish renewable energy action plan and the agricultural policy.

- **sustainable chemistry and plastics;**

Existing innovation programmes in the plastics industry have already been mapped. In addition, Flemish innovation programmes linked to the value chains with the highest potential are being initiated as part of FISCH (Flanders Innovation Hub for Sustainable Chemistry).Through the Policy Research Centre Sustainable Materials Management we collect knowledge about the dismantling of waste products in the chemical industry, as a basis for smarter product legislation that further stimulates the closing of material cycles. Flanders Plastic Vision developed a quality label that indicates the percentage of recycled materials a product contains. With this label, which we continue to promote in Flanders and in Europe, we want to eliminate the bias against recycled plastics. Another priority is to develop generally accepted indicators to track the progress in closing plastics cycles and compare these to the best European examples. By cataloguing plastics that are already being recycled or can be recycled, we are laying the foundation for an action plan to extend the recycling of plastics.

We are working on systematically listing the available biomass, and we are determining which biomass residues are suitable for high-value applications or energetic valorisation. To achieve the required data collection and communication, we are striving to establish a common research agenda that explores biomass applications and fills the knowledge gaps.

From a European perspective we want to valorise the Flemish demonstration projects and formulate recommendations for creating a market for bio-based products.

- **critical metals.**

Progress has already been made in the dedicated collection of small electronic devices that contain many precious as well as rare earth metals. Thanks to a refinement of the legislation there now is more room for new collection methods for small electric and electronic waste.

Important steps have been taken in the fight against illegal exports of metal containing waste. The criteria that were defined for determining whether electronic devices can be reused, have made checks easier. Additionally, Agoria and OVAM are collaborating with the inspection authorities and the European Commission on establishing a collaboration agreement between the major European ports to counter illegal exports and ‘port hopping’.

To ensure optimal traceability and a uniform approach, all Recupel (see supra note p.17) contractors are censored by a certified institution. Standards for collection and recycling of ‘e-waste’ have already been submitted as the basis for new European requirements. For the collection of discarded vehicles, progress has been made on the legal framework for the cooperation between the federal and local governments. This allows the traceability of vehicles to be realised more quickly and the government can promote the collection more rapidly. The unique cooperation between all actors, from producers to processers, has resulted in a rise in the percentage of recycled cars to 93%; an outstanding achievement.

Illegal transactions with discarded vehicles are limited by official removals, facilitated by the sector itself. An investigation was launched at the initiative of Bebat (see supra note p.17) to assess the possibility of establishing a centre of expertise on batteries that will research new recycling techniques. This centre of expertise has to become a partnership between the government, the industry and knowledge institutions

Wallonia

Construction sector (work on building materials and in particular flat glass). The Walloon government and the government of the Brussels-Capital region were probably inspired by the German 'employment-environment alliance' strategy on building renovation which was launched several years ago and yielded positive results; the concept has been promoted by the unions since 2006.

Furthermore, Wallonia committed to reducing its carbon dioxide emissions in line with European objectives. The largest contributors to emissions in Wallonia in 2009 were the industry sector (34 %), the transport sector (29 %) and the housing sector (25 %). Given the age of the housing stock in Wallonia, highlighted by a McKinsey study on Pathways to World Class Energy Efficiency in Belgium published in 2009, the residential sector offers wide possibilities for action on environmental issues; average residential energy consumption in Belgium is 72 % higher than in the EU-25.

Moreover, housing renovation generates local employment and therefore supports employment in the construction sector in Wallonia and offers an opportunity to turn environmental challenges into economic opportunities.

Finally, household energy bills continue to increase. Measures under the employment-environment alliance on construction aim to remove households from fuel poverty by reducing their energy bills through a higher energy efficiency of buildings.

As mentioned in the section below on policy framework, **resource efficiency is a means of deepening the Walloon Smart Specialisation Strategy**. A circular economy has been developed as part of the competitiveness clusters policy. These focus on the joint use of material flows and energy. This will be particularly developed with the support of the European Regional Development Fund (ERDF).

The **six sectoral competitiveness clusters** in Wallonia, where integration of resource efficiency is a cross-cutting priority within all clusters, include:

- agro-industry (WagrALIM);
- aerospace (Skywin Wallonie);
- chemistry and materials (GreenWin);
- health (Biowin);
- transport and logistics (Logistics in Wallonia);
- mechanical engineering (Mecatech).

Priority consumption categories

Federal

No priority consumption categories have been identified at the federal level.

Flanders

Food, covering the whole value chain, from producing and processing to consumption, and **construction**.

Wallonia

Food

The Walloon government intends to launch a coordinated action plan in 2015 to combat food waste. The plan will structure all existing and future actions for this purpose and will cover the whole food chain (http://www.wallonie.be/fr/actualites/lutte-contre-le-gaspillage-alimentaire).

The new household waste prevention plan will contain measures aiming to fight food waste.

Housing

The first employment-environment alliance in Wallonia focused on the construction sector (insulation and building renovation while improving the energy efficiency of buildings).

Policy framework

National strategies or action plans for material resource efficiency

Belgium does not have a dedicated *national* resource efficiency strategy or action plan, mainly due to its constitutional set-up (see also the section on Institutional set-up). The contributions of the Walloon and Flemish regions are described in this document as well as input from the federal level. Each entity mainly focuses on its own competences.

Flanders

Flanders has an Environmental Policy Plan (MINA) covering many of the topics mentioned in the EU Roadmap to a Resource Efficient Europe MINA 4 defines the environmental policy in Flanders. A new environmental policy plan (MINA 5) is currently under preparation (www.lne.be/themas/beleid/mina4/mina5).

Flanders has several different thematic strategies and plans.

Materials and waste

The Flemish Materials Programme and the Executive Plan on Municipal Waste deal with challenges concerning materials and moving towards a circular economy (www.vlaamsmaterialenprogramma.be/).

The Executive Plan on Management of Household Waste contains planning for waste prevention, separate collection and final processing of household waste for the period 2008–2015. The Public Waste Agency of Flanders is currently developing a new Executive Plan. The Plan goes beyond EU targets for waste. The total amount of household waste will be decoupled from consumption and will be equal to or lower than the 2000 amount of 560 kg per person. By 2015 the total amount of residual household waste should be equal or lower than 150 kg per person (www.ovam.be/uitvoeringsplan-milieuverantwoord-beheer-van-huishoudelijke-afvalstoffen-umbha).

In addition, there is a policy plan for primary raw materials, specifically for near-surface mineral resources such as clay, sand, loam and gravel. The plan makes an analysis of the demand and supply of these mineral resources in Flanders and contains measures to ensure a sufficient sustainable supply both now and in the future (www.vlaanderen.be/nl/publicaties/detail/tweede-algemeen-oppervlaktedelfstoffenplan; www.lne.be/en/earth-and-soil/mineral-recources-in-flanders).

Water

The upcoming River Basin Management Plans contain a set of actions related to water efficiency, including:

- a review of guidance for the construction sector (building and renovating private houses);
- tools for monitoring private water consumption;
- action on raising awareness for the agricultural and horticultural sector on the sustainable use of water and alternative water supply sources;
- local pilot projects for a shift from groundwater abstraction to surface water;
- a leakage risk reduction project;
- review (plus implementation) of water pricing regulations in order to establish pricing incentives for sustainable use.

See: www.volvanwater.be/geoloket/overzicht-acties

Biodiversity

There are several plans addressing the different challenges regarding natural capital and ecosystem services.

- Promote the use of innovative financial and market-based instruments and explore their wider potential (www.nara.be/natuurrapporten/natuurrapport-2012; www.vlm.be/landtuinbouwers/beheerovereenkomsten/Pages/default.aspx). Proposals to foster investments in natural capital to seize the full growth and innovation potential of green infrastructure and the 'restoration economy' were included in a Communication on Green Infrastructure in 2012, and a No Net Loss initiative in 2015 (www.natuurenbos.be/nl-BE/natuurbeleid/groen/harmonisch_park_en_groenbeheer/investeer-in-groen#.VMDd761OXIU; www.natuurinjebuurt.be).
- Map the state of the ecosystems and their services by 2014 (http://www.nara.be/natuurrapportering-2014-2018; https://www.uantwerpen.be/nl/onderzoeksgroep/ecoplan/).
- Assess the economic value of ecosystems and promote the integration of these values into accounting and reporting systems at EU and national levels (continuous) (http://natuurwaardeverkenner.be/nwv2/; www.uantwerpen.be/nl/onderzoeksgroep/ecoplan/).

Food

The agreement on combating food loss is expected to deliver a reduction in food loss and so contribute to the European milestone. It covers the whole chain. This will have a positive effect on other elements of the milestones in the Roadmap to a Resource Efficient Europe. It will give incentives for more sustainable food production and consumption and contribute to a reduction in the food chain's resource inputs (through optimised valorisation of food losses and secondary flows (the food biomass that is non-edible like peels or bones). The Roadmap covers the period 2015–2020 (www.vlaanderen.be/landbouw/voedselverlies).

Land and soil

The Public Waste Agency of Flanders manages a land information register containing all data about soil contamination in Flanders. This information comes from soil investigations, projects and remediation required by the Soil Decree. The goal is to map contamination, enforce remediation and protect and inform buyers of land through a mandatory soil certificate. The land information register is therefore considered the backbone of the Flemish soil remediation policy. JRC Reference Report Progress in the Management of Contaminated Sites in Europe.

Buildings

The ambition of the policy programme on construction is to build according to the principles of sustainable materials management and the circular economy. Material cycles need to be closed in the Flemish building and construction sector by 2020. The programme (covering all building materials) addresses five key domains: 1) selective demolition and dismantling; 2) stony fraction; 3) non-stony fraction; 4) materials performance of buildings; 5) dynamic (re)construction.

The policy programme looks at the whole life cycle of buildings and also at future use of their component materials over time. It starts from an integrated environmental assessment of the use of materials in buildings at the level of materials, building elements, buildings and the built environment (www.ovam.be/duurzame-kringlopen/materiaalkringlopen/materiaalbewust-bouwen-in-kringlopen).

Mobility

The Flemish Air Quality Plan consists of 72 measures including steps to deal with increasing mobility and action to green the transport fleet. Most measures target road traffic, but the plan also entails shipping, industry and households (www.lne.be/themas/luchtverontreiniging/beleid/beleid-in-belgie-en-vlaanderen).

The Flemish Climate Policy Plan consists of two parts: the Flemish mitigation plan, which has the aim of reducing greenhouse gas emissions and the Flemish adaptation plan that aims to limit the effects of climate change. In the mitigation plan, there is a whole chapter on how to reduce greenhouse gas emissions from transport (www.lne.be/themas/klimaatverandering/klimaattips/klimaattips/wat-doet-de-vlaamse-overheid/vlaams-klimaatbeleidsplan).

Air

Flanders has established plans to tackle air pollution in the framework of two dossiers, one focusing on air quality (air quality standards) and one focusing on the sources of air pollution (emission ceilings).

EU legislation is the basis of all the action plans. Every year, the Flemish government reports on the latest state of play concerning reaching air quality standards and emission ceilings in Flanders. There are different action plans for the whole of Flanders on nitrogen dioxide (NO_2) and particulate matter (PM_{10}) as well as more specific targets for hotspots such as the harbour and city of Antwerp and the region of Gent (port and city). In addition, specific very local and well-defined problems are being looked at.

In the framework of the National Emission Ceilings Directive, emission inventories are established yearly and projections are established on a regular basis (depending on obligations and need (www.lne.be/themas/luchtverontreiniging www.lne.be/themas/luchtverontreiniging/beleid/beleid-in-belgie-en-vlaanderen/beleid-vlaanderen; http://ec.europa.eu/environment/air/pollutants/nationalprogr_dir200181.htm).

Wallonia

Wallonia has not elaborated a specific resource efficiency strategy. This issue is integrated throughout different plans and current policies, among which:

- the Walloon government through its **Regional policy statement 2014–2019** clearly supports a circular and resource efficient economy (http://gouvernement.wallonie.be/sites/default/files/nodes/story/6371-dpr2014-2019.pdf);
- the **1st Walloon Sustainable Development Strategy** identifies consumption and production patterns as one of the seven major themes to address challenges and promote sustainable development in Wallonia. This theme encompasses the issue of resource efficiency and the circular economy (http://www.wallonie.be/sites/wallonie/files/pages/fichiers/1ere_strat_dd.pdf).

The 1st Sustainable Development Strategy was adopted in October 2013. The Strategy identifies five main challenges and seven themes that require action.

- The five challenges are energy transition, demographic evolution, restoration and protection of biodiversity, climate change and an increase in social inequality.
- The seven themes are housing, sustainable consumption and production, social cohesion, food, health, energy and mobility.

For each of the themes, the Strategy includes a 2050 vision, as well as transition targets based on existing commitments and requirements at EU and UN levels. A 2nd Sustainable Development Strategy is under elaboration for adoption in 2016.

The **Marshall Plan 4.0**, which follows the Marshall Plan 2.Green, intends to refocus the priorities of this economic restructuring programme around the digital and circular economies (http://www.wallonie.be/sites/wallonie/files/pages/fichiers/pm4__complet_texte.pdf).

The **Walloon Air-Climate-Energy Plan 2014–2022** (first reading by Walloon government on 23 January 2014; public consultation finalised) includes a list of measures to increase the market share of renewable energy and to promote energy efficiency in all sectors in terms of the production process, final consumption, transport, building envelope, and so on (http://lavenirestdanslair.be/upload/documents/2014_04_23_-_PACE-complet.pdf).

The future **Walloon Waste Plan**, drafted for adoption on first reading in October 2015, will identify new possibilities to reuse, repair and recycle waste still present in household or industrial waste with the aim of feeding the circular economy.

- A whole chapter about prevention will install waste reduction conditions by promoting actions linked with the economy of functionality, such as service hiring.
- For household waste, the plan will include measures to fight against the waste of resources and promote sustainable production, distribution and consumption patterns.
- For industrial waste, the plan will set new goals in terms of industrial waste prevention in line with new European guidelines (such as turning waste into by-products and end-of-waste criteria).

(http://environnement.wallonie.be/rapports/owd/pwd/elaboration_pwd2020.htm)

Green public procurement

On 28 November 2013 the Walloon government adopted an action plan aiming to implement a sustainable public procurement policy in Wallonia. This plan is accompanied by an administrative circular for the attention of the regional contracting authorities to inform them of the tools available to them. The Walloon sustainable public procurement policy fosters resource efficiency by facilitating the inclusion of environmental clauses in tenders.

Industrial policy

Resource efficiency as a way of deepening the Walloon Smart Specialisation Strategy (under elaboration):

Under the Marshall Plan 2.Green various initiatives have been taken to direct Walloon industrial policy towards sustainability.

Besides the dynamics of sustainable development embodied in the competitiveness cluster policy through calls for specific projects, an industrial ecology element has been developed that will continue to capitalise on early experiments.

In this perspective, the **Marshall Plan 4.0** links the circular economy to the competitiveness cluster policy, with a specific focus on small and medium-sized enterprises (SMEs), and in collaboration with relevant actors. These focus on the joint use of material flows and energy and will be developed with the support of the ERDF.

Furthermore, in connection with the previous point, the lever of European programmes (including the European Innovation Partnership on Raw Materials, Sustainable Process Industry through Resource and Energy (SPIRE) public-private partnership (PPP), and Knowledge and Information Community (KIC) on Raw Materials) will be activated in support of regional policy. A study is also underway to integrate the green dimension more in the Walloon Small Business Act, in conjunction with the European Green Action Plan.

The Marshall Plan 4.0 refocuses the priorities of this economic restructuring programme around the digital and circular economies (http://www.wallonie.be/sites/wallonie/files/pages/fichiers/pm4__complet_texte.pdf).

The Walloon **industrial policy** is structured around **six sectoral competitiveness clusters,** among them the Greenwin (http://www.greenwin.be/en) cluster which focuses on the competitiveness of green chemistry and sustainable materials as well as on the treatment and valorisation of waste and effluents (http://clusters.wallonie.be/federateur-en/).

Furthermore, resource efficiency has been recognised as a cross-cutting priority for Walloon industrial policy. The **NEXT programme**, which focuses on the effective management of resources across all sectors in Wallonia, was launched in 2012. It aims to reinforce industry competitiveness while promoting the circular economy in order to tackle issues related to resource dependency, availability and cost and also to control environmental aspects of Walloon industrial policy (http://marcourt.wallonie.be/next/next-299.htm?lng=fr).

A **Reference Center on Circular Economy** was set up in September 2013 in order to assist SMEs willing to become involved in the circular economy. The Center acts as a contact point to connect the different stakeholders, gives advices and shares good practice. To this end, a scheme has been put in place in collaboration with the NEXT programme. The Center also manages a circular economy fund for Walloon SMEs (http://as-e.be/page/qu-est-ce-que-l-economie-circulaire).

An '**eco-zoning' project** has been underway since 2011. Its goal is to integrate the principle of industrial ecology into the daily approach of industry. Specifically, the project aims at developing synergies for collaborative resource management, concerted management and use of waste and joint energy production, amongst others (http://ecozoning.wallonie.be/site/index.php/).

Sectoral strategy

Between 2011 and 2014 Wallonia developed a new approach aimed at turning environmental challenges into economic and employment opportunities. By creating **employment-environment alliances**, Wallonia gathered stakeholders from the public and private realms around concerted sectoral action. The innovation lays in the fact that it was not only about consultation and participation but above all about enabling stakeholders to work together to achieve shared goals, namely the development of economic opportunities and the creation of jobs in the field of environment.

The first Alliance, involving 41 partners, was set up in September 2011. It focused on the construction sector and in particular on insulation and building renovation while improving the energy efficiency of buildings. Through its 48th measure, it aimed to promote the reuse of construction waste. In this framework, six pilot projects were selected in the Wallonia and Brussels-Capital regions and a practical guide was elaborated (http://www.cifful.ulg.ac.be/images/stories/Guide_reemploi_materiaux_lecture_2013.pdf).

Energy/carbon dioxide (CO_2) sectoral agreements: branch agreements focus on the signing of voluntary agreements between regional authorities and industrial sectors represented by the most energy-intensive industries through their federation. Depending on the terms of these agreements, within the allotted time, each industrial sector agreed to improve their energy efficiency and their efficiency with regard to greenhouse gas emissions (mainly CO_2).

The sectoral agreements offer many advantages to industries, such as additional financial support from the public authorities (for example for an energy audit) and therefore an improvement in their energy efficiency and competitiveness. For their part, the public authorities are assured of a substantial and objectively measured effort in terms of reducing the energy consumption and CO_2 emissions of industry. In December 2013, as the first wave of agreements drew to a close, there were no fewer than 173 companies and 203 operating locations across 16 sectors successfully meeting their objectives. In total, these companies represent over 90 % of the energy consumption of Walloon industry. Due to the enthusiasm of the companies, the results have exceeded Wallonia's expectations and the efficiency of Walloon industry has improved by 16.5 % in energy and by a 19.3 % reduction in CO_2 emissions.

A second wave of agreements for the 2014–2020 period has just begun, which still involves monitoring energy consumption and objectives to improve energy efficiency and reduce CO_2

emissions. It is more systematically open to the possibility of using renewable energy sources on industrial sites and opens the participants' horizons to the energy/CO_2 analysis for the life cycle of their flagship product or carrying out a carbon assessment on their site. Federations, with the help of their businesses, are invited to present a roadmap for 2050.

Forests and biodiversity

The **Walloon Forestry Code** was revised in 2008 to ensure a sustainable use of forestry resources by seeking an optimal dynamic balance between the economic, ecological and social roles of the forest.

PEFC certification of sustainable forest management: the Programme for the Endorsement of Forest Certification schemes (PEFC) is a certification scheme used in Wallonia that is recognised by PEFC International (http://www.pefc.be/fr/).

Pro Silva has two main goals in Wallonia: production and protection. Pro Silva forestry is based on quality management and respects the natural processes of forest ecosystems while ensuring economic viability.

Game management plans in Wallonia endeavour to maintain equilibrium for species populations and their habitats. This is to ensure that both game species and forest resource use are compatible.

Sustainability criteria for biodiversity are included in material resource efficiency, from energy (renewable or not), to food (fish stocks, agricultural products) or any other raw material production/utilisation (clothing, buildings and so on).

The circular economy and closing material loops

Flanders

The most important point is that we stop seeing materials as waste. This is the basis for creating a paradigm shift towards a circular economy.

A very important prerequisite is good legislation that enables the transition towards a circular economy. Introducing a landfill and incineration ban on recyclable waste is just as important as taxes imposed when materials are being put into landfill or incinerated. A ban enables the development of alternative methods of waste/materials management. Pay-as-you-throw schemes and (extended) producer responsibility also play a role in this.

Flanders has implemented the Materials Decree and an executive bill that takes on board the above.

Furthermore, active participation of stakeholders is essential (see section on Institutional set-up).

Wallonia

The future (under development) Walloon Waste Plan (covering industrial waste) will focus amongst other things on the valorisation of waste as a substitute for primary raw material in the production process.

Furthermore, a **Reference Center on Circular Economy** was set up in September 2013 to assist SMEs willing to be involved in the circular economy. The Center acts as a contact point to connect the different stakeholders, gives advices and shares good practice. To this end, a scheme has been put in place in collaboration with the NEXT programme. The Center also manages a circular economy fund for Walloon SMEs (http://as-e.be/page/qu-est-ce-que-l-economie-circulaire).

Finally, we can mention the **valorisation of sewage sludge from urban wastewater treatment plants** for use in agriculture.

- The Walloon standards (limit values for heavy metals in sewage sludge recovered for agriculture), as defined in the Walloon Order of 12 January 1995 implementing EC Directive 86/278/EEC (see Annexes 1A and 1B of the AGW 12 January 1995 http://environnement.wallonie.be/legis/eau/easur102.htm) are more stringent than the standards of the EU Sewage Sludge Directive 86/278/EEC. In addition, limit values for some organic contaminants are imposed through the permit system. The quality of sludge recycled to land is also regulated at the federal level by Royal Order (28 January 2013) covering the use of fertilisers (http://www.favv-afsca.be/productionvegetale/engrais/_documents/2013_01_28_AR_KB_Engrais_Meststoffen_MB13032013_FR_NL.pdf). Limit values for heavy metals and polychlorinated biphenyls (PCBs) in sludge are defined in this regulation (see Annexe 1, Chapter VIII of the Royal Order).

  Consolidated version of the Sewage Sludge Directive 86/278/EEC: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01986L0278-20090420&qid=1434538078334&from=EN

  DG Environment website on Sewage sludge: http://ec.europa.eu/environment/waste/sludge/
- In accordance with the principles of the EU waste hierarchy that **material recovery has to be favoured over energy recovery** (Waste Framework Directive 2008/98/EC - http://ec.europa.eu/environment/waste/framework/, Article 4), the same principles are set out in the legal framework for waste management in Wallonia – the updated 1996 Waste Decree (http://environnement.wallonie.be/legis/dechets/degen019.htm). The reuse of sewage sludge in agriculture is imposed through the system of permits issued to all wastewater treatment works.
- In 2013, **53 % of sewage sludge was incinerated with energy recovery** and **47 % was recovered for agriculture** (material recovery), as long as the sludge complied with Walloon and federal regulations.

- Since 1 January 2007, the **disposal of sewage sludge in landfill is totally forbidden** in Wallonia, as mentioned in the Order of 18 March 2004 (§4 of the order http://environnement.wallonie.be/legis/dechets/decen008.htm). In addition, the Order of 14 June 2001 encourages the recycling of certain wastes and its Article 13 creates a legal framework for non-dangerous wastes (other than sludge) to be recycled to land.
  https://dps.environnement.wallonie.be/home/matieres/boues-depuration.html;
  http://etat.environnement.wallonie.be/index.php?mact=tbe,m54ade,default,1&m54adealias=Gestion-des-boues-de-stations-d-epuration-collectives_2&m54adereturnid=49&page=49

General policy objectives for material resource efficiency

Flanders

Materials and waste

In the Materials Decree, it is specifically mentioned that measures have to be laid down for the creation of material cycles where the depletion of renewable and non-renewable resources, the wasting of materials and energy in general and the harmful effects on humans and the environment connected to the use and consumption of materials are countered (Materials Decree, article 4, §2, point 2).

Minerals

The use of near-surface mineral resources has to decrease and the use of alternatives increase. Also, Flanders aims to become more self-sufficient in mineral resources, meaning that the share of Flemish mineral resources has to increase relative to imports (Wallonia, Brussels and territories under Federal jurisdiction included).

Construction sector

The policy plan on building according to the principles of sustainable materials management and a circular economy has the general objective of building in a way that pays more attention to sustainable materials management. This means that the focus should expand from primarily demolition and waste management (and within that separate collection of construction and demolition waste) to building in a sustainable way, looking at the whole life cycle of building materials. It entails mining, production, design, construction, use and maintenance, end of life, separate collection and waste management (www.ovam.be/materiaalbewust-bouwen-kringlopen).

Food

The aim is to reduce food losses as much as possible in co-operation with stakeholders throughout the chain (production, processing, distribution, preparing, consumption) (www.vlaanderen.be/landbouw/voedselverlies).

Wallonia

The **Marshall Plan 4.0** aims to set up conditions for the development of a circular economy and economy of functionality and to support related projects – for example industrial pilot projects. The purpose is to ensure better use of resources by closing the loop.

Specific policy objectives and a timeframe will be set relating to the Walloon Waste Plan and Walloon Air-Climate-Energy Plan 2014–2022. At the moment, these documents have not been finalised or approved by government.

According to the **Walloon Smart Specialisation Strategy** (under elaboration), promoting the efficient use of resources opens up significant economic opportunities through productivity gains, reduced costs and opening new markets. The development of green technologies and eco-innovation will give a further impetus to innovation and job creation. Sustainable industrial policy, eco-innovation, the development of the bio-economy and environmental technologies are major factors in the development of a sustainable and efficient Walloon economy in the use of resources.

The transition to a competitive low-carbon economy requires finding innovative solutions in the fields of energy, transport, industry and information and communication technology (ICT). In this respect, eco-innovation is the key. In addition to its central role in dealing with the fight against climate change, eco-innovation can enhance the competitiveness of Walloon industry, open new export markets and create new jobs.

Institutional set-up and stakeholder involvement

Institutional set-up for material resource efficiency policies

NOTE: Belgium is a federal country with a complex institutional set-up of regions and communities. A lot of competences are fully or partially transferred to these decentralised levels; for some other topics the federal level is still fully or partially in charge. The division of competences undergoes regular changes, mostly towards greater decentralisation.

The issue of material resource efficiency, as it is typically cross-cutting, involves several domains and policy levels. This means that the Belgian regions (Wallonia, Flanders, Brussels) and the federal level are all concerned, each taking care of its own competences. Agriculture and environment, for example, are mainly regional (though the federal level is still in charge of product policy), while for economy and energy the picture is more mixed.

In order to represent Belgium in the international arena we use what we call ‘collaboration agreements’ between the relevant political entities (regions or communities or the federal level).

One of these collaboration agreements is the Coordination Committee for International Environmental Policy (CCIM/CCPIE), which can establish thematic subgroups whenever needed. Material resource efficiency policy is discussed in one of these subgroups.

Flanders

OVAM, the Public Waste Agency of Flanders, has the lead when it comes to developing and implementing material resource efficiency in Flanders. This entails legislation and policy plans.

The 15 stakeholders that have engaged in the Flemish Materials Programme have goals to innovate (Plan C), to do research (Summa) and to implement sustainable materials management through an action plan. The stakeholders vary, from civil society, knowledge institutes, universities, government and businesses, and work actively together (www.vlaamsmaterialenprogramma.be).

The Environment, Nature and Energy Department is responsible for other themes within the Roadmap to a Resource Efficient Europe.

Wallonia

In Wallonia, the development and implementation of resource efficiency policies are negotiated at the level of the Walloon government in association with the Public Service of Wallonia (the administration; mainly the General Secretariat for sustainable development issues, the Directorate-General for Agriculture, Natural Resources and Environment/DGO3, the Directorate-General for Land-use planning, Housing, Patrimony and Energy/DGO4 and the Directorate-General for Economy, Employment and Research/DGO6) and relevant stakeholders (sectoral federations) or at the federal level (for product policies).

According to the sector concerned (business, households, agriculture) discussions are often organised to balance public authority objectives with existing constraints on the sector.

Process to ensure stakeholder participation

Federal

Several institutions organise stakeholder participation, including the CCPIE/CCIM and the Central Council of Economy. The federal working group mentioned above (see section on Scope of material resource efficiency) has also organised considerable stakeholder consultation through meetings and conferences.

Flanders

When it comes to developing or altering legislation and policy plans, OVAM's policy is to actively inform and consult all relevant stakeholders. Stakeholders have the chance to interact with OVAM and share their wishes and concerns during the development of new legislation. After consideration

of all the concerns and wishes of a variety of stakeholders, it is the government who decides what the legislation/policy plan will looks like. OVAM tries to be as transparent as possible in this process.

The Flemish Materials Programme has a special position. It develops sustainable materials management with a variety of stakeholders. All partners have equal responsibility for its success. In this way, the government tries to actively involve a variety of stakeholders to make the transition to a circular economy.

The partners within the Flemish Materials Programme play a crucial role in working towards becoming more resource efficient. The sectors involved are the Belgian federation of the technology industry (Agoria), Belgian federation of environmental companies (FEBEM), Flemish Construction Federation (VCB), different knowledge institutes and universities, and the Belgian federation for Chemistry and Life Sciences industries (Essenscia).

Wallonia

Sectoral federations are key stakeholders in Wallonia: competitiveness clusters (defined as a grouping of companies, training centres and public or private research units in Wallonia committed to a partnership-based approach intended to generate synergies in relation to common projects of an innovative nature) are good examples of public-private partnerships, which make it possible to have a strong involvement of the private sector (http://clusters.wallonie.be/federateur-en/).

On the domestic side, households are invited to adopt a sustainable lifestyle and to make sustainable consumption choices through public awareness campaigns and information tools such as websites and newsletters (e.g. http://moinsdedechets.wallonie.be/; http://www.ecoconso.be/).

Suggestions for international support mechanisms to exchange experience

Wallonia

At international level: results from the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) on biodiversity and ecosystem services.

At European level: we should explore how to better integrate resource efficiency in the EU2020 Strategy including through the introduction of a non-binding aspirational EU target and country-specific recommendations in the European Semester mechanism.

Policy instruments

Policy instruments commonly used for material resource efficiency

Federal

Product policy is quite important. The design of products is a critical element to ensure recovery, reuse, reparability and recycling. Therefore a strong framework for product design should be created. The EU must start with setting legally compelling performance requirements by making full use of the range of options offered by the Ecodesign regulation. Criteria should be set on the three Rs (reuse, repair, recycle), disassembly, recycled content, bill of materials/product information and identification of plastic components, amongst others.

Flanders

The policy instruments below have to stimulate consumers, producers and waste managers to look for alternatives to landfill and incineration of materials:

- landfill ban on recyclable waste;
- incineration ban on recyclable waste;
- pay-as-you-throw schemes;
- taxes on landfill;
- taxes on incineration;
- (extended) producer responsibility schemes.

The policy instruments below have to stimulate and help companies to become more aware of the use of materials and how they can become more sustainable and material efficient:

- materials scan – insight on quantities of materials used by SMEs and advice on how they can become more smart and efficient in their use (www.materialenscan.be/);
- SIS toolkit – www.ecodesignlink.be/en/sis-toolkit-1.

The policy instruments below focus on design, as smart design of products has a direct influence on the use of resources (www.ecodesignlink.be/):

- Ecodesign in Higher Education kit – this work package (EHE kit) provides concrete guidance to teachers, professors, programme coordinators and training councils to integrate ecodesign into training programmes in higher education;
- Ecolizer – the Ecolizer is an ecodesign tool and caters for all designers and companies who want to become informed and lower the environmental impact of their products.

Wallonia

Various policy instruments are used in Wallonia to improve material resource efficiency, such as:

- regulatory instruments – Marshall Plan 4.O, Walloon Air-Climate-Energy Plan 2014–2022, future Walloon Waste Plan;
- information-based instruments – technical support for SMEs through the Reference Center on Circular Economy, focus on education in the Marshall Plan 2022;
- voluntary agreements – voluntary initiatives with the private sector through competitiveness clusters, employment-environment alliances, branch agreements.
- economic/financial instruments – grants and subsidies (mainly in the energy field, covering insulation, photovoltaic systems, green certificates, and so on), taxes (water abstraction and local taxation for material extraction related to mining activities).

Examples of good practice

Federal

Federal administration will shortly start a process to define criteria for recycled content in new products. The focus will specifically be on plastics. The objective is to define general requirements for all products and subsequently to define requirements for yet-to-be-decided specific product categories.

Several measures have been taken to reduce the environmental impacts of products which are released onto the market, addressing for example air quality, CO_2 emissions and impacts on biodiversity, but were not specifically focused on material efficiency.

Flanders

- OVAM, the Public Waste Agency of Flanders
- Flemish Materials Programme

For details please see section on Institutional set-up.

Wallonia

The RESSOURCES network

RESSOURCES is a network of non-profit companies involved in recovery and recycling in Wallonia and Brussels. It ensures the development and professionalisation of its members by improving their visibility and cohesion, by representing them to external authorities, by encouraging collaboration with the various actors in socio-economic life, and by mobilising them around innovative and federative projects. The pluralist network is composed of about 60 active members in Wallonia and

the Brussels-Capital area which receive, collect, sort, repair, recycle and resell products. The network is active in the classical sectors (textiles, cumbersome items, electrical and electronic equipment) and emergent sectors (wood, bicycles, construction waste, green waste, industrial services or printers cartridges) of recovery and recycling economy. The network is becoming an essential actor in environmental protection: reducing the production of waste and promoting the reuse of resources are drivers of local development, a vector of solidarity and a creator of local jobs: 69 members; 200 second-hand stores; 4 600 employees; 150 000 tonnes of goods treated annually; and 50 000 tonnes of goods revalorised (http://www.res-sources.be)

Reverse Metallurgy project

The Reverse Metallurgy project brings together different industrial and academic Walloon partners in order to allow the development of techniques that better recycle metals and to develop measures focusing on smart steels or new surfaces. The ambition of the Reverse Metallurgy project is to recycle metals so that they can again be used as raw materials (http://www.gre-liege.be/reverse-metallurgy/).

Targets and indicators

Targets for material resource efficiency

Federal:

Currently no target has been set at the federal level. In the weeks to come a study will be launched to evaluate the economic potential of the circular economy in Belgium and to propose targets and indicators related to federal competencies (mainly product policy).

Flanders

Flanders has both current and future targets.

Current targets

- The total amount of household waste will be decoupled from consumption and will remain at the 2000 level until 2010, meaning that the level should not rise above 560 kg per person.
- The amount of residual household waste has to be less than 150 kg per inhabitant per year by 2010.
- More that 75 % of residual household waste will be separately collected.
- From 2015, no recyclable waste or waste that can be incinerated coming from households and industry can be sent to landfill as long as there is enough incineration capacity (in Flanders).

- The amount of industrial waste sent to landfill that cannot be incinerated will decrease in comparison to 2005–2007.
- The total amount of household waste that is being recuperated will increase in comparison to the 2013 level.
- The total amount of industrial waste that is being recuperated will increase in comparison to the 2013 level.
- The amount of primary industrial waste will decrease relative to 2005–2007.
- The amount of industrial waste not separately collected will decrease relative to 2005–2007.
- By 2020, the amount of food waste will have decreased by 15 %.
- By 2025, the amount of food waste will have decreased by 30 %.
- By 2020, the share of alternatives in the total amount of mineral resources required will have increased relative to 2013.
- By 2020, the share of Flemish mineral resources in the total amount of mineral resources required will have increased relative to 2013.

Future targets

Flanders is working on a new Executive Plan on Waste and new indicators in a broader sense. The targets given below have not yet been politically approved and may still change in the next few months.

- an average of 15 % less residual household (10 %) and commercial waste (20 %) by 2022 in comparison with 2013.
- Less than 500 kg per person of total household waste produced in 2020.
- The share of alternative raw materials in the total (mineral) raw materials required will increase in comparison to the 2013 level.
- The share of primary Flemish raw materials in the total (mineral) raw materials required will increase in comparison to the 2013 level.
- The amount of primary industrial waste produced will decrease relative to the 2012 level (excluding construction and demolition waste, sludge, soil and primary raw materials).
- The total amount of waste from shredded scrap sent to landfill and incinerated will decrease in comparison to the 2014 level.
- Decrease in regional material consumption related to gross regional product (GRP).
- Decrease of environmental pressure in relation to added value.

Regarding the development of new indicators and models, the OVAM did some work on modelling the loss of materials from material chains.

All over the world the availability of materials is under increasing pressure. All European Member States use raw materials through direct import and use, but also through import and use of semi-finished products. If specific production and consumption patterns lead to a systemic reduction of the available material stock (on national and global levels), they are unsustainable. Existing indicators in the field of resource efficiency do not sufficiently monitor whether our consumption and production patterns are on the right track towards a circular economy. Since it is important to understand and influence material flows in such a way that loss is prevented or at least minimised,

the Public Waste Agency of Flanders developed a model that gives an alternative insight on how material stocks are depleted and what the main issues are to tackle first if we want to move to a sustainable material use.

A model has been developed that estimates the material stock in the local (Flemish) economy (including urban mining), calculates scenarios for the release of material stocks at end of life, and identifies the main leakage flows. It also allows for comparison with primary material stock worldwide. The model contains data on the origin, use and recycling of materials in the local economy and has been built on calculations that take into account the following aspects of materials:

- the applications in which materials are used (e.g. transport, building, hard and soft packaging);
- the evolution of material stock in the local (Flemish) society;
- leakage flows due to collection and recycling efficiency and export.

The model maps the material losses in the Flemish economy, identifies the applications that are responsible and the reasons behind the losses. It uses variable parameters – including life span, collection and recycling rates, and export – which allows assessment of the influence of a specific policy focus (such as increased collection rates) on the material stock and leakage flows.

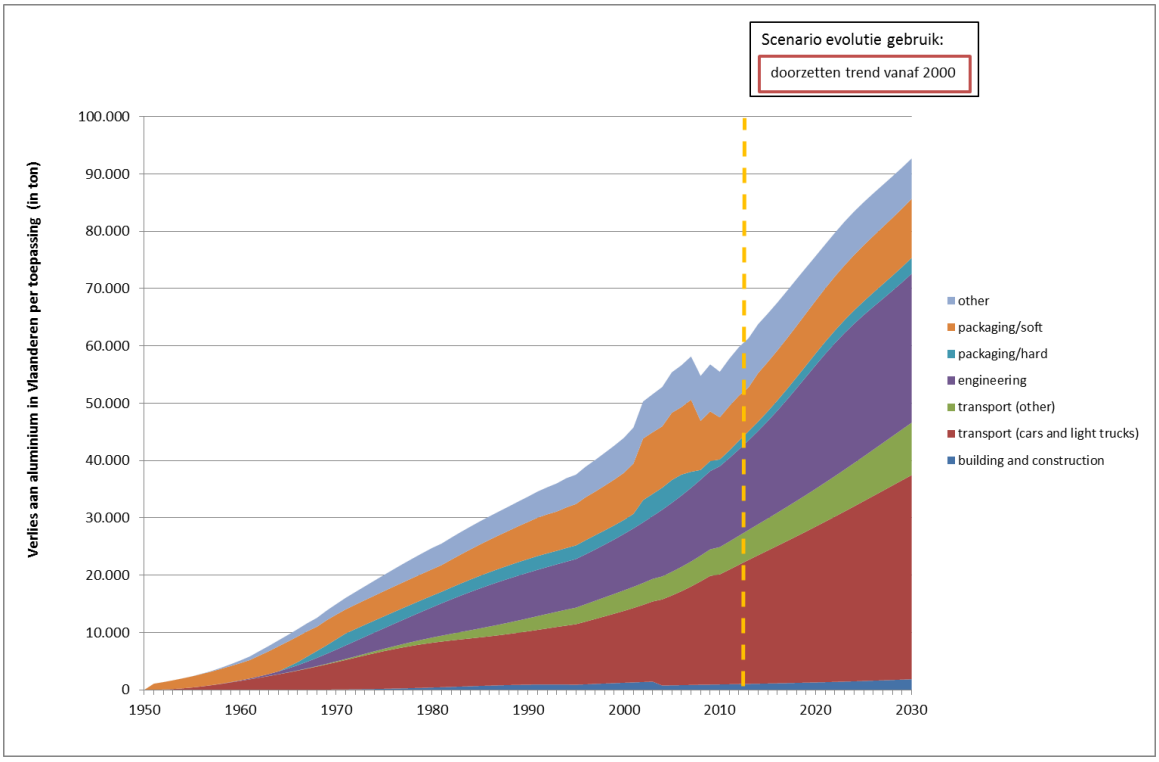
The model can also be used to make future projections based on different scenarios.

During development of the generic model aluminium served as a base model. Work to extend and refine the model for other materials was under way in 2015.

As such, the model supplies OVAM with information that is crucial for outlining an efficient and effective material management policy. Moreover it allows the development of indicators for the 'material sustainability level' of the Flemish economy and society.

In the coming months OVAM together with Flemish partners gathered in SuMMa (Policy Research Centre studies Sustainable Materials Management) will publish a report on new insights on material indicators and models.

The figure below shows an analysis of the total loss of aluminium from the material cycle until now and a future projection if the trend from 2000 until now is maintained. The leakage flows can be assigned to different applications of aluminium. The big losses in transport applications are for instance due to the export of second-hand cars, while those in soft packaging are due to the bad collection rate, combined with the fact that these wastes disappear upon incineration and cannot be recovered from ashes afterwards.



The height of the lines in a certain year gives the yearly amount of material losses in that year. The area under the lines gives the cumulative amount of aluminium that has leaked from the system.

Wallonia

The up-coming Walloon Waste Plan and Walloon Air-Climate-Energy Plan 2014–2022 will set specific objectives and targets for resource efficiency. At the moment, these documents are not finalised or approved by government.

Second-generation branch agreements began in 2014 with the objective of improving energy efficiency by 11.4 % and reducing CO_2 emissions by 16.1 % by 2020.

Indicators to monitor the use of materials and resource efficiency

Federal

See previous section ("Currently no target has been set at the federal level. In the weeks to come a study will be launched to evaluate the economic potential of the circular economy in Belgium and to propose targets and indicators related to federal competencies (mainly product policy)".

Flanders

Indicators in Flanders include:

- the total amount of household waste produced;
- the amount of residual household waste;
- the total amount of primary industrial waste;
- the total amount of industrial waste not separately collected;
- the total amount of industrial waste that cannot be incinerated sent to landfill;
- the total amount of household waste that is being separately collected;
- the total amount of industrial waste that is being recuperated;
- the share of primary Flemish raw materials in the total (mineral) raw materials requirement;
- the amount of primary produced industrial waste;
- the total amount of waste from shredded scrap sent to landfill and incinerated;
- DMC;
- GRP;
- used potential alternative mineral resources/realised substitution of near-surface mineral resources:
- total use of mineral resources and alternatives, consisting of
    - the share of imported mineral resources
    - the share of Flemish near-surface mineral resources
    - the share of used alternatives;
- the degree of optimal extraction;
- the degree of optimal valorisation of near surface mineral resources.

Wallonia

Every two years, the government provides a report on the State of the Walloon Environment (http://etat.environnement.wallonie.be/) to the Walloon Parliament (an obligation under the Walloon Code of the Environment) http://environnement.wallonie.be/legis/menucode.htm).

The reports on the State of the Walloon Environment contain:

- critical, evaluative and prospective **monitoring** of the various components of the environment and the pressures exerted by human activities;
- a management **analysis** conducted by environmental authorities, businesses and voluntary associations;
- an assessment of adherence to EU directives on the environment and **compliance** with international commitments on the environment;
- a review of **efforts** for sustainable development made in the Walloon region under the international conventions developed as part of the Rio Conference and the principles defined in Agenda 21.

The analysis of the environmental situation of Wallonia is made through the follow-up of different types of indicators – including environmental, socio-economic and health indicators – as well as resource efficiency indicators:

- material flow accounts: total material requirement, direct material input, DMC, physical trade balance, net additions to stock, domestic processed output, productivity of materials, substitution of extracted or imported materials (http://etat.environnement.wallonie.be/index.php?page=etudes-detaillees);
- energy intensity index;
- water abstraction index;
- eco-efficiency of the economy (industrial sector, transport sector, electricity production, agricultural sector, residential sector, services sector)

http://etat.environnement.wallonie.be/index.php?page=eow-2014 ;
http://etat.environnement.wallonie.be/download.php?file=uploads/archives/KEIW2012_UK_03-09_v2.pdf

In the framework of the first Walloon Sustainable Development strategy, a list of sustainable development indicators was elaborated which includes a resource efficiency indicator: decoupling of DMC from GDP (http://www.wallonie.be/sites/wallonie/files/pages/fichiers/approche_methodologique_et_proposition_dindicateurs.pdf).

Optional questions

Recent policy developments concerning natural resources in the broader sense of the term

Wallonia

Land and soil

Concerning land and soil, policies are currently being revised in terms of land planning and soil degradation. The future Code of Territory Development foreseen by the end of 2015 aims to limit soil sealing and urban sprawl by introducing, for the first time, a specific zone – entitled 'zone d'enjeu communal' – where urbanisation will be promoted. The location of such a zone on municipal land is based on criteria of centrality, high density of habitation, and proximity to public transport. The new Soil Decree is intended to give more attention to the degradation of agricultural and forest soils, as it is developed under the European soil strategy, in order to build on a more integrated approach to soil resource management. This approach cannot be decoupled from the management of materials at waste sites, therefore there is a strong link with the Waste Management Plan and especially with the development of end-of-waste criteria.

Water

Current policy developments refer to the calculation of ecological flows during the 2nd cycle of River Basin Management Plans and securing water provision in the long term through the interconnection of drinking water networks (taking into account potential climate change impacts on water availability at local scale) (Schéma régional d'exploitation des ressources en eau – Regional Outline For Use of Water Resources).

Biodiversity

As stated in the Roadmap to a Resource Efficient Europe, the failure to protect our natural capital and to give a proper value to ecosystem services will need to be addressed as part of the drive towards smart, sustainable and inclusive growth which is the EU's Europe 2020 priority. The Roadmap identifies investing in green infrastructure as an important step towards protecting natural capital.

'Fully valuing nature's potential will contribute to a number of the EU's strategic objectives. A more resource efficient economy: The EU's ecological footprint is currently double its biological capacity. By conserving and enhancing its natural resource base and using its resources sustainably, the EU can improve the resource efficiency of its economy and reduce its dependence on natural resources from outside Europe' (EU Biodiversity Strategy to 2020).

A platform on ecosystem services has been established in the Walloon administration.

The use of natural resources can go hand in hand with the achievement of specific biodiversity goals. Here are some examples of synergies or compatible initiatives that have been developed in the Walloon region.

- The habitat of the hazel grouse (*Bonasia bonasia*) is made up of coppices. The demand for wood biomass facilitates the implementation of management measures on low-productive forest areas in Natura 2000 sites aimed at restoring its habitat by coppicing.
- The Walloon region has initiated a dialogue with non-energy extractive industries aimed at making the exploitation of quarries compatible with biodiversity goals, protecting sand martin (*Riparia riparia*) nesting areas and amphibians, amongst others.
- The Walloon region supported the development of a mobile apple juicer. Such an initiative contributes to the protection of old orchards that are an important habitat for some birds and insects.

Which way should resource efficiency go in the future?

Flanders

From the perspective of material resource efficiency, Flanders is convinced that a shift in thinking in terms of waste towards a materials perspective is crucial. In order to do so, a holistic view of materials is necessary and a value chain approach is a prerequisite. This means that when developing a new policy and legislative framework the whole material chain of materials and

products has to be considered, not just parts of the chain. Smart connections between the different phases are crucial.

Materials management is of great European interest, not just a regional or national matter. Materials should not disappear, be it exported outside Europe to places that lack proper recycling infrastructure, being incinerated or sent to landfill, or poorly recycled within Europe. Materials should be treated inside Europe at a high-quality level. European indicators that give insight on how raw materials leak away from our economies can help with the further development of materials management and the transition towards a circular economy.

Currently, Europe is still a frontrunner when it comes to separate collection, recycling, reuse and product standardisation. It creates jobs. It also creates an export product in the form of knowledge and expertise. It is crucial that we keep the frontrunner position in Europe. Emerging economies are more than willing to take over. Falling back on national initiatives is not an option. KIC Raw Materials is a great contributor to innovation, knowledge gathering, research and development and education. If the EU wants to keep its frontrunner position, KIC Raw Materials has a crucial role to play.

There has to be room for 'learning by doing'. The transition to a circular economy and to becoming more resource efficient is a complex and comprehensive process in which room for experiments is necessary. Through these experiments, conditions and barriers can be identified and the road to a successful transition can be revealed. Legislators must have the opportunity to create room for experiments and frontrunners, to learn from them and to transpose new insight to legislation and policies.

Wallonia

Actions in the field of resource efficiency mainly focus on material resources and waste recovery. Resource efficiency should include a broad concept of the circular economy in order to close the loop. More systemic solutions could be considered in the future, including ecodesign; end of planned obsolescence; sharing goods such as cars or washing machines; and hiring of services rather than purchase of goods.

Resource efficiency measures and strategies should contribute to the realisation of the energy transition to a low-carbon economy.

Reflections on the country's trends in the use of materials and resource efficiency

Flanders

Graph on primary energy consumption: category waste (non-renewable): data used for this category comes from data on green electricity certificates. Energy is being produced because waste is being incinerated. Electricity and heat is created. Because of these certificates, Flanders has accurate data on waste used to make energy. In Belgium, the data have been filed under the category waste. In other countries such data are probably used for the categories 'derived heat' and 'electrical energy'. One could say Belgium should move the data to these categories too. This would change the graph.

Graph **on municipal waste by treatment method** (EU-27): one third of EU municipal waste is being sent to landfill. Because Belgium has a ban on municipal waste landfill, only 1 % or less is being disposed of by this method since 2010.

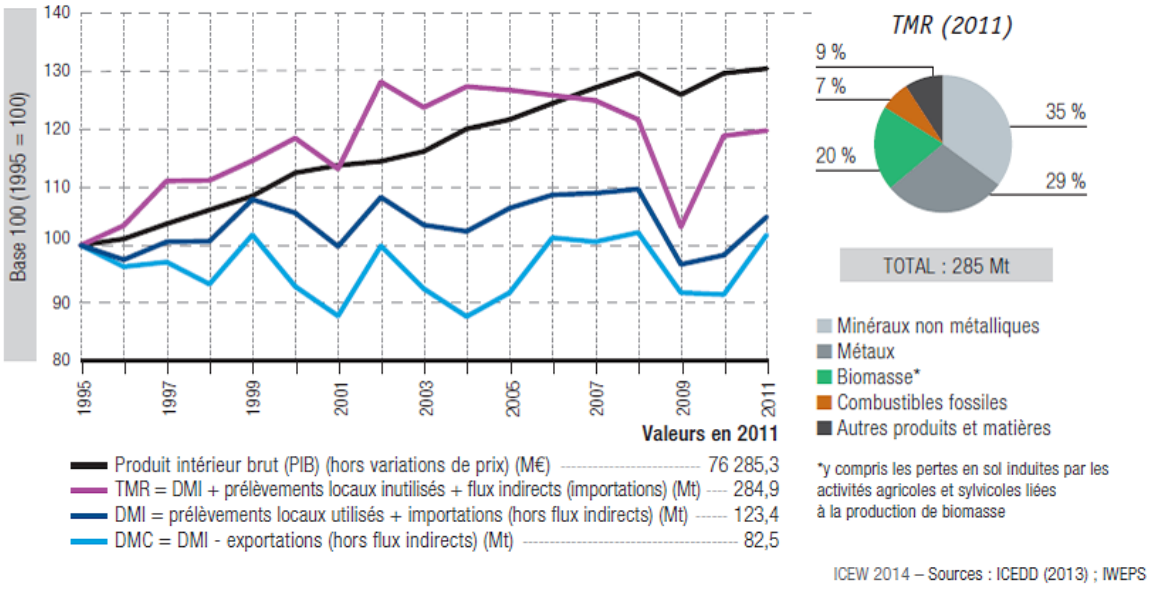
Wallonia

See examples below: resource productivity, municipal waste management, water abstraction and primary energy intensity.

Resource productivity

See:
http://etat.environnement.wallonie.be/index.php?mact=tbe,m54ade,default,1&m54adealias=Indicateurs-de-flux-de-matieres_2&m54adereturnid=49&page=49

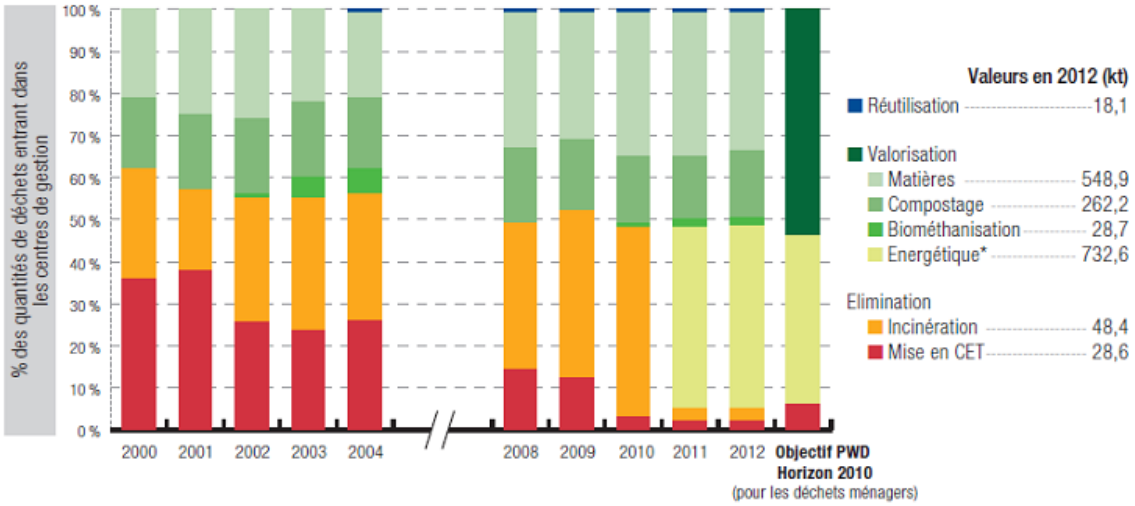
Fig. 3-1 Utilisation de matières et création de richesse en Wallonie



Municipal waste management

See:
http://etat.environnement.wallonie.be/index.php?mact=tbe,mfb234,default,1&mfb234alias=Municipal-waste&mfb234returnid=50&page=50

Fig. 7-5 Modes de gestion (en première destination) des déchets municipaux collectés en Wallonie



* A partir d'un certain seuil de rendement énergétique, calculé selon la formule de la directive 2008/98/CE, l'incinération peut être considérée comme de la valorisation énergétique. Grâce à une analyse de la performance énergétique des installations d'incinération effectuée depuis 2011, les quantités de déchets ainsi valorisés peuvent être calculées depuis cette date.

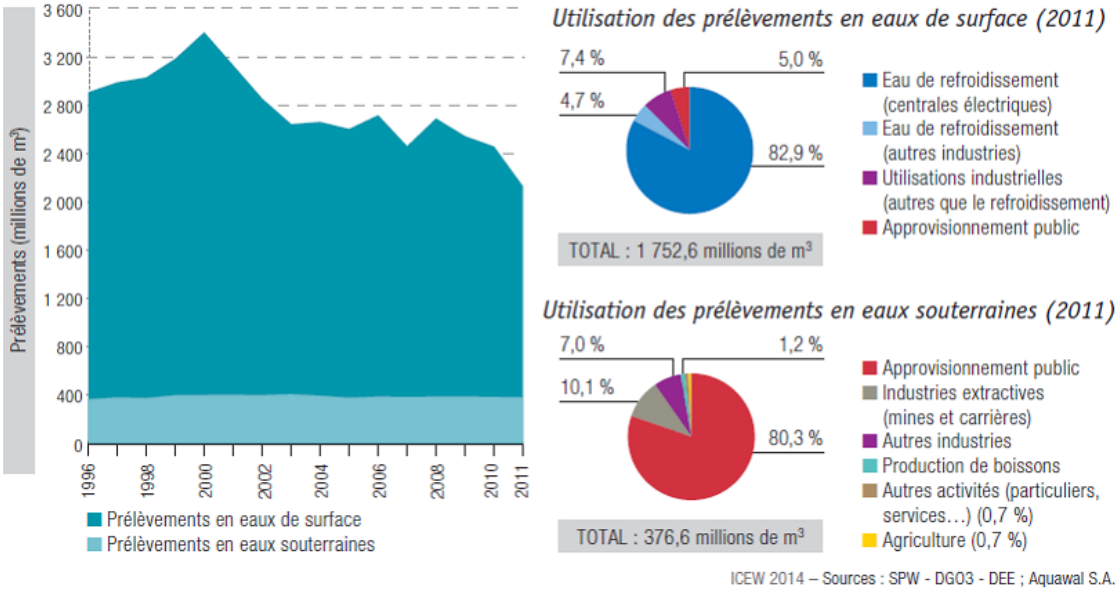
ICEW 2014 – Sources : SPW - DGO3 - DSD (bases de données Fedem, CETRA et Coditax) ; Réseau Ressources

In 2012, the amount of municipal waste collected in Wallonia reached 460 kg per person, 7 % less than the European average (492 kg per person, EU-28). Since 1997 the amount of household refuse has decreased by 21 %, while the proportion of coarse fractions increased by 91 %, in relation to the growing use of local collecting centres by citizens. However, the target of 383 kg per person set forth in the Walloon Waste Plan for 2010 has not been achieved. The Walloon authorities are therefore planning to strengthen their waste prevention policies in the context of the next Waste Plan. Regarding waste management, the targets for 2010 have been achieved overall. In 2012, 50 % of municipal waste was sent to recycling, composting or biomethanisation centres, while 44 % went to incineration plants with energy recovery. The proportion of municipal waste going to landfill facilities now represents less than 2 % as a result of the ban on sending certain types of waste to such facilities.

Water abstractions

See:
http://etat.environnement.wallonie.be/index.php?mact=tbe,m54ade,default,1&m54adealias=Prelevements-en-eau_3&m54adereturnid=49&page=49

Fig. 3-2 Prélèvements en eaux de surface et en eaux souterraines en Wallonie

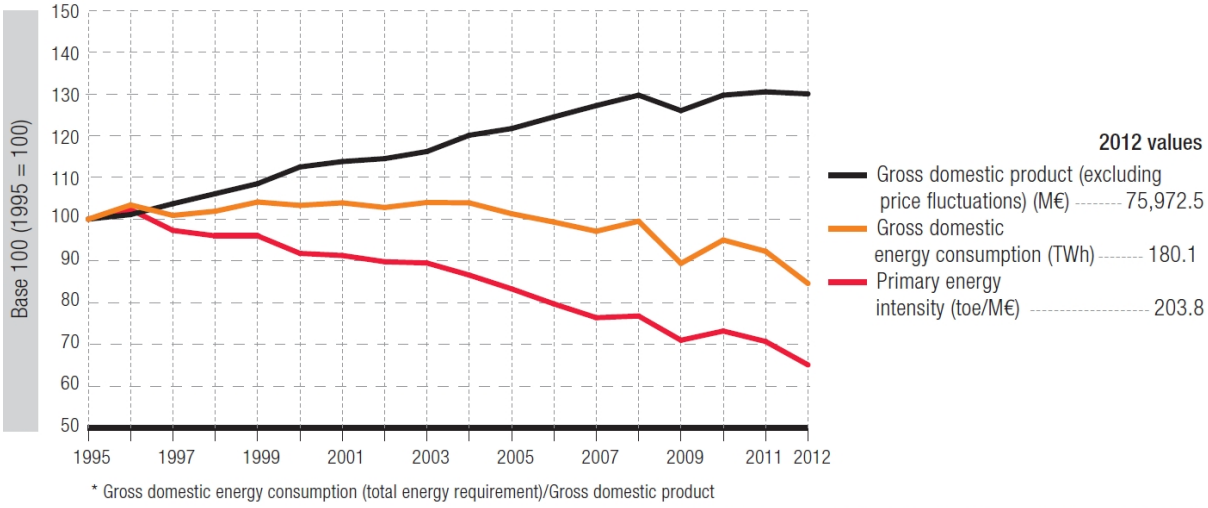


ICEW 2014 – Sources : SPW - DGO3 - DEE ; Aquawal S.A.

Primary energy intensity

See:
http://etat.environnement.wallonie.be/index.php?mact=tbe,mfb234,default,1&mfb234alias=Primary-energy-intensity_1&mfb234returnid=50&page=50

Fig. 3-1 Primary energy intensity* in Wallonia



* Gross domestic energy consumption (total energy requirement)/Gross domestic product

EOW 2014 – Sources: SPW - DGO4 - DEBD (energy balance 2012); IWEPS

The efficiency with which energy is used can be determined by way of the energy intensity, which compares the energy requirements of a region or country with its level of economic activity (GDP).

In 2012, Wallonia's energy intensity was 18 % higher than that of Belgium and 42 % higher than the European average. This reflects the importance of the transport sector and energy-intensive industries in Wallonia. Since 1995, Walloon energy intensity has decreased by 35 % owing to: 1) the continuous rise in GDP until 2008 (tertiarisation of the economy, production of higher added value goods); and 2) a decrease in the total energy demand since 2004. This can be explained in particular by downturns/closures of economic activities, for example in the steel and textile industries), technological progress and the efforts of industry to improve energy efficiency – through, for example, branch agreements and energy facilitators – some of which are supported by the public authorities.