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**MAIA**  
Mapping and Assessment for  
Integrated ecosystem Accounting

The MAIA country fact sheets summarize the state of affairs on natural capital accounting (NCA) in the countries connected to the MAIA project. They serve as an accessible overview and entry point for collaboration. The factsheets describe the needs from policy, society, science and business for the use of NCA, give an overview of the ongoing and published research -including knowledge gaps- in the country, include contact details and an overview of national partners and stakeholders involved in the accounts. Information in this document is based on MAIA Deliverables and exchanges, and the content is reviewed, co-authored and updated by MAIA-liaison persons in the participating country. This version was updated on August 5<sup>th</sup> 2022.

# Country fact sheet: **Belgium (BE)**

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## Summary

In Belgium, the environmental policy is regionalised. Therefore the priorities, knowledge gaps, support needed and the state of the research depends on the region. The Walloon en Brussels region have not taken any initiatives yet in developing Natural Capital accounts. Therefore this factsheet mainly focuses on Flanders.

A key motivation for developing natural capital accounting for Flanders relates to the ambition to bring together and structure data in support of better policy and public debate. Thematically policy prioritizes four research subjects: First, the development of capital accounts for climate related aspects such as water availability, storage and infiltration, carbon storage and climate regulation by green and blue spaces in an urban environment. Second, there is demand for better information on health-related aspects of natural capital. Third, there is interest in using NCA as a basis for monitoring the Sustainable Development Goals and to support the evolution towards a Green Economy with beyond GDP-indicators. A last point of interest is the monitoring of land use change as a driver of biodiversity loss.

In Flanders, both the extent account and four pilot ES supply and use accounts in physical and monetary terms are published. These include wood production in forests, carbon storage in above-ground biomass, water availability and health benefits of green and blue areas near the living environment. An ES erosion control, condition accounts for rivers and forests, and a biodiversity account are in development.

Identified challenges with the data in Flanders concern carbon storage in biomass; the health effects of green space; functional biodiversity and its contribution to the supply of ecosystem services, as well as the accuracy of the base layers of the land use/land cover map. Moreover, the relevant data, knowledge, skills and resources are scattered across different entities, this impedes building appropriate ES models.

In Flanders and Belgium capacity building in various aspects of ecosystem accounting is needed including, for instance expertise in the science-policy-practice interface. Considering the upcoming European engagement towards ecosystem accounting, investment in people is quintessential. Exchange of experience between MAIA partners and professional communication material will be valuable.

## Country policy priorities for developing natural capital accounts

*Based on MAIA D5.1 (Annex 1 section 3)*

A key motivation for developing natural capital accounting for Flanders relates to the ambition to bring together and structure data in support of better policy and public debate. Thematically policy prioritizes four research subjects: First, the development of accounts for climate related aspects such as water availability, storage and infiltration, carbon storage and climate regulation by green and blue spaces in an urban environment. Second, there is demand for better information on health-related aspects of natural capital. Third, there is interest in using NCA as a basis for monitoring the Sustainable Development Goals and to support the evolution towards a Green Economy with beyond GDP-indicators. A last point of interest is the monitoring of land use change as a driver of biodiversity loss.





It is anticipated that the integration of economic and environmental information by means of ecosystem accounts will support the inclusion of biodiversity in economic decision making.

Flanders has the ambition to develop a natural capital accounting system that will eventually comprise a broad set of ecosystem accounts and indicators that provide policy makers and the general public with insights on the relationship between the economic system and its ecological basis.

Land use change is one of the major drivers of biodiversity loss. Therefore it is important to monitor changes in land cover and land use. Especially the forest cover and the sur-

face of wetlands is high on the policy agenda. Three other research subjects are currently also on the policy agenda in the context of NCA. The first relates to climate, the second to health and the third is using NCA as a basis for monitoring the SDGs and as a beyond GDP indicator. The first two will be explained in more detail in the following text.

For climate related subjects, there is demand for information on:

-  Water availability for consumption, agriculture, industry, navigation and ecosystems and adaptation to water shortage. To this end a 'water balance for Flanders', which links and compares the availability or supply of surface and soil water in Flanders on the one hand and its use on the other hand, should be constructed. Criteria or limit values need to be defined to ensure water use is sustainable in the long run.
-  Water infiltration and storage capacity as a climate change adaptation measure against floods.
-  Carbon storage in soils and biomass as a climate change mitigation measure. To this end a 'carbon monitor' should be constructed, which could have several applications: LULUCF reporting, monitoring the sustainable use of agricultural land,...
-  Green and blue space for climate regulation in urban areas

For health-related aspects of natural capital there is demand for information on green space as an asset for stimulating people's physical and mental health and well-being, as well as on air purification in urban areas. To this end, a 'green standard' should be constructed that sets targets for the minimal availability of (amount of / distance to) green space in urban areas, as well as a 'monitor for assessing the ecosystem services delivery in urban areas' and a 'monitor for assessing the use of green space'.

# Pilot accounts under development

## Summary table of accounts

Account		Ecosystem Types /Ecosystem Services	Link to research
Accounts for ecosystem assets	Ecosystem extent account	All ecosystems*	Van Reeth et al., 2020
	Ecosystem condition account	Flowing aquatic ecosystems (rivers) and forests	
	Ecosystem monetary asset account		
Accounts for ecosystem services	Ecosystem services supply and use table - physical terms	Wood production in forests*	De Nocker et al., 2020
		Carbon storage in above ground biomass in forests*	
		Water availability*	
		Health benefits of green and blue areas in the living environment*	
		Soil erosion	
	Ecosystem services supply and use table - monetary terms	Wood production in forests*	De Nocker et al., 2020
		Carbon storage in above ground biomass in forests*	
		Water availability*	
		Health benefits of green and blue areas in the living environment*	
Thematic accounts		Biodiversity	

Scale	State of development
<b>National</b>	Finished
Regional	Ongoing
Local	None ongoing or published
*Highlighted in the fact sheet	

## Summary overview of highlight accounting projects

### Ecosystem services supply and use accounts pilot project

#### Scale

Flanders

#### Involved and funding partners

VITO and INBO (within the Horizon 2020 MAIA project) and SF (within the EUROSTAT 2019 project)

Co-Funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare.

#### (Policy) Goal of the study

Pilot project for NCA in Flanders. It should provide more insights into the way in which NCA can be developed within Flanders in order to produce accepted and reliable statistics showing the importance of natural capital for society. Learning experiences from abroad are included in the development of this assignment.

#### Ecosystems under study

Terrestrial ecosystems and inland freshwater ecosystems

#### ES/thematic account under study

– Wood production (by forests), physical and monetary terms

– Carbon storage in above ground biomass (by forests), physical and monetary terms;

– Water availability, physical and monetary terms;

– Health benefits of green and blue areas in the living environment, physical and monetary terms;

– Erosion control, physical terms;

#### Methods and data used for the study (if relevant indicators used)

The wood production account builds on national data, economic statistics on the forestry sector, supplemented with data from surveys. Starting from the total growth (in volume) and the total economic value of the forestry sector, the share of added value that is generated by the forest ecosystem in Flanders is identified (resource-rent approach). For missing data, European averages are used.

Carbon storage in biomass: The approach is in line with the method and underlying data for reporting for greenhouse gases (LULUCF) (types of land use and vegetation and key figures for carbon storage (in tonnes C.ha.year). Coastal habitats (saline wetlands) are also included. A fixed cost per ton CO<sub>2</sub> for Europe is used. This price is derived from market prices from Emission Trading Schemes (ETS) (30 € per ton CO<sub>2</sub>).

Water availability: The total service is the amount of drinking water that

is extracted (m<sup>3</sup> / year). For Flanders the method for pumping up phreatic drinking water is most relevant. The infiltrated water by the ecosystems (groundwater recharge, modelled with WetSpa model) is allocated in a simplified way to the water extraction areas. To this end, the pumped volumes per water extraction (m<sup>3</sup> / year) are evenly distributed over the water extraction areas that can be linked to that particular extraction (m<sup>3</sup>.ha.year). For the monetary account we use the resource rent method.

In addition to this a pilot account was set up to monitor the health benefits of green and blue areas in the living environment. For the physical accounts, dose-response relations between prevalence of certain diseases and share of green in the proximity of the house (up to 3 km), generic data on morbidity and mortality and number of inhabitants were used. For the monetary account a cost indicator per disease or mortality is used.

#### Link to the research/reference

Pilot account conceptualisation and development (De Nocker et al. 2020).

Pilot account evaluation by a divers group of stakeholders and suggestions for next steps to take (Jocque et al. 2022a).

#### Approximate date of final results

Published december 2020.

## Nature Report 2020: facts and figures for a new biodiversity policy

### Scale

Flanders.

### Involved and funding partners

INBO (within INBO's nature reporting task and the Horizon 2020 MAIA project).

### (Policy) Goal of the study

Assessment of the state and trend of biodiversity in Flanders, studying amongst others the effect of land use changes.

### Ecosystems under study

All ecosystems.

### ES/thematic account under study

Ecosystem extent account.

### Methods and data used for the study (if relevant indicators used)

This extensive report contains a chapter on land use change as a pressure on biodiversity, ecosystems and ecosystem services. This chapter is based on the ecosystem extent account for which the methodology is described below.

The ecosystem extent account for Flanders describes the state and trend for the MAES EU ecosystem types. This has been done for two sets of data, using (1) the best available spatially explicit data (see below) for Flanders combined in the Landgebruiksbestand 2013 and 2016 and (2) Corine Land Cover data for 1990 and 2018. Strengths and weaknesses of the two sources of land use and cover data have been assessed. The resolution of Corine Land Cover data is insufficient for a region like Flanders with a wide variety of land uses on a small surface area.

The Landgebruiksbestand combines the best available set of spatially explicit information (GIS-layers and other (spatial) data sources). This includes data from administrative databases, satellite imagery, aerial orthophotos and field recordings. Some key layers are the Biological Valuation Map (BWK), the Green Map (differentiating between 'agriculture', 'low green', 'high green' and 'not green' areas on a 1 m x 1 m grid), Agriculture use parcels (indicating what crops have been grown on a specific plot of land in a given year) and Cadastral map (CADMAP).

### Link to the research/reference

Land use changes in the Nature report as a base for the Flanders extent account (Van Reeth et al. 2020).

Identification and evaluation of possible improvements for the Flanders extent account (Jocque et al. 2022b).

### Approximate date of final results

Published december 2020.

## Knowledge gaps and difficulties for developing natural capital accounts

*Based on MAIA D3.2 (3.6); D5.1 (Annex 1 section 5e and 6d)*

Identified challenges with the data in Flanders concern carbon storage in biomass; the health effects of green space; functional biodiversity and its contribution to the supply of ecosystem services as well as the accuracy of the base layers of the land use/land cover map. Moreover the relevant data, knowledge, skills, resources are scattered across different entities, this impedes building appropriate ES models.

There is a wide diversity of data, which has been gathered with different methods and models. This data is not always freely available or is not always suited for accounting purposes because of quality or accuracy issues. Moreover, not all data needs have been identified yet. The already identified data gaps concern wood production, carbon storage in biomass; water availability; the health effects of green space; functional biodiversity and its contribution to the supply of ecosystem services and a detailed land use/land cover map. These data gaps lead to a lack of knowledge on some ES which impedes building appropriate ES models. Some of the issues are expanded upon here.

**Wood production:** the data used is only updated every 10 year. Regular monitoring of wood streams is lacking in Flanders. Attention must be given to other ecosystems than forests (hedges, gardens...) as different sources suggest that they can be a large source of wood.

**Carbon storage in biomass:** the data used for LULUCF are very different from the data used for the other accounts (land use and land use changes are quantified differently). Moreover, some data is still missing and needs to be updated.

**Water availability:** the models are driven by different parameters per ecosystem-type that are expert driven estimates. These need to be further improved and standardised by real time measurements. Also on the water use data are lacking e.g. water use in the agricultural sector and rain- and ground-water use in the households.

**Health benefits by the proximity of green-blue areas:** there is a lack of knowledge about the effect on health linked to the quality of the green-blue areas (e.g. accessibility, design, size...). Also knowledge is lacking to estimate the health benefits in other surroundings than the living environment (e.g. school, work environment).

**Land use/ land cover map:** a validation of the reliability of the Flemish land use/land cover data revealed relatively substantial problems with the accuracy of some base layers. As a consequence the practical usefulness of the data for ecosystem accounting purposes as well as policy and management applications thereof is somehow limited.





## Support needs for developing natural capital accounts

Based on MAIA D3.2 (3.6); D5.1 (Annex 1 section 7)

In Flanders several explorative ecosystem accounts are developed, but a long way towards functional accounts applied for policy in the whole of Belgium remains. There is a large need for capacity building in various aspects of ecosystem accounting, including the science-policy-practice interface. Considering the upcoming European engagement towards ecosystem accounting, investment in people in Flanders and Belgium is quintessential to further the development. Exchange of experience between MAIA partners and professional communication material will be valuable.

Several pilot initiatives have resulted in pilot ecosystem accounts for Flanders, exploring the reach of available data and visualising the possibilities. A relatively small core group of contributors manifested these first exploits. However, to efficiently tackle the multi-dimensions of a long list of ecosystem accounts regularly updated and applied in policy and decision making requires the involvement of many stakeholders and an interdisciplinary team of dedicated experts.

In Flanders and Belgium, there is an urgent need for the assembly of such a team to take care of upcoming demands and capacity building to fill in expertise gaps. More expertise is needed on science-policy-practice interface. More specifically, with regards to the following issues: how to stimulate more evidence-based decision making alongside improving the evidence base; how to merge ecosystem accounting with ongoing accounting, statistics and monitoring initiatives; how to offer a convincing added value and on how to communicate about trends in our natural capital given uncertainties that are often bigger than the changes in our natural capital?

In order to overcome difficulties and close gaps, more intensive (more frequent and in-depth) exchange of experiences between partners with respect to approaches and methods, policy applications/use of results, communication of results, dealing with uncertainties,... should be organised. This is done both actively (via webinars) and passively (via exchange of in-depth reports).

## Involved partners and stakeholders

Based on MAIA D5.1 (Annex 1 section 5d);  
European NCA stakeholder day

Government/ Ministry of Agriculture	Research	Private sector or NGO
Statistics Flanders (SF)	Research Institute for Nature and Forest (INBO)	Selected experts from consultancy
Agency for Nature and Forest (ANB)	Research Institute for Agriculture, Fisheries and Food (ILVO)	Selected experts from NGOs
Flemish Environment Agency (VMM)	Flanders Hydraulics Research	
Flemish Planning Bureau for the Environment and Spatial Development (VPO)	Flemish Institute for Technological Research (VITO)	
Flemish Land Agency (VLM)	Selected experts at the Universities of Antwerp, Brussels, Ghent, Hasselt and Leuven	
Department for Spatial development, environment, energy, climate, green economy and animal welfare		
Department of Agriculture and Fisheries		
Federal Planning Bureau		

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