MAIA
Mapping and Assessment for Integrated ecosystem Accounting

Pilot ecosystem core accounts report

Deliverable 3.3

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PREFACE

The Horizon 2020 MAIA (Mapping and Assessment for Integrated ecosystem Accounting) Coordination and Support Action aims to mainstream natural capital and ecosystem accounting (NCA) in the EU Member States (MS). MAIA uses the System of Environmental-Economic Accounting – Ecosystem Accounting (SEEA-EA) as the conceptual and methodological basis for NCA. The SEEA-EA is a system for NCA developed under auspices of the UN Statistical Commission and provides a consistent framework for analysing and storing information on ecosystem assets and flows of ecosystem services. In MAIA, a flexible approach is followed, allowing for adaptation of the SEEA-EA framework to the conditions of the individual EU MS. The MAIA project ensures mainstreaming of NCA within the 10 participating countries (nine in the EU and Norway).

The overall objective of WP3 is to ensure mainstreaming of NCA (based on the SEEA-EA guidelines) and alignment with identified policy needs (from MAIA WP2) within the 10 MS that are participating in MAIA, on the basis of existing and newly initiated pilot account projects in each participating country. The basic rationale behind WP3 is that testing and mainstreaming NCA approaches are most effectively done on the basis of concrete accounts, where available methods (principally, but not limited to the SEEA-EA guidelines and the central framework) are tested, applied and evaluated jointly by a range of relevant partners in each participating MS.

The previous work on identifying the state-of-the-art of Natural Capital and Ecosystem Accounting in the participating MS and generating a holistic overview on the progress (including past, present and future activities) of the Natural Capital Accounting was published in the MAIA Deliverables D3.1 and D3.2, respectively. Besides, in order to communicate and disseminate the valuable information on the NCA progress in the MAIA MS, so called “Country Fact Sheets” have been developed and published open-access on the MAIA website. In order to facilitate the mainstreaming of the natural capital and ecosystem accounting in the countries participating in MAIA, the individual national efforts need to be inspected in more detail. Thereby, the aim was in particular to identify the actual contribution of the MAIA project (i.e. coordination and support) on the generation of the various accounts. In this context, in this Deliverable (D3.3), the focus lies on the (through Task 3.3 defined) MAIA-supported accounts. Aiming at mainstreaming the NCA progress in the participating countries, we focus on the specifics of these MAIA-supported accounts, identifying aspects such as the input datasets, applied methodologies, utilized software as well the state of implementation.

SUMMARY

The overall objective of WP3 is to ensure mainstreaming of NCA (based on the SEEA-EA guidelines) and alignment with identified policy needs (from MAIA WP2) within the MAIA MS. The foundation for that undertaking are the existing and newly initiated pilot account projects in each participating MS. In order to facilitate the mainstreaming of the natural capital and ecosystem accounting in the countries, the individual national efforts have been inspected in more detail. Thereby, the aim was in particular to identify the actual contribution of the MAIA project (i.e. coordination and support) on the generation of the accounts and the overall NCA progress in the MS as well as the identification of account specifics. In order to obtain the relevant information for each MS, an overview table on all existing ecosystem accounts was generated. Therefore, the Country Fact Sheets, the created WP3 NCA database, the results of the surveys/ queries in spring and summer 2021 as well as presentation slides from MAIA events and the European Ecosystem Services Partnership European Conference ESP2021 were harnessed as sources. The tables allow for the inclusion of different aspects with reference to potential MAIA contributions (such as funding, personalized support/consultancy and/or support through diverse MAIA activities - e.g. webinars and workshops). The information on the MAIA contribution was collected/filled in by the corresponding country-specific MAIA partners. Aiming at mainstreaming the NCA progress in the participating countries, we focused on the specifics of these MAIA-supported core accounts, identifying aspects such as the input datasets, applied methodologies, utilized software as well the state of implementation. In order to guarantee a comprehensive and consistent reporting on these accounts, accounting tables have been generated and filled for all respective ecosystem extent, ecosystem condition, ecosystem services (in biophysical and monetary terms) and ecosystem asset accounts. Thus, in this Deliverable (D3.3) we provide a general overview on the collected information with regard NCA implementation in each MAIA MS as well as very specific and technical reporting on the identified MAIA-supported core accounts.

1. INTRODUCTION

In this Deliverable (D3.3), we focus on the (through Task 3.3 defined) “MAIA-supported accounts”. We will report specifically on these accounts. Aiming at mainstreaming the NCA progress in the participating countries, we will focus onto account specifics, such as the input datasets, applied methodologies, utilized software, state of implementation and outputs. In the following section, insights will be given on the underlying methods and the utilized data (Chapter 2). We outline the whole process including the progression of the data collection and elaboration. Afterwards we give a general overview on the NCA progress in the MAIA countries, differentiating between MAIA-supported and MAIA-independent accounts (Chapter 3.1), before we focus on the MS specific reports (Chapter 3.2). For each MAIA MS we briefly introduce the overall NCA progress followed by a specific and technical reporting on the identified MAIA-supported accounts. For each of these MAIA-supported accounts, detailed tables have been included in the Annex (Chapter 6).

2. METHODS AND DATA

This Deliverable is based upon a variety of activities from WP3. It builds on the various past engagements and deliverables as well as current activities. Based on the analysis and outcomes of the state-of-the-art of NCA implementation assessment done for MAIA Deliverable D3.1 a diverse level of implementation of the five SEEA-EA core accounts were observed. The interviews and follow-up exchanges, which were performed in the former reporting period (01/-04/2020), were evaluated and the results were interpreted in order to validate the former NCA data from Task 3.1 and to generate a holistic overview on the progress of the Natural Capital Accounting in each MAIA MS. Subsequently, the information was processed and published in the form of Deliverable 3.2. In order to ensure the actuality of the collected information in the MAIA countries, several follow up activities have been executed. Starting in spring last year (04/ - 05/2021), when an online survey was send out to all MAIA countries. Within the survey, the focus was on (i) a comparison between the originally proposed accounts and the actual NCA progress and (ii) updates with regard to the NCA progress in each MS. Whenever mismatches between the originally proposed accounts and actually on-going NCA progress were identified, an explanation was inquired for said differences from the MAIA countries. Also, it was inquired whether or not the countries were still planning on implementing these accounts in the future. The results of the

survey were processed and a presentation on the NCA progress in the MAIA countries was held during the MAIA workshop “Advancing Ecosystem Accounting in Europe” on 11th May 2021. In addition to that, an additional email-based query on updates and changes in the MS-specific NCA progress was send out in September 2021.

In a next step for each MS, an overview table on all ecosystem accounts was generated. The Country Fact Sheets, the WP NCA database, the results of the surveys/ queries in spring and summer as well as presentation slides from MAIA events and the Ecosystem Services Partnership European Conference ESP2021 were considered as sources for the generation of the tables. In the tables, the accounts were listed in individual rows. This structure allows for the inclusion of different aspect with reference to potential MAIA contribution. The following different aspects of MAIA contribution have been inquired:

- Did you receive funding from the MAIA project for the creation of this account?
- Did you receive personalized support from the MAIA project for the creation of this account?
- Did this account benefit from two or more MAIA project activities (such as webinars, workshops or the MAIA network)?
- Did this account benefit from only one MAIA project activity (such as webinars, workshops or the MAIA network)?

For each of these questions, respective tick boxes allow for the answers “yes” and “no”. In order to ensure a timely and precise collection of the information required, the tables were send out to the corresponding MS-specific MAIA partners. They were asked to take the lead in contacting all relevant parties in their country (if required) and in collecting all the necessary information to answer the questions for each account in their country. In addition to the MAIA contribution, the shared excel document allowed for the correction and addition of further relevant accounts. In case a new account was added to the list, the MAIA contribution had to be identified in the form of the four questions listed above, as well. In December 2021, the results from the query were gathered, processed and integrated into the WP3 NCA database and reported in the form of a Milestone (M3.4). The newly gathered information were elaborated in order to identify the general MAIA contribution on the NCA progress in all MAIA countries, as well as to identify the MS specific NCA progress. Thereby, we differentiated between the specifics of the MAIA contribution. Based upon the newly gathered information, the accounts were classified into *MAIA-supported accounts* and *MAIA-independent accounts*, based upon the degree of MAIA contribution. All of the identified MAIA-supported accounts were then the focus of our subsequent work. Template tables for reporting on individual ecosystem core accounts were developed by the WP3

leads team. For each ecosystem core account type, thus, ecosystem extent, ecosystem condition, ecosystem services (in biophysical and monetary terms) as well as ecosystem asset account a specific accounting table template was created. We created an individual accounting table for each identified MAIA-supported account and used the extensive WP3 NCA database to pre-fill these accounting tables with all available information. Afterwards, the tables were send out to the corresponding MS-specific MAIA partners. They were asked to take the lead in contacting all relevant parties in their country (if required) and in (i) checking all pre-filled information, as well as, (ii) providing the missing information for each account/ accounting table. Of course, again, they were also encouraged to report any corrections and/or additions of further relevant accounts. In addition to that, each MAIA MS was asked to hold a country presentation during the MAIA consortium meeting and workshop in Madrid (from 28th – 30th of April, 2022). Within the country presentation, they were asked to (i) provide a general overview on the contribution of the MAIA project on the NCA progress in their country and (ii) give a detailed report on one specific MAIA-supported account. The WP3 leads team selected the accounts for that second part of the presentation beforehand in order to ensure a diverse programme where reports on each core account type would be present. The schedule allowed for a Q&A session after each country presentation in order to foster some additional knowledge exchange and to explore potential future networking opportunities. In addition the MAIA consortium meeting and workshops were used in order to get actively involved with the MAIA MS partners and discuss any unresolved questions with regard to the tasks of WP3. Based upon all of these activities this Deliverable has been composed by the WP3 leads team. In order to ensure the actuality and accuracy of the Deliverable, the final draft version has been shared with and corrected by all MAIA partners.

3. RESULTS

In the following section, the overall characteristics of the NCA implementation in MAIA MS will be introduced. Afterwards, insights into the NCA progress and specifics will be provided for each MAIA MS individually, whereby the focus lies on reporting on the MAIA-supported core accounts.

6.1. General characteristics of NCA implementation in MAIA countries

The overview table (Table 1) demonstrates that the WP3 activities of supporting and mainstreaming NCA activities based on the assessment of the state-of-the-art in the participating countries (MAIA Deliverables D3.1. and D3.2) was useful in order to create tailor-made solutions for each MS and the involved stakeholders. Generally, we can see a diverse NCA pattern throughout the MAIA countries. However, we can report that the MAIA project target to be involved in the development of at least one additional account per MS was met, as for each MAIA MS at least one MAIA-supported account can be identified. Most MAIA-supported accounts can be reported for the Ecosystem Extent Accounts, followed by the Ecosystem Condition and both Ecosystem Services Accounts. More detailed information will be provided in the following Chapters for each MAIA MS individually.

Table 1: Summary table of NCA progress per MS including an overview on contributions (support and coordination) of MAIA[1].

MAIA countries	Status of the account	Core accounts: Extent account	Condition account	Biophysical ecosystem services account	Monetary ecosystem services account	Ecosystem asset account
Belgium	Finished	MAIA-supported Account - national scale		MAIA-supported Account - national scale		
	On-going /planned		MAIA-supported Account - national scale			
Bulgaria	Finished	MAIA-independent Account -national scale	MAIA-independent Account -national scale			
	On-going /planned	MAIA-supported Account - national scale		MAIA-supported Account – sub-national scale		
Czech Republic	Finished	MAIA-supported Account - national scale	MAIA-independent Account -national scale			MAIA-independent Account -national scale
	On-going /planned			MAIA-supported Account - national scale		
Finland	Finished		MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale
	On-going /planned	MAIA-supported Account - national scale	MAIA-supported Account - national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale
France	Finished				MAIA-independent Account – sub-national scale	MAIA-independent Account -national scale
	On-going /planned	MAIA-supported Account - national scale	MAIA-supported Account - national scale			MAIA-supported Account - national scale
Germany	Finished	MAIA-independent Account -national scale	MAIA-supported Account - national scale	MAIA-supported Account - national scale	MAIA-supported Account - national scale	MAIA-independent Account -national scale
	On-going /planned	MAIA-supported Account - national scale	MAIA-supported Account - national scale			MAIA-supported Account - national scale
Greece	Finished	MAIA-supported Account - national scale				MAIA-supported Account - national scale
	On-going /planned		MAIA-supported Account - national scale	MAIA-supported Account - national scale	MAIA-supported Account - national scale	
Netherlands	Finished	MAIA-independent Account -national scale	MAIA-independent Account -national scale	MAIA-supported Account - national scale		MAIA-independent Account -national scale
	On-going /planned					
Norway	Finished					MAIA-supported Account - national scale
	On-going /planned	MAIA-independent Account -national scale	MAIA-independent Account -national scale			
Spain	Finished	MAIA-supported Account - national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale	MAIA-independent Account – sub-national scale
	On-going /planned		MAIA-supported Account - national scale	MAIA-supported Account - national scale	MAIA-supported Account - national scale	

LEGEND

MAIA contribution

	MAIA-supported Account - national scale
	MAIA-independent Account -national scale

Largest spatial scale achieved

	MAIA-supported Account – sub-national scale
	MAIA-independent Account – sub-national scale

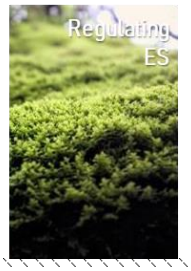
[1] It needs to be noted that this table only provides information on the ecosystem core accounts. Some MAIA MS have invested extensive work in the generation of thematic accounts (e.g. Norway on urban accounts).

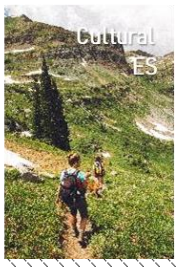
6.2. Country-specific reporting on ecosystem core accounts

In the following section, the country specific NCA progress is broadly described for each MAIA member state. As introduction for each MS the general NCA progress is visualized as Box. In the box, both MAIA-supported and MAIA-independent account processes for core and thematic accounts are visualized. Subsequently, the MAIA-supported NCA efforts on the ecosystem core accounts are highlighted and for each MAIA-supported ecosystem core account a detailed report is provided.

6.2.1. Belgium

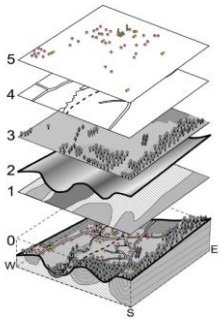
- Accounting on regional scale;
- Ecosystem extent account finalized;
- ES Accounts – both in physical and monetary terms – finalized for some provisioning, regulating and cultural services;
- Ecosystem condition and thematic accounts ongoing;
- Ecosystem asset account not compiled, yet.





Box 1: Overview of NCA progress in Belgium (including MAIA-supported and MAIA-independent efforts).

Belgium has been working on the development of regional ecosystem extent, condition, biophysical and monetary service accounts for Flanders (the Northern region of Belgium). All of these accounts have been funded by the MAIA project. With the exception of the condition account, which will focus on water bodies and forest ecosystems (Annex 6.1.2), all of the accounts have been completed. Besides being funded by the MAIA project, the accounts have benefited through one or more MAIA activities each.



	Urban	Field	Grassland	Forest	Heathland	Dunes	Swamp	Freshwater	Esuarium	Marine
Ecosystem stock 2013	4517	4708	2431	1479	96	42	21	269	56	3467
Ecosystem stock 2016	4445	4679	2551	1479	87	41	20	260	55	3467
reduction	-68	-282	-406	-74	-10	-1	-3	-9	0	0
expansion	140	311	285	75	19	1	3	18	1	0
Netto change	72	29	-120	1	9	0	0	9	0	0
% netto change	1.60%	0.60%	-4.70%	0.00%	10.30%	0.80%	2.20%	3.50%	0.70%	0.00%
Total change	208	593	691	149	28	2	6	27	1	0
% total change	4.70%	12.70%	27.10%	10.10%	32.30%	4.10%	28.40%	10.30%	2.30%	0.00%
Stabile stock	4238	4087	1860	1330	59	40	15	233	54	3467
% stabile stock	95.30%	87.30%	72.90%	89.90%	67.70%	95.90%	71.60%	89.70%	97.70%	100.00%

Figure 1: Exemplary ecosystem extent accounting table

For the ecosystem extent account, for example, ecosystem or land use classes have been generated as a hybrid between biophysical categories (land cover) and functional categories (land use). The order of stacking of layers has an influence on the final surfaces in each class (Figure 1, left). The modified land use map has been reduced to an ecosystem map with 10 classes following the Maes typology. In Figure 1 (right) the resulting accounting table for the ecosystem extent in 2013 and 2016 is presented.

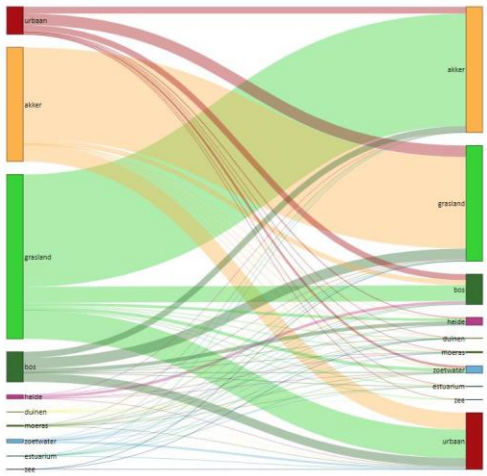


Figure 2: Flow of changes in ecosystem extent account.

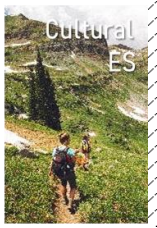
For that time period, the most important changes in absolute terms are the decrease in grassland and the expansion of urban and built-up areas (houses with gardens) and arable land. In addition to that a high relative change was identified for heather and inland dunes (10.3%) and freshwater ecosystems (3.5%). Nevertheless, it needs to be noted that throughout the years the mapping method has been improved as well as that one of the input layers, the biological valuation map, is not fully updated every three years. It should be highlighted that for this specific account also a thorough validation has been executed. In Annex 6.1.1 the specifics on the ecosystem extent account, including details on the validation, in Flanders are synthesized. Ecosystem service accounts in biophysical as well as monetary terms have been generated for wood production (focusing on forest ecosystems), carbon storage in biomass in forest and coastal ecosystems, water availability

and health benefits of green and blue areas in the living environment (Annex 6.1.3 and 6.1.4). The latter two include all (terrestrial) ecosystems in the accounting process.

6.2.2. Bulgaria

- National ecosystem extent account finalized; ongoing improvement & forest accounting;
- Compilation of ecosystem condition account finalized;
- Compilation of ES Accounts –in physical terms – for some regulating and cultural services (ongoing);
- Compilation of diverse thematic accounts;

- Monetary ES and ecosystem asset accounts not compiled, yet.



Box 2: Overview of NCA progress in Bulgaria (including MAIA-supported and MAIA-independent efforts).

In Bulgaria, the ecosystem extent and condition accounts have been generated on the national scale. The initial ecosystem extent and the ecosystem condition accounts have been developed without any financial and/or personalized support from the MAIA project. However, the revised version of the extent account, the ecosystem extent account which focuses on forests and woodlands and one of the biophysical ecosystem service accounts, which are under development right now, are funded by the MAIA project. All of these accounts benefitted from various MAIA activities, the forest ecosystem extent and the ecosystem service account also received personalized support from the MAIA project.

The national ecosystem extent account on all ecosystems (Annex 6.2.1), which is currently under development, covers the years 2000, 2006, 2012 and 2018 and has a resolution of 25 ha. For the terrestrial ecosystems the EU MAES ecosystem type classification level 2 (linked to CLC class 3) and for the marine ecosystems the EUNIS classification level 3 have been applied. The account follows the SEEA-EA guidelines.

For the forest ecosystem extent account, the forest and woodland ecosystem types are delineated on a national GRID (1x1 km^2). The objective of that project is to develop a

methodology and to describe the potential data sources suitable for the calculation of the extent of forest, woodland and other woodland ecosystems on national level and their changes over time. For that account (Annex 6.2.1), net changes, additions and reductions of the extent are calculated in every grid cell for Corine Landcover data (2000-2018) and State Cadastre data (2019, 2020 and 2021). In Table 2, the changes in the ecosystem extent of the considered forest and woodland ecosystems are exemplarily presented. Also, specific extent accounting activities are executed in the Natura 2000 network and in the Riparian zones.

Table 2: Changes in the forest and woodland ecosystems for the period 2000-2018

Tier 1	Tier 2	Area 2000 (km^2)	Area 2006 (km^2)	Area 2012 (km^2)	Area 2018 (km2)	Net change 2000-2018 (km2)	Net change 2000-2018 (%)
Forest and woodland	Broad-leaved forest	23890	23381	23337	23746	-144	-0,6%
	Coniferous forest	5466	5450	5415	5408	-58	-1,1%
	Mixed forest	6192	6521	6497	6534	342	5,5%
	Transitional woodland/shrub	7494	7306	7400	7777	283	3,8%
	Total forest and woodland	43042	42657	42650	43465	423	1,0%

The other main objective of the forest accounting activities is to present methods for estimating provisioning ecosystem services from forests and woodland in particular wood supply (timber harvest) and game hunting meat. During the project several monetary calculation for forest provisioning services were tested. The forest output (in terms of timber as input for economic activities) is part of national accounts production boundary. Nevertheless, there is a need to distinguish which part of this ecosystem service flow is attributed solely to natural forest ecosystems, as this information is invisible in SNA.

The main sources of quantitative information about forest and woodland in Bulgaria are: (i) the Wooded area report and (ii) the Forest Management Projects (FMP). The Wooded area report includes the distribution of the area by land types – forested land, bare land for afforestation and non-productive bare land (RF1). The Forest Management Projects include forest stand description, which is attributive information base, lists and maps. The

descriptions are made of each subdepartment, each forest stand or bare forest area. Forest management projects are updated every 10 years, after which the unit goes through inventory and a new plan is prepared. The attributive tables of the forest data include information for altitude, slope, soil, rock, soil richness, habitat, type of subdepartment, forest type, tree species type and composition, age, volume of growing stock in m3 and usage in m3. The total standing volume of timber in forest and woodland ecosystems is 580 803 358 m3 from which the share of broad-leaved (deciduous) forests is 56 %, and of coniferous forests is 43 % (see Table 3).

Table 3: Timber volume and usage in m3 from FMP for the 10 years period of action

Type of forest and woodland	Timber volume (standing biomass) in m^3 according to FMP	Use of timber in m^3 according to FMP	% of the envisaged usage from standing timber volume	Polygon number
Broad-leaved forest	323 854 962	42 988 626	13 %	746 476
Coniferous forest	251 455 936	25 762 281	10 %	360 181
Mixed forests	1 899 325	178 980	9 %	960
not classified type of forest	3 593 135	332 289	9 %	1 910

For the monetary valuation of the forest ecosystem services timber provision and game meat, market prices have been applied.

The timber provisioning service has been estimated using the physical amount of timber removed and the respective average market prices of timber. In order to distribute timber ecosystems physical and monetary value on a map, the information from the logging permits about the annual physical quantities of timber harvest in m3 was used. The actual harvested timber amounts are aggregated by type (coniferous and deciduous) and by timber size (large, medium, small and wood) and linked to subdepartments by key id. The total standing volume of timber in forest and woodland ecosystems is 580 803 358 m3 from which the share of broad-leaved (deciduous) forests is 56 % and coniferous forests is 43 %.

The total harvested timber in m3 and national currency are allocated in every GRID cell for all years where there is harvest. The average producer prices by type (deciduous and coniferous) and size for 2018, 2019 and 2020 are taken from the Agricultural and Forestry Statistics in national currency (BGN) per m3. Only natural and coppice forests are included in the accounts. The forest plantations (artificial forests) consisting of white pine, black pine, fir plantations, spruce, mixed coniferous, non-local coniferous, castanea sativa, linden (tilia), fruit and nut trees, populous hybrid and other deciduous and not classified types of forests

are excluded from the accounts. The spatial distribution of the harvested timber in 2020 is presented in Figure 3.

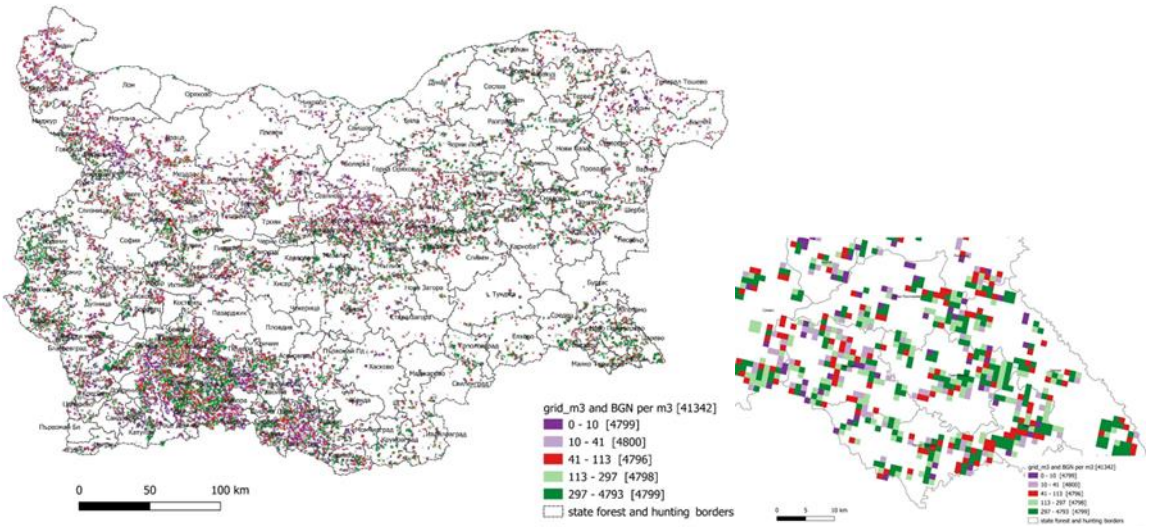


Figure 3: Map showing the harvested timber amounts in m3 in 2020 in national GRID cells 1x1 km2 (Map available for years 2018, 2019 and 2020).

For the second considered ecosystem service is providing meat from wild game (hereinafter game). Providing game (in sense of game meat) is considered as a provisioning ecosystem service whereas hunting is considered as a recreational activity under cultural ecosystem services. In Bulgaria, official hunting is permitted in the territory of the State Forest and State Hunting Enterprises, after paying a fee for issuing a hunting ticket. For the monetary valuation of the service, market prices were used and as final beneficiaries households were defined. For some exemplary results, see Table 4.

Table 4: Supply-use table for game meat provision 2019

ECOSYSTEM SERVICES SUPPLY TABLE FOR PROVISIONING SERVICE GAME MEAT (2019 year)

	Forest and woodland ecosystem
Ecosystem provisioning service	
Hunting – kg/year meat from game	200 402
Hunting – euro (€)/ year meat from game	181 701

ECOSYSTEM SERVICES USE TABLE FOR PROVISIONING SERVICE GAME MEAT (2019 year)

	Economic unit - Households
Ecosystem provisioning service	
Hunting – kg/year meat from game	200 402
Hunting – euro (€)/ year meat from game	181 701

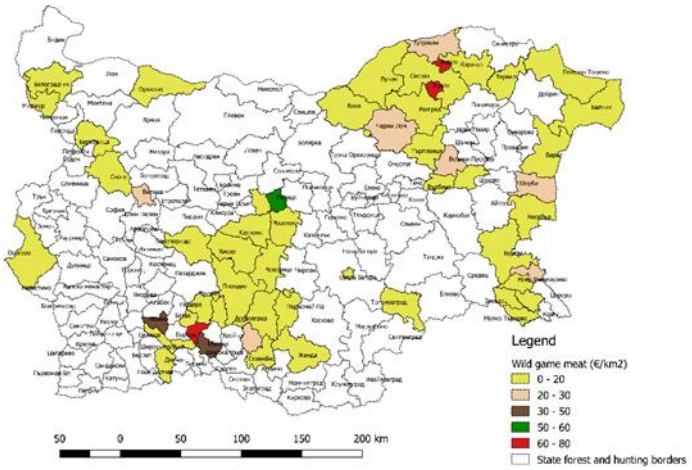


Figure 4: Wild game meat from forest and woodland in the territory of the state forest and hunting enterprises (€/km2) from 2017.

Furthermore, cadastral map layers (from Geodesy, Cartography and Cadaster Agency) have been included into the forest accounting database. The data cover the national territory and include information about buildings and immovable properties (cadastral parcels) allowing for further spatial assessments.

In addition to that, the ecosystem service account for flood regulation in biophysical terms (for details, see Annex 6.2.2) is implemented in two stages: In the 1st stage an account is generated for three case studies. This account will be completed by the end of the MAIA project. Afterwards, in the 2nd stage the flood regulation account will be generated at national scale.

Account type:	Urban thematic account
Funding partner(s):	NIGGG BAS
Other involved partner(s):	National Science Program "Environmental Protection and Reduction of Risks of Adverse Events and Natural Disasters", approved by the Resolution of the Council of Ministers No 577/17.08.2018 and supported by the Ministry of Education and Science (MES) of Bulgaria (Agreement No Д01-279/03.12.2021)
Status (planned/ ongoing/ done):	Ongoing
Spatial scale:	Municipal/ Regional

I. Focus on Local climate regulation: for the 1st time BG started monitoring the Cooling Effect of specific urban areas: Sofia municipality (2020) & Burgas city (2021).

II. Spatial unit, based on Disaggregation of the urban area in Local Climate Zones (LCZ, see Figure Box 1) (Stewart & Oke, 2009), recognized as accounting units by SEEA EEA (2021). Unit of Measure - T°C.

III. Approach: data collection and analysis of land surface temperature variations by Local Climate Zone (Dimitrov et al 2021; Venter, Krog and Barton, 2020; Marando et al., 2019).

IV. Application: in urban areas with v. diverse features and conditions:

A/ Sofia: capital city functions, incl. excellent landscaping traditions (1.3 mln.); B/ Burgas: mid-size city in direct contact with protected wetlands; seashore; industry/tourism/maritime trade and shipping functions.

V. Data acquisition instruments: A/ Remote sensing data from satellite platforms Landsat 8 - General mapping of the Urban heat island phenomenon; B/ Unmanned Aerial System for Thermal Photogrammetry with a self-calibrating sensor: - a sample stratified study of the magnitude of the Surface urban heat island effect (Albris platform, Sensefly).

Table Box 1: Results to support a pilot accounting table.

BURGAS CITY_LCZ		Buildings	Impervious	Vegetation	Average surface temperature, C
LCZ_3	Compact low-rise	19,96	23,77	21,42	21,5
LCZ_5	Open mid-rise	21,95	25,23	21,98	22,3
LCZ_6	Open low-rise	19,8	24,24	20,87	21,4
LCZ_8	Large low-rise	19	26	23,35	23,4
B	Scattered trees	23,78	29,49	23,36	23,6
D	Low plants	23,22	26,04	20,04	20,4
E	Bare rock or paved	22,26	25,46	21,68	22,9

VII. Cooling Effect Analysis:

(1) Temperature differences between green and gray infrastructure by types of Local Climate Zone; (2) Temperatures of the representative units (city park, suburban park, street landscaping, etc.); (3) Changes in the surface temperature in the buffer (200-400 m distance from a green element); (4) Geospatial statistical analyses.

Under development: Catalogue of the Intensity of the Surface Urban Heat Island (SUHI) for urban planning purposes. The goal: incorporate the above information in the respective urban planning geospatial units and thus, enable periodical data collection and fulfilment of the ‘time step’ accounting requirements.

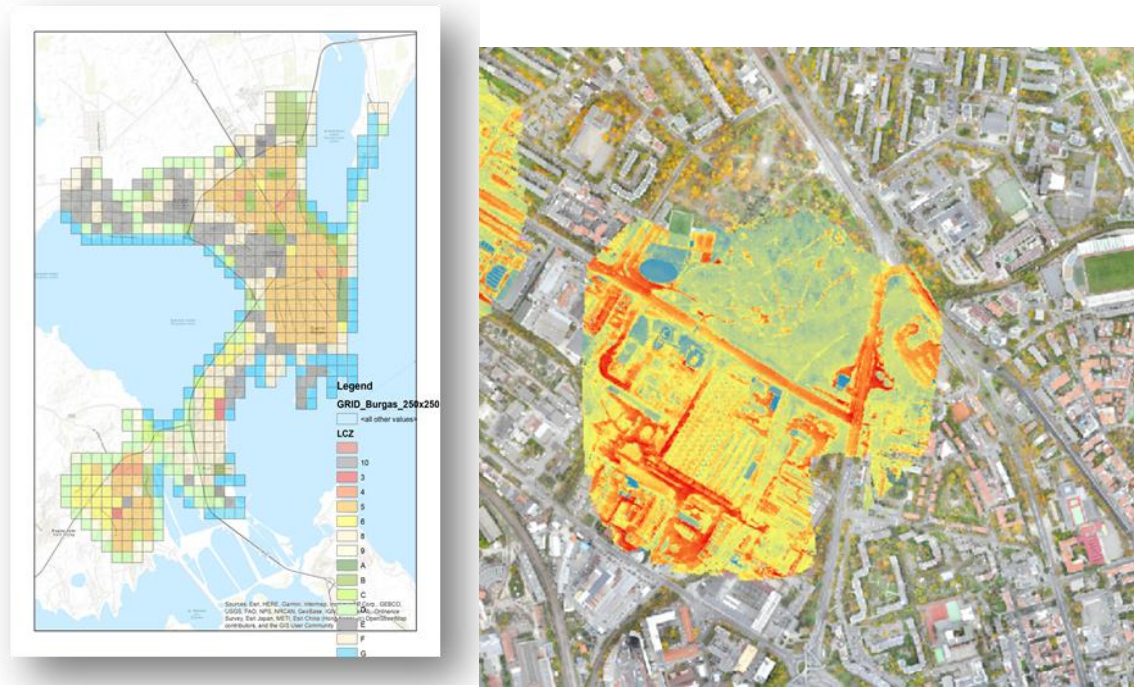


Figure Box 1: Disaggregation of the Burgas urban area in Local Climate Zones (left) and fragment from thermal imaging of the surface, Burgas, Sveta Troitsa area.

Box 3: Insights into thematic MAIA-supported accounting efforts (urban account) in Bulgaria.

Account type:	Carbon account for forest areas
Funding partner(s):	Bulgarian Academy of Sciences – NIGGG and FRI, National Statistical Institute of Bulgaria (NSI), MAIA project
Other involved partner(s):	Executive Environment agency (ExEA) by the Ministry of environment and waters
Status (planned/ ongoing/ done):	31.03.2022
Temporal coverage:	2005, 2015
Spatial scale:	Local, with spatial resolution 0.01-0.25 km² (Belovo Municipality)

The study area encompasses forest area of Belovo Municipality managed for commercial use as well as forest area within the boundaries of National Park Rila – protected area. The pilot account addresses the complexity of data availability in terms of spatially explicit data on forest resources, temporal coverage of the data, and its aggregation. To study the appropriateness of combining different data sources and information, two different methodological approaches for carbon stock and flow estimates in forest biomass were

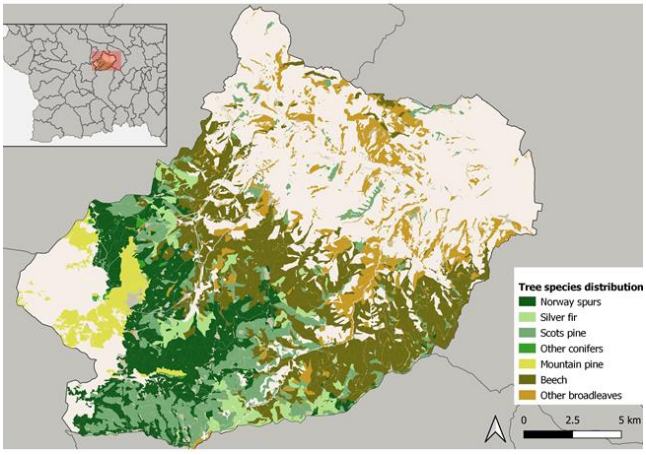
tested. Comparative analysis of both approaches was performed in terms of feasibility, accuracy, and technical implementation. Specific software/ model/ tool used are QGIS, Excel Spreadsheets and LOOKUP Tables.

Local specifics in forest inventory are considered and combined with the SEEA-EA guidelines. As indicators Carbon stock in aboveground biomass and Carbon stock in other pools are used. The data is aggregated by main tree species, age and yield class. Further aggregation is possible to match the extent of forest, woodland and other woodland ecosystems.

Initial datasets for carbon account in forests as climate regulation include one case study:

- Forest Management Plans
- LULUCF Inventory
- 1:25000 soil map data correlated to FAO classification

Some results are already published and one publication is under preparation:
https://naukazagorata.files.wordpress.com/2021/12/ng_2_2021-125-134.pdf



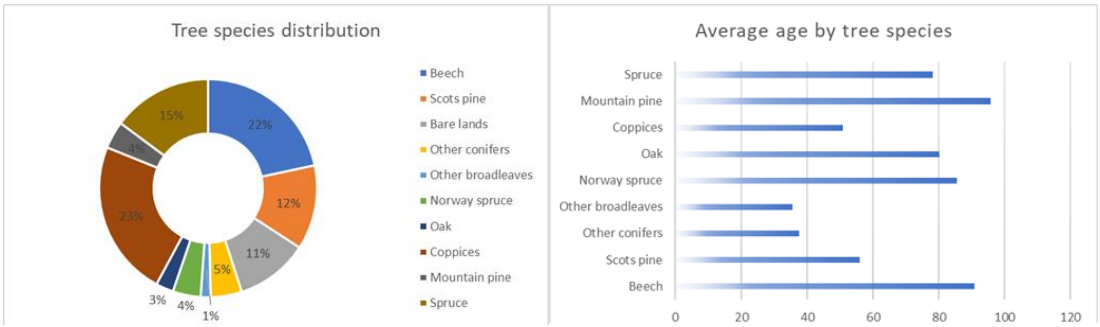


Figure Box 1: Exemplary results from forest inventory.

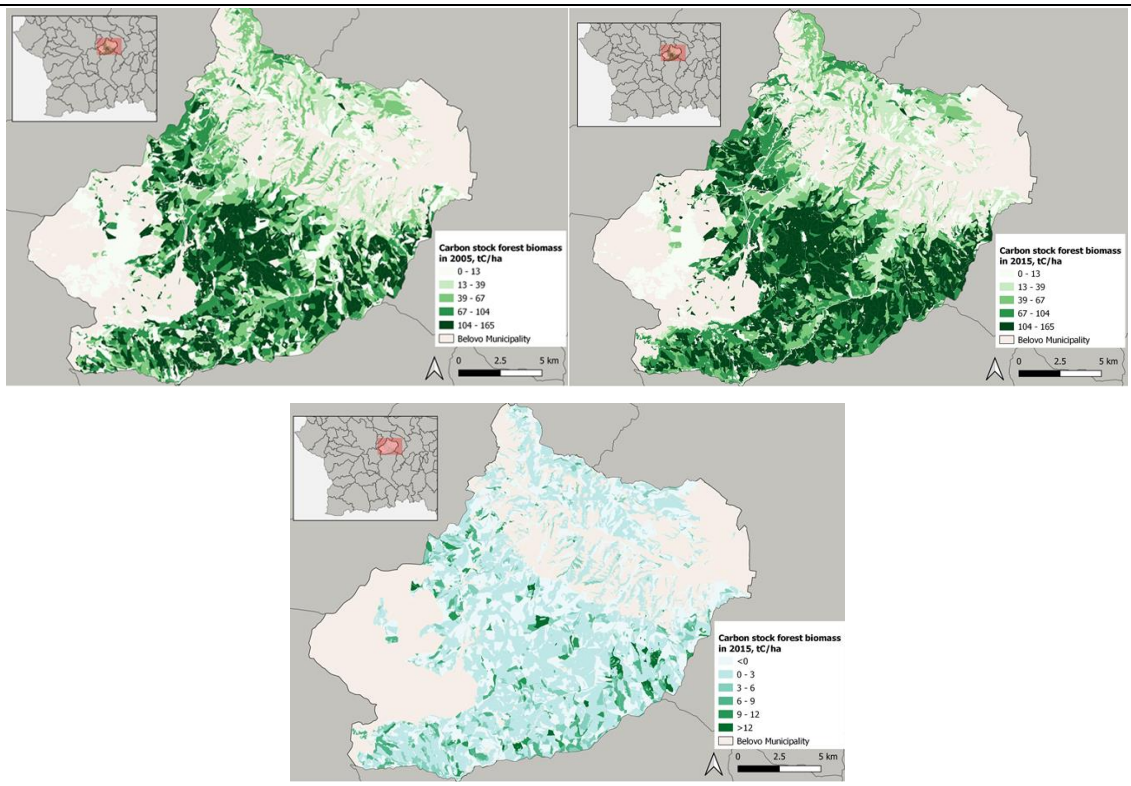


Figure Box 2: Exemplary results from the assessment of the carbon stock and flow estimates in forest biomass.

Box 4: Insights into thematic MAIA-supported accounting efforts (carbon account for forest areas) in Bulgaria.

6.2.3. Czech Republic

- Ecosystem extent account finalized;
- *Experimental* efforts with regard to both ecosystem condition and asset accounting;
- Compilation of ES Accounts – both in physical and monetary terms – for some regulating and cultural services (ongoing);

- Official ecosystem condition, asset & thematic accounts not compiled, yet.

Box 5: Overview of NCA progress in Czech Republic (including MAIA-supported and MAIA-independent efforts).

In the Czech Republic, the MAIA contribution in the NCA progress is substantial. The staff involved in the development of the finalized national ecosystem extent as well as several ongoing national ecosystem service accounts (including the biophysical and monetary ecosystem service account for carbon sequestration and water purification) have been funded by the MAIA project. In addition to that, the MAIA project provided personalized support for all ecosystem service accounts that are currently under development. Originally, the Czech extent accounts have been developed based on the methodology of Land and Ecosystem Accounting (LEAC) by the European Environment Agency. With the adoption of SEEA-EA framework, the extent account has been revised according to the accounting methodology of the statistical standard (Annex 6.3.1). The current version of the ecosystem extent account covers the years 2000, 2006, 2012 and 2018 (see changes of ecosystem extents in Figure 5).

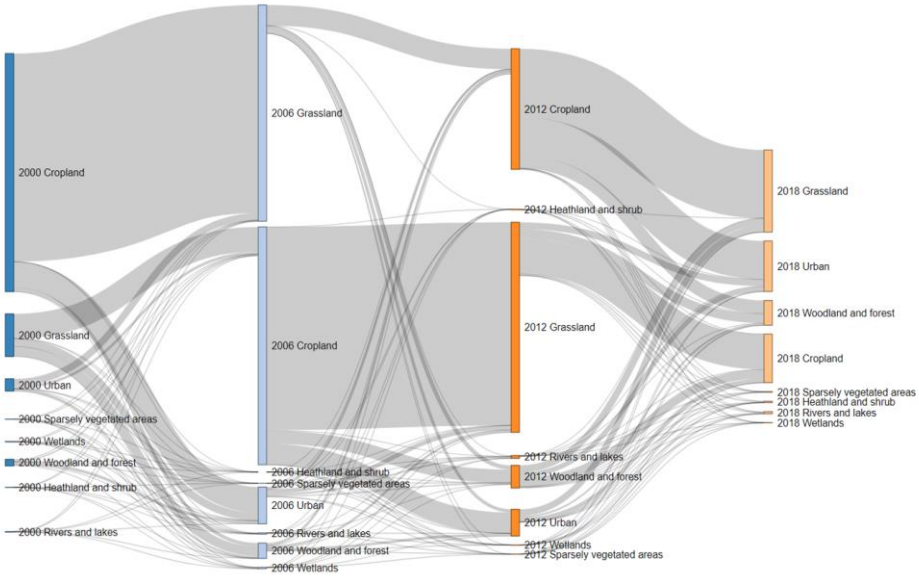


Figure 5: Diagram of ecosystem extent changes in the Czech Republic for 2000, 2006, 2012 and 2018.

The biophysical MAIA-supported ecosystem accounts that are currently under preparation in the context of the MAIA project cover the regulating ecosystem services water purification, carbon sequestration and water retention (Annex 6.3.2). In Table 5, some exemplary results from the national water filtration account are presented, in which a total of 274 million m³ purified groundwater per year can be identified. In Figure 6, the spatial distribution of the carbon storage in forest trees as a component of carbon accounts based on the National forest inventory (left); and the mean annual water infiltration (right) as a component of water retention account are presented.

Table 5: Biophysical supply table for the ecosystem service water filtration in the Czech Republic.

ECOSYSTEM SUPPLY TABLE

		Ecosystem types								
	Measurement units	Cropland	Woodland and forest	Urban	Heathland and shrub	Grassland	Rivers and lakes	Wetlands	Sparsely vegetated areas	TOTAL SUPPLY
Ecosystem service										
surface water purification	K m3/year	NA	NA	NA	NA	NA	NA	NA	NA	NA
groundwater purification	K m3/year	112,157	79,366	30,896	26,755	21,242	3,227	370	19	274,032
water purification - infiltration	K m3/year									
Total										

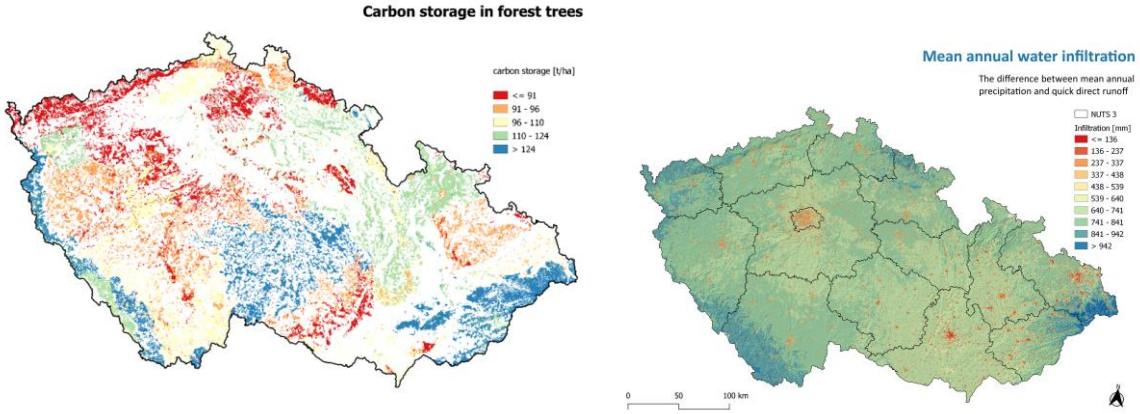


Figure 6: Carbon storage in forest trees based on the National forest inventory (left); mean annual water infiltration (right).

In monetary terms MAIA-supported accounts are under development for the ecosystem services water filtration, carbon sequestration and nature-motivated tourism (Annex 6.3.3). With regard to the water filtration, for example, the purified groundwater adds up to a total of 23 million € per year (Table 6), which can be attributed in the monetary use table (Table 7) to the institutional sector "water collection, treatment, supply".

Table 6: Monetary supply table for the ecosystem service water purification.

		Ecosystem types								
	Measurement units	Cropland	Woodland and forest	Urban	Heathland and shrub	Grassland	Rivers and lakes	Wetlands	Sparsely vegetated areas	TOTAL SUPPLY
Ecosystem service										
Groundwater purification	K EUR/year	9,533	6,746	2,626	2,274	1,806	274	31	2	23,293
Total										23,293

Table 7: Monetary use table for the ecosystem service water purification.

		Institutional sector										
	Measurement units	agriculture	forestry	fisheries	mining and quarrying	manufacturing	construction	electricity, gas supply	water collection, treatment, supply	other industries	households	TOTAL USE
Ecosystem service												
groundwater purification	K EUR/year								23,293			23,293
Total									23,293			23,293

6.2.4. Finland

- Ongoing work on marine ecosystem extent, condition and asset account;
- Compilation of regional forest condition account;
- Compilation of ES Accounts – both in physical and monetary terms – for nature-based recreation, commercial and recreational fishing;
- Compilation of diverse thematic accounts *(+ plan for a local urban account).*

Box 6: Overview of NCA progress in Finland (including MAIA-supported and MAIA-independent efforts).

The NCA activities in Finland are manifolds and mostly implemented on a national scale. Even though some accounts have already been finalized, most of the core accounts are ongoing. Amongst those accounts, the national ecosystem extent and condition account for marine ecosystems can be considered MAIA-supported accounts. They have benefited from both funding and personalized support from the MAIA project.

In the context of the ecosystem extent account (see Figure 7), which will be completed in 2023, species-based extents rely on extensive spatial inventory data, from over 160’000 underwater sites. Based on the data, distributions of species have been modelled at a high resolution (20 m). Additional data includes approximately 50 environmental variables, such as salinity, turbidity, or topographical complexity, that may be used in modelling. The models describe benthic invertebrates, vascular plants, alga and mosses, and as such form the extent of Finnish marine ecosystems. Most of the species can be linked to international habitat classifications. As the distribution models only describe the probability of detecting a species at a given modelling grid, the probabilities need to be transformed into spatial extent units. Thereby the challenge occurs that discretization degrades the information content. Therefore, the median cover (%) was calculated for each species, based on the VELMU inventory data. Subsequently, the extent per modelling unit was calculated. For mobile species, it was assumed that the whole grid can be suitable. Data also includes Habitats

Directive Annex I habitats, which are expert-based assessments, and include eight habitats associated with marine environments: reefs, narrow inlets, lagoons, estuaries, shallow bays, sand banks and underwater parts of the Baltic Sea esker islands and islets. The data also cover the broad habitat types as formulated by the Marine Strategy Framework Directive, and habitat types based on the threatened status assessment and habitat typology of the IUCN Red Listed Ecosystems. For more information check Annex 6.4.1.

The ecosystem condition account (see Figure 8) is also ongoing and should be completed in 2023. The account mainly builds, next to the data from the ecosystem extent account, upon Aerial image surveys and remote sensing of human activities as well as expert-based workshops on the diverse impact levels (Annex 6.4.2).

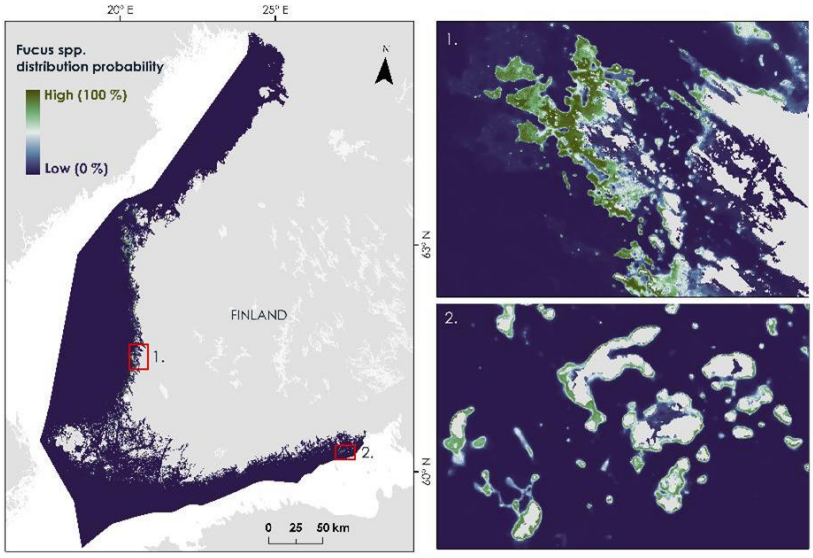


Figure 7: An example of the ecosystem extent data: Distribution probability of bladderwrack (Fucus spp.), a key habitat forming species in the Baltic Sea, and zoomed-in example areas. Modelling and graphs: Elina Virtanen, SYKE.

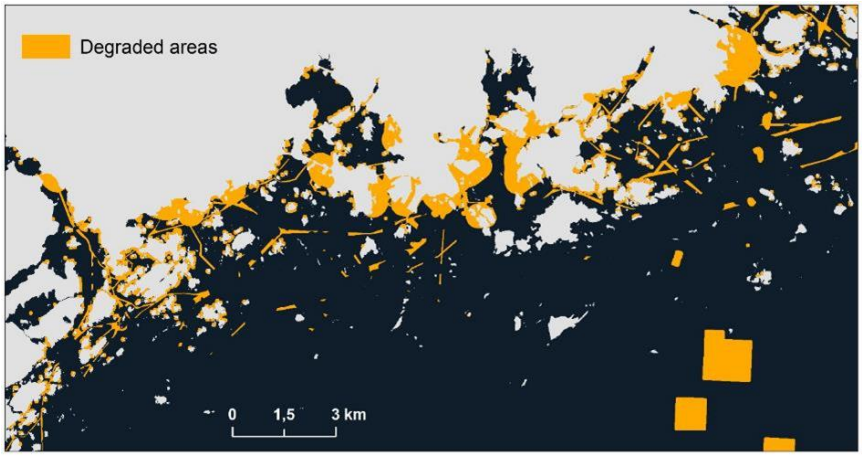
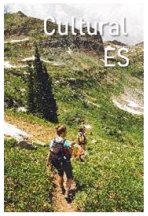


Figure 8: An example of ecosystem condition data: Degraded areas based on habitat loss, degradation and severe disturbance in an example area off the coast of the Capital City Helsinki. Modelling and graphs: Elina Virtanen, SYKE.

6.2.5. France

- Ecosystem extent, condition and asset account (mostly ongoing); – main focus: Marine ecosystems;
- Compilation of experimental local ES Account – in monetary terms – for cultural services (finished);

- ES accounts in biophysical terms and thematic accounts not compiled, yet.



Box 7: Overview of NCA progress in France (including MAIA-supported and MAIA-independent efforts).

The current NCA progress in France focuses on marine ecosystems. Accounts are being developed for the ecosystem extent, the ecosystem condition as well as the ecosystem assets of marine ecosystems on a national level. All of these accounts have received funding as well as personalized support from the MAIA project. In addition to that, these accounts also benefited from several additional MAIA activities.

The ongoing accounting efforts with regard to the marine ecosystem extent account (Annex 6.5.1) make use of the EUNIS classification scheme. Generally, a surface aggregation of marine habitats is executed on a one-minute arc grid resolution. For the ecosystem condition account (Annex 6.5.2), a combination of three categories of indicators is used. They reflect distinct values underlying ecosystem management, including heritage, functionality, and capacity. In Figure 9, as an example, the spatial distribution of the integrity of the seafloor approximated as risk of concomitant effects of physical pressures is presented. Both the marine extent and condition account are generated spatially explicit, whereas the marine ecosystem asset account is not spatially explicit, but aggregated by marine sub-regions and aggregated at the national level (Annex 6.5.3). The asset account builds upon the unpaid ecological costs (approach), corresponding mainly to avoiding and restoration costs required to reach specific environmental standards mentioned in the Marine strategic framework directive.

For all three, the ecosystem extent, condition and asset, the accounting is implemented in the French metropolitan Exclusive Economic Zone as a whole and also divided by sub-regions.

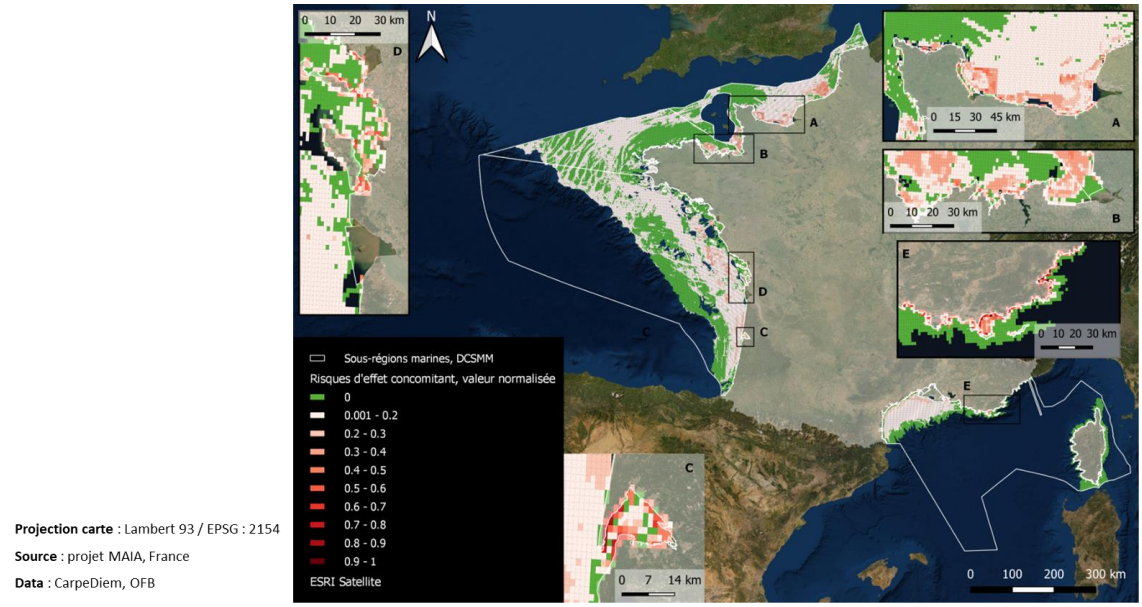


Figure 9: Condition account: Integrity of the seafloor approximated as risk of concomitant effects of physical pressures.

6.2.6. Germany

- Ecosystem extent accounts finalized;
- Compilation of ecosystem condition accounts (ongoing);
- Compilation of ES Accounts – both in physical and monetary terms – for some provisioning, regulating and cultural services;

- Ecosystem asset account and thematic accounts not compiled, yet.

Box 8: Overview of NCA progress in Germany (including MAIA-supported and MAIA-independent efforts).

The first comprehensive set of ecosystem accounts which were published in Germany on a national scale where generated in the framework of a research project funded by one of the German MAIA partners, the Federal Agency for Nature Conservation (BfN). The respective research project and its follow-up project are called “Integration of ecosystems and

ecosystem services into environmental economic accounting (EAA). Theoretical framework and methodological foundations" (short: Accounting I) and "Ecosystem services and environmental-economic accounting - Digital assessment" (short: Accounting II), both of them were carried out by the Leibniz Institute of Ecological Urban and Regional Development (IOER).

The second project is also supported by MAIA activities. By means of these projects an ecosystem extent account, accounts for selected ecosystem services (both physical and monetary, examples see Figure 10 to Figure 12) as well as a conceptual base for an ecosystem condition account are developed (Annex 6.6.1, 6.6.2, 6.6.3, 6.6.4 and 6.6.5. In the last couple of years, the ecosystem accounting activities actually have also started to enter the official activities of the German Federal Statistical Office (Destatis). They have recently published the first official German ecosystem extent account on a national scale. Thus, for that specific account, Germany already managed to make the transition from the "pilot"/ research phase, towards the production of an official account, which is part of the national statistical framework. None of these accounts received direct funding from the MAIA project, nevertheless, a fair share of the accounts has actually benefited through diverse MAIA project activities (such as webinars, workshops and joined publications), including the official ecosystem extent account developed and published by Destatis.

Next to these activities, the second German MAIA partner Leibniz University Hannover (LUH) was also involved in hosting, co-organising and co-financing the two German National Ecosystem Accounting Conferences in Hannover in March 2020 and November 2021, which brought together the key stakeholders of German NCA implementation. More precisely, the second German conference on ecosystem accounting took place as a cooperation between the MAIA project, the LUH, the Leibniz Institute of Ecological Urban and Regional Development, the Federal Agency for Nature Conservation and the Federal Statistical Office. Next to the newly adapted SEEA-EA standard and its implication for the German Ecosystem Accounting, also, on-going project work as well as an overview over the recent results and upcoming work of the German Ecosystem Accounting progress including insights on challenges and opportunities were presented and discussed. In addition to that, through diverse statements from stakeholders from the potential user spectrum, the users' perspective was taken into account.

In addition to that, the LUH is actively involved in the generation of the German ecosystem condition account by Destatis through personalized support/ consultant activities since 2021. The German ecosystem condition account (for specifics see Annex 6.6.2), is currently under development on a national scale for all ecosystems (including the marine ecosystems as far as the Exclusive economic zone). Its estimated completion date will be in spring 2023. It will

generally follow the SEEA-EA guidelines and will be generated for three-year time intervals. The plan is to develop whenever possible spatially explicit information using mainly Python and ArcMap. The results will be published open access aggregated at administrative scales in the form of reports, accounting spreadsheet and maps. Currently, the focus lies on the selection of indicators as well as on the identification of reference levels. Thus, even though MAIA was not involved through direct funding in the development of ecosystem accounts in Germany, the contributions are manifolds. Also, it should be highlighted that the accounting efforts in Germany very nicely evolved from the comprehensive research activities (pilot accounts) towards the launching of official accounting activities by Destatis (official national accounts).

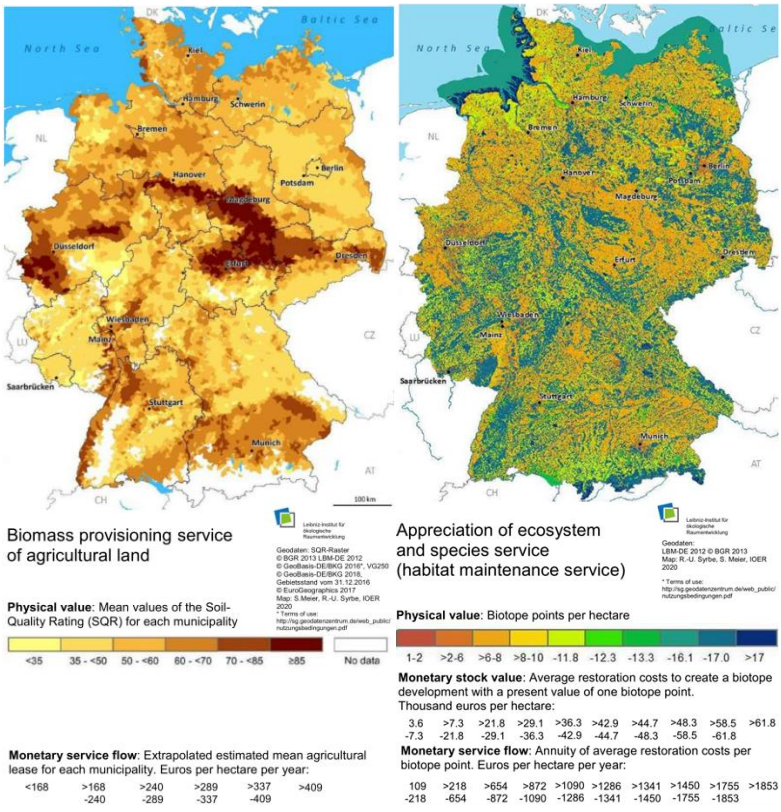


Figure 10: Biomass provision service of agricultural land and appreciation of ecosystem and species service – physical and monetary values (source: Leibniz Institute for Ecological Urban and Regional Development (IOER), Dresden).

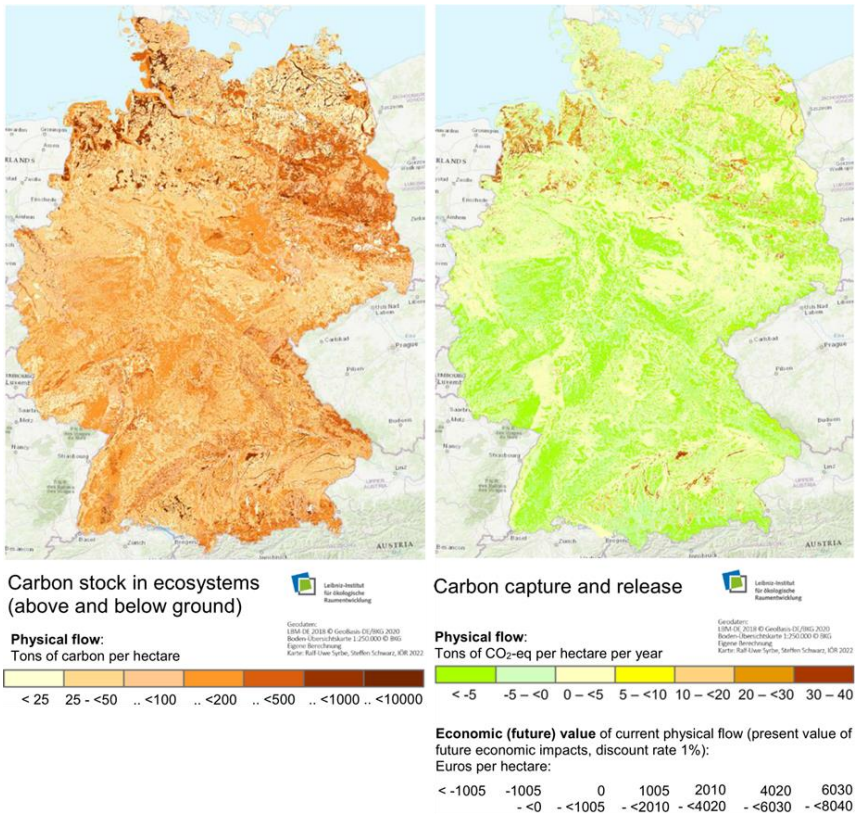


Figure 11: Climate regulation service (carbon stock, greenhouse gas capture and release (physical and monetary value) (source: IOER, Dresden)

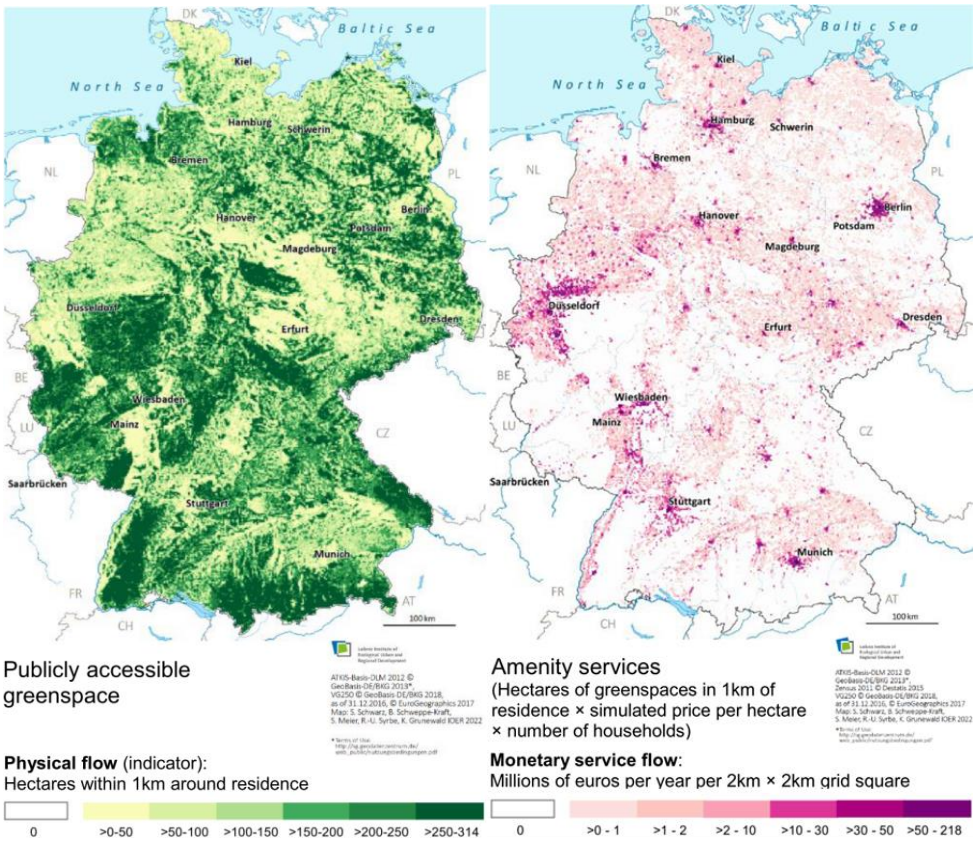


Figure 12: Publicly accessible greenspace in the vicinity of residence - monetary value of amenity services of urban greenspace (source: IOER, Dresden)

6.2.7. Greece

- Compilation of ecosystem extent, condition and asset account – diverse foci: All ecosystems, forest ecosystems, freshwater ecosystems (also at different spatial scales)
- Compilation of ES Accounts – both in physical and monetary terms – for water provision (ongoing);
- Compilation of biodiversity account.

Box 9: Overview of NCA progress in Greece (including MAIA-supported and MAIA-independent efforts).

In Greece, the MAIA project is substantially involved in the NCA progress. All of the identified accounts have received both funding and personalized support from the MAIA project. The national ecosystem extent account for all ecosystems as well as the regional ecosystem extent accounts for forest and woodlands as well as freshwater ecosystems have been finalized. In addition to that, also, the national ecosystem asset account has been completed. Further ongoing accounts focus on the ecosystem condition, the biophysical and monetary ecosystem service account for the provision of drinking and irrigation water.

The national ecosystem extent account for all ecosystems is based upon the EU MAES ecosystem type classification and provides information for the time between 1990 and 2018. It generally follows the SEEA-EA guidelines and utilises the Corine Land Cover datasets (Annex 6.7.1). In addition to that, also an ecosystem extent account focusing on freshwater (surface and groundwater) ecosystems has been generated (Annex 6.7.1). This account is generated for the region of the Alfeios river basin, Peloponnese, and covers two Water Framework Directive (WFD) reporting cycles, i.e., (2009-2015) and (2016-2021). For this account, the identification of rivers, lakes and groundwater bodies is based upon the WFD, as reported in the river basin management plans. Additionally, (a) the Corine Land Cover database for 1990, 2000, 2006, 2012, 2018, and (b) JRC Global Surface Water, using changes in seasonality between 1984 and 2020 have been used for the water bodies' identification. In Table 8 an excerpt from the freshwater extent account is presented.

Table 8: Freshwater extent account based on Corine Land cover 1999, 2000, 2006, 2012 and 2018 for the Alfeios RB (under publication).

Ecosystem type	Freshwater	
CLC 3 Code	**511**	**512**
CLC Level 3	**Water courses (rivers)in km²**	**Water bodies (lakes) in km²**
1999	10,209	3,946
2000	10,208	3,946
2006	6,960	3,946
2012	6,892	3,948
2018	6,892	3,948
Total change 2000 up to 2018 for the common areas	0	0

On the same spatial and temporal scale, also a freshwater ecosystem condition account is being generated (Annex 6.7.2). For the surface waters, thus river and lakes the "ecological status" is used (see Figure 13) as indicator, whereas for the groundwater bodies, the quantitative, chemical and total status are used. The information is aggregated within the EEA Reference Grid cell (size: 1x1 km2) following the worst-case status classification.

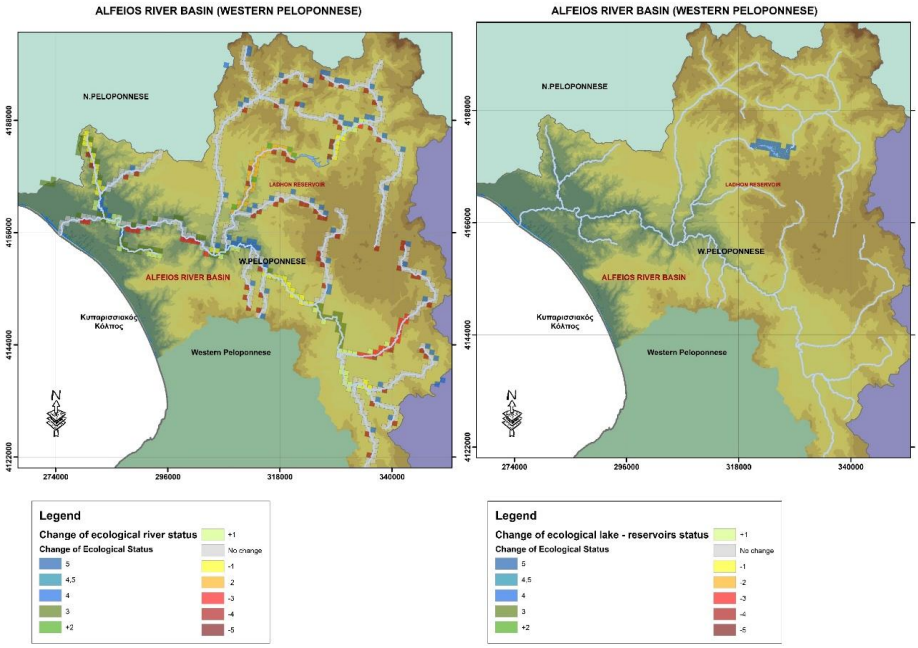


Figure 13: Freshwater Ecosystem Condition Accounts: Ecological river (left) and lakes (right) status change of Alfeios river basin using the EEA Ref Grid 1x1km² (under publication).

In addition to that, there are ongoing MAIA-supported accounting activities on a regional scale with regard to ecosystem service accounts. The provision of drinking and irrigation water is accounted for in both biophysical and monetary terms (Annex 6.7.3 and 6.7.4). In Figure 14, the change in the annual drinking water use and supply (in biophysical terms) between the years 2015 and 2021 is presented. For the monetary account, the valuation of

drinking water use and supply is based on cost of production (for change between 2015 and 2021 see Figure 15), whereas the valuation of irrigation water use and supply is based on (i) standard output of crops, (ii) net return to water and (iii) cost of production.

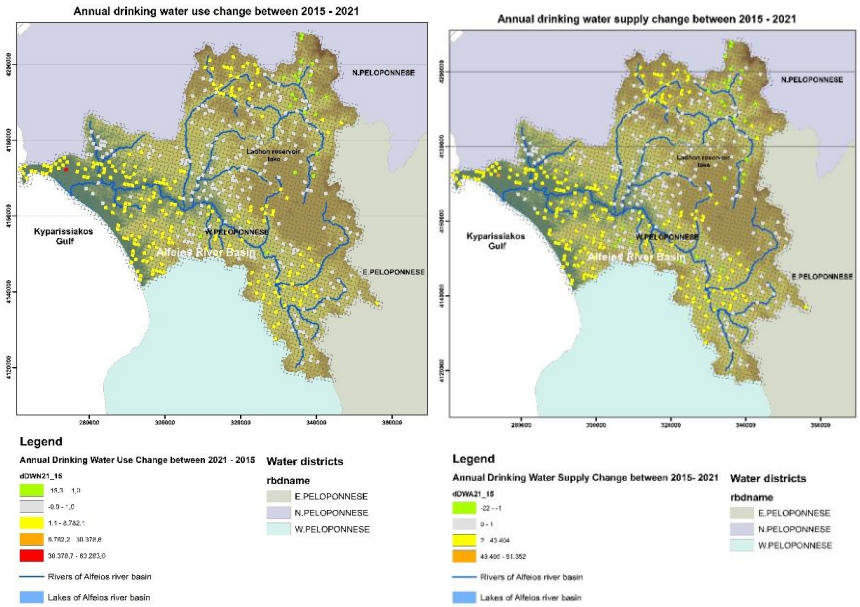


Figure 14: Freshwater ecosystem services accounts in biophysical terms: Annual drinking water use (left) and supply (right) change (m³ per year) between 2015 and 2021 in the Alfeios river basin using the EEA Reference Grid Greece with cell size 1×1 km² (under publication).

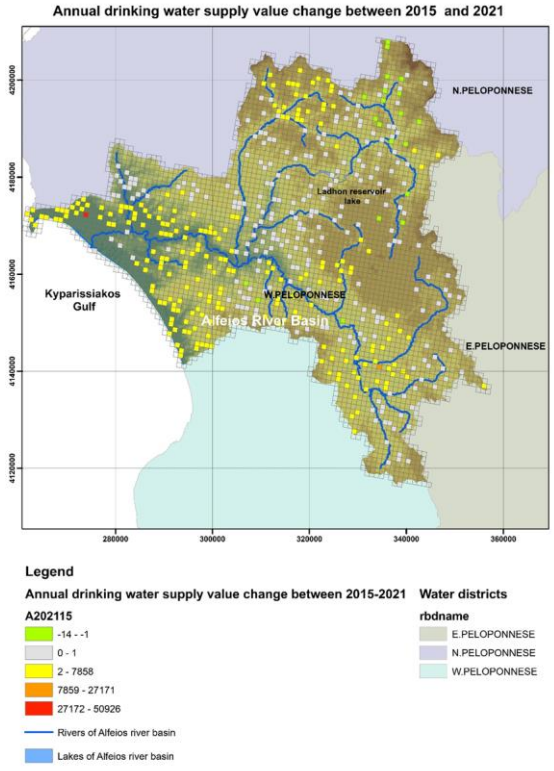


Figure 15: Freshwater ecosystem services supply accounts in monetary terms: Annual drinking water supply value change (in Euro) between 2015 and 2021(under publication).

The ecosystem asset account has been developed in Greece on a national scale covering

all ecosystems (Annex 6.7.5). For the account, the relative extent of the ecosystem type and flora species richness (total, endemic. ecosystem type exclusive, ecosystem type exclusive endemics) per 10x10 km EEA reference grid cell, with respect to the relevant species richness category is accounted for per floristic region in Greece. The efforts so far can be identified as a baseline assessment or accounting reference.

In addition to that, Greece, also in the context of the MAIA project, is involved in very extensive work on the thematic account biodiversity, where number of habitat types, number of species under IUCN threat categories and number of species included in Annex I of Dir/92/43/EEC are accounted for (see Table Box 1).

Table Box 1: Synoptic accounting table for biodiversity indicators inside Natura 2000 SCIs, in Peloponnese and its Prefectures, for the years 2000 and 2015. Net change is also presented; green colour indicates improvement; grey colour indicates no change.

	MAES - LEVEL 3 (2000)	MAES - LEVEL 3 (2015)	**Net Change (2000 to 2015)**	Habitat types (2000)	Habitat types (2015)	**Net Change (2000 to 2015)**	Priority Habitat types (2000)	Priority Habitat types (2015)	**Net Change (2000 to 2015)**	Listed in IUCN threat categories (2000)	Listed in IUCN threat categories (2015)	**Net Change (2000 to 2015)**	Annex I of Directive 92/43/EEC (2000)	Annex I of Directive 92/43/EE (2015)	**Net Change (2000 to 2015)**
Peloponnese (Total)	**13**	**16**	3	**37**	**50**	**13**	**5**	**9**	**4**	**23**	**10**	**-13**	**4**	**4**	**0**
Prefecture of Achaia	12	14	2	29	31	2	5	5	0	6	4	-2	2	2	0
Prefecture of Argolis	3	3	0	3	3	0	0	0	0	0	0	0	0	0	0
Prefecture of Arkadia	12	15	3	22	27	5	3	4	1	7	3	-4	1	1	0
Prefecture of Corinthia	10	12	2	16	19	3	3	3	0	6	3	-3	1	1	0
Prefecture of Ilia	12	15	3	21	35	14	1	4	3	1	1	0	0	0	0
Prefecture of Lakonia	11	13	2	21	27	6	2	3	1	5	3	-2	1	1	0
Prefecture of Messinia	12	13	1	26	33	7	3	6	3	10	1	-9	2	2	0

Box 10: Insights into thematic MAIA-supported accounting efforts in Greece.

6.2.8. The Netherlands

- Compilation of national ecosystem extent and condition account – diverse foci: All ecosystems (finalized) and marine ecosystems (ongoing improvement);
- Compilation of ES Accounts – both in physical and monetary terms – for some provisioning, regulating and cultural services;
- Compilation of ecosystem asset and diverse thematic accounts.

Box 11: Overview of NCA progress in the Netherlands (including MAIA-supported and MAIA-independent efforts).

At the national level, The Netherlands have developed accounts for extent, condition, physical ecosystem services, monetary ecosystem services valuation, monetary ecosystem assets, and a first approach to join ecosystem services assets with statistic national accounting. They have even already updated most of these accounts for 2018. Even though most of these official national ecosystem accounts have been developed without funding or personalized support from the MAIA project, the largest share of the accounts has benefited from multiple MAIA projects activities. In addition to that, the ecosystem service accounts for local climate regulation and coastal protection have been funded by the MAIA project (see accounting tables in Annex 6.8.1 and 6.8.2). The accounts for local climate regulation and coastal protection follow the SEEA-EA guidelines and have been generated on a national scale for the years 2013, 2015 and 2018. The local climate regulation was accounted for in biophysical terms (see Annex 6.8.1). Thereby, the service is defined as the contribution of vegetation within a radius of 500 m to the cooling capacity of highly urban areas during a heat wave. The service is expressed in the contribution of vegetation to the temperature reduction of the total heat wave number in °C in the city during a heat wave). For the ecosystem service coastal protection, accounts have been generated in biophysical as well as monetary terms focusing on the coastal zone of the country (see Annex 6.8.2). By means of GIS models, the amount of protected coastline is identified. For the ecosystem service account in monetary terms the replacement cost approach is compared with costs

of constructing dykes. Besides, there are efforts on the establishment of a thematic account on biodiversity as a collaboration between the Statistics Netherlands (Centraal Bureau voor de Statistiek, CBS) and the MAIA project (for specifics, see Box 12).

Account type:	Biodiversity account
Funding partner(s) and other involved partner(s):	Statistics Netherlands (CBS), MAIA project
Status (planned/ ongoing/ done):	Ongoing
Coverage:	National

Statistics Netherlands is currently working on an update of its biodiversity account. Its first experimental biodiversity account was published in 2020 and showed the development of a SEEA EA consistent biodiversity account for the accounting period 2006-2013 (SEEA-EEA Biodiversiteitsrekening 2006-2013, report in English). In the current update the account is being developed for the period 2013-2020. Using existing indicators from Red List Indicators, Living Planet Index and the SEEA EA extent account an overall picture of the state and change of biodiversity for different ecosystems in the Netherlands is brought together (see Figure Box 1 and Table Box 1). The update is planned to be published in May 2022 on the website of Statistics Netherlands (www.cbs.nl).

Apart from the biodiversity account update, Statistics Netherlands is currently also working on new biodiversity indicators to be used in the biodiversity account. The research is specifically focused on integration of the farmland bird index into SEEA EA biodiversity and/or condition accounts. Therefore we are looking into how the current farmland bird index can be regionalized and investigate possible indicators on the relation between landscape structure and farmland bird populations and pressure indicators specifically on farmland birds.

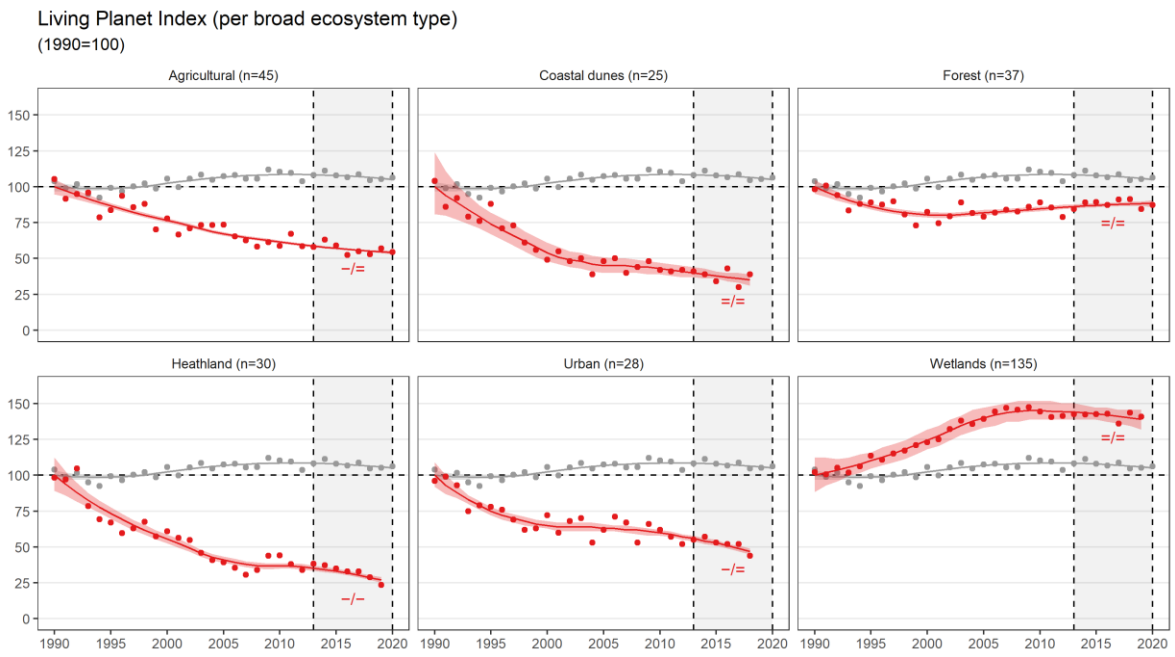


Figure Box 1: Living Planet Indices for six broad ecosystem types in the Netherlands (1990-2020). The overall LPI in grey for reference purposes. +/=/- indicate decreasing/stable/increasing trends during the accounting period 2013-2020.

Ecosystem (sub)type	Extent			Living Planet index				MSA ecosystem quality			
	2006	2013	Change	2006	2013	Change	assessment	2006	2013	Change	assessment
All Terrestrial and Freshwater				107.7	108.9	1%	Stable				
Terrestrial				85	87	2%	Stable				
Terrestrial nature				59	60	2%	Stable	37.8	37.8	0	Stable
Forest	326903	329540	1%	93	98	5%	Increasing	32.3	35	8%	Increasing
Open nature				39	38	-3%	Stable				
Heathland	38343	41493	8%	42	37	-12%	Decreasing	32.6	32.3	-1%	Stable
Coastal Dunes	24010	22049	-9%	57	54	-5%	Stable	47.1	43.9	-7%	Decreasing
Semi-natural grassland	49841	57790	14%					29.2	33.4	14%	Increasing
Freshwater and wetlands				144	144	0%	Stable				
Freshwater	408344	421246	3%					36.2	39.8	10%	Increasing
Wetlands	37006	47669	22%					47.5	45.9	-3%	Stable
Agricultural	1867094	1822362	-2%	63	56	-11%	Decreasing				
Urban	519289	546967	5%	63	56	-11%	Decreasing				

Notes:
Forest' includes permantenly vegetated coastal dunes
Urban' includes built-up environments and public green space

Table Box 1: Combined biodiversity account 2006-2013, retrieved from Bogaart, Polman, Veweij and Van Swaay, 2020, "The SEEA-EEA Experimental biodiversity account for the Netherlands". CBS & WUR, The Hague/Wageningen, The Netherlands.

Box 12: Insights into thematic MAIA-supported accounting efforts in The Netherlands.

6.2.9. Norway

- Ecosystem extent, condition and asset accounts – diverse foci: All ecosystems, agricultural, urban area (also at different spatial scales);
- Compilation of regulating ES Accounts – both in physical and monetary terms (ongoing);
- Compilation of diverse thematic accounts on the topics biodiversity and urban areas.

Box 13: Overview of NCA progress in Norway (including MAIA-supported and MAIA-independent efforts).

The accounting efforts in Norway are taking place on a national and subnational scale. On a sub-national scale, the urban areas are of special interest. On the national scale, a MAIA-supported account focusing on agricultural land has been generated in the framework of the official national statistics, entitled *Norway, values of agricultural land*. The account can be regarded as an accounting exercise towards ecosystem asset accounts (Annex 6.9.1). For the account the agricultural values are assessed by three approaches, with different temporal and spatial coverage: The Resource rent approach for the time period from 1984-2018, according to National Accounts procedures, System of National Accounts (SNA) and SEEA-EA (Figure 16). The second and third approach are accounting for the value of public transfers to agriculture as indirect societal willingness to pay for agriculture (1986-2018, Figure 17Figure 17: Value of Norwegian grassland, arable land and horticulture land in six Norwegian regions in 2020. Mill NOK. (Source: Calculations based on data from Statistics Norway and Norwegian Agriculture Agency)) and the rental prices for agricultural land in active use for the period from 2005-2020 (Figure 18). This account has received both funding and personalized support through the MAIA project.

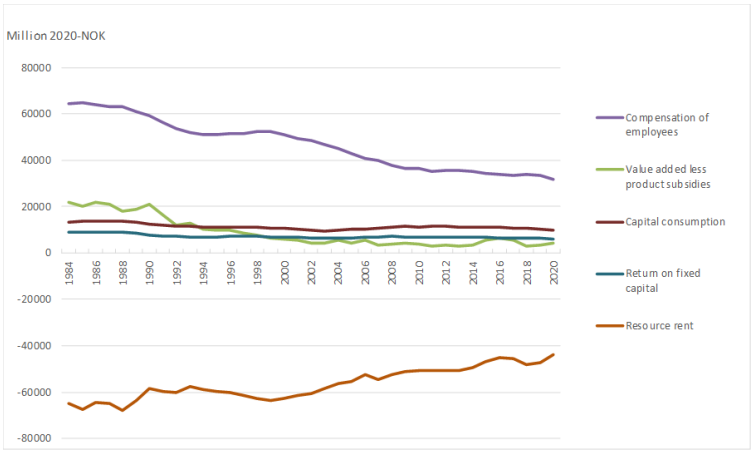


Figure 16: The components of the resource rent in Norwegian agriculture 1984-2020.

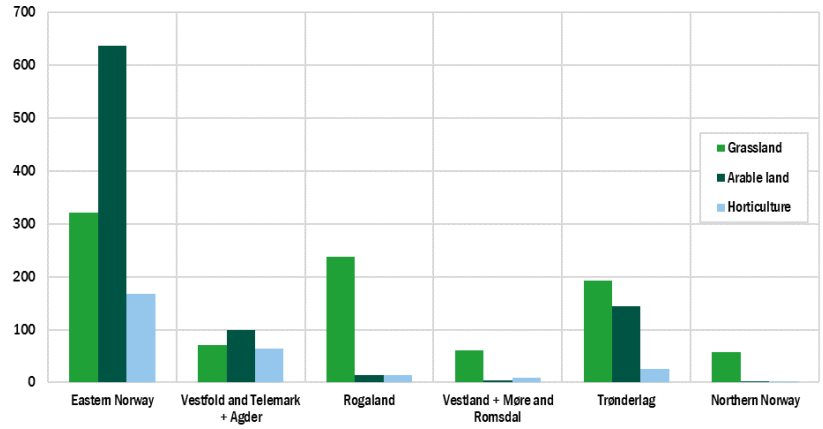


Figure 17: Value of Norwegian grassland, arable land and horticulture land in six Norwegian regions in 2020. Mill NOK. (Source: Calculations based on data from Statistics Norway and Norwegian Agriculture Agency)

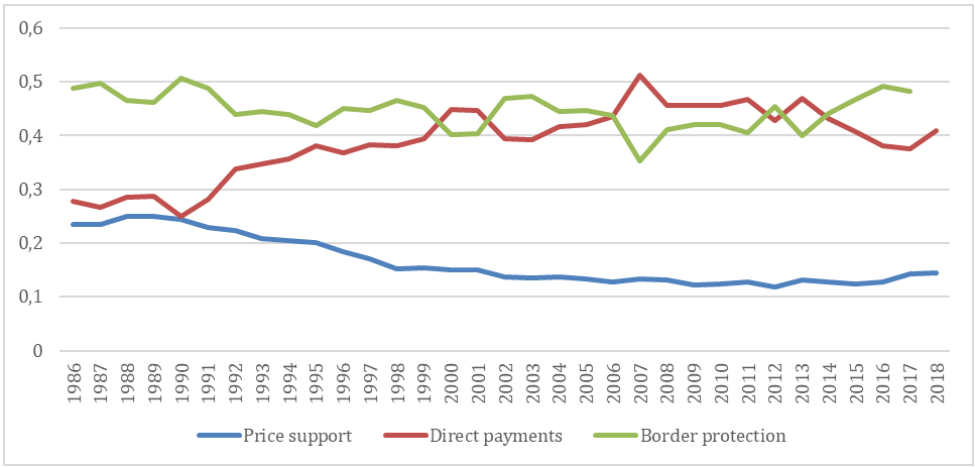


Figure 18: Share of price support, direct payments and border protection of total producer support to Norwegian farmers. 1986-2018. (Source: OECD)

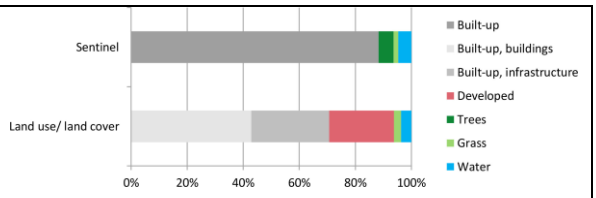
All MAIA-independent accounts in Norway did benefit from (only) one MAIA project activity, an active participation in a MAIA webinar. In addition to that, in the domain of thematic

accounts, the MAIA-supported accounts that should be highlighted are sub-national accounting efforts on ecosystem extent and condition focusing on the metropolitan area of Oslo (for specifics, see Box 14).

Account type:	Urban thematic extent account
Funding partner(s) and other involved partner(s):	Norwegian Institute for Nature Research (NINA) and Statistics Norway (SSB), MAIA project, Oslo Municipality
Status (planned/ ongoing/ done):	Official statistics (ongoing), extent change account (done)
Temporal coverage:	2015-2019
Spatial scale:	Subnational/urban: Oslo built zone

One of the main purposes of ecosystem accounts to support policy is to detect significant changes during the accounting period in ecosystem extent and condition. This is a challenge in urban areas. Statistics Norway has tested combining official land use/land cover maps with Sentinel-2 Copernicus land cover classification to generate faster and more consistent updating of official land cover statistics in urban built zones (Garnåsjordet et al. 2021).

Principle for combination of Statistics Norway land use/land cover maps and Sentinel-2 land cover classification (raster map).



Comparing the information content of the map of land use/land cover and the map of Sentinel-2 satellite data. 2017.
Source: Garnåsjordet et al. 2021

The Norwegian Institute for Nature Research (NINA) has assessed the accuracy of change detection in urban ecosystem extent accounts (with condition data including tree canopy), using groundtruthed Sentinel-2 data (Nowell et al. forthcoming) (Figure Box 1) (Nowell et al. forthcoming). The study finds that using Sentinel-2 data significant change during a 4-year

accounting period could be detected for 11 of the 12 land cover classes optimally with a 50m2 pixel resolution. This is promising for future official statistics for land cover in urban areas.

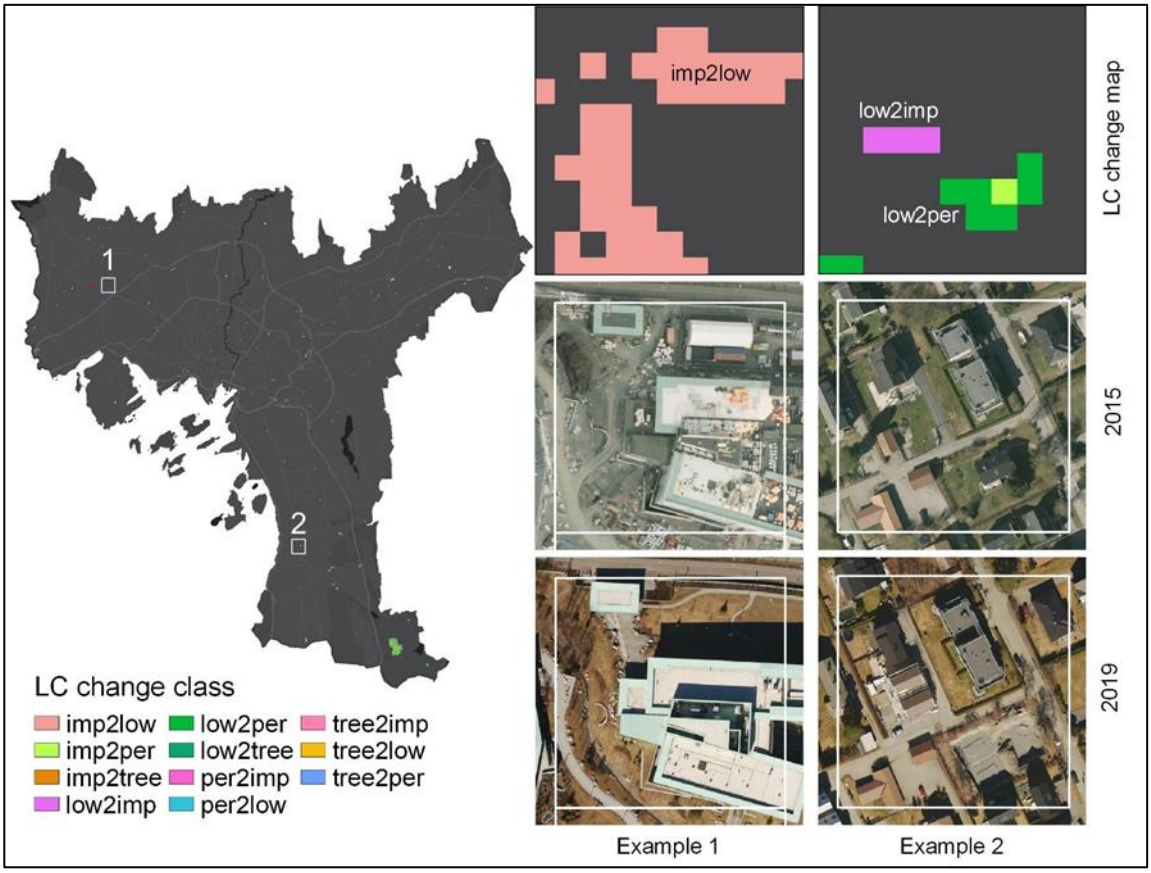
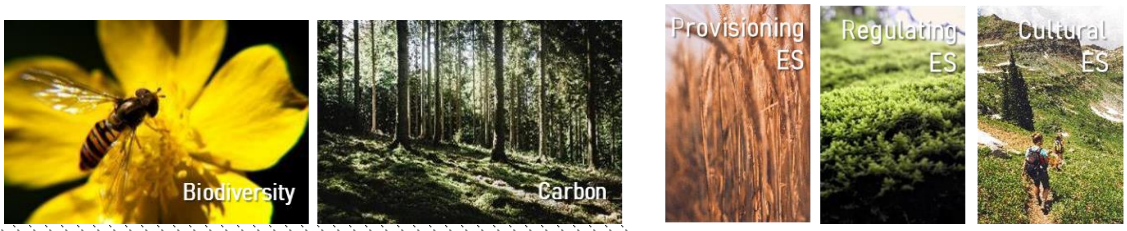


Figure Box 1: Twelve types of LC change were mapped in Oslo municipality. The panels on the right show two examples of the LC change between 2015 and 2019. Source: Nowell et al. forthcoming.

Box 14: Insights into thematic MAIA-supported accounting efforts in Norway.

6.2.10. Spain

- Ecosystem extent and condition account (mostly finished) – diverse foci: All ecosystems and forest ecosystems;
- Compilation of ES Accounts – both in physical and monetary terms – for some provisioning, regulating and cultural services (mostly finished);
- Regional ecosystem asset account finalized for forest ecosystems;
- Compilation of diverse thematic accounts.



Box 15: Overview of NCA progress in Spain (including MAIA-supported and MAIA-independent efforts).

In Spain the NCA progress takes place at the regional (for Andalusia) and national scale. The MAIA project was not directly involved (through funding and/or personalized support) in the creation of the regional ecosystem accounts in Andalusia, whereas on the national scale, substantial MAIA efforts can be detected. The finalized national ecosystem extent account, as well as the national forest condition and several ecosystem service accounts (biophysical and monetary) have been funded by the MAIA project. In addition to that, some of these national accounts (amongst which the ecosystem condition account) have been used as an example in MAIA activities (i.es webinars, SEEA-EA forum) to provide personalized support in other MAIA countries.

At the national level, the idea is to develop automated models to measure the accounts using Python algorithms (Annex 6.10.1). These models are ready to be used on other scales and/or ecosystem types. About ecosystem extent account they present a novel approach from existing ecosystem classifications. This approach shows the spatial and statistical extent account of 26 ecosystems (i.e. forests, grasslands, croplands, and urban, among others) between 1970 and 2015 at the national scale. Extent accounts were developed at a resolution of 25 meters and provided reliable information on how ecosystem types have changed over time in Spain. The results reflect three main patterns in the extension account: (i) an increase in forest ecosystems, (ii) a considerable decrease in agroecosystems (especially annual croplands), and (iii) substantial development of urban areas.

Forest condition accounts propose a method in compliance with the requirements of SEEA-

EA. This approach is a step forward to test the condition account framework from a technical and methodological perspective that serves as a guide for future developments in condition accounting. Forest was used as the first ecosystem to develop this account, due to the substantial contributions of forest biodiversity and ecosystem services to society and because it is the ecosystem with the highest net extension growth in recent decades in Spain (Annex 6.10.2).

In relation to the accounts under development at the national level, work is being done on carbon accounts in both biophysical and monetary terms (Annex 6.10.3 and 6.10.4), with the Invest, using the information provided by the carbon density of the biomass as carbon stock data, global aerial and underground (NASA), maps of soil organic carbon reserves (ISRIC) and information on dead wood from the Spanish forest monitoring network (MITERD).

Regarding biodiversity accounts, species richness accounts have been developed based on machine learning models for 521 species included in the habitat and bird directives as species of community interest, obtaining species richness maps by species, ecosystem, or taxon, from 2000 to 2015.

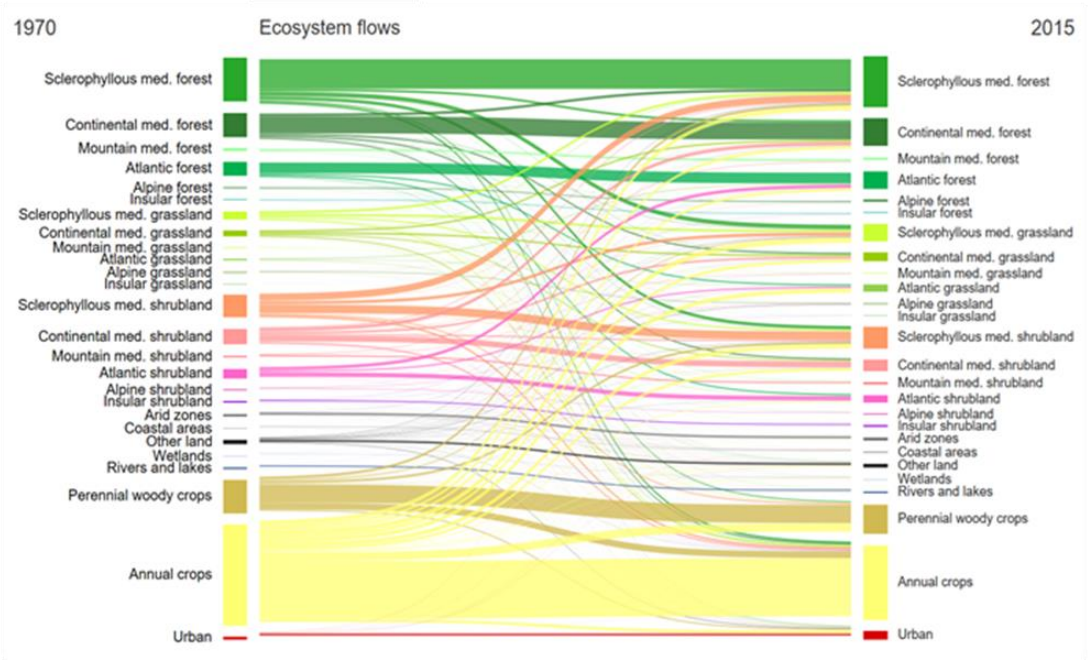


Figure 19: Ecosystem extent account flow/ changes from 1970 to 2015 in Spain.

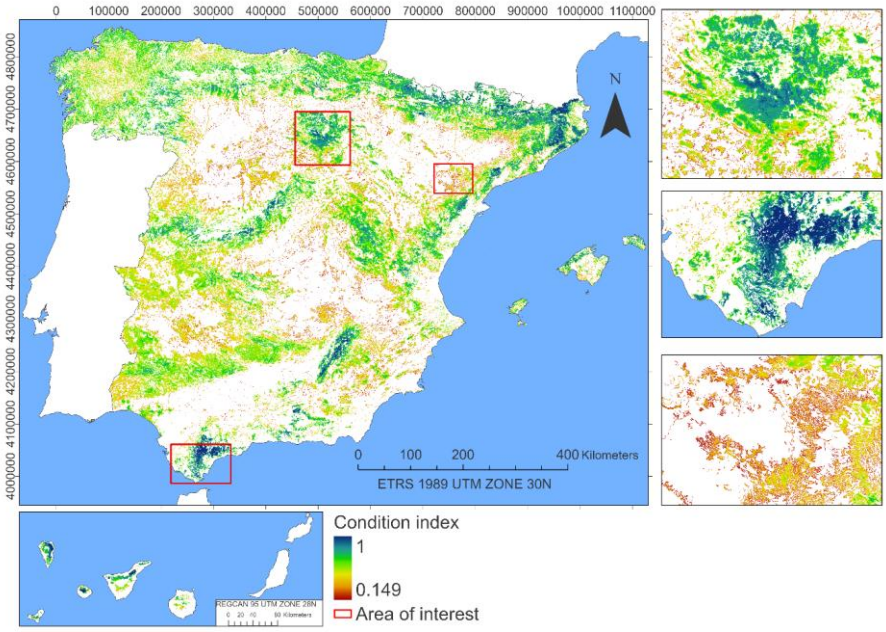


Figure 20: Forest condition index in 2015 in Spain (part of forest condition account).

4. CONCLUSIONS

The Deliverable gives many interesting insights into the significant progress with respect to the NCA implementation in the 10 European countries that are participating in the MAIA Coordination and Support Action. Next to providing a general overview on the state of the NCA implementation in the countries and the general influence of MAIA in that process, the Deliverable functions as a technical report on the specifics of MAIA-supported core accounts. Generally, it should be noted, that even though the NCA progress differs within the ten MAIA MS, in each of the countries significant development has been achieved within the last couple of years. Many countries had started their activities already before MAIA came to action and are receiving continuous support by the project, other countries indicated that the MAIA project delivered highly needed support to finally kick-off the efforts. Some countries developed their first pilot accounts, whereas other countries managed to transit from the pilot accounting phase into the generation of official accounts in the framework of their national statistics.

Next to the diverse MAIA-supported accounts, for which a contribution such as direct funding and/ or personalized support from the MAIA project was identified, it needs to be highlighted that also most of the other accounts benefited from the various activities from the MAIA project, such as workshops, webinars and the MAIA network. In this context, it should be mentioned that the transfer of knowledge and skills was and still is probably the fundamental base of the success of the MAIA project. It can be concluded that the WP3 activities of supporting and mainstreaming NCA activities based on the assessment of the state-of-the-art in the participating countries (MAIA Deliverables D3.1. and D3.2) was useful in order to create tailor-made solutions for each MS and the involved stakeholders.

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6. ANNEX

6.1. Annex: Belgium

6.1.1. Ecosystem extent account

Country		Belgium
Account type		Ecosystem extent account
Account code		BE_EE_R_1
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystem type classification	*(Sub-)national/ international*	International
	If possible, please specify	EU MAES ecosystem types
	If (sub-)national, compatible with international classification (if yes, please specify which)	Not applicable
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	2013, 2016 (Corine: 1990, 2018)
	Frequency of updates	Pluri-annual (every 3 years; Corine: six years)
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	10m x 10m (Corine: 1ha, with MMU of 25ha)
Methodology		

General description	Combining specific spatial geodata (data from administrative databases, satellite imagery, aerial orthophotos and field recordings) for Flanders	
Specific software/ model/ tool used	GIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	The land use on the map is compared to a sample of reference points that reflect the actual land use with a higher accuracy. A sample size of 3815 points, distributed among the change classes proportionally according to their area share, with a minimum of 40 points for the classes with the smallest area. Validation by ten evaluators (aerial photographs, attribute tables of the agricultural use parcels database and the Biological Valuation Map). For each point (both years), land use and land use change was recorded. For each evaluator, 30 points were also checked by a second evaluator. Error matrix is drawn up and measures of accuracy can be calculated including * overall accuracy (OA) * producers accuracy (PA) https://www.vlaanderen.be/inbo/backgroundindicatoren/landgebruiksverandering-validatie
Data source(s)	• Landgebruiksbestand Vlaanderen 2013 and 2016 • Biological Valuation Map (BWK) • Green Map (differentiating between 'agriculture', 'low green', 'high green', 'not green' areas) • Agriculture use parcels, cadastral map (CAPMAP) • CORINE Land Cover data for 1990 and 2018	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Van Reeth W, Stevens M, Van Gossum P, Maes D, Wils C, (2020) D.1

		Landgebruiksverandering, in: Natuurrapport 2020: Feiten En Cijfers Voor Een Nieuw Biodiversiteitsbeleid, Mededelingen van Het Instituut Voor Natuur- En Bosonderzoek. Instituut voor Natuur- en Bosonderzoek (in flamish), Link: https://www.vlaanderen.be/publicaties/natuurrapport-2020
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	An accounting spreadsheet has been included in the report above (Tabel 6) and spreadsheets are published online.
	If possible, specify link/ source	https://www.vlaanderen.be/inbo/backgroundindicatoren/landgebruiksverandering-ecosysteemvoorraad-corine; https://www.vlaanderen.be/inbo/backgroundindicatoren/landgebruiksverandering-ecosysteemvoorraad-landgebruiksbestand-vlaanderen
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	

MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes	The ecosystem extent has been build based upon two different base datasets: (i) A national dataset on land use, land cover (for which 69 national land use land cover types aggregated to 10 ecosystem types) and (ii) the EU wide Corine dataset (for which (44 Corine LULC classes are aggregated to 5 ecosystem types). Therefore, two sets of information are specified above for e.g. ecosystems, temporal and spatial specifics. s)	
References	Very specific metadata information including input geodata and source code: https://www.vlaanderen.be/inbo/backgroundindicatoren/landgebruiksverandering-ecosysteemvoorraad-landgebruiksbestand-vlaanderen	

6.1.2. Ecosystem condition account

Country		Belgium
Account type		Ecosystem condition account
Account code		BE_EC_R_1
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystems	Ecosystem types	Forest ecosystems; waterbodies
Temporal specifics	Temporal coverage	
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological*	Fully spatially explicit

	scale, fully spatially explicit]	
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	
Methodology		
General description		
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Biological valuation based upon rarity, biological quality, vulnerability, replaceability
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Categorical index
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• Field data • Data from Water framework directive, Marine strategy framework directive, Habitats Directive, forest inventory and biotic and abiotic monitoring networks	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	

Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References	Stevens, Maarten & Demolder, Heidi & Jacobs, Sander & Michels, Helen & Schneiders, Anik & Simoens, Ilse & Spanhove, Toon & Van Gossum, Peter & Van Reeth, Wouter & Peymen, Johan. (2015). English Version: Flanders Regional Ecosystem Assessment - State and trends of ecosystems and their services in Flanders: Key findings of the Technical Report.	

6.1.3. Ecosystem service accounts – biophysical

Country		Belgium
Account type		Ecosystem service account (biophysical)
Account code		BE_ESb_R_1
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Forests
Ecosystem service	Ecosystem service category	Provisioning
	Ecosystem service	Wood production
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	updated every 10 years
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description		
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	No
	If yes, please specify	
Aggregation	*Yes/ no*	No

	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• National data • Geodata [soil data, climatic data] • Forest inventory • surveys (European averages used for data gaps) • [wood growth tables Ecoplan, Natuurwaardeverkenner of Sim4Tree]	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

Country		Belgium
Account type		Ecosystem service account (biophysical)
Account code		BE_ESb_R_2
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Forest ecosystems; coastal ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Carbon storage in biomass
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	one time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description		
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	
	If yes, please specify	
Aggregation	*Yes/ no*	
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• Emissions of LULUCF (https://www.vmm.be/data/emissies-per-sector/sector-lulucf/view) • Forest inventory	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

Country		Belgium
Account type		Ecosystem service account (biophysical)
Account code		BE_ESb_R_3
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystems	Ecosystem types	All (terrestrial) ecosystems
Ecosystem service	Ecosystem service category	Provisioning
	Ecosystem service	Water availability
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	
Methodology		
General description	Groundwater recharge modelled with WetSpass model, simple allocation to water extraction areas linked to particular annual extraction	
Specific software/ model/ tool used	WetSpass	
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Amount of extracted drinking water (m3/year)
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	Not applicable

Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Comparison of measured and modelled runoff
Data source(s)	• Land use data • Elevation data • Soil data • Statistical data • Climatic data [precipitation, potential evaporation, temperature, wind speed] • Ground water data	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	

Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

Country		Belgium
Account type		Ecosystem service account (biophysical)
Account code		BE_ESb_R_4
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All (terrestrial) ecosystems
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Health benefits of green and blue areas in the living environment
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Dose-response relations; usage of generic data on morbidity, mortality and number of inhabitants	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Disease-adjusted life years (DALYs)
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• Administrative data • census data • prevalence data • geodata	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	

	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

6.1.4. Ecosystem service accounts - monetary

Country		Belgium
Account type		Ecosystem service account (monetary)
Account code		BE_ESm_R_1
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Forests
Ecosystem service	Ecosystem service category	Provisioning
	Ecosystem service	Wood production
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	Updated every 10 years
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Resource-rent approach, expert evaluation	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	No
	If yes, please specify	
Aggregation	*Yes/ no*	No

	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• National data • Economic statistics on the forestry sector • Forest inventory, • Surveys (European averages used for data gaps) • [wood growth tables Ecoplan, Natuurwaardeverkenner of Sim4Tree]	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

Country		Belgium
Account type		Ecosystem service account (monetary)
Account code		BE_ESm_R_2
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Forests, coastal ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Carbon storage in biomass
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	one time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	market price	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	No
	If yes, please specify	
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• CO2eq. price from Emission Trading Schemes (ETS)	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	

Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

Country	Belgium
Account type	Ecosystem service account (monetary)

Account code		BE_ESm_R_3
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystems	Ecosystem types	All (terrestrial) ecosystems
Ecosystem service	Ecosystem service category	Provisioning
	Ecosystem service	Water availability
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	
Methodology		
General description	Resource-rent approach, expert evaluation	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Health benefits
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/	Yes/ no	No
	If yes, please specify	

or uncertainty assessment		
Data source(s)		
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	

MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

Country		Belgium
Account type		Ecosystem service account (monetary)
Account code		BE_ESm_R_4
Funding partners		VITO and INBO (within the Horizon 2020 MAIA project); co-funded by Department for Spatial development, environment, energy, climate, green economy and animal welfare
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All (terrestrial) ecosystems
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Health benefits of green and blue areas in the living environment
Temporal specifics	Temporal coverage	2013, 2016
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Flanders
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	

Methodology		
General description	Cost indicator per disease or mortality	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	No
	If yes, please specify	
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• … • …	
Output(s)		
Report(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	

	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	De Nocker, L., Broekx, S., Liekens, I., Beckx, C., Dams, J., Hambsch, L., Van den Abeele, L., Poelmans, L., De Jong, R., De Smet, L., 2020. Pilootproject Natural Capital Accounting in Vlaanderen. Studie uitgevoerd in opdracht van het Departement Omgeving, Vlaams Planbureau voor Omgeving	

6.2. Annex: Bulgaria

6.2.1. Ecosystem extent accounts

Country		Bulgaria
Account type		Ecosystem extent account
Account code		BG_EE_N_1
Funding partners		Bulgarian Academy of Sciences, National Statistical Institute of Bulgaria (NSI), MAIA project
Other involved partners		Executive Environment agency (ExEA) by the Ministry of environment and water
Status	*Planned/ ongoing/ done*	Ongoing

	(Estimated) completion date	30.05.2022
Ecosystem type classification	*(Sub-)national/ International*	International
	If possible, please specify	For terrestrial ecosystems: EU MAES ecosystem type classification level 2 (linked to CLC class 3); for marine ecosystems: EUNIS classification level 3
	If (sub-)national, compatible with international classification (if yes, please specify which)	MAES BG ecosystem type classification level 3 (linked to CLC class 3 and EUNIS classification level 3 and level 4)
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	2000, 2006, 2012, 2018
	Frequency of updates	Pluri-annual
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	National level, Biogeographical regions and marine regions – Alpine, Continental, Black sea, Marine region "Black sea", Districts, Municipalities, Settlements and ETRS grids 10x10 km
	Spatial resolution	25 ha
Methodology		
General description	Combination of a. o. land cover data and population grid; spatial (GIS) assessment; ecosystems will be mapped at different levels as – national – whole country, biogeographical level, marine area part of Bulgarian Exclusive Economic zone, Natura 2000 sites (34 % of the country), Districts (28), Municipalities (265), Settlements and ETRS grids 10x10 sq.km, EUNIS level 3 and 4 on national level	
Specific software/ model/ tool used	ArcGIS, QGIS and MS EXCEL	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/	*Yes/ no*	Yes
	If yes, please specify	We use validated datasets from CLC database

or uncertainty assessment		
Data source(s)	• Corine land cover databases from 2000, 2006, 2012 and 2018 • for marine ecosystems: usage of the results from Mapping and assessment of marine ecosystems within EEA grands project - BG03"Biodiversity and ecosystems"	
Output(s)		
Report(s)	*Yes/ no*	No (not yet)
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	We plan to publish the results at the ExEA MAIA web pages; the link will be shared asap
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://ecosys.eea.government.bg/corinemaesecosystems/
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://ecosys.eea.government.bg/
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	

	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References		

Country		Bulgaria
Account type		Ecosystem extent account *(forest and woodland extent accounts on national level)*
Account code		BG_EE_N_2
Funding partners		Bulgarian Academy of Sciences (FRI-BAS), National Statistical Institute of Bulgaria (NSI), Executive Environment agency (ExEA) by the Ministry of environment and water, MAIA project
Other involved partners		Forest Research Institute
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystem type classification	*(Sub-)national/ International*	International
	If possible, please specify	MAES classification level 2 (broad-leaved, coniferous, mixed forests, transitional woodland/shrub); for FMP the type of forest according to version 2 data format and nomenclatures is linked to these categories using a crosswalk table; the forest immovable properties (parcels) are presented according to cadastral code nomenclature; forest and woodlands are classified as Forest Land (FL) in the physical blocks of land
	If (sub-)national, compatible with	Not applicable

	international classification (if yes, please specify which)	
Ecosystems	Ecosystem types	Forest and woodland ecosystems
Temporal specifics	Temporal coverage	2000, 2006, 2012, 2018, 2019-2021
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Spatially explicit on national level
	If aggregated, please specify administrative or ecological scale	National level
	Spatial resolution	
Methodology		
General description	Delineation (splitting) of forest and woodland ecosystem types on national GRID 1x1 km2 and calculation of net changes, additions and reductions to extent in every grid cell for Corine Landcover (2000-2018) and State Cadastre (2019, 2020 and 2021). Present area of forest ecosystems from Forest Management Plans by type of forest, EUNIS and level 2 MAES	
Specific software/ model/ tool used	QGIS, MapINFO, IBM SPSS and Microsoft Excel	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	No
	If yes, please specify	Not applicable
Data source(s)	The national georeferenced data sources for forests and woodland area include: • 1) Corine Landcover for 1990, 2000, 2006, 2012 and 2018 years • 2) Bulgarian Geodesy, Cartography and Cadastre Agency maps including immovable properties and building layers (State Cadastre maps of forest parcels) • 3) Forest Management Projects (FMP) including data for types of forest, tree species and their composition produced from Executive Forestry Agency.	

	• 4) Data on the physical blocks of land (land use) of the Ministry of Agriculture, Foods and Forestry • Attributive data for actual timber removal from logging permits from 2018, 2019 and 2020, killed game and prices from hunting and fishing report for 2017, 2018 and 2019	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	We plan to publish the results at the NSI MAIA web pages, the link will be shared asap
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable

	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes	The objective of the project is to develop a methodology and describe the potential data sources used for calculation of the extent of forest, woodland and other woodland ecosystems on the national level and their changes over time in square kilometres (km^2). EAA covers the whole territory of the country and the basic spatial units are different forest types and cadaster parcels. The other main objective is to present methods for estimating ecosystem provisioning services from forests and woodland in particular wood supply (timber harvest) and hunting meat. The timber harvest is part of NA data but hunting is not. For both services we used market prices for calculating the services.	
References		

6.2.2. Ecosystem service account - biophysical

Country		Bulgaria
Account type		Ecosystem service account (biophysical)
Account code		BG_ESb_R_1
Funding partners		Bulgarian Academy of Sciences (National Institute of Geophysics, Geodesy and Geography), MAIA project
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	31.10.2022/31.12.2022*
Ecosystems	Ecosystem types	Woodland, forest, heathland, shrub, grassland, cropland and urban ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Flood regulation
Temporal specifics	Temporal coverage	
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional

	If sub-national, please specify area	Ogosta, Malki Iskar and Yantra watershed - three mountain watersheds
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 km^2
Methodology		
General description	GIS-based AGWA tool, which utilizes the KINEROS (Kinematic Runoff and Erosion model) hydrologic model applied in Malki Iskar Yantra watersheds, GIS-based ArcSWAT model applied in Ogosta watershed: The accounting of flood regulation is based on the assumption that specific ecosystems can reduce the extent and intensity of floods, thus reducing the risk of damage to build environments. The ecosystems which provide the flood control functions (ES supply) are located at a particular distance from the demand areas. The spatial relationship between them is conceptualized by the Service Providing Areas (SPA) and the Service Benefiting Areas (SBA). The flood regulation accounting is based on the calculation of the Actual Flow (AF) as a function of SBA and SDA. The accounting tables contain calculations of the ES Potential, ES Demand, and ES Actual flow areas per ecosystem subtypes.	
Specific software/ model/ tool used	GIS, AGWA tool, KINEROS model, ArcSWAT tool, SWAT model	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	• Soil water infiltration (mm) • Surface runoff (m^3/sec) • Peak flow (m^3/sec) (SWAT)
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Aggregation in the accounting tables of the SPA and SBA areas for ecosystem type based on CORINE data
Validation process and/ or uncertainty assessment	Yes/ no	No (planned for the second stage*)
	If yes, please specify	Not applicable
Data source(s)	Initial datasets for flood regulation modelling include of the three case studies: • 30m DEM;	

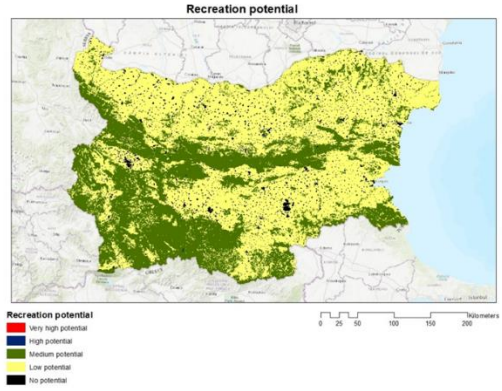
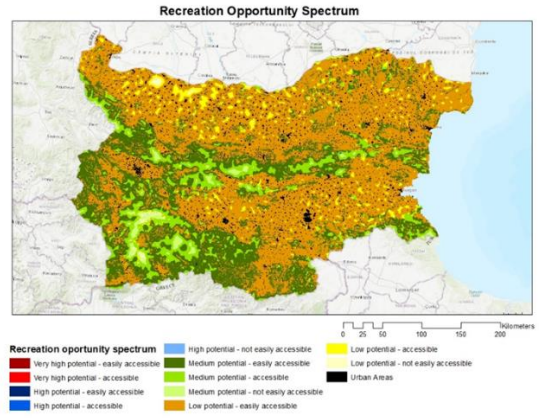
	• Land Cover data correlated to 4rd level CORINE classes downscaled to 1:25000; • 1:25000 soil map data correlated to FAO classification; • Rainfall data • Runoff data (used for model calibration Data derived from KINEROS model (Malki Iskar and Yantra) and SWAT (Ogosta): • Soil water infiltration (mm) per subbasin (KINEROS) and HRU (SWAT) • Surface runoff (m^3/sec) per subbasin (KINEROS) and HRU (SWAT) • Peak flow (m^3/sec) per subbasin (KINEROS) and HRU (SWAT)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published/in preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Could be published if appropriate conditions are available
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	One published/ One planned
	Note(s)	

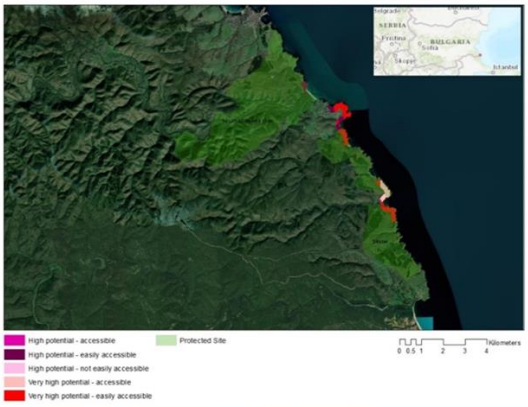
	If possible, specify link/ source	https://publications.jrc.ec.europa.eu/repository/handle/JRC123667?mode=full
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Hristova, D., Nedkov, S., Katsarski, N., 2021. Modelling flood regulation ecosystem services in support of ecosystem accounting in Bulgaria. In: La Notte A., Grammatikopoulou I., Grunewald K., Barton D.N., Ekinci B., Ecosystem and ecosystem services accounts: time for applications. EUR 30588 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-30142-4, doi:10.2760/01033, JRC123667, https://op.europa.eu/en/publication-detail/-/publication/90a6db49-700a-11eb-9ac9-01aa75ed71a1	

* The account is planned in two stages: 1st stage - Account based of the three case studies to be done within MAIA project until the end of the project (the report will be ready by the end of March); 2nd stage account at national scale to be done within INES project funded by the Bulgarian National Science Fund, the project has already started but the tasks on flood regulation accounting are planned to start in November 2022.

Country		Bulgaria
Account type		Ecosystem service account (biophysical)
Account code		BG_ESb_R_2
Funding partners		Bulgarian Academy of Sciences (National Institute of Geophysics, Geodesy and Geography), MAIA project
Other involved partners		SU, IG, NSI
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems

Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Outdoor recreation
Temporal specifics	Temporal coverage	
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	National/ sub-national
	If sub-national, please specify area	Smolyan municipality
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Administrative scale
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	1 km^2
Methodology		
General description	The ESTIMAP model is adapted and successfully tested at national scale in Bulgaria. It is used to evaluate and map the potential supply of the ecosystem services to support outdoor recreational, leisure and sport activities, in relation to the proximity to the population settlements and roads (considered some of the main drivers of recreation resources use).	
Specific software/ model/ tool used	GIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	No
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	
	If yes, please specify	
Aggregation	*Yes/ no*	
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	Data made available from project "Conceptualization, flexible methodology, and a pilot geospatial platform for access of the Bulgarian natural heritage to the European digital single market of knowledge and information services", CE Heritage BG	
Output(s)		

Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes (a) Recreational Provision Potential map  (b) Recreation Opportunity Spectrum (ROS) map, applied here to reclassify the land cover, according to the possibilities it offers and the proximity to potential users. The assessment of potential benefits estimates the percentage of potential trips for each ROS category.  (c) The national scale study identifies the places with high and very high recreation potential at the local scale. Most of them are protected areas.

		The examples here shows the Mouth of the the Silistar and Kaliakra protected areas.  
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned for sub-national level (Smolyan Mun.) and published for national level (Ihtimanski et al, 2020)
	Note(s)	Smolyan municipality assessment is under preparation
	If possible, specify link/ source	Ihtimanski I, Nedkov S, Semerdzhieva L (2020) Mapping the natural heritage as a source of recreation services at national scale in Bulgaria. One Ecosystem 5: e54621.
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	Yes

	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	The research is funded from the project "Conceptualization, flexible methodology, and a pilot geospatial platform for access of the Bulgarian natural heritage to the European digital single market of knowledge and information services", CE Heritage BG
	If possible, specify link/ source	https://jbgs.arphahub.com/issue/3547/
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Ihtimanski I, Nedkov S, Semerdzhieva L (2020) Mapping the natural heritage as a source of recreation services at national scale in Bulgaria. One Ecosystem 5: e54621. Dodev, Y.; Zhiyanski, M.; Glushkova, M.; Borisova, B.; Semerdzhieva, L.; Ihtimanski, I.; Dimitrov, S.; Nedkov, S.; Nikolova, M.; Shin, W.S. An Integrated Approach to Assess the Potential of Forest Areas for Therapy Services. Land 2021, 10(12), 1354	

6.3. Annex: Czech Republic

6.3.1. Ecosystem extent account

Country		Czech Republic
Account type		Ecosystem extent account
Account code		CZE_EE_N_1
Funding partners		MAIA project; Global Change Research Institute CAS; Technology Agency of the Czech Republic
Other involved partners		Czech Statistical Office
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
	(Sub-)national/ international	International

Ecosystem type classification	If possible, please specify	CORINE Land Cover
	If (sub-)national, compatible with international classification (if yes, please specify which)	Not applicable
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	2000, 2006, 2012, 2018
	Frequency of updates	Pluri-annual (Land accounts are based on Corine Land Cover database which is being developed pluri-annually)
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	
Methodology		
General description	Original extent accounts have been developed based on the methodology of Land and Ecosystem Accounting (LEAC) by the European Environment Agency. With the adoption of SEEA-EA framework, extent account has been revised according to the accounting methodology of the statistical standard.	
Specific software/ model/ tool used	GIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	No
	If yes, please specify	Not applicable
Data source(s)	• Corine Land Cover (CLC)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes

	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	The extent account is planned to be published by the Czech Statistical Office
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.tandfonline.com/doi/full/10.1080/20964129.2018.1560233
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes

	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Vačkářů, D., Grammatikopoulou, I., 2019. Toward development of ecosystem asset accounts at the national level. Ecosystem Health and Sustainability 5, 36–46. https://doi.org/10.1080/20964129.2018.1560233	

6.3.2. Ecosystem service accounts – biophysical

Country		Czech Republic
Account type		Ecosystem service account (biophysical)
Account code		CZE_ESb_N_1
Funding partners		MAIA project; Global Change Research Institute CAS
Other involved partners		Ministry of Agriculture
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	Freshwater ecosystems, groundwater
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Water purification
Temporal specifics	Temporal coverage	2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at ecological scale
	If aggregated, please specify administrative or ecological scale	Ecosystem types MAES
	Spatial resolution	
Methodology		
General description	Delineation of basins to water withdrawal points. Land cover of the basins.	
Specific software/ model/ tool used	MS Excel, GIS	

Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	No
	If yes, please specify	Not applicable
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Aggregation of land cover (ecosystem types) extents - the sum of the areas of the individual ecosystems for all sampling points.
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Dataset containing yearly water withdrawal, water analysis, unit production costs, consumption of electrical power, raw water quality, water treatment technologies (data was provided by the Ministry of Agriculture) • Charge rates (own data collection)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable

Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Czech Republic
Account type		Ecosystem service account (biophysical)
Account code		CZE_ESb_N_2
Funding partners		MAIA project; Global Change Research Institute CAS
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Carbon sequestration
Temporal specifics	Temporal coverage	2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	
Methodology		
General description	Biocarbon accounts based on LULUCF inventories, National forest inventory, modelling of carbon sequestration and storage. Based on LULUCF inventories (Eurostat, FAO sources) the units refer to net emissions of CO2 eq. corresponding to carbon sequestration Look up table approach and process-based modelling (InVEST)	
Specific software/ model/ tool used	InVEST	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	
	If yes, please specify	
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Carbon data is aggregated at the level of ecosystem types
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• LULUCF inventory • National forest inventory • Scientific literature	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
	Yes/ no	Yes

Accounting spreadsheet(s)	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country	Czech Republic

Account type		Ecosystem service account (biophysical)
Account code		CZE_ESb_N_3
Funding partners		
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	Not to be fully developed within the runtime of the MAIA project
Ecosystems	Ecosystem types	
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Water retention
Temporal specifics	Temporal coverage	2000-2018
	Frequency of updates	Yearly
Spatial specifics	Spatial scale *[local, regional, national]*	National Regional
	If sub-national, please specify area	Main watersheds
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	Hydrological response units
Methodology		
General description	Modelling of water budged by hydrological model	
Specific software/ model/ tool used	Soil and water assessment tool (SWAT); R	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Volume of water infiltration, number of days with no water stress, possibly others
Aggregation	*Yes/ no*	
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Model parameters adjusted against measured stream flows

Data source(s)	• Hydrometeorological data • Digital terrain model EU-DEM • SoilGrids • Corine land cover	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable

MAIA contribution	Support through funding *[yes/ no]*	No
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes	The account has been addressed in MAIA WP4	
References		

6.3.3. Ecosystem service accounts – monetary

Country		Czech Republic
Account type		Ecosystem service account (monetary)
Account code		CZE_ESm_N_1
Funding partners		MAIA project; Global Change Research Institute CAS
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	Freshwater ecosystems, groundwater
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Water filtration
Temporal specifics	Temporal coverage	2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Not spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	Not applicable
Methodology		

General description	Replacement cost approach	
Specific software/ model/ tool used	STATA, linear regression	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	No
	If yes, please specify	Not applicable
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	The sum of the groundwater purification value for the whole Czech Republic
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	The difference in production costs of drinking water from groundwater and surface water depended on the model specification. It ranged between 0.078 and 0.093 EUR/m3. We used the cost difference of the model specification with significant variables only, which was 0.085 EUR/m3
Data source(s)	• Dataset containing yearly water withdrawal, water analysis, unit production costs, consumption of electrical power, raw water quality, water treatment technologies (data was provided by the Ministry of Agriculture) • Charge rates (own data collection)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable

	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation: submitted
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Horváthová, E. Analysis of Drinking Water Treatment Costs – with an Application to Groundwater Purification Valuation. One Ecosystem. (submitted), 10.3897/oneeco.coll.94	

Country		Czech Republic
Account type		Ecosystem service account (monetary)
Account code		CZE_ESm_N_2
Funding partners		MAIA project; Global Change Research Institute CAS
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing

	(Estimated) completion date	2022
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Carbon sequestration
Temporal specifics	Temporal coverage	2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Not spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	Not applicable
Methodology		
General description	The Damage based approach or the social cost of carbon (SCC); Values estimated by Integrated Assessment Models as calculated by the United States Government; Values estimated by applying a meta-analysis value transfer on the estimated SCC; The market based or marginal abatement cost (MAC) Values provide by the European Union Emissions Trading System (EU ETS)	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	
	If yes, please specify	
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Value transfer per tonne of carbon
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Values estimated by applying a meta-analysis value transfer on the estimated SCC	

	• Values provide by the European Union Emissions Trading System (EU ETS)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.sciencedirect.com/science/article/pii/S2212041621000206
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes

	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Grammatikopulou, I., Vačkářová, D. (2021). The value of forest ecosystem services: A meta-analysis at the European scale and application to national ecosystem accounting. Ecosystem Services 48, 101262.	

Country		Czech Republic
Account type		Ecosystem service account (monetary)
Account code		CZE_ESm_N_3
Funding partners		
Other involved partners		Czech Statistical Office
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	Not to be fully developed within the runtime of the MAIA project
Ecosystems	Ecosystem types	All – not distinguished
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Nature-motivated tourism
Temporal specifics	Temporal coverage	2018, 2019 2020 - when statistics released (possibly in 03/2022)
	Frequency of updates	Annual
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Not spatially explicit at the moment; it is foreseeable that the account can be made (fully) spatially explicit in the future
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	Not applicable
Methodology		
General description	The account uses expenditure data from the Tourism Satellite Account and two survey sources conducted with tourist in the Czech Republic to determine portion of tourism spending that could be attributed to nature	

	related activities. Broadly speaking we are following the Dutch approach with some modifications.	
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes or Partly
	If partly, please specify	SEEA guidelines is not detailed enough to be sure (no published report or scientific paper really is). We are using expenditure data from the Tourism Satellite Account, which should be correct in principle. As per "9.47 …. *Where travel cost data are not available, an alternative method to obtain the exchange value of recreation related services is to sum relevant consumption expenditures (e.g., using data from tourism satellite accounts).*"
Indicators used	*Yes/ no*	No
	If yes, please specify	Not applicable
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	The data is already aggregated from the Satellite account, done by the National Statistical Office
Validation process and/ or uncertainty assessment	Yes/ no	Yes – uncertainty assessment, to some extent.
	If yes, please specify	We are using different approaches and get different results: 1) using two survey methods to have a lower and upper bound and an average; 2) using input expert assessment to determine proportionality of different activities that could be attributed to nature; and 3) estimating values for recreation only activities and for all activities (following discussion with the statistical office)
Data source(s)	• Czech Tourism Satellite Account data https://www.czso.cz/csu/czso/tourism_satellite_account_tables • Two surveys: 1) Official Tourism Survey by the Czech Statistical Office and 2) survey from the CzechTourism Agency	
Output(s)		
Report(s)	*Yes/ no*	No (not yet)
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
	Yes/ no	No

Accounting spreadsheet(s)	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned in the future
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Possibly planned
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	No
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.4. Annex: Finland

6.4.1. Ecosystem extent account

Country		Finland
Account type		Ecosystem extent account
Account code		FI_EE_N_1
Funding partners		Finnish Environment Institute (SYKE), funded by InterReg Central Baltic (2020) and the MAIA Project
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2023
Ecosystem type classification	*(Sub-)national/ international*	National
	If possible, please specify	Marine environment (species and habitat based assessment)
	If (sub-)national, compatible with international classification (if yes, please specify which)	Habitats Directive Annex I habitats, Habitat types based on IUCN Red List of Ecosystems classification, broad habitats types (MSFD)
Ecosystems	Ecosystem types	Marine ecosystems
Temporal specifics	Temporal coverage	Data from a national inventory programme, complemented with monitoring data. Assessment of the extent can be repeated at regular intervals.
	Frequency of updates	Extent calculations piloted. Updates can be done annually, if data allows.
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Spatially explicit. Finnish sea areas, covering 81,500 km2.
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	20 m resolution
Methodology		
General description	Species-based extents rely on extensive spatial inventory data, from over 160 000 underwater sites. Based on the data, distributions of species	

	have been modelled at a high resolution (20 m). Additional data includes approximately 50 environmental variables, such as salinity, turbidity, or topographical complexity, that may be used in modelling. The models describe benthic invertebrates, vascular plants, alga and mosses, and as such form the extent of Finnish marine ecosystems. The most of species can be linked to international habitat classifications. As the distribution models only describe the probability of detecting a species at a given modelling grid (here, 400 m2), the probabilities need to be transformed into spatial extent units. The challenge is that discretization degrades the information content. For this reason, we calculated the median cover (%) for each species, based on the VELMU inventory data (assessed by a diver for 4 m2 sampling units). Then the extent per modelling unit (400m2) was calculated: median cover in dive * 0.04 * 100 * probability of occurrence. For mobile species, it was assumed that the whole grid can be suitable (400 * probability of occurrence). Calculations were done for all ~200 modelled species. Data also includes Habitats Directive Annex I habitats, which are expert-based assessments, and include eight habitats associated with marine environments: reefs, narrow inlets, lagoons, estuaries, shallow bays, sand banks and underwater parts of the Baltic Sea esker islands and islets. The data also cover the broad habitat types as formulated by the Marine Strategy Framework Directive, and habitat types based on the threatened status assessment and habitat typology of the IUCN Red Listed Ecosystems. All extents of individual species and habitats can be linked to ecosystem services. Fish are excluded of the assessment, as such data is not available.	
Specific software/ model/ tool used	The distribution of species was modelled based on an ensemble modelling method, Boosted regression trees (BRT), which combine statistical and machine learning traditions. BRTs combine multiple best models instead of one, and they are able to model interactions. BRTs are a common approach for developing species distribution models, and they are used for various purposes. A general description of the method can be found e.g. Elith et al., (2008), doi: 10.1111/j.1365-2656.2008.01390.x	
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	The IUCN Global Ecosystem Typology (level six hierarchy)
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	Species and habitat models are validated with data.
Data source(s)	Georeferenced data on marine environments: • Finnish Inventory Programme for Marine Underwater Diversity (VELMU) data on algae, vascular plants and invertebrates, collected in 2004-2020 from ca. 160 000 sites. • Regular monitoring of soft bottom macrofauna and environmental parameters (2004-2020) • Spatial data on human activities and anthropogenic pressures on and at sea, based on aerial image surveys and remote sensing	

Output(s)		
Report(s)	*Yes/ no*	Yes (MAIA report)
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	MAIA report published; scientific paper planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	No. Only extent and condition assessment done.
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Method of map production published in a MAIA project periodic report; scientific publication planned
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	No
	Note(s)	Geodata used for estimating extent and condition available in SYKE
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes

	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.4.2. Ecosystem condition account

Country		Finland
Account type		Ecosystem condition account
Account code		FI_EC_N_1
Funding partners		Finnish Environment Institute (SYKE), funded by InterReg Central Baltic (2020) and the MAIA Project
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2023
Ecosystems	Ecosystem types	Marine ecosystem
Temporal specifics	Temporal coverage	Data from a national inventory programme, complemented with monitoring data. Assessment of the extent can be repeated at regular intervals.
	Frequency of updates	Condition calculated only once. Updates not yet done, dependent on data availability.
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Spatially explicit. Finnish sea areas, covering 81,500 km2.
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	20 meters
Methodology		

General description	As the developed models describe the distribution of species, at the present, and at the current condition of the environment, which usually is an average condition of a period over years. Thus, degradation of habitats and species due to factors such as eutrophication has already been accounted for, based on information on turbidity or oxygen deficiency. What is missing is their degradation status due to direct human activities, such as conversion of coastal shores into infrastructure, dredging and dumping, resulting in modification of the seafloor, habitat loss, degradation and severe disturbance. Such degradations necessarily do not show in the marine status, and are thus less likely to be accounted for. The analysis of the effects of such activities on ecosystem extent was based on previous expert-based estimates on the magnitude and intensity of pressures in spatial context (Second Holistic Assessment of the Ecosystem Health of the Baltic Sea, HELCOM SPICE project, SEAmBOTH and Meriavain workshops, unpublished), but was modified to finer spatial scales (20 m). The condition here is reported for human activities, which lead to habitat loss (and species loss) per grid cell (400 m2). The loss of an area is based on the average extent (m2) of the activity in question, estimated from aerial images.	
Specific software/ model/ tool used	The distribution of species was modelled based on an ensemble modelling method, Boosted regression trees (BRT), which combine statistical and machine learning traditions. BRTs combine multiple best models instead of one, and they are able to model interactions. BRTs are a common approach for developing species distribution models, and they are used for various purposes. A general description of the method can be found e.g. Elith et al., (2008), doi: 10.1111/j.1365-2656.2008.01390.x The degradation of species/habitats was estimated in R, and raster-based calculations, where habitats most impacted got a value of 0 (habitat lost), and habitats in pristine condition (no human activity) a value of 1 (no decline in the habitat status).	
Following SEEA-EA guidelines	*Yes/ partly/no*	No
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	No
	If yes, please specify	Not applicable
Aggregation	*Yes/ no*	
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• Aerial image surveys and remote sensing of human activities • Expert-based workshops on the impact levels	
Output(s)		
Report(s)	*Yes/ no*	No

	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes

	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.5. Annex: France

6.5.1. Ecosystem extent account

Country		France
Account type		Ecosystem extent account
Account code		FR_EE_N_1
Funding partners		MAIA project
Other involved partners		AgroParisTech, CIRED, collaboration from the French Biodiversity Office (OFB), the French ministry for an ecological transition (MTE)
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystem type classification	*(Sub-)national/ international*	International
	If possible, please specify	EUNIS classification
	If (sub-)national, compatible with international classification (if yes, please specify which)	Not applicable
Ecosystems	Ecosystem types	Marine ecosystems
Temporal specifics	Temporal coverage	2000-2018 (composite map)
	Frequency of updates	No recurrent update
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Economic Exclusive Zone of France and marine sub-regions
	Spatial resolution	One-minute arc grid

Methodology		
General description	Surface aggregation of marine habitats	
Specific software/ model/ tool used	GIS, R, postgreSQL	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes, with EUNIS typology of habitats instead of IUCN typology
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	Sensitivity analysis on grid and spatial resolution used versus best-available maps
Data source(s)	• French biodiversity office (OFB) • Ifremer • French Marine Information System (SIMM) • Quemmerais-Amice et al. (2020)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No (MAIA viewer)
	Status *[planned/ in preparation/ published]*	Published (MAIA viewer)
	Note(s)	
	If possible, specify link/ source	

Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes	Accounting implemented in French metropolitan Exclusive Economic Zone as a whole and divided by sub-regions.	
References	Comte, A., Kervinio, Y., Levrel, H., 2020. Ecosystem accounting in support of the transition to sustainable societies – the case for a parsimonious and inclusive measurement of ecosystem condition. CIRED Working Paper; Quemmerais-Amice, F., Barrere, J., La Rivière, M., Contin, G., Bailly, D., 2020. A Methodology and Tool for Mapping the Risk of Cumulative Effects on Benthic Habitats. Frontiers in Marine Science 7; https://doi.org/10.3389/fmars.2020.569205 (research used in account); https://maiaportal.eu/storage/app/uploads/public/60a/e4f/c4e/60ae4fc4e1737895697701.pdf	

6.5.2. Ecosystem condition account

Country		France
Account type		Ecosystem condition account
Account code		FR_EC_N_1
Funding partners		MAIA project
Other involved partners		AgroParisTech, CIRED, collaboration from the French Biodiversity Office (OFB), the French ministry for an ecological transition (MTE)
Status	*Planned/ ongoing/ done*	Ongoing

	(Estimated) completion date	
Ecosystems	Ecosystem types	Marine ecosystems
Temporal specifics	Temporal coverage	2000-2018
	Frequency of updates	Depends on indicator, frequency of update to be determined
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Spatially explicit
	If aggregated, please specify administrative or ecological scale	Tables aggregated by marine sub-regions and at national level
	Spatial resolution	One-minute arc grid
Methodology		
General description	Combination of three categories of indicators reflecting the distinct values underlying ecosystem management, including heritage, functionality, and capacity	
Specific software/ model/ tool used	QGIS, PostgreSQL, R, Excel	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Biophyscial indicators with regard to heritage (benthic and pealgic), functionality (benthic and pealgic), capacity (pelagic)
Aggregation	*Yes/ no*	
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• French biodiversity office (OFB) • Ifremer • French reporting of the Marine Strategy Framewory Directive • French Marine Information System (SIMM) • Quemmerais-Amice et al. (2020)	

	• National History Museum (MNHN, INPN)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No (MAIA viewer)
	Status *[planned/ in preparation/ published]*	Published (MAIA viewer)
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Executive summary (4 pages in French)
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes

	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes	Accounting implemented in French metropolitan Exclusive Economic Zone as a whole and divided by sub-regions	
References	Comte, A., Kervinio, Y., Levrel, H., 2020. Ecosystem accounting in support of the transition to sustainable societies – the case for a parsimonious and inclusive measurement of ecosystem condition. CIRED Working Paper; https://maiaportal.eu/storage/app/uploads/public/60a/e4f/c4e/60ae4fc4e1737895697701.pdf	

6.5.3. Ecosystem asset account

Country		France
Account type		Ecosystem asset account
Account code		FR_EA_N_1
Funding partners		MAIA project
Other involved partners		AgroParisTech, CIRED, collaboration from the French Biodiversity Office (OFB), the French ministry for an ecological transition (MTE)
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystems	Ecosystem types	Marine ecosystems
Temporal specifics	Temporal coverage	
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Not spatially explicit, aggregated by marine sub-regions and aggregated at the national level
	If aggregated, please specify administrative or ecological scale	Aggregated by marine sub-regions and aggregated at the national level
	Spatial resolution	Not applicable

Methodology		
General description	Unpaid ecological costs (approach) based on dose-response modelling and on avoiding and restoration costs	
Specific software/ model/ tool used	R, Excel	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	
	If yes, please specify	
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Marine sub-regions and national level
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• French biodiversity office (OFB) • Ifremer • French reporting of the Marine Strategy Framework Directive	
Output(s)		
Report(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	No

	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	One publication will be submitted to the One Ecosystem Topical Collection "Monetary Valuation for Ecosystem Accounting"
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes	Accounting implemented in French metropolitan Exclusive Economic Zone as a whole and divided by sub-regions	
References	Comte, A., Kervinio, Y., Levrel, H., 2020. Ecosystem accounting in support of the transition to sustainable societies – the case for a parsimonious and inclusive measurement of ecosystem condition. CIRED Working Paper	

6.6. Annex: Germany

6.6.1. Ecosystem extent account

Country	Germany
Account type	Ecosystem extent account
Account code	DE_EE_N_1

Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done: For 2012, 2015, 2018 with first version of land cover data from the German Federal Agency of Cartography and Geodesy, no MAIA support was provided Ongoing: For 2012, 2015, 2018 with revised (2nd version) land cover data ongoing with MAIA support
	(Estimated) completion date	
Ecosystem type classification	*(Sub-)national/ international*	International
	If possible, please specify	CLC
	If (sub-)national, compatible with international classification (if yes, please specify which)	Not applicable
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	2012, 2015, 2018
	Frequency of updates	1 update with revised data in 2022
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 hectare (CORINE land cover data, CLC) and higher resolution linear elements, hedges, rivers, roads, paths
Methodology		
General description	Assessing the change of area from ecosystem types.	
Specific software/ model/ tool used	GIS-software ArcGISpro, development environment PyCharm	
	Yes/ partly/no	Yes

Following SEEA EA guidelines	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	Exchange with data delivering institution: Bundesamt für Kartographie und Geodäsie (Federal Agency for Cartography and Geodesy)
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1 • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50 Research Report "Accounting II" for the German Federal Agency for Nature Conservation, publication planned
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	November 2022
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: "Research Report Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published

	Note(s)	
	If possible, specify link/ source	Will partly be published in the open access German MAES-Report which will be published at the end of 2022. Some material is already published in scientific publications (see below)
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg: Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Grunewald, Karsten; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Meier, Sophie; Krüger, Tobias; Schorcht, Martin; Walz, Ulrich Hierarchical classification system of Germany's ecosystems as basis for an ecosystem accounting – methods and first results In: One Ecosystem 5 (2020) e50648, S.1-41 https://doi.org/10.3897/oneeco.5.e50648 Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring

		des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No* [i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.6.2. Ecosystem condition account

Country		Germany
Account type		Ecosystem condition account
Account code		DE_EC_N_1
Funding partners		Federal Statistical Office of Germany
Other involved partners		Federal Agency for Cartography and Geodesy; MAIA project
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	Spring 2023
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	Start 2015
	Frequency of updates	Pluri-annual (every 3 years)
Spatial specifics	Spatial scale *[local, regional, national]*	National + Exclusive economic zone
	If sub-national, please specify area	Not applicable

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit, whenever possible. Publication of results aggregated on administrative scale
	If aggregated, please specify administrative or ecological scale	Level of local authorities association ("Gemeindeverbandsebene") or higher (federal states)
	Spatial resolution	TBD
Methodology		
General description	TBD	
Specific software/ model/ tool used	ArcGIS, Python, (further software TBD)	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	A variety of indicators describing the ecosystem condition will be used for each ecosystem; selection of indicators to be decided
Aggregation	*Yes/ no*	Yes, when necessary
	If yes, please specify (e.g. aggregation level and method)	The aim is to represent information on the most disaggregated level that is meaningful for the public. Therefore, information will be aggregated where necessary, but we will avoid to construct weighted composite indicators that include different ecosystem characteristics.
Validation process and/ or uncertainty assessment	Yes/ no	TBD
	If yes, please specify	TBD
Data source(s)	• NDVI by remote sensing • Copernicus satellite programme • National data • Data according to reporting duties towards the EU (like WFD)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	

	If possible, specify link/ source	TBD
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	TBD
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	The maps that will be published will show information for small area grids as well as by administrative units
	If possible, specify link/ source	TBD
Geodata	*Yes/ no*	TBD
	Open access *[yes/ no]*	TBD
	Status *[planned/ in preparation/ published]*	planned
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	No
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes

	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem condition account
Account code		DE_EC_N_2
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	2012, 2015 and/or 2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Capture the change of condition with regard to the contribution of ecosystem types to the preservation of biodiversity in Germany.	
Specific software/ model/ tool used	ArcGISpro, PyCharm	
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Indicator: “Landscape fragmentation" (already published in the IOER monitor)

		Indicator: carbon stock in soil and vegetation. Data for 2018, calculation model for update every three years based on LBM-DE, BÜK200, NIR. Indicator: Biodiversity area indicator (biotope value points). Data for 2018, calculation model for update every three years based on LBM-DE. - from reporting on the habitat directives ("structure and functions") - from WFD reporting ("ecological status") - from national monitoring of High Nature Value ecosystems in agricultural landscapes (3 ratings) - naturalness of tree species (for forests not captured by the habitat directives) - age of tree species (for forests not captured by the habitat directives) Indicator: Protected areas (Nature-emphasized areas and nature reserves in Germany, already published in the IOER monitor) Indicator: Critical load exceedance – nitrogen. Data for 2015, calculation model for regular updates on the basis of UBA Indicator: Proportion of woody ecotones Indicator: Hemeroby index (already published in the IOER monitor)
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Sum resp. weighted average
Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Ongoing by external experts
Data source(s)	The data sources for most of the indicators are: • BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1 • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	

Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Partly published (s. link), others planned for 2023
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned for 2023
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Meier, Sophie; Grunewald, Karsten

		Datengrundlagen für einen Biodiversitätsflächenindikator auf Bundesebene In: Meinel, Gotthard; Schumacher, Ulrich; Behnisch, Martin; Krüger, Tobias (Hrsg.) : Flächennutzungsmonitoring XII mit Beiträgen zum Monitoring von Ökosystemleistungen und SDGs. Berlin : Rhombos-Verlag, 2020, (IÖR-Schriften; 78), S.191-202 https://doi.org/10.26084/12dfns-p020 Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)

	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem condition account – **near natural open land ecosystems**
Account code		DE_EC_N_3
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	near natural open land ecosystems
Temporal specifics	Temporal coverage	2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Capture the change of condition with regard to the contribution of ecosystem types to the preservation of biodiversity in Germany.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Near-natural open land ecosystems

		Indicator: Proportion of near-natural or denaturalised peatlands Concept/data in progress
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Weighted average
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1. • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	planned
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem condition account – **forest ecosystem**
Account code		DE_EC_N_4
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done

	(Estimated) completion date	
Ecosystems	Ecosystem types	Forest ecosystems
Temporal specifics	Temporal coverage	2000, 2006, 2012, 2016, 2020
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Administrative
	Spatial resolution	
Methodology		
General description	Capture the change of condition with regard to the contribution of ecosystem types to the preservation of biodiversity in Germany.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Forest ecosystems Indicator: Forests fragmentation (already in the IOER-monitor) Indicator: Annual wood increment (already published in the IOER monitor)
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Weighted average
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1.	

	• BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe;

		Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg: Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Grunewald, Karsten; Herold, Hendrik; Marzelli, Stefan; Meinel, Gotthard; Richter, Benjamin; Syrbe, Ralf-Uwe; Walz, Ulrich Assessment of ecosystem services at the national level in Germany – Illustration of the concept and the development of indicators by way of the example wood provision In: Ecological Indicators 70 (2016), S. 181-195 http://dx.doi.org/10.1016/j.ecolind.2016.06.010
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem condition account – **agricultural ecosystems**
Account code		DE_EC_N_5
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Agricultural ecosystems
Temporal specifics	Temporal coverage	s. indicator
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Capture the change of condition with regard to the contribution of ecosystem types to the preservation of biodiversity in Germany.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Indicator: Share of organic farming in area/LN/acre of land (2016) Indicator: livestock population (2010, 2016) Indicator: loss of arable land (2012, 2015, 2018)

		Indicator: Excess nitrogen land balance (3-year averages of 1995-1997, 2016-2018)
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Several administrative levels
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1. • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	http://doi.org/10.26084/45xx-rs50

Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No

Notes	
References	

Country		Germany
Account type		Ecosystem condition account – **water ecosystems**
Account code		DE_EC_N_6
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Water / floodplain ecosystems
Temporal specifics	Temporal coverage	s. indicator
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Capture the change of condition with regard to the contribution of ecosystem types to the preservation of biodiversity in Germany.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Indicator: Water quality (WFD) Indicator: Settlement and transport areas (SuV) in floodplains 2006, from 2008 to 2020 yearly

Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Sum resp. weighted average
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1. • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S. • https://www.umweltbundesamt.de/themen/wasser	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257

Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	https://www.umweltbundesamt.de/themen/wasser
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257 https://www.umweltbundesamt.de/themen/wasser
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Walz, Ulrich; Richter, Benjamin; Grunewald, Karsten Indikatoren zur Regulationsleistung von Auen. Ein Beitrag zum Konzept nationaler Ökosystemleistungs-Indikatoren Deutschland In: Naturschutz und Landschaftsplanung 49 (2017) 3, S.93-100
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	

MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem condition account – **Urban ecosystems**
Account code		DE_EC_N_7
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), MAIA project
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Urban ecosystems
Temporal specifics	Temporal coverage	s. indicators
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Capture the change of condition with regard to the contribution of ecosystem types to the preservation of biodiversity in Germany.	
Specific software/		

model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Indicator: Green space per inhabitant 2013, 2018 Indicator: Cooling effect through UGI Data for 2018 based on LBM-DE, Urban Atlas, script for update every three years.
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Average per city (> 50000 inhabitants)
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1. • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published resp. in preparation
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published resp. in preparation
	Note(s)	
	If possible, specify link/ source	https://www.ioer-monitor.de/en/indicators/#c257
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]

	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.6.3. Ecosystem service accounts (biophysical)

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_1
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Cropland, meadows and pastures
Ecosystem service	Ecosystem service category	provisioning
	Ecosystem service	Biomass provisioning service of agricultural lands
Temporal specifics	Temporal coverage	2012, 2015
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	Municipality
	Spatial resolution	1 ha
Methodology		

General description	German-wide spatially explicit data for the relative level of agricultural production on different soils were used as level of biomass provisioning services of agricultural lands in physical terms. We used this way, for it - helps to determine the service itself, independent of spatially specific levels of human inputs - there is a lack of data to determine the spatially specific level of agricultural production	
Specific software/ model/ tool used	Existing dataset of the German Federal Agency for Geosciences and Natural Resources (see below: Data sources)	
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	Not sufficient spatial explicit data on actual yields. Therefore, German-wide spatially explicit figures for the relative level of agricultural production on the different soils were used instead to determine the level of biomass provisioning services of agricultural lands in physical terms. Furthermore, yield based data would not help to determine the monetary value of the service because of a lack of data on agricultural profits in Germany. Instead, agricultural land rent was taken as a proxy for the monetary value of the service and the correlation between the relative level of agricultural production and agricultural land rents were used to assess the spatially explicit monetary values of the service.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Müncheberger Soil Quality Rating (SQR)
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Municipality, national, by summing up SQRs can be added as they are designed to correlate linearly with agricultural yields (the value of yields)
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Mueller L, Schindler U, Behrendt A, Eulenstein F, Dannowski R (2007) Field manual for detecting and assessing properties and limitations of soils for cropping and grazing. https://www.zalf.de/de/forschung_lehre/publikationen/Documents/Publikation_Mueller_L/field_mueller.pdf . Accessed on: 2022-3-28.	

	• BGR (2013) Bundesanstalt für Geowissenschaften und Rohstoffe: Ackerbauliches Ertragspotential der Böden in Deutschland. Bewertet nach dem Müncheberger Soil Quality Rating (1:1.000.000) auf Basis der BÜK1000N. https://www.bgr.bund.de/DE/Themen/Boden/Ressourcenbewertung/Ertragspotential/Ertragspotential_node.html. Accessed on: 2020-3-25. • BKG/Bundesamt für Kartographie und Geodäsie (2019b): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation. Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50 Hirschfeld, J., Hartje, V., Pekker, R., Grunewald, K., Meier, S., Sauer, A., Syrbe, R.-U., Zieschank, R., Schweppe-Kraft, B. (2020): Integration von Ökosystemen und Ökosystemleistungen in die Umweltökonomische Gesamtrechnung. Research Report for the German Federal Agency for Nature Conservation, Berlin/Dresden/Bonn, unpublished.
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	November 2022
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes

	Status *[planned/ in preparation/ published]*	Published / planned
	Note(s)	
	If possible, specify link/ source	Published: Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Additional maps in: Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.) : Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Article in "One Ecosystem", topical collection: "Monetary Valuation for

		Ecosystem Accounting" (Pensoft), planned for July 2022
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_2
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulation and maintenance
	Ecosystem service	Global climate regulation service
Temporal specifics	Temporal coverage	2018
	Frequency of updates	3-year (planned)
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 ha
Methodology		
General description	As far as possible according to the LULUCF methodology for National Inventory Reports under UNFCCC	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	GHG-Emission/sequestration in tCO2 – eq / ha
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	National, by summing up
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. • UBA Umweltbundesamt. Berichterstattung unter der Klimarahmenkonvention der Vereinten Nationen und dem Nagoya-Protokoll 2020: Nationaler Inventarbericht zum Deutschen Treibhausgasinventar 1990-2018. 2020.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	

	If possible, specify link/ source	German Federal Agency for Nature Conservation. Research Report "Accounting II" Additional publication in German MAES report in preparation (planned for end of 2022)
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: "Research Report Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / planned
	Note(s)	
	If possible, specify link/ source	Additional maps in: Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned for 2023
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]

	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_3
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulation and maintenance
	Ecosystem service	Local (micro and meso) climate regulation service
Temporal specifics	Temporal coverage	2018
	Frequency of updates	3-year (planned)
Spatial specifics	Spatial scale *[local, regional, national]*	National (all cities with more than 50.000 inhabitants)
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	

Methodology		
General description	According to Zardo et al. (2017), the cooling capacity of vegetation in cities with more than 50.000 inhabitants within the Functional Urban Areas (FUA) was assessed. Zardo, L., Geneletti, D., Pérez-Soba, M., van Eupen, M. (2017): Estimating the cooling capacity of green infrastructures to support urban planning. In: Ecosystem Services (26), 225–235. doi:10.1016/j.ecoser.2017.06.016.	
Specific software/ model/ tool used	ArcGISpro and PyCharm	
Following SEEA EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Two indicators were developed: 1) The percentage of inhabitants was estimated that lived in areas with at least a good cooling capacity. 2) The mean cooling capacity of each city was assessed.
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. • Copernicus (2021): Urban Atlas. Street Tree Layer (STL) 2018. URL: https://land.copernicus.eu/local/urban-atlas/street-tree-layer-stl-2018 (Zugriff am: 13.12.2021). • Krüger, T., Eichler, L., Meinel, G., Tenikl, J., Taubenböck, H., Wurm, M. (2022). Urban Green Raster Germany 2018 (1 (2021)) [Data set]. https://doi.org/10.26084/ioerfdz-r10-urbgrn2018. • Destatis - Statistisches Bundesamt (2011): Zensusatlas 2011. https://atlas.zensus2011.de/ (27.11.2020), zuletzt aktualisiert 2015.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	

	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands – Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Research Report for the German Federal Agency for Nature Conservation (FKZ: 3518810400), Dresden
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands – Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Research Report for the German Federal Agency for Nature Conservation (FKZ: 3518810400), Dresden
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_4
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulation and maintenance
	Ecosystem service	Soil erosion control services (only water erosion)
Temporal specifics	Temporal coverage	2012, 2015
	Frequency of updates	3-year (planned)
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit

	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	1 ha
Methodology		
General description	Application of the adopted soil erosion equation of Wischmeyer and Smith 1978 to Germany	
Specific software/ model/ tool used	ArcGISpro PyCharm	
Following SEEA EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	National, by summing up
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S. • https://www.dwd.de/DE/klimaumwelt/cdc/cdc_node.html;jsessionid=B59802BD1D65FAA37BD2A7A5C6717869.live21071 • Bodenübersichtskarte 1:1.000.000 (BÜK1000) https://www.bgr.bund.de/DE/Themen/Boden/Informationsgrundlagen/Bodenkundliche_Karten_Datenbanken/BUEK1000/buek1000_node.html	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands – Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein

		bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Research Report for the German Federal Agency for Nature Conservation (FKZ: 3518810400), Dresden
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands – Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Research Report for the German Federal Agency for Nature Conservation (FKZ: 3518810400), Dresden
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Syrbe, R.-U., Schorcht, M., Grunewald, K., Meinel, G. (2018) Indicators for a nationwide monitoring of ecosystem services in Germany exemplified by the mitigation of soil erosion by water. Ecological Indicators 94. S. 46-54.
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_5
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulation and maintenance
	Ecosystem service	Pollination service (by wild bees)
Temporal specifics	Temporal coverage	2015
	Frequency of updates	3-year (planned)
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable

	Spatial resolution	1 ha
Methodology		
General description	The potential floral and nesting resources of ecosystem types were assessed by using an adapted approach of Zulian et al. 2013. Zulian, G.; Maes, J.; Paracchini, M.L. Linking Land Cover Data and Crop Yields for Mapping and Assessment of Pollination Services in Europe. Land 2013, 2, 472-492. https://doi.org/10.3390/land2030472	
Specific software/ model/ tool used	ArcGISpro, PyCharm	
Following SEEA EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	The indicator shows the quality of landscape regarding potential wild bee and nesting and foraging possibilities and if they are well-connected. The habitat quality is measured on a dimensionless scale from 0 (no wild bee habitat) to1 (good conditions for wild bees regarding habitat).
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	Not applicable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Zulian, G.; Maes, J.; Paracchini, M.L. Linking Land Cover Data and Crop Yields for Mapping and Assessment of Pollination Services in Europe. Land 2013, 2, 472-492. https://doi.org/10.3390/land2030472 • BKG/Bundesamt für Kartographie und Geodäsie (2019): Dokumentation. Digitales Landbedeckungsmodell für Deutschland. LBM-DE2018. Stand: 15.2.2019. BKG. Frankfurt am Main: 61 p. Version 1. • BKG/Bundesamt für Kartographie und Geodäsie (2016): Digitales Basis-Landschaftsmodell (AAA-Modellierung). Stand der Dokumentation: 1.4.2016. BKG. Frankfurt am Main: 6 S.	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	

	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands – Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Research Report for the German Federal Agency for Nature Conservation (FKZ: 3518810400), Dresden
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands – Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Research Report for the German Federal Agency for Nature Conservation (FKZ: 3518810400), Dresden
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Meier, S., Walz, U., Syrbe, R.-U., Grunewald, K. (2021): Das bundesweite Habitatpotenzial für Wildbienen. Ein Indikator für die Bestäubungsleistung. Naturschutz und Landschaftsplanung 53(6): 12-19
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	

	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_6
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Technical University Hannover, Hochschule Darmstadt - University of Applied Sciences, NIT - Institut für Tourismus- und Bäderforschung in Nordeuropa
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	CLC
Ecosystem service	Ecosystem service category	cultural
	Ecosystem service	Recreation-related services
Temporal specifics	Temporal coverage	2015
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale,*	Fully spatially explicit

	aggregated at ecological scale, fully spatially explicit]	
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 ha
Methodology		
General description	Physical measure: number of trips to experience nature to a destination. All areas in Germany outside settlements were seen as possible destinations. Frequency of visits in nature related trips to a destination were modelled depending on the: - location of a destination (distance from residents) - naturalness of a destination (naturalness of ecosystems measured on a hemeroby/naturalness scale) - diversity of ecosystems - uniqueness of a destination - accessibility of a destination - availability of restaurants and hotels - special recreation related infrastructure. The average number of nature-related trips per person, the different distances covered, and the facilities and naturalness of the chosen destination were determined via a survey supported by a GIS analysis of the target destination.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Indicators for naturalness, uniqueness, landscape diversity, infrastructure supply etc.
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Up to the national level by adding up the number of trips
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Hermes, J.; Haaren, C. v.; Schmücker, D.; Albert, C. (2021): Nature-based recreation in Germany: Insights into volume and economic significance. In: Ecological Economics 188. DOI: 10.1016/j.ecolecon.2021.107136	

Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation (planned for End of 2022)
	Note(s)	
	If possible, specify link/ source	Hermes, J.; Albert, C.; Schmücker, D.; Barkmann, J.; Haaren, C. von (2018): Die Qualität der Landschaft für Feierabend und Wochenenderholung in Deutschland: Potenzial, Dargebot, Präferenzen, Nutzung. Endbericht zum Forschungsvorhaben „Erfassung und Bewertung kultureller Ökosystemleistungen in Deutschland“. Leibniz Universität Hannover, Institut für Umweltplanung; Hochschule Darmstadt, Fachbereich Gesellschaftswissenschaften; NIT – Institut für Tourismus- und Bäderforschung in Nordeuropa GmbH, gefördert durch das Bundesamt für Naturschutz mit Mitteln aus dem Umweltforschungsplan.
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes (preliminary version)
	Status *[planned/ in preparation/ published]*	Final version in preparation. Preliminary versions published.
	Note(s)	
	If possible, specify link/ source	Preliminary version: Hermes, J.; Albert, C.; & Haaren, C. v. (2020): Erfassung und Bewertung der kulturellen Ökosystemleistung Naherholung in Deutschland. UVP-report 34 (2): 61–70. DOI: 10.17442/uvp-report.034.08 https://www.researchgate.net/publication/348930887_Erfassung_und_Bewertung_der_kulturellen_Okosystemleistung_Naherholung_in_Deutschland_en_Mapping_and_Assessing_Local_Recreation_as_a_Cultural_Ecosystem_Service_in_Germany Final version

		will inter alia be published in the open access German MAES-Report which will be published at the end of 2022.
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Hermes, Johannes (2020): Dataset: KOeSL-Ergebnisse-Geodaten_V1., Research Data Repository der Leibniz Universität Hannover. DOI: 10.25835/0006102
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Hermes, Johannes & Albert, Christian & Haaren, Christina. (2021). Erfassung und Bewertung der kulturellen Ökosystemleistung Naherholung in Deutschland ***en: Mapping and Assessing Local Recreation as a Cultural Ecosystem Service in Germany. 34. 61-70. 10.17442/uvp-report.034.08. https://www.researchgate.net/publication/348930887_Erfassung_und_Bewertung_der_kulturellen_Okosystemleistung_Naherholung_in_Deutschland_en_Mapping_and_Assessing_Local_Recreation_as_a_Cultural_Ecosystem_Service_in_Germany
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes

	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_6
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), Technical University Berlin
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Publicly accessible greenspace in 1km radius of residence (woody vegetation, woodland, meadow and pasture, park/publicly accessible greenspace, other sport, leisure and recreation area, cemetery)
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Visual amenity services
Temporal specifics	Temporal coverage	2012
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	0.25 ha (spatial data on ecosystems), 100 x 100 m census data, 2km x 2 km calculation grid
Methodology		

General description	The two step physical indicator for the amenity service is a) the extent of publicly accessible greenspace in 1km radius of residence and b) the influence of this on individual well-being measured on a Likert-scale from 0 to 10	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	The two step physical indicator for the amenity service is a) the extent of publicly accessible greenspace in 1km radius of residence and b) the influence of this on individual well-being measured on a Likert-scale from 0 to 10
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	National, By summing up, Benefits measured on the Likert Skale were assumed to be interindividual comparable and addable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Krekel C., Kolbe J., Wüstemann H. (2016): The greener, the happier? The effect of urban land use on residential well-being. Ecological Economics 121: 117 – 127	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation. Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Hirschfeld, J., Hartje, V., Pekker, R., Grunewald, K., Meier, S., Sauer, A., Syrbe, R.-U., Zieschank, R., Schweppe-Kraft, B. (2020): Integration von Ökosystemen und Ökosystemleistungen in die Umweltökonomische Gesamtrechnung. Research Report for the German Federal

		Agency for Nature Conservation, Berlin/Dresden/Bonn, unpublished. („Accounting I")
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	November 2022
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: "Research Report Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022 Will also be published in the open access German MAES-Report which will be published at the end of 2022.
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko: National accounting of ecosystem extents and services in Germany: a pilot project. In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033

		Revised version in “One Ecosystem”, topical collection: “Monetary Valuation for Ecosystem Accounting” (Pensoft), unpublished
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESb_N_7
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done: For 2012, 2015, 2018 with 2019 data without MAIA support Ongoing: For 2012, 2015, 2018 with revised 2021 data ongoing with MAIA support
	(Estimated) completion date	July 2020 Revision: Spring 2023
Ecosystems	Ecosystem types	CLC
	Ecosystem service category	Cultural

Ecosystem service	Ecosystem service	Appreciation of ecosystem and species service[2]
Temporal specifics	Temporal coverage	2012, 2015, 2018
	Frequency of updates	1 update with revised data in 2022
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 ha + linear elements
Methodology		
General description	Appreciation of ecosystem and species services are physically measured by "biotope value points" assigned to each biotope type according to the Federal Compensation Ordinance. The ordinance regulates the determination of full compensation through restoration measures for impairments of ecosystems caused by construction and other measures that damage species and ecosystems. It assigns biotope values to about 300 (currently 1000) different biotope types. Mean biotope value point per CLC biotope type are determined with the help of additional information on the condition and the sub-types of CLC ecosystems-types taken from: - reporting on European Habitat Directives - reporting on the Water Framework Directive - mapping of biotopes within the agricultural landscape with high nature conservation value - data from the Federal Statistical Office on land use and the various types of agricultural land use - data from the Federal Forest Inventory	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	No recommendations in SEEA EA. According to SEEA EA appreciation of ecosystem and species services are not

[2] Appreciation of ecosystem and species services (biophysical). In terms of SEEA EA, this is a complementary account. However, it is argued that conservation issues addressed here are the focus of habitat maintenance services. If this is the case, the following account can also be considered a habitat maintenance account, which is part of the core accounts.

		services in the sense of SEEA EA as there is no need for transactions with ecosystems in order to be served by this service. It is, however, also argued that nature conservation aspects, addressed here, are focus of the habitat maintenance service. In this case this account is a core account belonging to the regulation and maintenance service accounts.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Biotope value points per ecosystem type
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	National level by addition
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)		
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft of Hirschfeld et a. 2020 available at German Federal Agency for Nature Conservation
	Note(s)	
	If possible, specify link/ source	Forschungsendbericht Hirschfeld, J., Hartje, V., Pekker, R., Grunewald, K., Meier, S., Sauer, A., Syrbe, R.-U., Zieschank, R., Schweppe-Kraft, B. (2020): Integration von Ökosystemen und Ökosystemleistungen in die Umweltökonomische Gesamtrechnung. Research Report for the German Federal Agency for Nature Conservation, Berlin/Dresden/Bonn, unpublished („Accounting I“)
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: Research Report “Accounting II”
	Yes/ no	Yes

Map(s) (formatted)	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	Will be published in the open access German MAES-Report which will be published at the end of 2022. Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Grunewald, Karsten; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Meier, Sophie; Krüger, Tobias; Schorcht, Martin; Walz, Ulrich Hierarchical classification system of Germany's ecosystems as basis for an ecosystem accounting – methods and first results In: One Ecosystem 5 (2020) e50648, S.1-41 https://doi.org/10.3897/oneeco.5.e50648

		Additional publication in German MAES report in preparation (planned for end of 2022)
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.6.4. Ecosystem service accounts (monetary)

Country		Germany
Account type		Ecosystem service account (monetary)
Account code		DE_ESm_N_1
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Cropland, meadows and pastures
Ecosystem service	Ecosystem service category	Provisioning
	Ecosystem service	Biomass provisioning service of agricultural lands
Temporal specifics	Temporal coverage	2012
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at administrative scale
	If aggregated, please specify administrative or ecological scale	Municipality
	Spatial resolution	1 ha
Methodology		
General description	German-wide spatially explicit data for the relative level of agricultural production on different soils (Soil Quality Rating [SQR]) were used as the level of biomass provisioning services of agricultural lands in physical terms. We used this way, for it - helps to determine the service itself, independent of spatially specific levels of human inputs, - there is a lack of data to determine the spatially specific level of agricultural production. The monetary valuation was based on the correlation between the SQR and the rent for agricultural land. Agricultural land rents are taken as a proxy for the net profit suggested for the monetary value of provisioning services by SEEA EA.	
Specific software/ model/ tool used	Existing dataset of the German Federal Agency for Geosciences and Natural Resources (see below: Data sources)	
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	Not sufficient spatial explicit data on actual yields. Therefore, German-wide spatially explicit figures for the relative level of agricultural production on the different soils were used instead to determine the level of biomass provisioning services of agricultural lands in physical terms. Furthermore, yield based data would not help to determine the monetary value of the service because of a lack of data on agricultural profits in Germany. Instead, agricultural land rent was taken as a proxy for the monetary value of the service and the correlation between the relative level of agricultural production and agricultural land rents were used to assess the spatially explicit monetary values of the service.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Müncheberger Soil Quality Rating (SQR), agricultural land rent

Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Municipality, national, by summing up
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Mueller L, Schindler U, Behrendt A, Eulenstein F, Dannowski R (2007) Field manual for detecting and assessing properties and limitations of soils for cropping and grazing. https://www.zalf.de/de/forschung_lehre/publikationen/Documents/Publikation_Mueller_L/field_mueller.pdf . Accessed on: 2022-3-28. • BGR (2013) Bundesanstalt für Geowissenschaften und Rohstoffe: Ackerbauliches Ertragspotential der Böden in Deutschland. Bewertet nach dem Müncheberger Soil Quality Rating (1:1.000.000) auf Basis der BÜK1000N. https://www.bgr.bund.de/DE/Themen/Boden/Ressourcenbewertung/Ertragspotential/Ertragspotential_node.html. Accessed on: 2020-3-25. • Garvert, H. (2017): Determinanten der Pachtpreise in Deutschland –Biogasförderung und Direktzahlungen im Fokus. Dissertation, Institut für Agrarpolitik und Marktforschung, Justus-Liebig-Universität Gießen. http://geb.uni-giessen.de/geb/volltexte/2017/13142/pdf/GarvertHendrik_2017_07_28.pdf, accessed 28.03.2022	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation. Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: “Research Report Accounting I”
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	November 2022
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: “Research Report Accounting II”
	Yes/ no	Yes

Map(s) (formatted)	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / planned
	Note(s)	
	If possible, specify link/ source	Published: Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Additional maps in: Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the

		European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (monetary)
Account code		DE_ESm_N_2
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulation and maintenance
	Ecosystem service	Global climate regulation service
Temporal specifics	Temporal coverage	2018
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National

	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 ha
Methodology		
General description	Physical service calculated as far as possible according to the LULUCF methodology for National Inventory Reports under UNFCCC Monetary value is calculated using a social cost approach.Cost rates per t CO2 according to Umweltbundesamt (Dessau): Methodenkonvention 3.1 zur Ermittlung von Umweltkosten – Kostensätze Stand 12/2020 (https://www.umweltbundesamt.de/publikationen/methodenkonvention-umweltkosten)	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Yes (but had to be discussed in detail)
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	No
	If yes, please specify	Not applicable
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	National, by summing up
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	Same as for biophysical account	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	

	If possible, specify link/ source	German Federal Agency for Nature Conservation. Research Report "Accounting II" Additional publication in German MAES report in preparation (planned for end of 2022)
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: "Research Report Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / planned
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: "Research Report Accounting II" Additional publication in German MAES report in preparation (planned for end of 2022)
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]

	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (monetary)
Account code		DE_ESm_N_3
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Technical University Hannover, Hochschule Darmstadt - University of Applied Sciences, NIT - Institut für Tourismus- und Bäderforschung in Nordeuropa
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	CLC
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Recreation-related services
Temporal specifics	Temporal coverage	2015
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Currently not spatially explicit, Fully spatially explicit planned for 2023
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Physical measure: number of trips to experience nature to a destination.	

	All areas in Germany outside settlements were seen as possible destinations. Frequency of visits in nature related trips to a destination were modelled depending on the: - location of a destination (distance from residents) - naturalness of a destination (naturalness of ecosystems measured on a hemeroby/naturalness scale) - diversity of ecosystems - uniqueness of a destination - accessibility of a destination - availability of restaurants and hotels - special recreation related infrastructure. The average number of nature-related trips per person, the different distances covered, and the facilities and naturalness of the chosen destination were determined via a survey supported by a GIS analysis of the target destination. The monetary value of recreation-related ecosystem services was calculated based on the correlation between travel effort and naturalness of the destination. This correlation was determined by a multiple regression between travel effort and the different characteristics of the destination such as naturalness, uniqueness, etc. (see above). The part of the monetised travel effort explained by the naturalness of a location was interpreted as the recreation-related ecosystem service.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Indicators for naturalness, uniqueness, landscape diversity, infrastructure supply etc.
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	On the national level by adding up the monetised travel effort per trip that was explained by the naturalness of the destination
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Hermes, J.; Haaren, C. v.; Schmücker, D.; Albert, C. (2021): Nature-based recreation in Germany: Insights into volume and economic significance. In: Ecological Economics 188. DOI: 10.1016/j.ecolecon.2021.107136	
Output(s)		
Report(s)	*Yes/ no*	Yes

	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation (planned for End of 2022)
	Note(s)	
	If possible, specify link/ source	Hermes, J.; Albert, C.; Schmücker, D.; Barkmann, J.; Haaren, C. von (2018): Die Qualität der Landschaft für Feierabend und Wochenenderholung in Deutschland: Potenzial, Dargebot, Präferenzen, Nutzung. Endbericht zum Forschungsvorhaben „Erfassung und Bewertung kultureller Ökosystemleistungen in Deutschland“. Leibniz Universität Hannover, Institut für Umweltplanung; Hochschule Darmstadt, Fachbereich Gesellschaftswissenschaften; NIT – Institut für Tourismus- und Bäderforschung in Nordeuropa GmbH, gefördert durch das Bundesamt für Naturschutz mit Mitteln aus dem Umweltforschungsplan.
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes (preliminary version)
	Status *[planned/ in preparation/ published]*	Final version in preparation. Preliminary versions published.
	Note(s)	
	If possible, specify link/ source	Preliminary version: Hermes, J.; Albert, C.; & Haaren, C. v. (2020): Erfassung und Bewertung der kulturellen Ökosystemleistung Naherholung in Deutschland. UVP-report 34 (2): 61–70. DOI: 10.17442/uvp-report.034.08 https://www.researchgate.net/publication/348930887_Erfassung_und_Bewertung_der_kulturellen_Okosystemleistung_Naherholung_in_Deutschland_en_Mapping_and_Assessing_Local_Recreation_as_a_Cultural_Ecosystem_Service_in_Germany Final version will inter alia be published in the open access German MAES-Report which will be published at the end of 2022.

Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Hermes, Johannes & Albert, Christian & Haaren, Christina. (2021). Erfassung und Bewertung der kulturellen Ökosystemleistung Naherholung in Deutschland ***en: Mapping and Assessing Local Recreation as a Cultural Ecosystem Service in Germany. 34. 61-70. 10.17442/uvp-report.034.08. https://www.researchgate.net/publication/348930887_Erfassung_und_Bewertung_der_kulturellen_Okosystemleistung_Naherholung_in_Deutschland_en_Mapping_and_Assessing_Local_Recreation_as_a_Cultural_Ecosystem_Service_in_Germany
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (biophysical)
Account code		DE_ESm_N_4
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER), Technical University Berlin
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	Publicly accessible greenspace in 1km radius of residence (woody vegetation, woodland, meadow and pasture, park/publicly accessible greenspace, other sport, leisure and recreation area, cemetery)
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Visual amenity services
Temporal specifics	Temporal coverage	2012
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	0.25 ha (spatial data on ecosystems), 100 x 100 m census data, 2km x 2 km calculation grid
Methodology		
General description	The two step physical indicator for the amenity service is a) the extent of publicly accessible greenspace in 1km radius of residence and b) the influence of this on individual well-being measured on a Likert-scale from 0 to 10. The individual simulated exchange value for an additional hectare of green space within 1 km of residence is estimated using a multi-criteria regression analysis between individual well-being and a number of explanatory variables, including the area of publicly accessible green space within 1 km, following the concept of Life Satisfaction Analysis (Experiences Preference method). The regression analysis shows both	

	the effect of additional income on well-being and the effect of additional green space on well-being. By comparing these two relationships, the effect of additional green space on well-being can be transformed into an income equivalent, which can be interpreted as a simulated price. This simulated price depends on the total supply of green space in the 1km radius and is highest when there is no accessible public green space at all and zero when the supply of green space exceeds saturation point.	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	SEEA EA proposes Hedonic Pricing for the valuation of visual amenities. A comparison between the results of Hedonic Pricing on the one hand and Life Satisfaction Analysis on the other hand, both for the same explanatory variable (publicly accessible green spaces within a radius of 1 km), showed that Hedonic Pricing seems to capture only a very small part of the simulated price captured by Life Satisfaction Analysis. This can be explained by the high market imperfections in real estate markets (incomplete information, high transaction costs, limited short-term supply, equity preferences ...). Therefore, the Life Satisfaction Analysis was used instead, which can be interpreted as a simulated exchange value method in the terminology of SEEA EA.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	The two step physical indicator for the amenity service is a) the extent of publicly accessible greenspace in 1km radius of residence and b) the influence of this on individual well-being measured on a Likert-scale from 0 to 10
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Up to the national level, by summing up. Individual income (income equivalents) were assumed to be inter-individually comparable and addable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	• Krekel C., Kolbe J., Wüstemann H. (2016): The greener, the happier? The effect of urban land use on residential well-being. Ecological Economics 121: 117 – 127	

	• Kolbe, J., Krekel, C., Schweppe-Kraft, B. (2019): Reconciling Experienced-Preference Val-uation with Hedonic Pricing: The Case of Green Spaces. Technical University of Berlin, Lon-don School of Economics, German Federal Agency for Nature Conservation (BfN). Second Draft, 20th October 2019	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation. Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Hirschfeld, J., Hartje, V., Pekker, R., Grunewald, K., Meier, S., Sauer, A., Syrbe, R.-U., Zieschank, R., Schweppe-Kraft, B. (2020): Integration von Ökosystemen und Ökosystemleistungen in die Umweltökonomische Gesamtrechnung. Research Report for the German Federal Agency for Nature Conservation, Berlin/Dresden/Bonn, unpublished (Research Report „Accounting I")
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	November 2022
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: "Research Report Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022 Will also be published in the open access German MAES-Report which will be published at the end of 2022.
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No

	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published / in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko: National accounting of ecosystem extents and services in Germany: a pilot project. In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033 Revised version in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Germany
Account type		Ecosystem service account (monetary)
Account code		DE_ESm_N_5
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done: For 2012, 2015, 2018 with 2019 data without MAIA support Ongoing: for 2012, 2015, 2018 with revised 2021 data ongoing with MAIA support
	(Estimated) completion date	July 2020
Ecosystems	Ecosystem types	CLC
Ecosystem service	Ecosystem service category	Cultural (regulation and maintenance)
	Ecosystem service	Appreciation of ecosystem and species service (habitat maintenance service)[3]
Temporal specifics	Temporal coverage	2012, 2015, 2018
	Frequency of updates	1 update with revised data in 2022
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 ha + linear elements
Methodology		
General description	Using the terminology of SEEA EA, the method can be interpreted as a simulated exchange value method based on social preferences revealed by public expenditures on ecosystem restoration. In addition, individual preferences resulting from Contingent Valuation were taken into account	

[3] In terms of SEEA EA, this is a complementary account. However, it is argued that conservation issues addressed here are the focus of habitat maintenance services. If this is the case, the following account can also be considered a habitat maintenance account, which is part of the core accounts.

	when determining the exchange values. In accordance with accounting principles, the lower value of the two (based on restoration costs) was used. Cost-based method, cross-checked with the results of Contingent Valuation. Appreciation of ecosystem and species services are calculated as the average present value of the costs to create a biotope development with a present value of one "biotope value point". The valuation of ecosystem and species services is physically measured in a first step by "biotope value points", which are assigned to each biotope type according to the Federal Compensation Ordinance. The Ordinance regulates the determination of full compensation through restoration measures for impairments to ecosystems caused by constructional and other measures that damage species and ecosystems. (For more information on the allocation of "biotope value points", see "physical account"). The average restauration costs that lead to a biotope development resulting in a future biotope value development with a present value of one biotope value point were calculated using the cost estimate for the full implementation of NATURA 2000 (EU habitat directives) in Germany. Average costs are used instead of marginal costs to reflect that public decision makers tend to decide on the basis of costs and benefits of "packages of measures" rather than for each individual measure. The present value of the average biotope development costs per biotope value point multiplied with the biotope value points allocated to an ecosystem is a measure for the stock of biodiversity represented by this ecosystem. The service flow is calculated as the annuity of the present value (discount rate 3%, infinite calculation period).	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	No recommendations in SEEA EA. According to SEEA EA appreciation of ecosystem and species services are not services in the sense of SEEA EA as there is no need for transactions with ecosystems in order to be served by this service. It is, however, also argued that nature conservation aspects, addressed here, are focus of the habitat maintenance service. In this case this account is a core account belonging to the regulation and maintenance service accounts.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Biotope value points per ecosystem type
Aggregation	*Yes/ no*	Yes

	If yes, please specify (e.g. aggregation level and method)	National level by addition
Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Expert knowledge
Data source(s)		
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. http://doi.org/10.26084/45xx-rs50 Hirschfeld, J., Hartje, V., Pekker, R., Grunewald, K., Meier, S., Sauer, A., Syrbe, R.-U., Zieschank, R., Schweppe-Kraft, B. (2020): Integration von Ökosystemen und Ökosystemleistungen in die Umweltökonomische Gesamtrechnung. Research Report for the German Federal Agency for Nature Conservation, Berlin/Dresden/Bonn, unpublished („Accounting I")
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation: Research Report "Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	

	If possible, specify link/ source	Will be published in the open access German MAES-Report which will be published at the end of 2022. Article in “One Ecosystem”, topical collection: “Monetary Valuation for Ecosystem Accounting” (Pensoft), planned for July 2022
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033
Other output(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	Schweppe-Kraft, B.; Ekinci, B. (German Federal Agency for Nature Conservation) Ecosystem and Species Appreciation – Service Flow, Biodiversity Wealth and Biodiversity Debt. Paper presented on the 27th Meeting of the London Group on Environmental Accounting, https://seea.un.org/sites/seea.un.org/files/schweppe-kraft_ecosystem-and-species-

		appreciation-service-flow-biodiversity-wealth-and-biodiversity-debt_paper.pdf
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.6.5. Ecosystem asset account

Note: For the value of appreciation of ecosystem and species service / habitat maintenance service, only. Not taking all other values of ecosystems into account.

Country		Germany
Account type		Ecosystem asset account
Account code		DE_EA_N_1
Funding partners		German Federal Agency for Nature Conservation (BfN)
Other involved partners		Institute for Ecological Urban and Regional Development Dresden (IOER)
Status	*Planned/ ongoing/ done*	Done: For 2012, 2015, 2018 with 2019 data without MAIA support Ongoing: For 2012, 2015, 2018 with revised 2021 data ongoing with MAIA support
	(Estimated) completion date	July 2020, Revision: Spring 2023
Ecosystems	Ecosystem types	CLC
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Appreciation of ecosystem and species service
Temporal specifics	Temporal coverage	2012, 2015, 2018
	Frequency of updates	1 update with revised data in 2022
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	1 ha + linear elements
Methodology		
General description	Cost-based method, cross-checked with the results of Contingent Valuation. Appreciation of ecosystem and species services are calculated as the average present value of the costs to create a biotope development with a present value of one "biotope value point". The valuation of ecosystem and species services is physically measured in a first step by "biotope value points", which are assigned to each biotope type according to the Federal Compensation Ordinance. The Ordinance regulates the determination of full compensation through restoration measures for impairments to ecosystems caused by constructional and other measures that damage species and ecosystems. (For more information on the allocation of "biotope value points", see "physical account"). The average restauration costs that lead to a biotope development resulting in a future biotope value development with a present value of one biotope value point were calculated using the cost estimate for the full implementation of NATURA 2000 (EU habitat directives) in Germany. Average costs are used instead of marginal costs to reflect that public decision makers tend to decide on the basis of costs and benefits of "packages of measures" rather than for each individual measure. The present value of the average biotope development costs per biotope value point multiplied with the biotope value points allocated to an ecosystem is a measure for the stock of biodiversity represented by this ecosystem. The service flow is calculated as the annuity of the present value (discount rate 3%, infinite calculation period).	
Specific software/ model/ tool used		
Following SEEA EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	Captures the present value of the appreciation of ecosystem and species services, only. Does not capture the future value of all other relevant services. According to SEEA EA appreciation of ecosystem and species services are not services in the sense of SEEA EA as there is no need for transactions with ecosystems in order to be served by this service.

		It is, however, also argued that nature conservation aspects, addressed here, are focus of the habitat maintenance service. In this case this account can be seen as a capital core account that captures one out of different values of the future services of ecosystems, here estimated as proxy by the ecosystem creation and maintenance cost.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Biotope value points per ecosystem type
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	National level by addition
Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Expert knowledge
Data source(s)		
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	First draft available at German Federal Agency for Nature Conservation, final draft in preparation
	Note(s)	
	If possible, specify link/ source	Grunewald, K., Meier, S., Syrbe, R.-U., Walz, U. (2021): Ökosysteme Deutschlands. Klassifizierung und Kartierung der Ökosystemtypen sowie Indikatoren für ein bundesweites Assessment und Monitoring des Ökosystemzustands und der Ökosystemleistungen. Leibniz-Institut für ökologische Raumentwicklung e.V. (IOER), Dresden. Hirschfeld, J., Hartje, V., Pekker, R., Grunewald, K., Meier, S., Sauer, A., Syrbe, R.-U., Zieschank, R., Schweppe-Kraft, B. (2020): Integration von Ökosystemen und Ökosystemleistungen in die Umweltökonomische Gesamtrechnung. Research Report for the German Federal Agency for Nature Conservation, Berlin/Dresden/Bonn, unpublished
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes

	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	German Federal Agency for Nature Conservation Research Report "Accounting II"
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	Will be published in the open access German MAES-Report which will be published at the end of 2022. Article in "One Ecosystem", topical collection: "Monetary Valuation for Ecosystem Accounting" (Pensoft), planned for July 2022
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Additional publication in German MAES report in preparation (planned for end of 2022)
	Note(s)	
	If possible, specify link/ source	Grunewald, Karsten; Hartje, Volkmar; Meier, Sophie; Sauer, Axel; Schweppe-Kraft, Burkhard; Syrbe, Ralf-Uwe; Zieschank, Roland; Ekinci, Beyhan; Hirschfeld, Jesko National accounting of ecosystem extents and services in Germany: a pilot project In: La Notte, Alessandra; Grammatikopoulou, Ioanna; Grunewald, Karsten; Barton, David N.; Ekinci, Beyhan (Eds.): Ecosystem and ecosystem services accounts: time for applications. Luxembourg : Publications Office of the European Union, 2021, S.34-48 http://dx.doi.org/10.2760/01033
Other output(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published

	Note(s)	
	If possible, specify link/ source	Schweppe-Kraft, B.; Ekinci, B. (German Federal Agency for Nature Conservation) Ecosystem and Species Appreciation – Service Flow, Biodiversity Wealth and Biodiversity Debt. Paper presented on the 27th Meeting of the London Group on Environmental Accounting, https://seea.un.org/sites/seea.un.org/files/schweppe-kraft_ecosystem-and-species-appreciation-service-flow-biodiversity-wealth-and-biodiversity-debt_paper.pdf
MAIA contribution	Support through funding *[yes/ no]*	*No*[i]
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes (Workshops, joint publication efforts)
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.7. Annex: Greece

6.7.1. Ecosystem extent accounts

Country		Greece
Account type		Ecosystem extent account
Account code		GR_EE_N_1
Funding partners		MAIA project, University of Patras
Other involved partners		
	Planned/ ongoing/ done	Done
	(Estimated) completion date	Not applicable
Ecosystem type classification	*(Sub-)national/ international*	National
	If possible, please specify	Forests and forested areas
	If (sub-)national, compatible with international classification (if yes, please specify which)	No
Ecosystems	Ecosystem types	Forests and forested areas
	Temporal coverage	1945 and 2016

Temporal specifics	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Peloponnese
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	Topographical scale (~1:1000)
Methodology		
General description	Identification of forests and forested areas for the year 1945 and 2016, via photointerpretation and field surveys.	
Specific software/ model/ tool used	ArcGIS and QGIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	Integrated: The data set has been validated and approved by the Greek forest service
Data source(s)	• Ministry of Environment and Energy / National Cadastre https://www.geotee.gr/lnkFiles/DasikoiXartes240321/Dasikoi_Xartes_Dedomena_2021.zip	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	

	If possible, specify link/ source	
Map(s)(formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		

References	The outcomes are based on the current mapping data which can be changed during the objection process by any interested party. The assessment excludes areas within city and settlements limits.

Country		Greece
Account type		Ecosystem extent account
Account code		GR_EE_N_2
Funding partners		MAIA project, University of Patras
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystem type classification	*(Sub-)national/ international*	International
	If possible, please specify	EU MAES ecosystem type classification
	If (sub-)national, compatible with international classification (if yes, please specify which)	Not applicable
Ecosystems	Ecosystem types	All ecosystems
Temporal specifics	Temporal coverage	1990 - 2018
	Frequency of updates	Pluri-annual
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Corine Land Cover to MAES ecosystem types typology (https://biodiversity.europa.eu/ecosystems/mapping-and-assessment-of-ecosystems-and-their-services-maes-1/correspondence-between-corine-land-cover-classes-and-ecosystem-types)	
Specific software/	ArcGIS and QGIS	

model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	No
	If yes, please specify	Not applicable
Data source(s)	• Corine land Cover Datasets (1990 – 2018) (https://land.copernicus.eu/pan-european/corine-land-cover)	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	In preparation
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	

Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Greece
Account type		Ecosystem extent account
Account code		GR_EE_N_3
Funding partners		MAIA project, University of Patras
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystem type classification	*(Sub-)national/ international*	National
	If possible, please specify	Freshwater (surface and groundwater)
	If (sub-)national, compatible with international classification (if yes, please specify which)	No
Ecosystems	Ecosystem types	Rivers, lakes and groundwater bodies
Temporal specifics	Temporal coverage	Two reporting WFD reporting cycles, i.e., (2009-2015) and (2016-2021)
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	Regional (Alfeios river basin, Peloponnese)
	If sub-national, please specify area	Not applicable

	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	EEA Reference Grid Greece with cell size 1x1km^2
Methodology		
General description	Identification of rivers, lakes and groundwater bodies within the WFD, as reported in the river basin management plans. Additionally, (a) the Corine Land Cover (CLC) database for 1990, 2000, 2006, 2012, 2018, (b) JRC Global Surface Water, using changes in seasonality between 1984 and 2020 have been used for the water bodies identification.	
Specific software/ model/ tool used	ArcGIS and QGIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	Comparison between the various used sources
Data source(s)	• River basin management plans • CORINE land use land cover • JRC Global Surface Water	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	

Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	(Includes physical account)
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding [yes/ no]	Yes
	Personalized support from MAIA community [yes/ no]	Yes
	Support through more than one MAIA activity (such as webinars and workshops) [yes/ no]	Yes
	Support through one MAIA activity (such as webinars and workshops) [yes/ no]	No
Notes		
References		

6.7.2. Ecosystem condition account

Country		Greece
Account type		Ecosystem condition account
Account code		GR_EC_1
Funding partners		MAIA project, University of Patras
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystems	Ecosystem types	Freshwater (surface and groundwater)
Temporal specifics	Temporal coverage	Two WFD reporting cycles, i.e., (2009-2015) and (2016-2021)
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Alfeios river basin, Western Peloponnese
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	EEA Reference Grid Greece with cell size 1x1 km^2
Methodology		
General description	Freshwater ecosystem condition accounts are undertaken for the rivers and lakes, as well as for the groundwater, using the quantitative and qualitative data together with their assessment as reported in river basin management plans for the two WFD reporting cycles.	
Specific software/ model/ tool used	ArcGIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Surface waters (river and lakes): ecological status Groundwaters: quantitative, chemical and total status
Aggregation	*Yes/ no*	Yes

	If yes, please specify (e.g., aggregation level and method)	Within the EEA Reference Grid cell (size: 1x1 km^2) following the worst-case status classification
Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Comparison with the WFD reports
Data source(s)	• River basin management plans • Geoportal of Special Secretariat for Water	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable

	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.7.3. Ecosystem service account – biophysical

Country		Greece
Account type		Ecosystem service account (biophysical)
Account code		GR_ESb_R_1
Funding partners		MAIA project, University of Patras
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystems	Ecosystem types	
Ecosystem service	Ecosystem service category	Provisional
	Ecosystem service	Drinking and Irrigation water
Temporal specifics	Temporal coverage	
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Alfeios river basin, Water District of Western Peloponnese
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit

	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	EEA Reference Grid Greece 1x1km^2
Methodology		
General description		
Specific software/ model/ tool used		
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Drinking water use and supply Irrigation water use and supply
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	At EEA Reference Grid Greece cell with size 1x1km^2
Validation process and/ or uncertainty assessment	Yes/ no	Yes
	If yes, please specify	Comparison with river basin management plans
Data source(s)	• River basin management plans of two reporting cycles, (I) 2009-2015 and (ii) 2016-2021 • Eurostat –Water Database • Agricultural Accounts • WISE • FADN Database • Hellenic Statistical Authority • IACS geodatabase • Corine Land Use Land Cover • JRC • Global Surface Water	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	

	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In Preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as	Yes

	webinars and workshops) *[yes/ no]*	
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.7.4. Ecosystem service account – monetary

Country		Greece
Account type		Ecosystem service account (monetary)
Account code		GR_ESm_R_1
Funding partners		MAIA project, University of Patras
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	
Ecosystems	Ecosystem types	
Ecosystem service	Ecosystem service category	Provisioning
	Ecosystem service	Annual and summer drinking water use and supply, Annual irrigation water use and supply
Temporal specifics	Temporal coverage	1991, 2001 ,2011, 2015, 2021 for annual drinking water use and supply; 2015, 2016, 2017, 2018 for irrigation water use and supply
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Alfeios river basin, Peloponnese
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	EEA Reference Grid Greece with cell size 1x1km^2
Methodology		

General description	Valuation of drinking water use and supply based on cost of production, Valuation of irrigation water use and supply based on (I) standard output of crops, (ii)net return to water and (iii) cost of production	
Specific software/ model/ tool used	ArcGIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Value of drinking water use and supply (Euros per year and Euros per summer), Value of irrigation water use and supply (Euros per year)
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	At EEA Reference Grid cell (1x1 km^2)
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)		
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In Preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes

	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References		

6.7.5. Ecosystem asset account

Country		Greece
Account type		Ecosystem asset account
Account code		GR_EA_N_1
Funding partners		MAIA project, University of Patras
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystems	Ecosystem types	All terrestrial ecosystem types (MAES level 2)
Temporal specifics	Temporal coverage	2018
	Frequency of updates	

Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated
	If aggregated, please specify administrative or ecological scale	10x10 km EEA reference grid cell
	Spatial resolution	10x10 km
Methodology		
General description	Ecosystem type relative extent and flora species richness (total, endemic. ecosystem type exclusive, ecosystem type exclusive endemics) per 10x10 km EEA reference grid cell, with respect to the relevant species richness category, per floristic region in Greece	
Specific software/ model/ tool used	GIS analysis	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Species richness
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Aggregation of floristic records (point data) in each 10x10 km grid cell
Validation process and/ or uncertainty assessment	Yes/ no	No (all analyses are based on filed recordings)
	If yes, please specify	Not applicable
Data source(s)		
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
	Yes/ no	No

Accounting spreadsheet(s)	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	Baseline assessment (accounting reference)
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes	Extensive initial support from the MAIA partners, related to the Task.	
References		

6.8. Annex: The Netherlands

6.8.1. Ecosystem service accounts – biophysical

Country		The Netherlands
Account type		Ecosystem service account (biophysical)
Account code		NL_ESb_N_1
Funding partners		MAIA
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Coastal protection
Temporal specifics	Temporal coverage	2013, 2015, 2018
	Frequency of updates	Pluri-annual
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	10m
Methodology		
General description	GIS model	
Specific software/ model/ tool used	ArcGIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Km of coastline protected
Aggregation	*Yes/ no*	No

	If yes, please specify (e.g. aggregation level and method)	Not applicable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Land use • Location of dunes	
Output(s)		
Report(s)	*Yes/ no*	Yes: part of the NL biophysical ecosystem services account
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Yes, same report as above
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No

	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Linda de Jongh, Rixt de Jong, Sjoerd Schenau, Jocelyn van Berkel, Patrick Bogaart, Corine Driessen, Edwin Horlings, Marjolein Lof (WUR), Redbad Mosterd, Lars Hein (WUR) (2021) Natuurlijk Kapitaalrekeningen Nederland 2013-2018 (https://www.cbs.nl/nl-nl/longread/aanvullende-statistische-diensten/2021/natuurlijk-kapitaalrekeningen-nederland-2013-2018); Statistics Netherlands and WUR (2021), Natural Capital Accounting in the Netherlands – Technical report. Statistics Netherlands (CBS) and Wageningen University and Research (WUR)	

Country		The Netherlands
Account type		Ecosystem service account (biophysical)
Account code		NL_ESb_N_2
Funding partners		
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	Not applicable
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Local climate regulation
Temporal specifics	Temporal coverage	2013, 2015, 2018
	Frequency of updates	Pluri-annual
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	[but only in urban areas + 500m buffer]
	Spatial coverage *[not spatially explicit, aggregated at administrative scale,*	

	aggregated at ecological scale, fully spatially explicit]	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	The local climate regulation service is defined here as the contribution of vegetation within a radius of 500m to the cooling capacity of highly urban areas during a heat wave. The service is expressed in the contribution of vegetation to the temperature reduction of the total heat wave number in °C in the city during a heat wave). The heat wave number is calculated as the number of degrees of the maximum temperature above 25.0 °C cumulatively for all days in the heat wave, with a unit in degree-days	
Specific software/ model/ tool used	ArcGIS model	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes, see above.
	If yes, please specify	
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	Not applicable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not appliable
Data source(s)	• Ecosystem Type map from Statistics Netherlands • Tree cover map: bomen 10m, Shrub cover map: struik 10m and Grass cover map: gras 10m from RIVM • CBS buurt 2013, 2015 and 2018 from Statistics Netherlands • Sky-view-factor and climatic data from KNMI	
Output(s)		
Report(s)	*Yes/ no*	Yes, see reference below
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	

	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes, but only published for Amsterdam
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Linda de Jongh, Rixt de Jong, Sjoerd Schenau, Jocelyn van Berkel, Patrick Bogaart, Corine Driessen, Edwin Horlings, Marjolein Lof (WUR), Redbad Mosterd, Lars Hein (WUR) (2021) Natuurlijk Kapitaalrekeningen Nederland 2013-2018 (https://www.cbs.nl/nl-nl/longread/aanvullende-	

	statistische-diensten/2021/natuurlijk-kapitaalrekeningen-nederland-2013-2018); Statistics Netherlands and WUR (2021), Natural Capital Accounting in the Netherlands – Technical report. Statistics Netherlands (CBS) and Wageningen University and Research (WUR)

6.8.2. Ecosystem service account – monetary

Country		The Netherlands
Account type		Ecosystem service account (monetary)
Account code		NL_ESm_N_1
Funding partners		
Other involved partners		
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystems	Ecosystem types	All ecosystems
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Coastal protection
Temporal specifics	Temporal coverage	2013, 2015, 2018
	Frequency of updates	Pluri-annual
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Coastal zone of the NLs
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Replacement cost approach; compared with costs of constructing dykes.	
Specific software/ model/ tool used	ArcGIS	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	
Indicators used	*Yes/ no*	
	If yes, please specify	

Aggregation	*Yes/ no*	
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	
	If yes, please specify	
Data source(s)	• Various NLs publications on the costs of construction coastal production such as dykes, • Costs of dune maintenance and construction and maintenance of dykes	
Output(s)		
Report(s)	*Yes/ no*	Yes, see reference below
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Linda de Jongh, Rixt de Jong, Sjoerd Schenau, Jocelyn van Berkel, Patrick Bogaart, Corine Driessen, Edwin Horlings, Marjolein Lof (WUR), Redbad Mosterd, Lars Hein (WUR) (2021) Natuurlijk Kapitaalrekeningen Nederland 2013-2018 (https://www.cbs.nl/nl-nl/longread/aanvullende-statistische-diensten/2021/natuurlijk-kapitaalrekeningen-nederland-2013-2018); Statistics Netherlands and WUR (2021), Natural Capital Accounting in the Netherlands – Technical report. Statistics Netherlands (CBS) and Wageningen University and Research (WUR)	

6.9. Annex: Norway

6.9.1. Ecosystem asset account

Country		Norway
Account type		Norway, values of agricultural land (Ecosystem asset account)
Account code		NO_EA_N_1
Funding partners		Statistics Norway (SSB)
Other involved partners		Norwegian Agriculture Agency provided data on rental prices for agricultural land in active use
Status	Done	Done
	(Estimated) completion date	Calculations were prepared before presentation at the conference of the International Association for Research in Income and Wealth (IARIW), on 26 August 2021

Ecosystems	Ecosystem types	Agricultural ecosystems, with valuation in a context of ecosystem asset accounts based on resource rent for other natural resources
Temporal specifics	Temporal coverage	Agricultural values are assessed by three approaches, with different temporal and spatial coverage: **Resource rent** 1984-2018, for the natural resource sectors agriculture, hydro power, petroleum, aquaculture, fisheries, mining, forestry and harvesting of nature for own use and private sales; **Value of public transfers to agriculture** 1986-2018; **Rental prices** for agricultural land in active use, 2005-2020
	Frequency of updates	Input data are updated **yearly** (including data for resource rent calculation from national accounts, data for value of public transfers and rental prices for agricultural land.) The frequency of updates for future ecosystem accounts to be developed is not yet decided.
Spatial specifics	Spatial scale *[local, regional, national]*	**National** level: Data for resource rent calculation from national accounts, data for value of public transfers. **Municipal** (scale) level: Data for rental prices for agricultural land in active use These data are not (yet) spatially explicit, due to lack of mapping of crops at farm level, a gap in data yet to be improved.
	If sub-national, please specify area	Data for rental prices for agricultural land in active use are available at municipal level, provided by the Norwegian Agriculture Agency.
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Not spatially explicit. Input data are aggregated at administrative level: national level for resource rent and public transfers, and municipal level for rental prices.
	If aggregated, please specify administrative or ecological scale	National level for resource rent and public transfers, and municipal level for rental prices.
	Spatial resolution	Not spatially explicit at ecosystem scale, input data for rental prices available at municipal level.
Methodology		
General description	Agricultural values are assessed by three methods:	

	Resource rent calculation, according to National Accounts procedures, System of National Accounts (SNA) and SEEA-EA Indirect valuation of societal willingness to pay for agriculture by the level of public transfers to agricultural subsidies Rental prices for agricultural land in active use as assessment of value of agricultural land	
Specific software/ model/ tool used	Standard tools	
Following SEEA-EA guidelines	*Yes/ partly/no*	Partly
	If partly, please specify	Resource rent calculations follow SEEA-EA guidelines Values of agriculture presented here represent estimates of values of agricultural land as basis for (future) assessments of ecosystem services, as assessments of (farm level and ecosystem level) agricultural extent and condition are not yet available for Norway.
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Resource rent for agriculture Indirect valuation by public transfers Rental prices for agricultural land in active use.
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	Input data for indicators are aggregated at national level for resource rent and public transfers and at municipal level for rental prices.
Validation process and/ or uncertainty assessment	Yes/ no	No/Partly
	If yes, please specify	Sensitivity analysis of resource rent has been carried out as standard procedure. Practices for reporting rental prices for agricultural land vary across municipalities, and future efforts to enhance data quality should aim to enhance consistency in reporting practice across municipalities, for prices and location of rented land. A challenge for developing ecosystem accounting for agriculture is lack of data on the spatial distribution of crops, neither for own land nor rented land, and future work should aim to develop remote sensing methods to assess the spatial distribution of crops at farm level.

Data source(s)	• National accounts: resource rent • Norwegian Agriculture Agency: rental prices for agricultural land • Statistics Norway (SSB): Land use statistics for agricultural land, for coverage	
Output(s)		
Report(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	See below: Scientific publication is in preparation
	If possible, specify link/ source	Not applicable
Accounting spreadsheet(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	(Accounting spreadsheets may possibly be part of future development of ecosystem accounting)
	If possible, specify link/ source	Not applicable
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	(Maps may possibly be part of future development of ecosystem accounting)
	If possible, specify link/ source	Not applicable
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	(Geodata may possibly be part of future development of ecosystem accounting)
	If possible, specify link/ source	Not applicable
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation H. M. Dalen, L. Lindholt, P. A. Garnåsjordet, M. E. Hillestad, A. Norderhaug and I. Aslaksen, and other contributing authors (2021): Valuing agricultural land: From resource rent and willingness to pay to values of ecosystem services, paper presented at the conference of the International Association for Research in

		Income and Wealth (IARIW), 26 August 2021, in presentation with comments by Mark de Haan of Statistics Netherlands.
	Note(s)	
	If possible, specify link/ source	https://iariw.org/wp-content/uploads/2021/06/LarsLindholt.pdf
Other output(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Two outputs in addition to article in international journal, in preparation: IARIW Conference presentation Discussion Paper from Statistics Norway (SSB) is in preparation, based on paper presented at IARIW conference, with Discussion Paper from internal review process before submission to the international journal Review of Income and Wealth
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes	As indicated above, this is not a full on SEEA-EA ecosystem asset account.	
References	H. M. Dalen, L. Lindholt, P. A. Garnåsjordet, M. E. Hillestad, A. Norderhaug and I. Aslaksen, and other contributing authors (2021): Valuing agricultural land: From resource rent and willingness to pay to values of ecosystem services. Paper presented at International Association for Research in Income and Wealth (IARIW), 26 August 2021, https://iariw.org/wp-content/uploads/2021/06/LarsLindholt.pdf	

6.10. Annex: Spain

6.10.1. Ecosystem extent account

Country		Spain
Account type		Ecosystem extent account
Account code		SP_EE_N_1
Funding partners		MAIA project, Rey Juan Carlos University
Other involved partners		Spanish Ministry of ecological transition and demographic challenge; Spanish National Statistical Institute
Status	*Planned/ ongoing/ done*	Done
	(Estimated) completion date	
Ecosystem type classification	*(Sub-)national/ international*	
	If possible, please specify	
	If (sub-)national, compatible with international classification (if yes, please specify which)	LULUCF IPCC classification and via a crosswalk is compatible with IUCN ET
Ecosystems	Ecosystem types	Sclerophyllous Mediterranean, Continental Mediterranean, Mediterranean mountain, Atlantic, Alpine, Macaronesia, Arid zones, Coastal areas, Other lands, Wetlands, Rivers & lakes, Perennial woody crops, Annual crops, Urban
Temporal specifics	Temporal coverage	1970-2015
	Frequency of updates	Every three years
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	The entire territory of Spain was considered as the study area, which includes the Spanish Iberian Peninsula and the Balearic and the Canary Islands
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	25 meters

Methodology		
General description	We developed an algorithm capable of producing ecosystem extent accounts for different periods, follow the SEEA-EA approach. From an ecosystem classification and a land cover mapping, we generated a map of ecosystem types, which is the basic input need it to assess extension changes in an accounting system. This algorithm gives us information on all transformations that occurred in the ecosystems between the periods studied. Including, on the one hand, information on the changes that each ecosystem has undergone (net change, turnover, stable stock, and extension change), and on the other hand, has given us information on the flows that occurred between different ecosystems.	
Specific software/ model/ tool used	Python	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	
Validation process and/ or uncertainty assessment	*Yes/ no*	Yes
	If yes, please specify	We use observational data from LUCAS to compare the results obtained on spatially explicit information.
Data source(s)	• National ecosystem classification • Land cover, land cover change, and forestry (LULUCF) • Supporting spatial data (Climate of peninsular Spain 1950–2007', MODIS1A, Terraclimate, CHIRPS, Copernicus riparian and coastal) • Land Cover Survey (LUCAS) program	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://maiaportal.eu/storage/app/media/MAIA_SP_Factsheet_final.pdf
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes

	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://www.sciencedirect.com/science/article/abs/pii/S0048969721079821
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References	Bruzón, A. G., Arrogante-Funes, P., de Anguita, P. M., Novillo, C. J., & Santos-Martín, F. (2022). How the ecosystem extent is changing: A national-level accounting approach and application. Science of The Total Environment, 152903.	

6.10.2. Ecosystem condition account

Country		Spain
Account type		Ecosystem condition account
Account code		SP_EC_N_1
Funding partners		MAIA project, Rey Juan Carlos University
Other involved partners		Spanish Ministry of ecological transition and demographic challenge; Spanish National Statistical Institute
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	Broadleaved, Coniferous, and Mixed forests for Sclerophyllous Mediterranean, Continental Mediterranean, Mediterranean mountain, Atlantic, Alpine, Macaronesia.
Temporal specifics	Temporal coverage	2000-2015
	Frequency of updates	Every three years
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	Not applicable
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	Not applicable
	Spatial resolution	25 meters
Methodology		
General description	Our computed based method follows the five steps of the SEEA-EA condition account framework and it works used three explicit spatial inputs, data of condition variables from different available data sources, ecosystem types and reference areas. These inputs have been in raster format. The method uses three main process steps to measure a condition index by year and ecosystem.	
Specific software/ model/ tool used	Python	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes

	If yes, please specify	NDWI, SOC, AOT40f, Critical loads eutrophication, Species richness Forest birds, Species richness Forest flora, Tree cover, NDVI, GPP, Forest Area Density Naturalness index
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	We have evaluated the distance between the weighted condition variables in the reference areas with the rest of the forest areas, used the max-min scaler to rescale the condition variables by reference values and applied the arithmetic mean for aggregate these condition variables in a composite condition index.
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Landsat, MODIS • JRC-soil, Land Cover Survey (LUCAS) program • European Environment Agency • Spanish Ministry of ecological transition and demographic challenge • Guidos tool box	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://maiaportal.eu/storage/app/media/MAIA_SP_Factsheet_final.pdf
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes

	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	Not applicable
	Status *[planned/ in preparation/ published]*	Not applicable
	Note(s)	Not applicable
	If possible, specify link/ source	Not applicable
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
Notes		
References		

6.10.3. Ecosystem service accounts - biophysical

Country		Spain
Account type		Ecosystem service account (biophysical)
Account code		SP_ESb_N_1
Funding partners		MAIA project, Rey Juan Carlos University
Other involved partners		Spanish Ministry of ecological transition and demographic challenge; Spanish National Statistical Institute
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	Sclerophyllous Mediterranean, Continental Mediterranean, Mediterranean mountain, Atlantic, Alpine, Macaronesia, Arid zones,

		Coastal areas, Other lands, Wetlands, Rivers & lakes, Perennial woody crops, Annual crops, Urban.
Ecosystem service	Ecosystem service category	Regulation services
	Ecosystem service	Carbon storage and sequestration
Temporal specifics	Temporal coverage	2000-2015
	Frequency of updates	Every three years
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Fully spatially explicit
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	25 meters
Methodology		
General description	The InVEST model developed by Stanford University is used for carbon storage and sequestration services. The InVEST Carbon Storage and Sequestration model estimates the current amount of carbon stored in a landscape and values the amount of sequestered carbon over time. First, it aggregates the biophysical amount of carbon stored in four carbon pools (aboveground living biomass, belowground living biomass, soil, and dead organic matter) based on land use/land cover (LULC) maps provided by users.	
Specific software/ model/ tool used	The InVEST Carbon Storage and Sequestration model (https://naturalcapitalproject.stanford.edu/software/invest-models/carbon)	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Carbon pool by ecosystem
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	Not applicable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable

Data source(s)	• Global Aboveground and Belowground Biomass Carbon Density Maps (NASA) • Soil Organic Carbon Stock Maps (ISRIC) • Information on dead wood from the Spanish forest monitoring network (MITERD) • Ecosystem extent account maps	
Output(s)		
Report(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	

	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Spain
Account type		Ecosystem service account (biophysical)
Account code		SP_ESb_N_2
Funding partners		MAIA project, Rey Juan Carlos University
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2023
Ecosystems	Ecosystem types	Forest
Ecosystem service	Ecosystem service category	Cultural
	Ecosystem service	Nature recreation
Temporal specifics	Temporal coverage	2021
	Frequency of updates	
Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		

General description	We compare models of landscape quality using Flickr and deep learning with an environmental indicator model, and explore their synergistic use.	
Specific software/ model/ tool used	R software, and R studio	
Following SEEA-EA guidelines	*Yes/ partly/no*	Party
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Environmental indicator
Aggregation	*Yes/ no*	No
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	Flickr images	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://maiaportal.eu/storage/app/media/MAIA_SP_Factsheet_final.pdf
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting

	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

6.10.4. Ecosystem service accounts – monetary

Country		Spain
Account type		Ecosystem service account (biophysical)
Account code		SP_ESm_N_1
Funding partners		MAIA project, Rey Juan Carlos University
Other involved partners		
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2023
Ecosystems	Ecosystem types	Forest
Ecosystem service	Ecosystem service category	Regulating
	Ecosystem service	Carbon storage
Temporal specifics	Temporal coverage	2000,2015
	Frequency of updates	

Spatial specifics	Spatial scale *[local, regional, national]*	National
	If sub-national, please specify area	
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	
	If aggregated, please specify administrative or ecological scale	
	Spatial resolution	
Methodology		
General description	Carbon Storage model uses maps of land use along with stocks in four carbon pools (aboveground biomass, belowground biomass, soil, and dead organic matter) to estimate the amount of carbon currently stored in a landscape or the amount of carbon sequestered over time.	
Specific software/ model/ tool used	InVest	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Price of Carbon, Annual Market Discount Rate, Annual Price Change
Aggregation	*Yes/ no*	Yes
	If yes, please specify (e.g. aggregation level and method)	
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	
Data source(s)	EU carbon price	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	Published
	Note(s)	
	If possible, specify link/ source	https://maiaportal.eu/storage/app/media/MAIA_SP_Factsheet_final.pdf

Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Geodata	*Yes/ no*	Yes
	Open access *[yes/ no]*	Yes
	Status *[planned/ in preparation/ published]*	In preparation
	Note(s)	Website for Spanish accounting
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	Yes
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	Yes
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

Country		Spain
Account type		Ecosystem service account (monetary)
Account code		SP_ESm_N_2
Funding partners		MAIA project
Other involved partners		CSIC, URJC
Status	*Planned/ ongoing/ done*	Ongoing
	(Estimated) completion date	2022
Ecosystems	Ecosystem types	Forest, shrubland and grassland
Ecosystem service	Ecosystem service category	cultural services
	Ecosystem service	Nature recreation
Temporal specifics	Temporal coverage	2022
	Frequency of updates	One time study
Spatial specifics	Spatial scale *[local, regional, national]*	Regional
	If sub-national, please specify area	Protected areas (National parks)
	Spatial coverage *[not spatially explicit, aggregated at administrative scale, aggregated at ecological scale, fully spatially explicit]*	Aggregated at ecological scale
	If aggregated, please specify administrative or ecological scale	Forest, shrubland and grassland into national parks
	Spatial resolution	
Methodology		
General description	The choice method can be used to estimate economic values for virtually any ecosystem or environmental service and can be used to estimate non-use as well as use values. The choice method asks the respondent to state a preference between one group of environmental services or characteristics, at a given price or cost to the individual, and another group of environmental characteristics at a different price or cost.	
Specific software/ model/ tool used	Choice method	
Following SEEA-EA guidelines	*Yes/ partly/no*	Yes
	If partly, please specify	Not applicable
Indicators used	*Yes/ no*	Yes
	If yes, please specify	Forest condition, species richness, IRPF values
Aggregation	*Yes/ no*	No

	If yes, please specify (e.g. aggregation level and method)	Not applicable
Validation process and/ or uncertainty assessment	Yes/ no	No
	If yes, please specify	Not applicable
Data source(s)	• Survey to population • Forest condition account in Spain • Biodiversity data	
Output(s)		
Report(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Accounting spreadsheet(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Map(s) (formatted)	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Geodata	*Yes/ no*	No
	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
Scientific publication(s)	*Yes/ no*	Yes
	Open access *[yes/ no]*	No
	Status *[planned/ in preparation/ published]*	Planned
	Note(s)	
	If possible, specify link/ source	
Other output(s)	*Yes/ no*	No

	Open access *[yes/ no]*	
	Status *[planned/ in preparation/ published]*	
	Note(s)	
	If possible, specify link/ source	
MAIA contribution	Support through funding *[yes/ no]*	Yes
	Personalized support from MAIA community *[yes/ no]*	No
	Support through more than one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
	Support through one MAIA activity (such as webinars and workshops) *[yes/ no]*	No
Notes		
References		

[i] The BfN is an official MAIA Partner. Nevertheless, they don't receive any direct financial support from the MAIA project. They fund the accounting activities from the IOER through the research projects Accounting I and II. Therefore, the account is considered MAIA-supported even though the official funding cannot be dedicated to the MAIA project directly.