Euroopa Liit
Ühtekuuluvusfond

Eesti
tuleviku heaks

KESKKONNA-
INVESTEERINGUTE
KESKUS

ELME

Looduse hüvede tegevuste ajalooline ja rahvusvaheline vaade

Kalev Sepp

ELME projekti seminar, 18.04.2023

KESKKONNAMINISTEERIUM

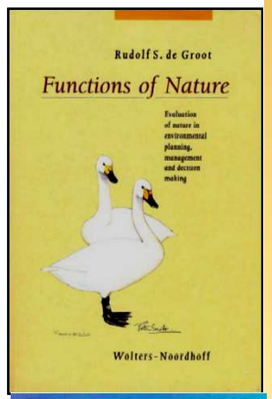
KESKKONNAAGENTUUR

TARTU ÜLIKOOL
1632

www.emu.ee
Eesti Maaülikool
Estonian University of Life Sciences

Ökosüsteemiteenuste kontseptsiooni teetähised

- Mõiste on kasutusel alates aastast 1970, inimesele olulised **ökosüsteemi hüved** kirjeldati süsteemselt raamatus (*Study of Critical Environmental problems*, 1970).
- 1990ndad tüvipublikatsioonid R. Groot **„Looduse funktsioonid“** (*“Functions of Nature”*, 1992), H. Daily, R. Costanza.
- **ÜRO Millenniumi ökosüsteemide hindamise aruanne (*Millennium Ecosystem Assessment,* MEA, 2005**).
- **Ökosüsteemiteenuste koostööplatvorm** (*Ecosystem Service Partnership*, **ESP**), 2008, Eesti Maaülikool on liige 2019.a.
- 7-10 juuni 2021 toimus Tartus *Third ESP Europe Conference “Ecosystem Services Science, Policy and Practice in the face of Global Changes*”, Eesti Maaülikool, Tartu Ülikool, Keskkonnaagentuur.



ESP

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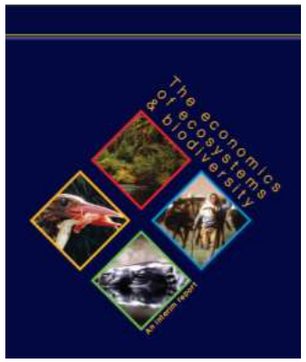
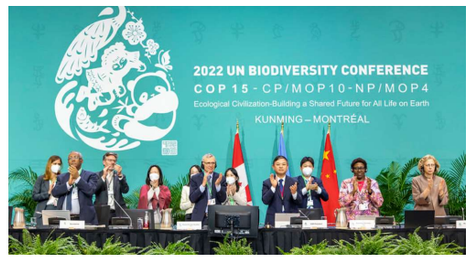
Ökosüsteemiteenuste kontseptsiooni teetähised

- Ökosüsteemide ja elurikkuse ökonoomika (*The Economics of Ecosystems and Biodiversity* **(TEEB)**, 2010.
- Elurikkuse konventsiooni strateegiline plaan 2011-2020, Aichi eesmärgid, 2010.
- EL elurikkuse strateegia aastani 2020, kinnitatud 2011. a. **MAES**.
- **Elurikkuse ja loodushüvede koostöökogu** (*Intergovernmental Panel on Biodiversity and Ecosystem Services* (IPBES), 2012.
- Euroopa Liidu elurikkuse strateegia aastani 2030, kinnitatud 2020. a.
- Elurikkuse konventsiooni COP 15 teekaart. 2022.a.



ipbes
Science and Policy for People and Nature



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Strateegilised dokumendid

Convention on Biological Diversity

CBD, Aichi eesmärgid, visioon 2050:

- **Elurikkus ja ökosüsteemi teenused** on hinnatud, kaitstud ja taastatud ja säästlikult kasutatud, et Planeet Maa ökosüsteemide seisund oleks hea ja ökosüsteemid panustaks inimeste heaollu.

EL visioon 2050:

- Euroopa Liidu **bioloogiline mitmekesisus** ja sellega seotud **ökosüsteemi teenused – piirkonna looduskapital** – kaitstakse, hinnatakse ning taastatakse 2050. aastaks asjakohaselt bioloogilise mitmekesisuse väärtusena omaette ja inimeste heaolu ja majandusliku jõukuse alusena, et ära hoida bioloogilise mitmekesisuse vähenemisest tingitud katastroofilised muutused.

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ELi elurikkuse strateegia aastani 2020

- Vastavalt **strateegia 5. tegevusele** pidid ELi liikmesriigid **kaardistama ja hindama ökosüsteemid** ja nende teenused **2014**. aastaks ning hindama ökosüsteemiteenuste **majandusliku väärtuse** ja võtma seda arvesse **arvepidamis- ja aruandlussüsteemides ELi** ja **siseriiklikul tasandil aastaks aastaks 2020.**

- 5. tegevuse elluviimiseks moodustas Euroopa Komisjon töörühma **„Ökosüsteemide ja nende teenuste hindamine“** (‘*Mapping and Assessment of Ecosystems and their Services’, **MAES***), kuhu kuulusid eksperdid Euroopa Komisjonist, liimesriikidest ja teadusringkondadest.

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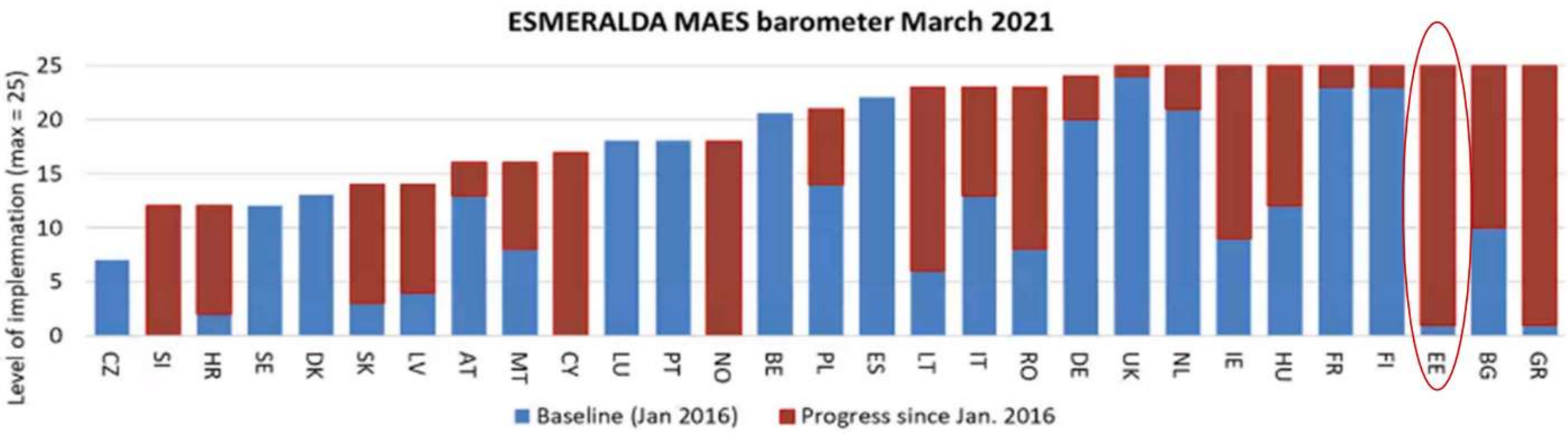
MAES töörühm on välja töötanud neljaetapilise analüütilise raamistiku

1) ökosüsteemide kaardistamine; 2) ökosüsteemi seisundi hindamine;

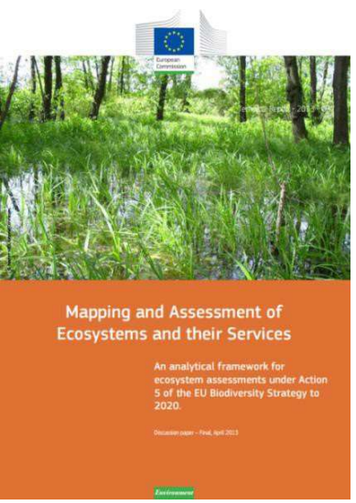
3) ökosüsteemiteenuste hindamine; 4) terviklik hindamine.

MAES baromeeter 2021 märts.

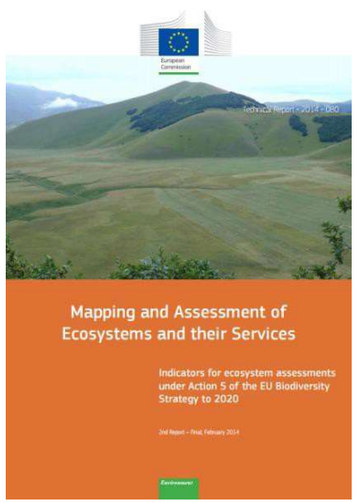


MAES-I töögrupi publikatsioonid

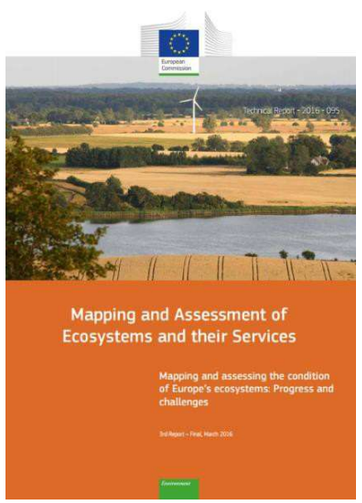
Conceptual framework and typologies



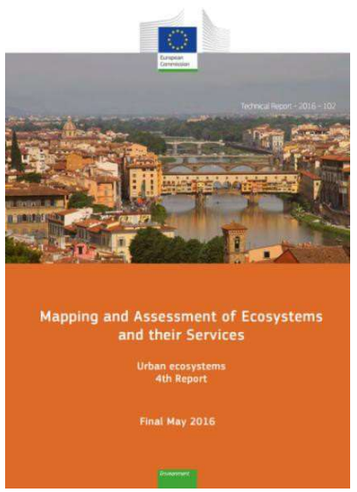
Indicators for ecosystem services



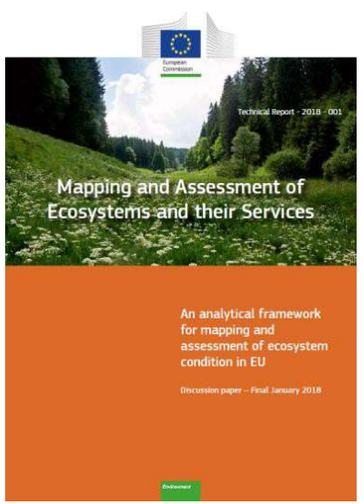
Ecosystem condition assessment



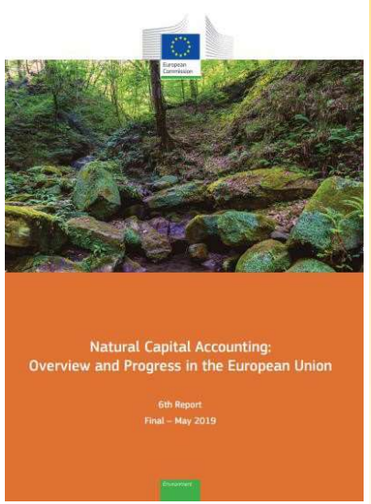
Urban ecosystems



Indicators for ecosystem condition



Progress on natural capital accounting



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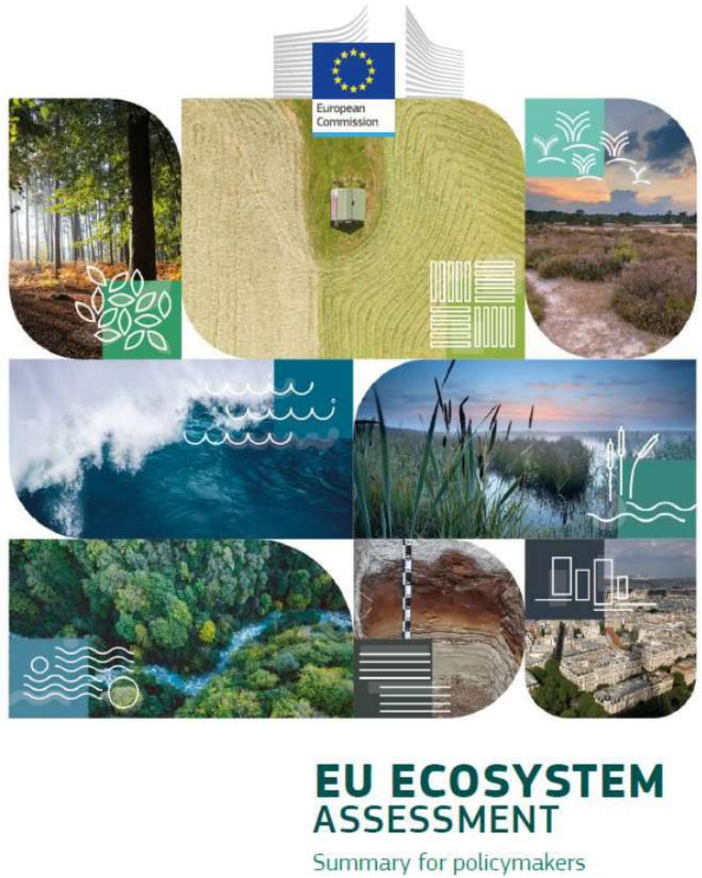
EL ökosüsteemide seisundi hinnang

- Analysis of the pressures and the **condition** (quality, health, integrity) of terrestrial, freshwater and marine ecosystems and their services.
- Single, comparable methodology based on European data relative to the **baseline year 2010.**
- **Summary for policymakers** with 10 key messages and background information.



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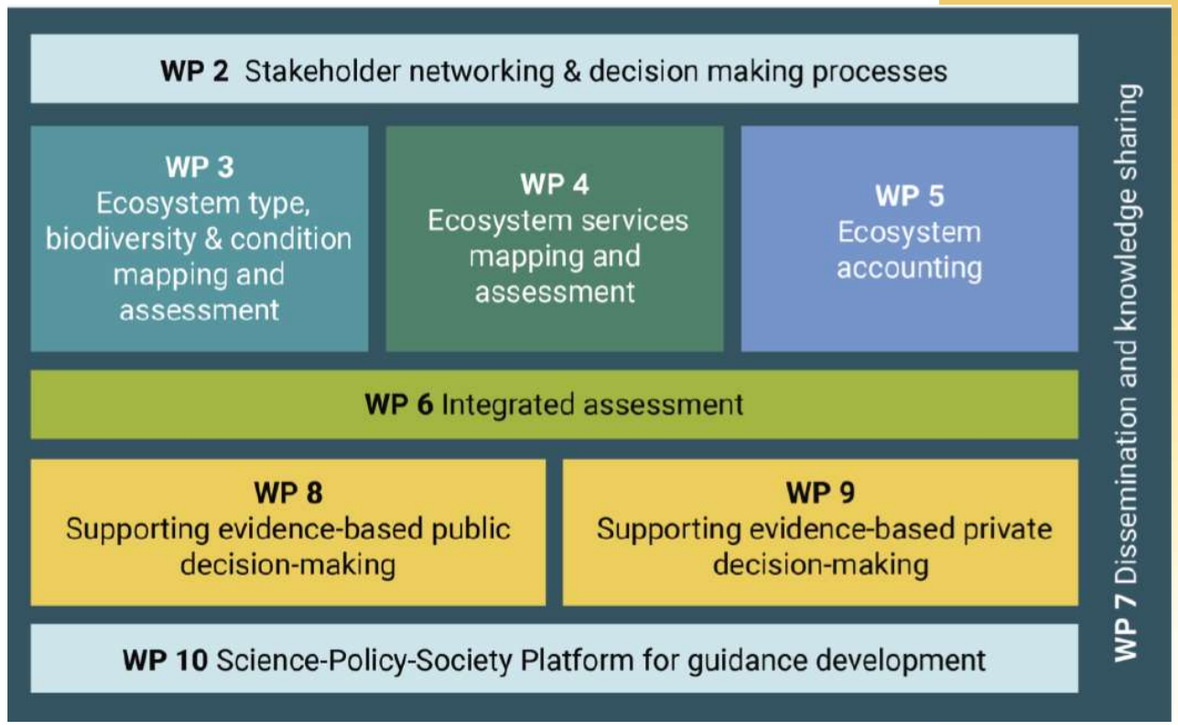
MAESist SELINAni (2022-2027)

SELINA Science for evidence-based and sustainable decisions about natural capital.

- Provide **robust information** that support the protection, restoration and sustainable use of ecosystems and their services in the EU by 2030.
- Builds upon EU initiative on Mapping and Assessment of Ecosystems and their Services **(MAES)** in the context of the **EU BD Strategies.**
- **Integrate** the different MAES components (ecosystem types & condition; ecosystem services; ecosystem accounting) **to enable uptake** of ES in decision making.
- Võimalik on liituda **SELINA** asjaosaliste töörühmaga, et anda sisendit projekti ja saada teavet projekti tulemustest. Kontakt: kalev.sepp@emu.ee.



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Integreeritud andmebaas

MAES Methods Explorer

- Developed database to collect the majority of available **methods** to map and assess ecosystem services.
- Aimed to **link** methods to specific ecosystem types as well as ecosystem services and actual case studies with.
- A variety of **entry points** to guarantee efficiency and utility.

(ESMERALDA, MOVE, MOVE-ON)

Update (ongoing)
Technicalities & Coordination
Content

Entries 224
Time span 2015 – 2021

Entries 881
Time span 1995 – 2018

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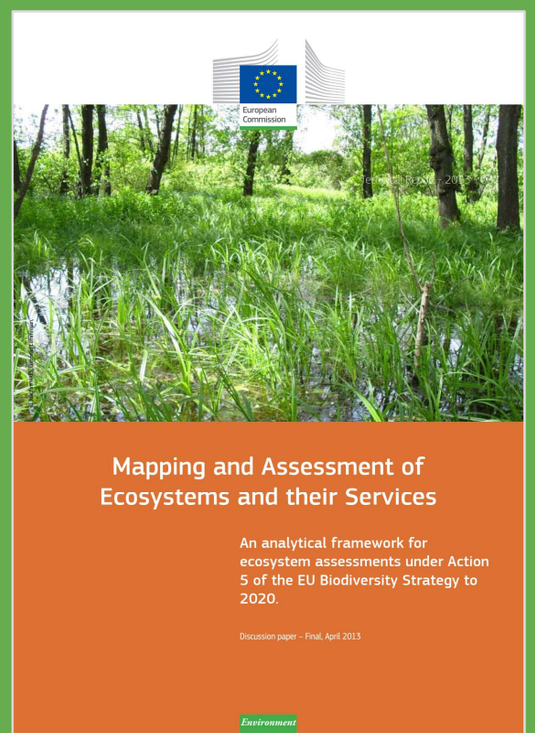
Ökosüsteemide tüpoloogiad

MAES Ecosystem typology

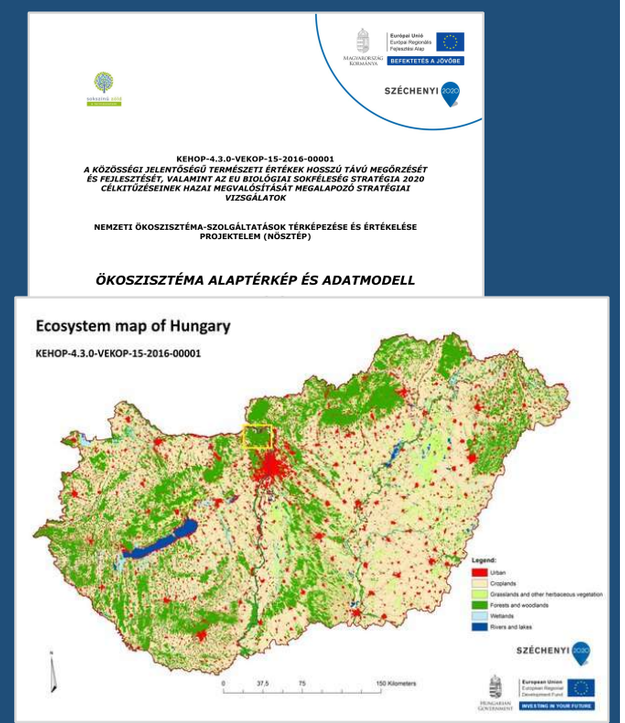


EUROSTAT Ecosystem typology

European Commission

eurostat

Hungarian Ecosystem typology



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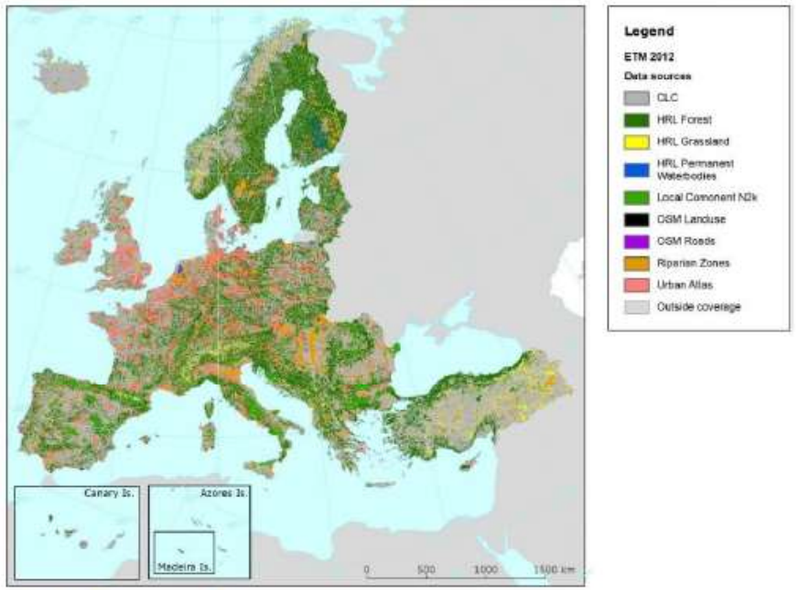
Ecosystem classification

Data availability

Copernicus land service portfolio



EMODnet for marine

- Bathymetry
- Seabed

MAES ecosystem types

Terrestrial

1. Urban
2. Cropland
3. Grassland
4. Woodland & forest
5. Heathland & shrub
6. Sparsely vegetated land

Freshwater

7. Wetlands
8. Rivers and lakes

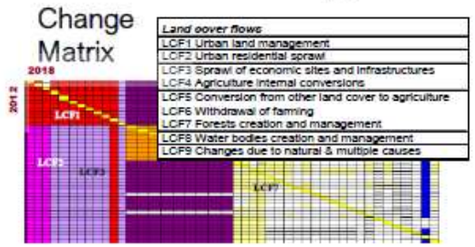
Marine

9. Marine inlets & transit. waters
10. Coastal
11. Shelf
12. Open ocean

Streamlining policies

Ecosystem services

Accounting



MAES final report

Summary: https://publications.jrc.ec.europa.eu/repository/handle/JRC123783
https://publications.jrc.ec.europa.eu/repository/handle/JRC120383
https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120383/annex_eu_ecosystem_assessment_final.pdf

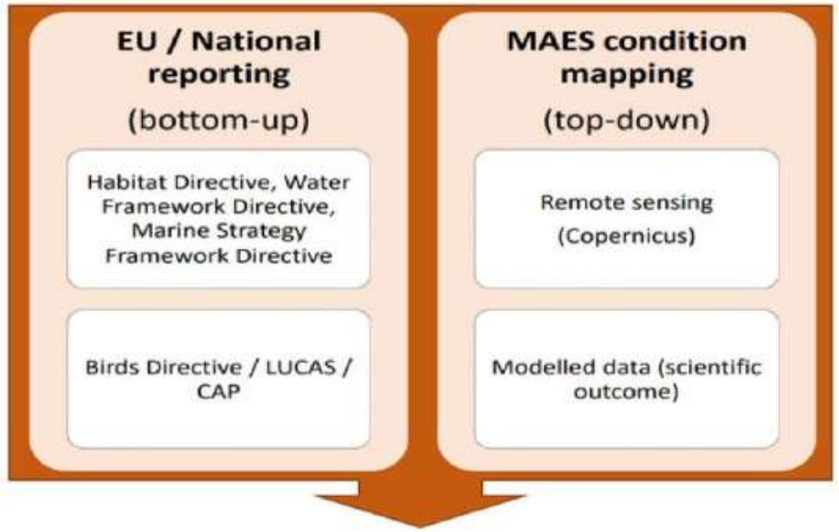
European Environment Agency

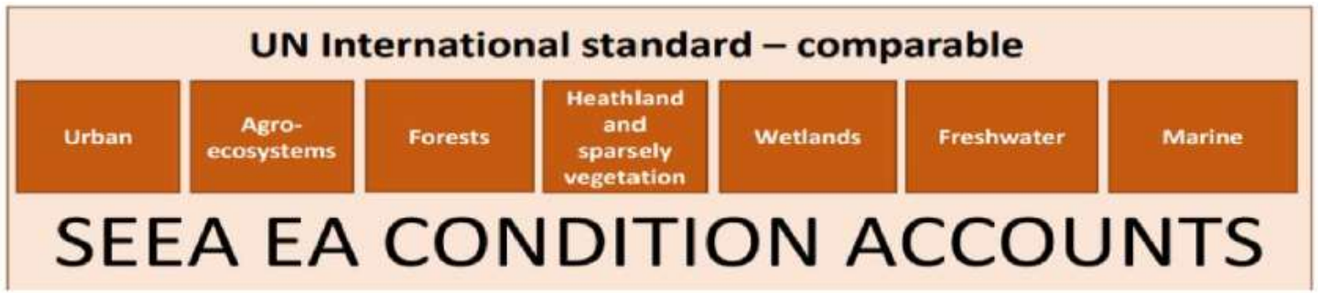
Ecosystem condition and accounting

Condition accounting under ESTAT Regulation and UN SEEA-EA

Towards a common EU methodology

Courtesy:
Sara Vallecillo, JRC





https://publications.jrc.ec.europa.eu/repository/handle/JRC130782

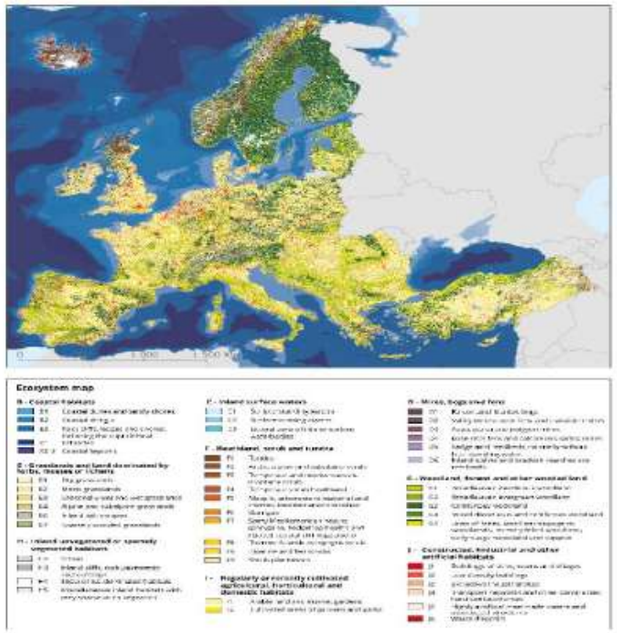
Reporting under nature restoration law

https://op.europa.eu/en/publication-detail/-/publication/95311c9d-f07b-11ec-a534-01aa75ed71a1

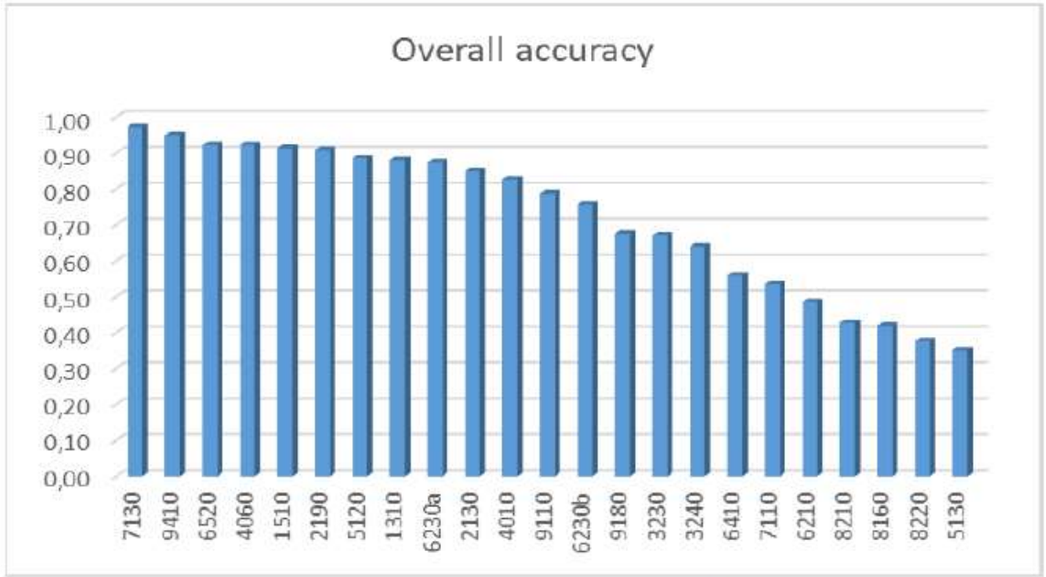
European Environment Agency

From ecosystem (MAES) towards habitat mapping (EUNIS)

Current ecosystem type map v3.1



Summary of the overall accuracies for the 22 European Annex I habitat types modelled with Maxent at a 100m resolution



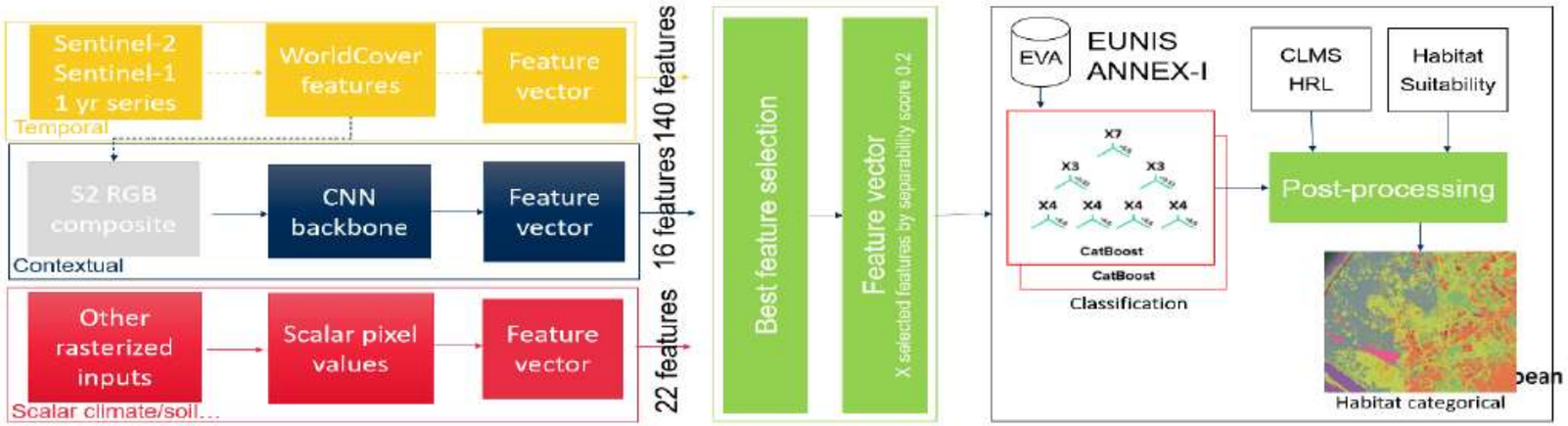
EVA: Selection based on distribution of Salix elaeagos (+ subsp.)

https://eunis.eea.europa.eu/
http://euroveg.org/eva-database

Ca. 60 Habitats

- Terrestrial (>50)
- freshwater (3)
- marine (>15)

Modelling with AI



European Environment Agency

EL ökosüsteemide tüpoloogia

	Ecosystem type
1	Settlements and other artificial areas
2	Cropland
3	Grassland (pastures, semi-natural and natural grasslands)
4	Forest and woodland
5	Heathland and shrub
6	Sparsely vegetated ecosystems
7	Inland wetlands
8	Rivers and canals
9	Lakes and reservoirs
10	Marine inlets and transitional waters
11	Coastal wetlands, beaches and dunes (shorelines)
12	Marine ecosystems (offshore coastal, shelf and open ocean)

ecosystem typology: evel 1	EU ecosystem typology: level 2	EU Ecosystem typology: level 3
1. Settlements and other artificial areas	1.1 Continuous settlement area	1.1.1 Dense residential area 1.1.2 Dense commercial and industrial area
	1.2 Discontinuous settlement area	1.2.1 Dispersed residential area 1.2.2 Dispersed commercial and industrial area
	1.3 Infrastructure	1.3.1 Road and rail networks and associated land 1.3.2 Port areas 1.3.3 Airports 1.3.4 Mineral extraction sites 1.3.5 Dump areas 1.3.6 Construction sites
	1.4 Urban greenspace	1.4.1 Parks 1.4.2 Sports sites 1.4.3 Cemeteries 1.4.4 Archaeological sites 1.4.5 Other urban green including water courses
2. Croplands	2.1 Annual croplands	2.1.1 Potato 2.1.2 Grain crops 2.1.3 Vegetables 2.1.4 Sugar beet 2.1.5 Other crops
	2.2 Rice fields	2.2.1 Rice fields
	2.3 Permanent crops	2.3.1 Olives 2.3.2 Vines 2.3.3 Apples 2.3.4 Pears 2.3.5 Oranges 2.3.6 Almonds 2.3.7 Cork oak 2.3.8 Other perennial crops and orchards
	2.4 Mixed farmland	2.4.1 Mosaic farmland 2.4.2 Agroforestry areas 2.4.3 Nurseries
	2.5 Greenhouses	2.5. Greenhouses

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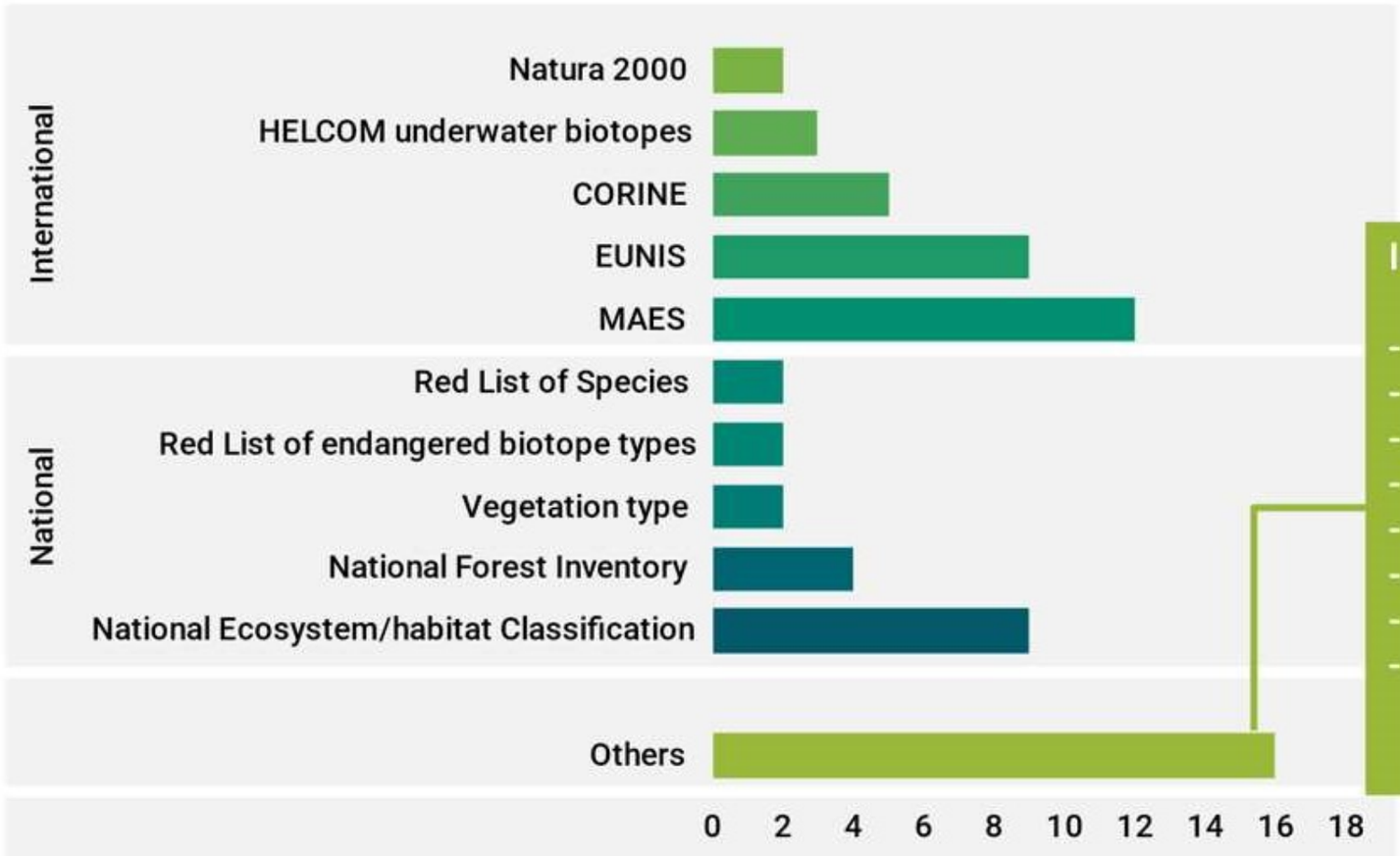
Ökosüsteemi tüpoloogiad EL riikides

Ecosystem typologies used in the countries



Including typologies such as:

- New EUROSTAT – EEA – JRC Typology
- Annex 1 – Habitats directive
- UN SEEA
- CICES (?)
- PHYSIS
- MEA
- LULUCF
- Classification of lake types in the ecological monitoring of freshwater bodies

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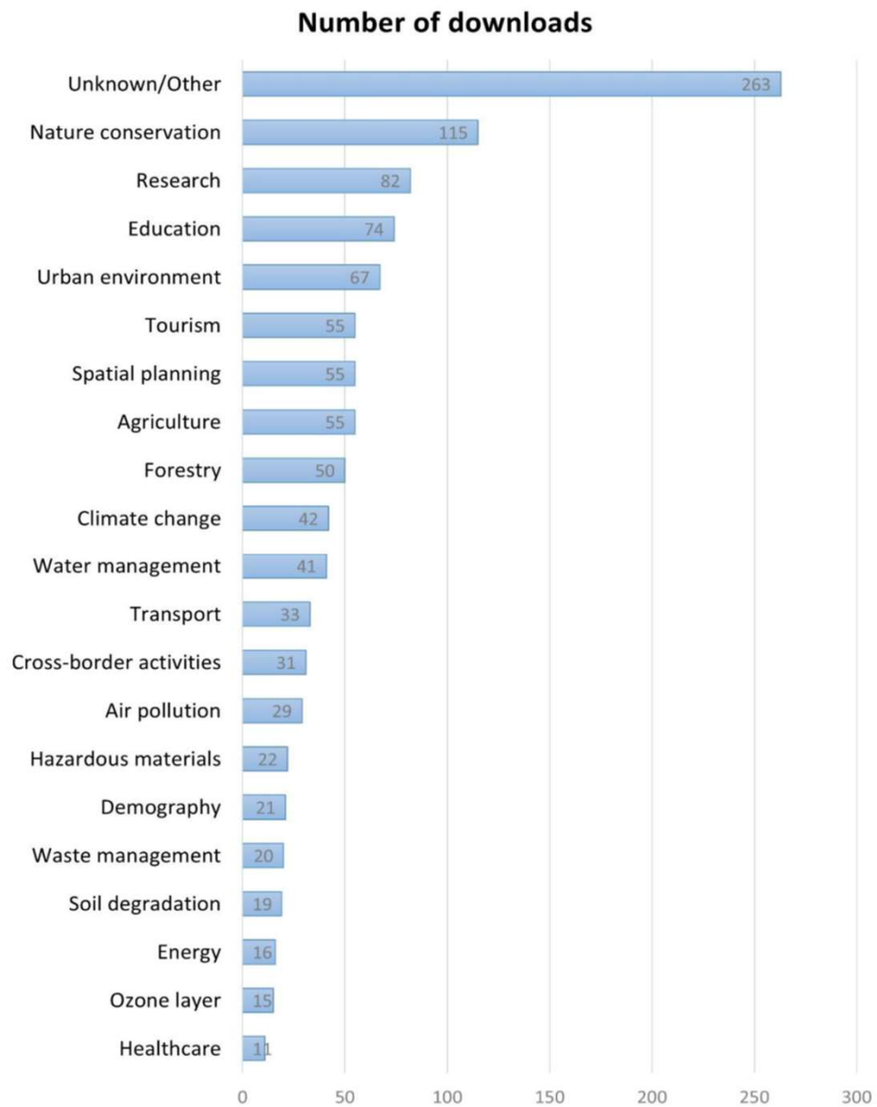
Ökosüsteemi tüpoloogiad, Ungari

- Töötasid välja oma klassifikatsiooni.
- Andmete sisend sarnane Eestile.
- Eraldi seisundi ja tüüpi kaardid.

Kasutajad

- Research (especially planning but also habitat modelling) and other.
- Education (both teachers and students).
- Flood risk estimation.
- Mushroom picking.
- Hiking (route choice).
- Planning.
- Mapping of Natura2000 areas.
- Basis of a simulate on game on pollination.



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EL rahastatud looduskapitali projektid erasektorile

Project name	Funder	Lead organisation(s)	SELINA Contact	Sector	Link to Assessment of ES
Align (2021-June 2024)	EU	UNEP-WCMC / Capitals Coalition	Justine	Private	Methods for measuring impacts and dependencies on biodiversity and integration into natural capital accounting, including measuring ecosystem condition. Guidance on integrating this into private sector decision-making
Transparent (ends June 2023)	EU Life	Value Balancing Alliance, Capitals Coalition	Justine	Private	Methods for assessing and valuing impacts and dependencies on natural capital, via impact pathways. Provides valuation methods for each impact driver/pressure.
SUSTAIN	EU	Capitals Coalition	Fae	Private - Financial	Update of the ENCORE database and new tools to assess impacts on biodiversity and ES
CircHive	EU (Horizon)	Luke (Finland)	Ivan Paspaldzhiev (Denkstatt)	Private and Public	Biodiversity footprinting and natural capital accounting
TEEB AgriFood	EU	UNEP / Capitals Coalition on Business engagement	Martine	Public/Private	Methodology and case development to support agri-food sector to implement capitals thinking

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Standardid ja juhendmaterjalid erasektorile

Name	Lead organisation(s)	Sector	Link to Assessment of ES
EU Taxonomy	European Commission	Private	
The Corporate Sustainability Reporting Directive (CSRD)	European Commission	Private	Adopted November 11, 2022
Natural Capital Protocol	Capitals Coalition	Private	
Business and Biodiversity Methods Assessment	IPBES	Private	
SEEA Business Accounting	UN	Public and Private	In progress to complete 2025
Taskforce on Nature related Financial Disclosures (TNFD)	TNFD	Private - Financial	ES are one of their "building blocks"
European Sustainability Reporting Standards (ESRS)	European Financial Reporting Advisory Group (EFRAG)	Private - Financial	To be adopted as delegated acts in June 2023
Science Based Targets for Nature (SBTN)	SBTN	Private	Biodiversity targets
Global Standards for sustainability impacts	Global Reporting Initiative (GRI)	Private	Biodiversity indicators

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Standardid ja juhendmaterjalid erasektorile

Name	Lead organisation(s)	Sector	Link to Assessment of ES
CDSB Framework application guidance for biodiversity-related disclosures	International Sustainability Standards Board (ISSB)	Private	Non-mandatory biodiversity guidance released Nov 2021
Questionnaires and Guidances 2023	CDP	Public and Private	CDP is a not-for-profit charity that runs the global disclosure system for public/private sector to manage their environmental impacts.
	Partnership for Biodiversity Accounting Financials (PBAF)	Private	
Principles for Responsible Investment (PRI)	UNEP FI	Private	Principles for setting targets and analyzing and disclosing impacts
14008:2019 Monetary valuation of environmental impacts and related environmental aspects	International Organization for Standardization (ISO)	Private	Valuation approaches

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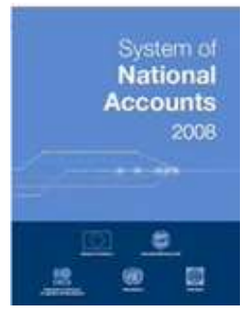
Ökosüsteemide arvepidamine

- 2012 **SEEA** (*System of Environmental Accounts*) esimene versioon.
- Pilootprojektid (Bulgaaria, **Eesti (Statistikaamet)**, Holland, Itaalia, Soome Taani.
- 2021 SEEA arvepidamine kiideti heaks **globaalse standardina** ÜROs. Arendusse panustasid IMF, Maailma Pank, OECD, Euroopa Komisjon.
- 2022 EL, USA ja G7 kiidavad heaks SEEA rakendamise vajaduse.
- 2023 Üle 40 riigi rakendavad looduskapitali arvepidamist.
- 2023 EL jätkab ökosüsteemi arvepidamise **määruse** välja töötamisega.



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EL teadusprojektid ökosüsteemide arvepidamisest

- **MAIA** (Mapping and Assessment for Integrated ecosystem Accounting) is a HORIZON 2020 project and aims **to mainstream natural capital and ecosystem accounting in EU Member States** (2018-2022).
- **OPERAs** (Operational Potential of Ecosystem Research Applications) was a five year European research project running from 2012-2017 that aimed to put **cutting edge ecosystem science into practice.** Researchers and practitioners from 27 different organisations helped stakeholders to put the ecosystem services and natural capital concept into practice.
- **We Value Nature** works with businesses, networks, platforms and other interested stakeholders to mainstream approaches such as **natural capital assessments**, **natural capital accounting**, nature based solutions, green infrastructure and related ecosystem-based approaches.

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Innovation: The European Journal of Social Science Research, 2018
Vol. 31, No. S1, S116–S124, https://doi.org/10.1080/13511610.2017.1361814

Routledge
Taylor & Francis Group

Väljakutsed, lüngad, vajadused …

- Andmete ja teabe **ebapiisavus** ÖST hindamiseks ja modelleerimiseks.
- ÖST hindamistulemuste tõlgendamine ja **rakendamine.**
- **Ebapiisav teabevahetus** institutsioonide vahel, madal teadlikkus ja aeglane ÖST kontseptsiooni arvestamine strateegilistes dokumentides.

Vajadused

- Suutlikkuse suurendamine (nt haridus, teadlikkuse tõstmine, stardiprojektid, muudetud seadused jne) valdkondades, kus teadmised puuduvad.
- Valmidus ja tahe ÖST kontseptsiooni kasutuselevõtuks on madal.
- Vähe lihtsaid kuid samas kompleksseid hindamisvahendeid (nt kaardistamine, modelleerimine, ruumiline planeerimine).
- Ökosüsteemide mittemateriaalseid väärtuseid ei tohi jätta tagaplaanile.

Olulised strateegilised küsimused

- **Teadmised** (nt kas Euroopa, Eesti ökosüsteemid on piisavalt terved ja toimivad ÖST pakkumiseks).
- **Poliitikavaldkonnad** (veemajandus, metsamajandus, põllumajandus, keskkonnakorraldus. Kas on arvestatud ÖST?).
- **Ressursside haldamine ja abinõud** (kas on näiteid ÖST edukate toetuste kohta?).
- **Rakendused** (kuidas saab ÖST hindamise kaarte rakendada maakasutuse ja ruumilise planeerimise valdkonnas, KMHs, statistikas jne).
- **Tehnilised ja metoodilised küsimused** (milliseid on parimad meetodeid saab kasutada strateegiliste dokumentide mõju hindamisel ÖST-le?).

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Euroopa Liidu poliitika raamistik

- EU **Biodiversity Strategy** for 2030.
- Expert Group on Mapping and Monitoring of Ecosystems; Knowledge Centre for Biodiversity, Science Service.
- EU methodology on ecosystem condition based on the **SEEA EA**.
- Proposal for a **Nature Restoration Law**.
- Proposal for a **Regulation on Ecosystem Accounting**.
- Proposals for better forest monitoring and soil health.

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Kuidas edasi?

- Peame jätkama ELME I ja II projektide **tulemuste rakendamisega** Eestis. Andmed kõikidele kättesaadavaks!
- Vajame ühtsemat poliitikat, mis arvestaks ÖST kontseptsiooni ELi ja **riiklikus poliitikates.**
- Peaksime rohkem keskenduma ÖST lähenemise rakendamisele ELi ning **riiklikul/ piirkondlikul tasandil.** Arvestama ÖST rohkem planeeringutes, KMH, kaitsealade sotsiaal-majanduslikes analüüsides, põllumajanduses ja metsanduses jne).
- Peame jätkama **tööriistade arendamist**, et vastata paremini paljudele keerulistele küsimustele, millega otsustajad silmitsi seisavad.
- Teadusuuringud peavad kohandama oma vaatenurka ja meetodeid arvestades suurema ühiskondliku kontekstiga.

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