Interim report illustrating the themes and regions selected for testing the methods across Europe and across themes

Deliverable 5.1

15 February 2016

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ESMERALDA

Enhancing ecosystem services mapping for policy and decision making

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Summary

In the ESMERALDA project, the objective of Work Package 5 (WP5) is to identify case studies and test how the proposed methods for mapping and assessment of ecosystem services may be used to inform policy and decision-making processes. Testing will enable the refinement of the methods, and the final development of guidelines to support users in the application of the methods to deliver under Action 5 of the EU Biodiversity Strategy. Testing activities will be conducted through a series of workshops in different European contexts, each addressing a different set of themes and regions.

Deliverable 5.1 "Interim report illustrating the themes and regions selected for testing the methods across Europe and across themes" presents the process through which the ESMERALDA project has identified and selected case studies for testing the methods for ecosystem service mapping and assessment. This includes the definition of five selection parameters (A: Stage in ES mapping and assessment; B: Geographic region; C: Biome; D: Spatial scale; E: Theme), which were used for collecting available case studies from the ESMERALDA partners, as well as the selection of the case studies to be actually used in the workshops.

Based on the above-mentioned selection parameters, we prepared an online questionnaire, through which we collected 31 case studies from the ESMERALDA partners and 1 from an external partner. The selection of the case studies to be used in the project workshops was carried out by taking into account the need to cover different conditions across Europe (see selection parameters above) and the scope of each workshop (as defined by the project's DoA), by including one case study proposed by workshop hosting partners, and by assigning priority, whenever possible, to case studies proposed by partners with more person-months allocated to WP5.

1. Introduction

Deliverable 5.1 "Interim report illustrating the themes and regions selected for testing the methods across Europe and across themes" relates to work carried out in "**Task 5.1: Identification of case studies exemplifying different conditions, themes and geographical contexts**". This is the first task in **WP5** whose aim is to identify case studies and demonstrate how the proposed methods for mapping and assessment of ecosystem services may be used to inform policy and decision-making processes. In WP5, testing is also a way of refining the methods proposed by WP3 and WP4, throughout the project.
Therefore, Task 5.1 consists in identifying and selecting case studies in such a way that they are representative for:

1. The variety of existing conditions across the EU, in terms of data availability, spatial scale, levels of implementation of EU2020 targets, and expertise and experience in ES mapping and assessment;
2. The geographical regions and biomes of the entire EU, including marine areas and the outermost regions;
3. The variety of cross-EU themes relevant for ecosystem services, such as Common Agricultural Policy, Green Infrastructure, Natura2000 network, forestry strategy, water policy, energy, business and industry sectors, and health;
4. The variety of policy and planning processes that can be used to mainstream ecosystem services in real-life decisions, such as spatial and land use planning, water resource management, flooding under the EU climate adaptation action, energy policy, strategic environmental assessment, protected area planning.

Operatively, testing will be conducted through two sets of workshops (WS), hosted each time by a different ESMERALDA partner. A first set of three workshops (WS3, WS4, and WS5) will test the suitability of the first version of the methods for mapping and assessing ecosystem services (Task 5.2). More specifically, WS3 will test whether the methods have the flexibility required for their application in a variety of geographical contexts and conditions, WS4 will address different themes, and WS5 will address specific biomes and areas, including marine areas and the outermost EU regions.
A second set of two workshops (WS7 and WS8)[1] will illustrate how the final methods can be used to guide real-life policy- and decision-making, across Europe and across themes (Task 5.3). In particular, WS8 will focus on the application of the methods by business and citizens.
In the first set (WS3, WS4, and WS5), each workshop will involve three case studies, while in the second set (WS7 and WS8) the number of case studies for each workshop is two. This is mainly to allow a deeper analysis of the final methods. All the workshops will last 3 days, including 1 day excursion to a case study site, and will be attended by experts of the ESMERALDA consortium and advisory board, stakeholders of EU MS, and local experts.

The identification of the case studies for the second set of workshops (WS7 and WS8) is not required under Deliverable 5.1. These case studies are to be identified at a later stage (Milestone 27: Selection of suitable case studies to test the final methods in policy and decision-making, month 31). However, we found it useful to advance a proposal already, as far as possible, to ensure that all the requirements for case studies seen above are actually met.

[1] For completeness, WP6 "Flexible methods for ES mapping and assessment (final version)" taking place in 8/2017 in Bulgaria is a WP1, 3, 4 organised workshop and not part of WP5.

2. Defining parameters for case study selection

In order to identify case studies that meet the requirements of the project seen above, we defined five main selection parameters, which are presented hereafter.

A. Stage in ES mapping and assessment

This reflects the status of EU Member States in regard to achieving the EU Biodiversity Strategy's Action 5 targets for mapping and assessment of ecosystems and their services. It is based on the clustering of EU Member States according to their prerequisites and needs to perform ES mapping and assessment, carried out by WP2 (Deliverable 2.1). Accordingly, EU Member States are clustered into three groups, i.e. Beginners=Stage 1, Mid-level=Stage 2, and Front-runners=Stage 3 (**Table 1**).

Table 1: Clustering of EU Member States according to their prerequisites and needs to perform ES mapping and assessment (WP2 - Deliverable 2.1).

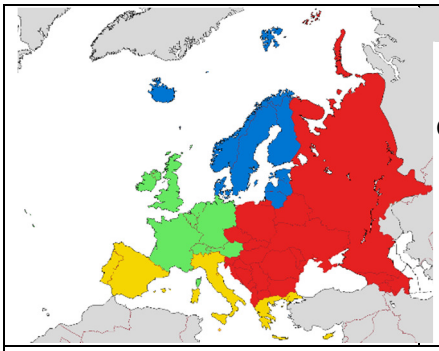
BEGINNERS=STAGE 1	MID-LEVEL=STAGE 2	FRONT-RUNNERS=STAGE 3
Latvia (3)	Austria (1)	Belgium (1)
Slovakia (0)	Bulgaria (2)	Finland (6)
Croatia	Czech Republic (3)	Germany (3)
Cyprus	Hungary (2+2)	Netherlands (3)
Estonia	Italy (16)	Portugal (2)
Greece	Malta (1)	Spain (3)
Slovenia	Poland (3)	France
	Romania (3)	Luxemburg
	Sweden (0)	UK
	Denmark	
	Ireland	
	Lithuania	

NB. Grayed are countries proposing case studies, **in bracket person-months in WP5**

B. Geographic regions

This is based on the definition of regions given by the European Union's official multilingual thesaurus (EuroVoc). EU Member States are divided into four regions, shown in **Table 2**.

Table 2: Definition of EU regions according to EuroVoc.



Eastern	Northern	Southern	Western
Bulgaria	Estonia	Cyprus	Austria
Croatia	Latvia	Greece	Belgium
Czech Republic	Lithuania	Italy	France
Hungary	Denmark	Malta	Germany
Poland	Finland	Portugal	Ireland
Romania	Sweden	Spain	Luxembourg
Slovakia			Netherlands
Slovenia			United Kingdom

http://eurovoc.europa.eu/drupal/?q=request&uri=http://eurovoc.europa.eu/100277

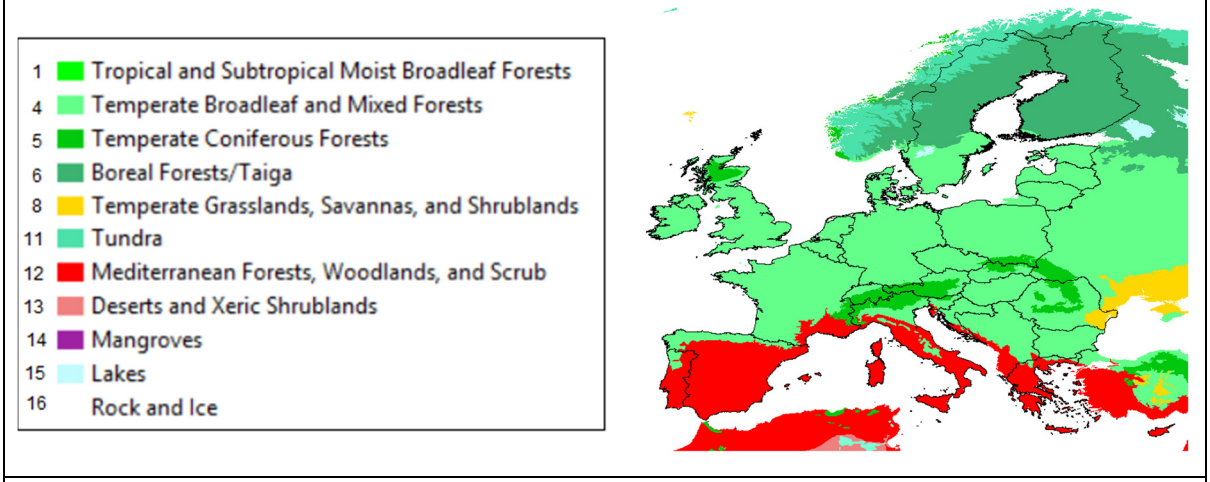
In addition, we consider the following nine Outermost regions, i.e. regions that are geographically very distant from the European continent (**Table 3**)

Table 3: Nine Outermost regions

• Guadeloupe, French Guiana, Martinique, La Réunion, Mayotte (5 French overseas departments) • Saint-Martin (1 French overseas collectivity) • Madeira and Azores (2 Portuguese autonomous regions) • Canary Islands (1 Spanish autonomous community)
http://ec.europa.eu/regional_policy/en/policy/themes/outermost-regions/):

C. Biomes in EU

Following the ESMERALDA Glossary, we adopt the WWF classification of biomes, based on Olson et al. (2001). **Figure 1** shows the list of biomes in Continental Europe (4, 5, 6, 8, 11, and 12) and in the Outermost regions (1, 12, 13, and 14) as well as the spatial distribution of biomes in Continental Europe. **Table 4** shows the biomes in each EU Member State, including the Outermost regions.



Reference: *Olson, D. M., et al. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. BioScience 51(11):933.* (SHAPEFILE)

Figure 1: Biomes in EU according to the WWF classification (Olson et al 2001)

Table 4: Distribution of Biomes in EU-28 countries including Outermost regions (in red) (Olson et al 2001-2004). *EU member states with Outermost regions.

BIOMES	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech republic	Denmark	Estonia	Finland	France *	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxemburg	Malta	Netherlands	Poland	Portugal*	Romania	Slovakia	Slovenia	Spain *	Sweden	United kingdom
4	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■
5	■					■				■	■				■						■		■	■	■			■
6									■																		■	
8			■																				■					
11									■																		■	
12			■	■	■					■		■			■				■			■			■	■		
1										■																		
13										■																		
14										■																		

D. Spatial scale

We adopt the following three spatial scales:
- National;
- Sub-national (i.e. NUTS 1, NUTS 2, and NUT 3: http://ec.europa.eu/eurostat/web/nuts);
- Local.

E. Themes

We consider the following themes as being representative for current policy challenges in the EU:
- Nature conservation;
- Climate, Water and Energy;
- Marine policy;
- Natural risk;
- Urban and spatial planning;
- Green Infrastructures;
- Agriculture and forestry;
- Business Industry and tourism;
- Health.

We assign the category “ES mapping and assessment” to case studies not linked to any specific sector.

In addition, we consider whether case studies involved real-life policy or planning process. This is relevant for the second set of workshops, where we aim at testing the methods in the framework of an actual planning/decision-making process.

F. Ecosystem types

We consider the same classification of ecosystem types used in the MAES project:
- Urban;
- Cropland;
- Grassland;
- Woodland and Forest;
- Heathland and Shrub;
- Sparsely vegetated land;
- Wetlands;
- Rivers and Lakes;
- Marine inlets and Transitional waters;
- Coastal;
- Shelf;
- Open ocean.

3. Collecting case studies

A. Preparing online questionnaire

Base on the parameter above, we designed an online questionnaire, which was then submitted to the ESMERALDA partners. Here priority was given to those members who had more person-months in WP5, starting from those hosting a workshop. **Figure 2** is a screenshot of the questionnaire.

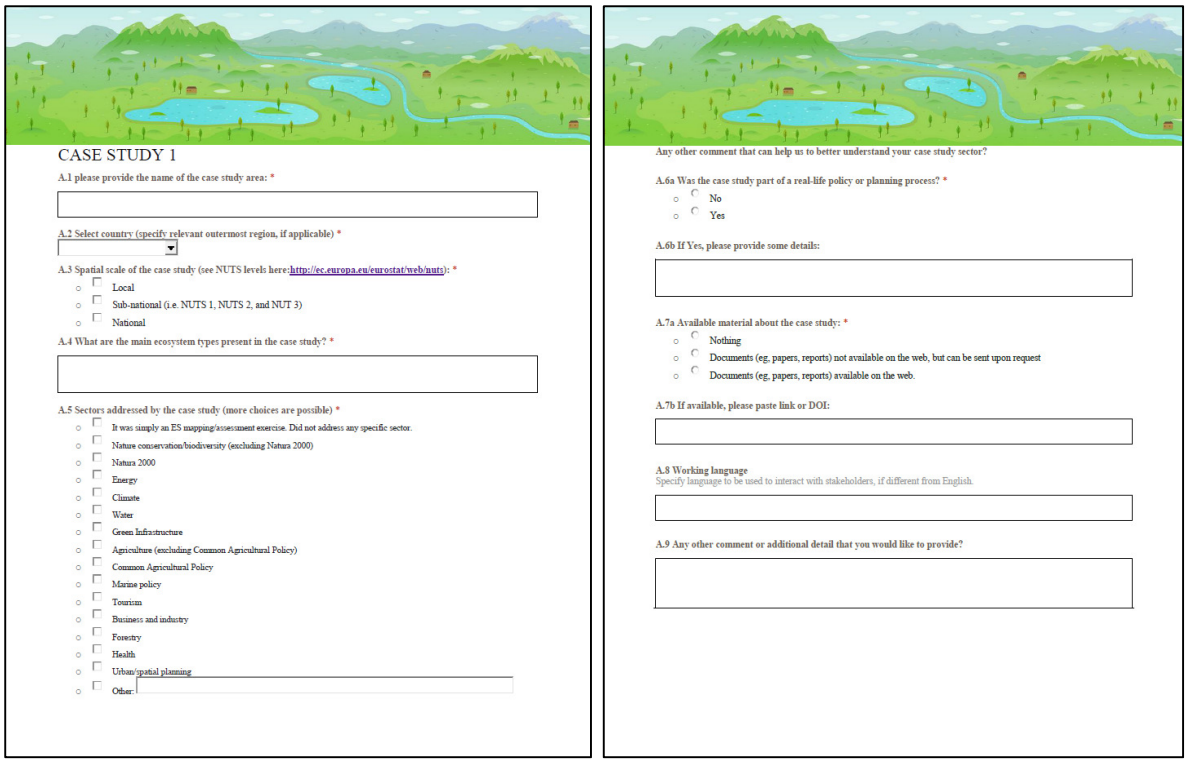


Figure 2: Screenshot of the online questionnaires for collecting case studies.

B. Case studies proposed by partners

We received a total of 31 case studies from 15 ESMERALDA partners, plus 1 case study from an external partner (CE SPECTRA), collaborating with ESMERALDA partner CVGZ (see **Table 5**). All the three partners hosting the first set of three workshops (WS3, WS4, and WS5) have submitted at least one case study each. As for the second set of two workshops (WS7 and WS8), a case study in Hungary (host of WS8) has not been identified yet.

Table 5: Overview of all case studies proposed by ESMERALDA partners.

PARTNER	NAME	COUNTRY	SCALE
CE SPECTRA	Horský park	Slovakia	Local
PLUS	Ecosystem services in the Mondsee Catchment	Austria	Local
NIGGG-BAS	Central Balkan national park	Bulgaria	Local
NIGGG-BAS	Smolyan development plan	Bulgaria	Local
NIGGG-BAS	Ecosystem services in the Ogosta basin	Bulgaria	Local
CVGZ	Pilot National Assessment of Ecosystem Services	Czech Republic	National
CVGZ	ES Trade-offs Assessment in the Třeboň Basin	Czech Republic	Local
CVGZ	Pilot survey of grassland ecosystem services	Czech Republic	National
REC+MTA OK	To be identified	Hungary	
UNITN	Trento ES-based adaptation to climate change	Italy	Local
BEF	Mapping marine ecosystem services in Latvia	Latvia	National
MCAST	Ecosystem service accounting in the Maltese Islands	Malta	Sub-national, National
UPOZ	Ecosystem services in Polish urban areas	Poland	Local, Sub-national
UB	Lower Danube floodplain - Greaca area	Romania	Local
UB	Long term socio-ecological research site Braila Island	Romania	Sub-national
UB	Niraj and Târnava-Mică rivers	Romania	Sub-national
Swedish EPA	Ecosystem services in Northern Sweden	Sweden	Local, Sub-national
VITO	Mapping green infrastructures and their ES in Antwerp	Belgium	Local
VITO	Flandres ecosystem assessment	Belgium	Sub-national
VITO	Integrated ES-based planning for flood protection	Belgium	Local
SYKE	Planning green infrastructure in Helsinki-Uusimaa Region	Finland	Sub-national
SYKE	Green infrastructure and urban planning in Järvenpää	Finland	Local
SYKE	Ecological connectivity and nature tourism in Kainuu Region	Finland	Sub-national
CAU	Mapping ES dynamics in agricultural landscapes	Germany	Local
VU	ES-based coastal defense	Netherlands	Local
IST	BALA - Biodiversity of Arthropods from the Laurisilva of Azores	Acores (PT)	Sub-national
IST	Impact of land-use changes on arthropod biodiversity	Acores (PT)	Sub-national
IST	Impact of land-use changes on flower visiting insects	Acores (PT)	Local
IST	ISLAND-BIODIV - Understanding biodiversity dynamics in tropical and subtropical islands as an aid to science based conservation action	Acores (PT)	Sub-national
IST	SLAM - Long Term Ecological Study of the Impacts of Climate Change	Acores (PT)	Sub-national
UAM	Madrid rural-urban gradient	Spain	Sub-national
UAM	Spanish National Ecosystem Assessment	Spain	National

4. Selected case studies for testing the methods

Here our main aim was to select nine case studies, which will be used in the first set of workshops (WS3, WS4, and WS5), to test the first version of the methods for ES mapping and assessment. In the selection of the case studies, the main criteria was the scope of each workshop, as briefly described above. Another important selection criterion was the priority given to case studies proposed by partners hosting the workshops. To a lesser extent, we also took once more into account the person-months in WP5 of the proposing partners.

Given these two plus one criteria, we tried numerous possible configurations that possibly satisfy all the requirements for testing the methods for mapping and assessment. The outcome of this iterative process was the selection of nine case studies for the first set of workshops (WS3, WS4, and WS5), plus six candidate case studies for the second set of workshops (WS7 and WS8).

The next pages present a brief overview of the three workshops, followed by the detailed fact sheets containing all the information gathered for each selected case study through the online questionnaire.

4.1. WORKSHOP 3 (WS3): Testing the methods across Europe

Czech Republic, SEPTEMBER 2016 – Three case studies

WS3 will be held in Prague in September 2016, and will be hosted by the **Global Change Research Centre, Academy of Sciences of the Czech Republic (CVGZ).**
It is the first of the three workshops for testing the methods for mapping and assessment. Its aim is to test whether the methods have the flexibility required for their application in a variety of geographical contexts and conditions. Therefore, the main selection criteria was to include a case study from each stage in terms of ES mapping and assessment (i.e. Stage 1 = Beginners; Stage 2 = Mid-level; and Stage 3 = Front-runners).

	NAME	COUNTRY	REGION	BIOME°	STAGE	THEME
WS3-cs1	Mapping marine ecosystem services in Latvia	Latvia	Northern	4	Beginner	Marine policy; Business, Industry and tourism
WS3-cs2	Pilot National Assessment of Ecosystem Services	Czech Republic	Eastern	4, 5	Mid-level	ES mapping and assessment
WS3-cs3	Mapping ES dynamics in agricultural landscapes	Germany	Western	4, 5	Front-runner	ES mapping and assessment

*** BIOMES** refer to those present in the country in which the case study is located; later, a more detailed classification based on Terrestrial ecoregions could be used.

4.2. WORKSHOP 4 (WS4): Testing the methods across THEMES

The Netherlands, JANUARY 2017 – Three case studies

WS4 will be held in Amsterdam in January 2017, and will be hosted by the **VU University Amsterdam (VU).**

It is the second of the three workshops for testing the methods for ES mapping and assessment. Its aim is to test the methods across themes. Accordingly, we included one case study dealing with "Natural risk", proposed by the hosting partner (VU), another case study from Poland, which concerns 10 Large Urban Zones with more than 100,000 inhabitants and a third case study from Malta, dealing with "Agriculture and Forestry". The Polish case study has the advantage of addressing many themes, of which to choose one or two focal themes.

	NAME	COUNTRY	REGION	BIOME	STAGE	THEME
WS4-cs1	ES-based coastal defense	Netherlands	Western	4	Front-runner	Natural risk
WS4-cs2	Ecosystem services in Polish urban areas	Poland	Eastern	4, 5	Mid-level	Many themes addressed
WS4-cs3	Ecosystem service accounting in the Maltese Islands	Malta	Southern	12	Mid-level	Agriculture & forestry

4.3. WORKSHOP 5 (WS5): Testing the methods across BIOMES and REGIONS

Spain, APRIL 2017 – Three case studies

WS5 will be held in Madrid in April 2017, and will be hosted by the **Universidad Autónoma de Madrid (UAM).**

It is the last of the three workshops for testing the methods for ES mapping and assessment. WS5 addresses specific biomes and areas, including marine areas and the outermost EU regions. Accordingly, we included one case study from the three proposed by the hosting partner (UAM). A second case study is from Portugal – Azores, which is an Outermost region. A third case study is from Bulgaria, and covers different types of biomes and ecosystems.

	NAME	COUNTRY	REGION	BIOME	STAGE	THEME
WS5-cs1	Spanish National Ecosystem Assessment	Spain	Southern	4, 12	Front-runner	ES mapping and assessment
WS5-cs2	BALA - Biodiversity of Arthropods from the Laurisilva of Azores	Portugal - Acores	Outermost region	12	Front-runner	Nature conservation; Green infrastructures

WS5-cs3	Central Balkan national park	Bulgaria	Eastern	4, 8, 12	Mid-level	Green infrastructures; Urban/spatial planning

4.4. Fact sheets of the selected case studies for testing the methods

The following pages present the detailed fact sheets of the selected case studies for testing the methods in WP3, WP4 and WP5:

- WP3_cs1 - Mapping marine ecosystem services in Latvia
- WP3_cs2 - Pilot National Assessment of Ecosystem Services
- WP3_cs3 - Mapping ES dynamics in agricultural landscapes
- WP4_cs1 - ES-based coastal defense
- WP4_cs2 - Ecosystem services in Polish urban areas
- WP4_cs3 - Ecosystem service accounting in the Maltese Islands
- WP5_cs1 - Spanish National Ecosystem Assessment
- WP5_cs2 - BALA - Biodiversity of Arthropods from the Laurisilva of Azores
- WP5_cs3 - Central Balkan national park

Figure 3 shows the approximate location of the case studies (for the sake of readability, all case studies are represented by a marker point).

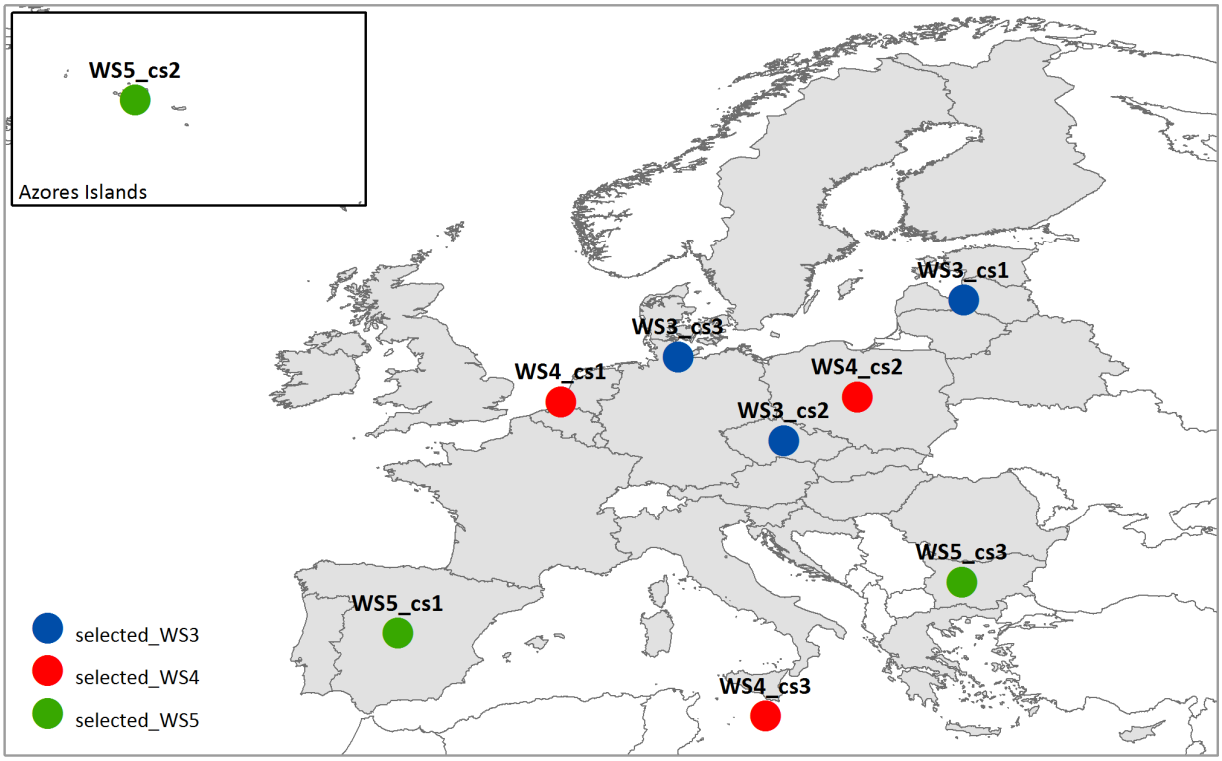


Figure 3: Map of the case studies selected for workshops 3, 4 and 5.

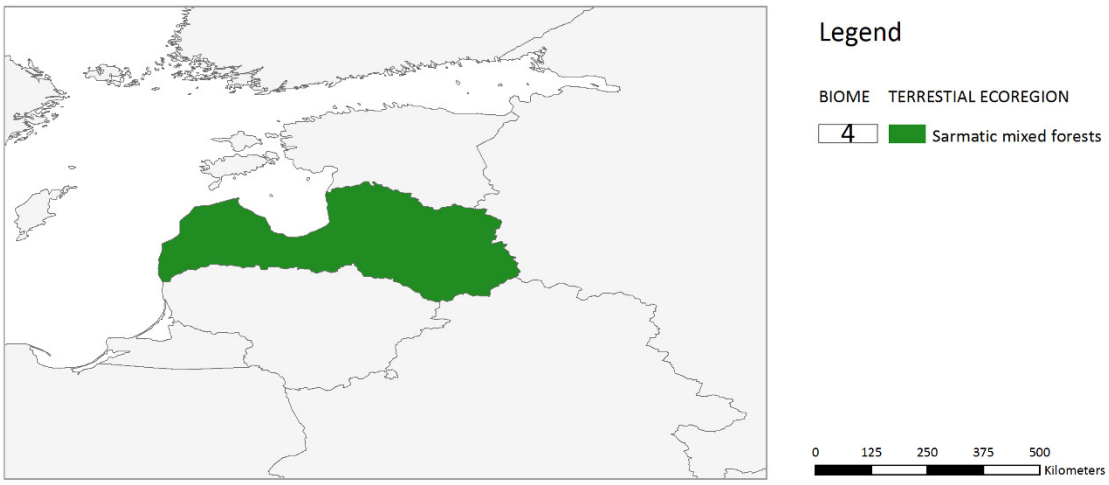
Mapping marine ecosystem services in Latvia

WS3_cs1

STUDY AREA	Territorial waters and Exclusive Economic Zone of Latvia

location

COUNTRY	Latvia			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	Mapping of marine ecosystem services is performed as one of the tasks within development of the national Maritime Spatial Plan (MSP) for Latvian territorial waters and EEZ, prepared by the BEF in frame of contract with Ministry of Environmental Protection and Regional Development (January 2015 -February 2016). Mapping of marine ecosystem services is essential component for implementation of the ecosystem based approach, which is defined as the overarching principle of MSP. The ecosystem service maps is used to assess the ecological as well as socio-economic impacts of the different sea use scenarios as well as the optimal sea use solution.		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request. Documentation on Latvian MSP (mostly in Latvian language) is available at the web site: http://jurasplanojums.net/		
FURTHER INFORMATION			

proponent

ESMERALDA PARTNER	BEF	contact person	Anda Ruskule Baltic Environmental Forum
		e-mail	anda.ruskule@bef.lv

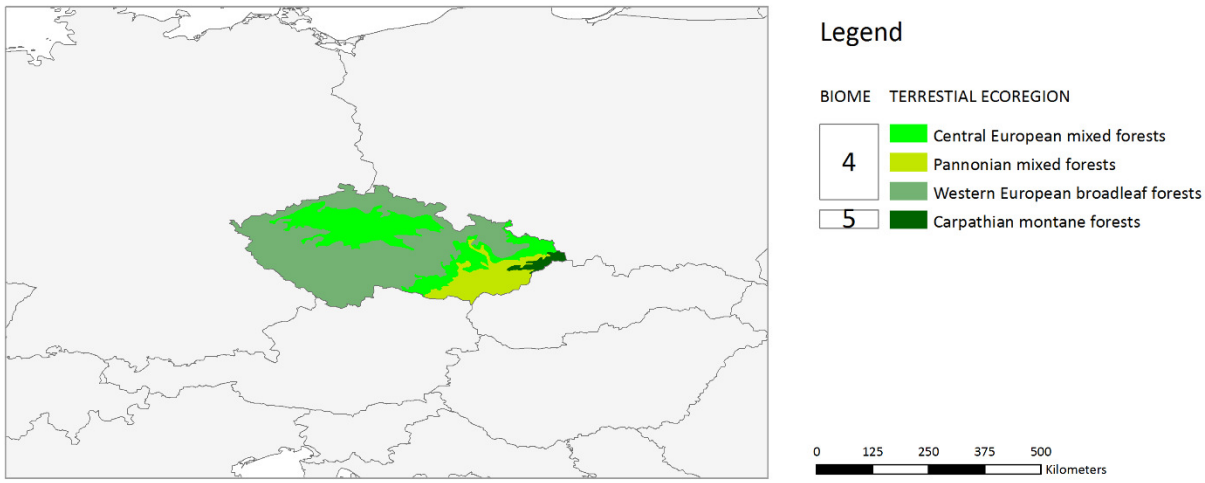
Pilot National Assessment of Ecosystem Services

WS3_cs2

STUDY AREA	Czech Republic

location

COUNTRY	Czech Republic			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	The outcomes of the study fed into Methodological framework of an integrated assessment of ecosystem services in the Czech Republic (certified by the Ministry of the Environment) and were also used for an update of National Biodiversity Strategy of the Czech Republic (as an individual chapter on assessing ecosystem services).	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. - J. Frélichová, D. Vačkář, A. Pártl, B. Loučková, Z. V. Harmáčková, E. Lorencová (2014), "Integrated assessment of ecosystem services in the Czech Republic", *Ecosystem Services*, 8, 110-117, http://dx.doi.org/10.1016/j.ecoser.2014.03.001. - Certified methodology: http://www.ecosystemservices.cz/en/methodological-framework-of-an-integrated-assessment-of-ecosystem-services-in-the-czech-republic/ - GIS layer of ecosystems used in the study: http://www.ecosystemservices.cz/en/consolidated-layer-of-ecosystems-of-the-czech-republic/
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	CVGZ	contact person	Adam Pártl CzechGlobe – Global Change Research Centre
		e-mail	partl.a@czechglobe.cz

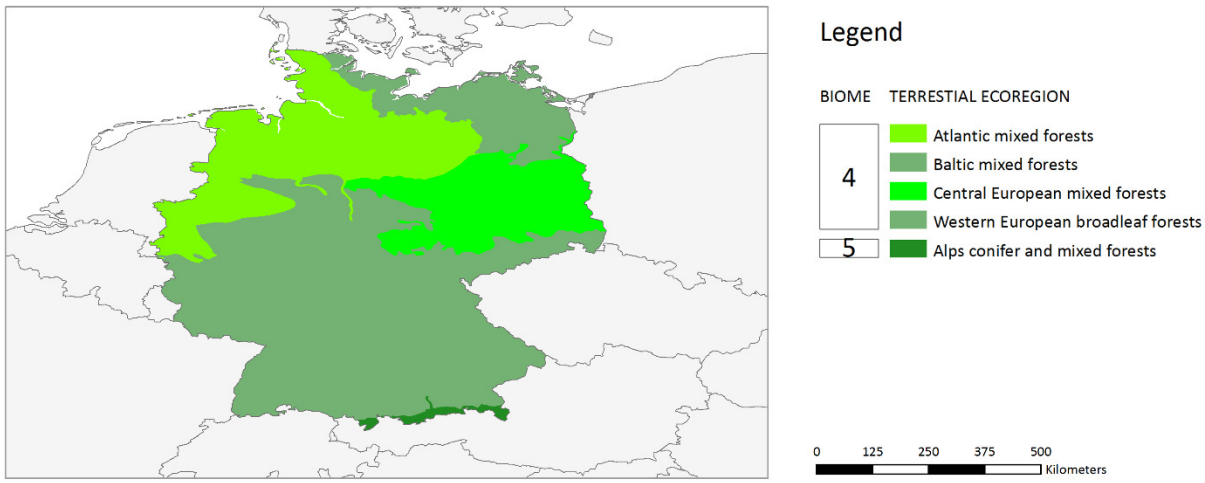
Mapping ES dynamics in agricultural landscapes

WS3_cs3

STUDY AREA	Bornhöved lakes district

location

COUNTRY	Germany			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		yes ■ no
	Agricultural land use changes (e.g. 50 % loss of grassland from 1987-2007) influence the supply of other ecosystem services (regulating, cultural and provisioning services).	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. Research papers and publications: - M. Kandziora, B. Burkhard, F. Müller (2013), "Mapping provisioning ecosystem services at the local scale using data of varying spatial and temporal resolution", *Ecosystem Services*, 4, 47-59, http://dx.doi.org/10.1016/j.ecoser.2013.04.001. - M. Kandziora, K. Dörnhöfer, N. Oppelt, F. Müller (2014), " Detecting Land Use And Land Cover Changes In Northern German Agricultural Landscapes To Assess Ecosystem Service Dynamics", Landscape Online, 35, 1-24, DOI:10.3097/LO.201435. - O. Fränzle, L. Kappen, H. Blume, K. Dierßen (Eds) (2008), "Ecosystem Organization of a Complex Landscape: Long-Term Research in the Bornhöved Lake District, Germany", Ecological Studies, Springer, ISBN-13 978-3540758105
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	CAU	contact person	Benjamin Burkhard Kiel University
		e-mail	bburkhard@ecology.uni-kiel.de

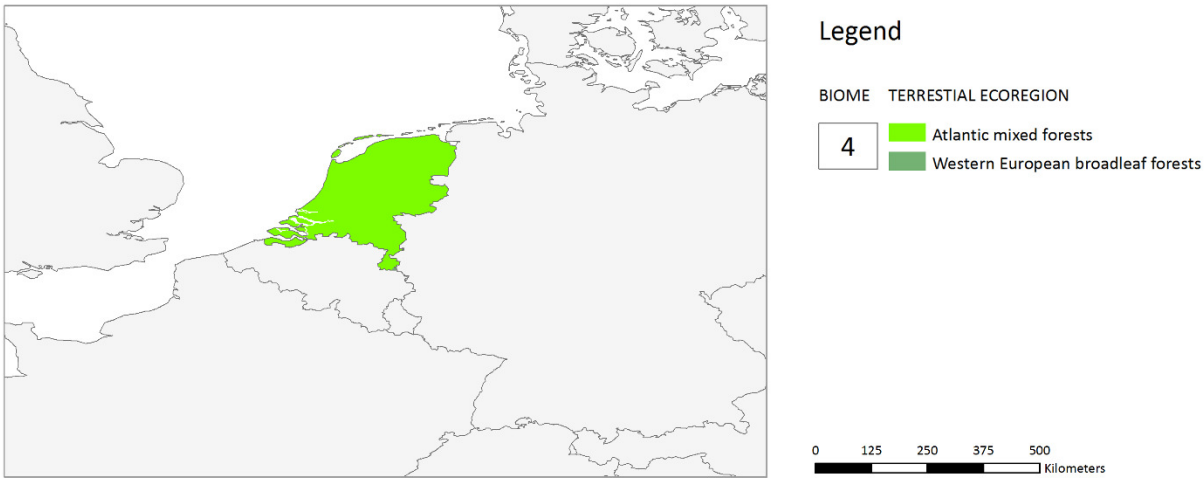
ES-based coastal defense

WS4_cs1

STUDY AREA	Haringvliet

location

COUNTRY	Netherlands			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	The main question at hand was whether converting a permanent coastal defense structure into a more ecosystem-based infrastructure allowing for exchange between the ocean and inland waters, would make sense from an economic and environmental point of view.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request. - Web article: https://www.wnf.nl/nieuws-en-resultaten/bericht/postcode-loterij-geeft-135-mln-voor-deltanatuur.htm - Report: http://www.leefbaarstad.nl/files/10.%20Dolf%20de%20Groot%20Open%20Haringvliet%20levert%20jaarlijks%20half%20miljard%20op.pdf
FURTHER INFORMATION	Close collaboration with WWF, who plays an important role as facilitator in this case study.

proponent

ESMERALDA PARTNER	VU	contact person	Pieter van Beukering VU University, Amsterdam
		e-mail	pieter.van.beukering@vu.nl

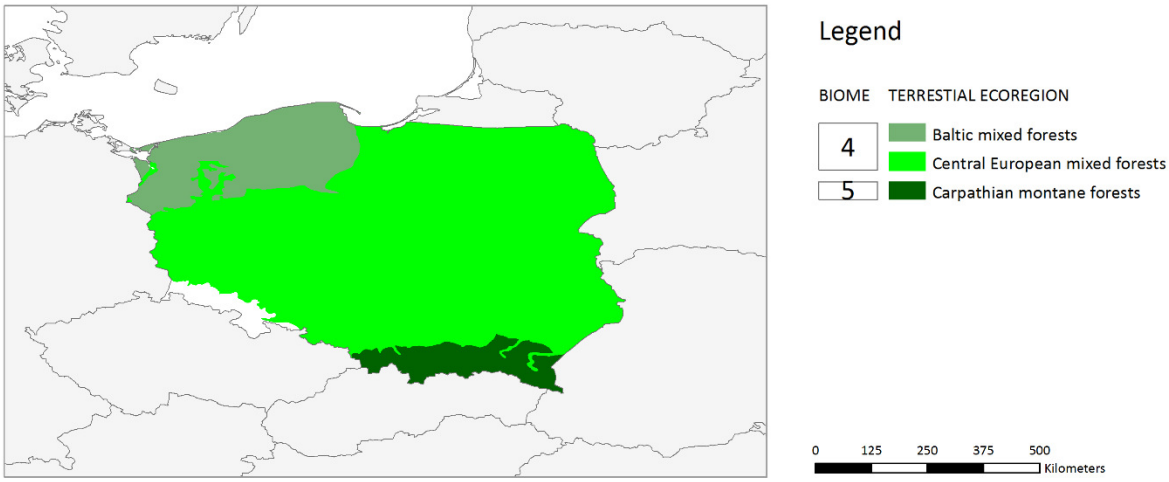
Ecosystem services in Polish urban areas

WS4_cs2

STUDY AREA	10 polish Large Urban Zones with more than 100.000 inhabitants (see European Urban Atlas)

location

COUNTRY	Poland			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	Expertise "Urban MAES - ecosystem services in urban areas" commissioned by the Ministry of Environment under contract No. DLP/2015 of 23 April 2015	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	UPOZ	contact person	Andrzej Mizgajski, Damian Łowicki Adam Mickiewicz University in Poznań
		e-mail	damek@amu.edu.pl

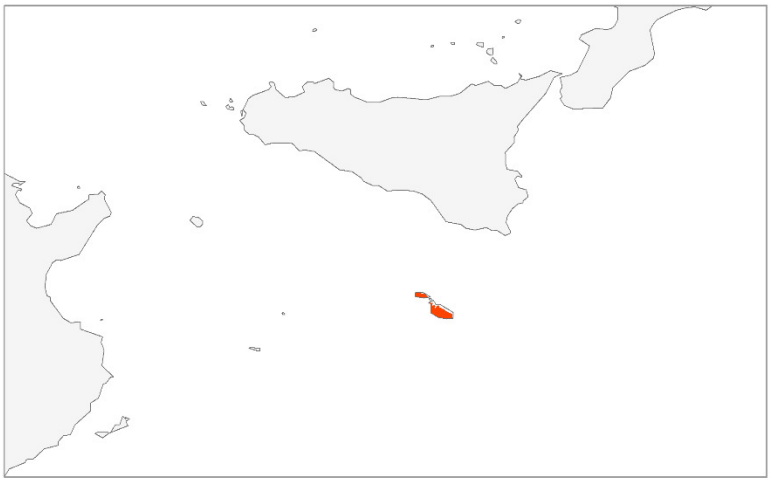
Ecosystem service accounting in the Maltese Islands

WS4_cs3

STUDY AREA	Maltese Islands

location

COUNTRY	Malta			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes ☐ no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	Most of this work has so far been unpublished but we are presently carrying out research on (1) the importance of different plants and habitats for beekeeping, (2) crop pollination and (3) cultural ES (e.g. recreation). We have also initiated an ecosystem accounting study with data on supply and flow of a number of ES.

proponent

ESMERALDA PARTNER	MCAST	contact person	Mario V Balzan Malta College of Arts, Science and Technology
		e-mail	mario.balzan@mcast.edu.mt

Spanish National Ecosystem Assessment

WS5_cs1

STUDY AREA: Spain

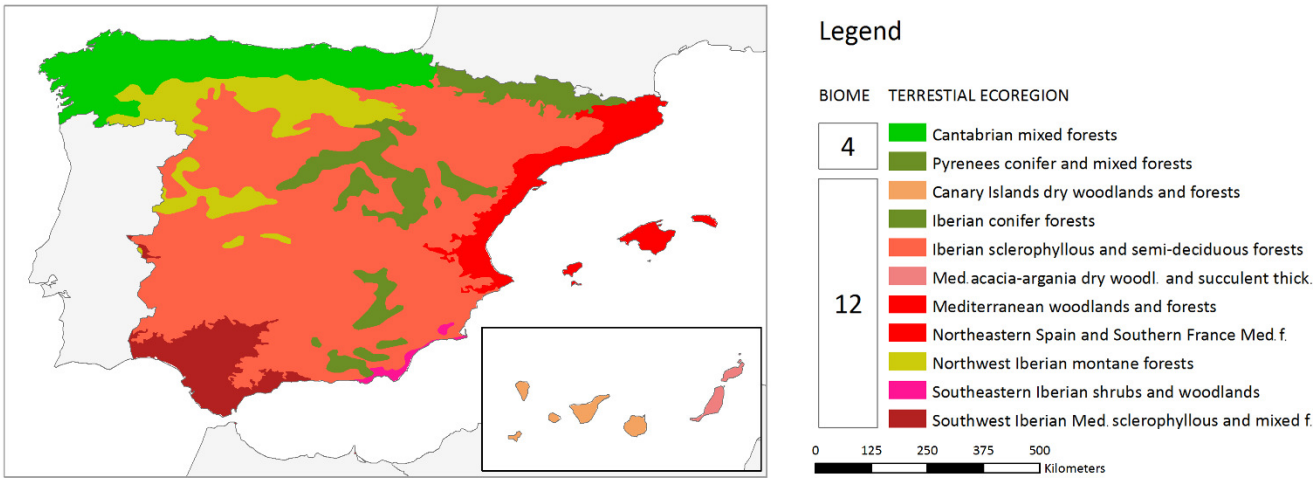
location

COUNTRY: Spain

STAGE	beginner	mid-level	**front-runner**
GEOGRAPHIC REGION	eastern	northern	western	**southern**

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	**4 Temperate Broadleaf & Mixed Forests**
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE	**national**	sub-national	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	**ES mapping and assessment**		

ECOSYSTEM TYPES

urban	**cropland**	**grassland**	**woodland and forest**
heathland and shrub	**sparsely vegetated land**	**wetlands**	**rivers and lakes**
marine inlets and transitional waters	**coastal**	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	In collaboration with Spanish National Ministry and EU Commission.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. For further information visit the website: http://www.ecomilenio.es/
FURTHER INFORMATION	

Proponent

ESMERALDA PARTNER	UAM	contact person	Fernando Santos Martin Universdad Autónoma de Madrid
		e-mail	fernando.santos.martin@uam.es

BALA - Biodiversity of Arthropods from the Laurisilva of Azores

WS5_cs2

STUDY AREA: Laurel forests in the Arcipelago of Azores

location

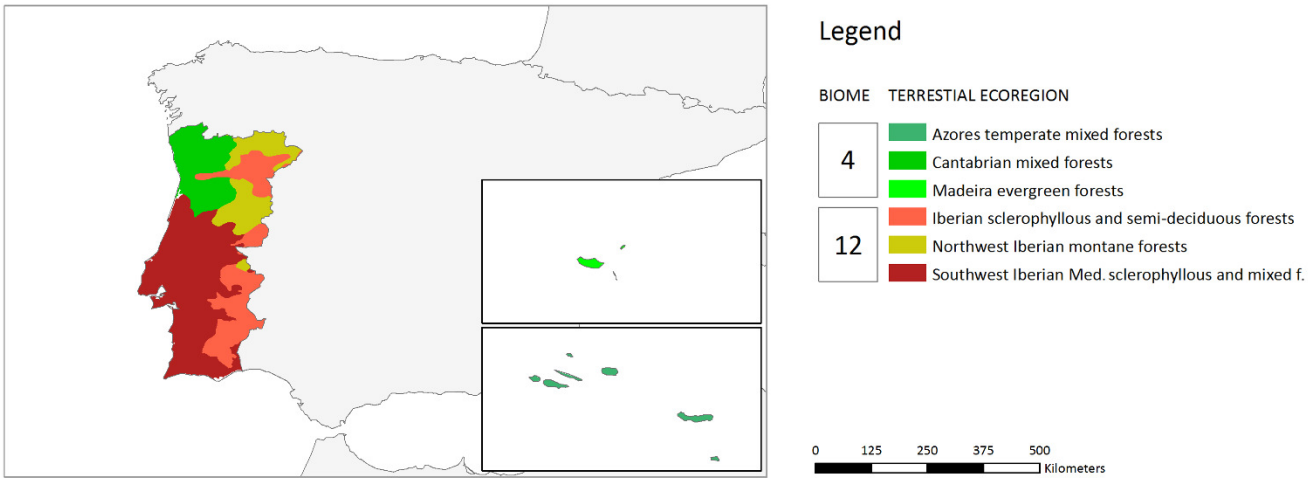
COUNTRY: Portugal (Azores)

STAGE	beginner	mid-level	front-runner
			■

GEOGRAPHIC REGION	eastern	northern	western	southern*
				■

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests	
5 Temperate Conifer Forests	6 Boreal Forests/Taiga	
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra	
■ 12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands	
14 Mangrove		



case study outline

SCALE	national	sub-national	local
		■	

THEMES				
	■ nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	■ green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		

ECOSYSTEM TYPES				
	urban	cropland	grassland	■ woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes ☐ no
	For defining new areas for the Natural Park system of Azores that was created based on IUCN Protected areas system.

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. http://islandlab.uac.pt/projectos/ver.php?id=65#panel4
FURTHER INFORMATION	More information about this long-term project can be found at http://islandlab.uac.pt/projectos/ver.php?id=65

proponent

ESMERALDA PARTNER	IST	contact person	Paulo Alexandre Vieira Borges CE3C – Centre for Ecology, Evolution and Environmental Change
		e-mail	paulo.av.borges@uac.pt

Central Balkan national park

WS5_cs3

STUDY AREA	Central Balkan national park

location

COUNTRY	Bulgaria			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			

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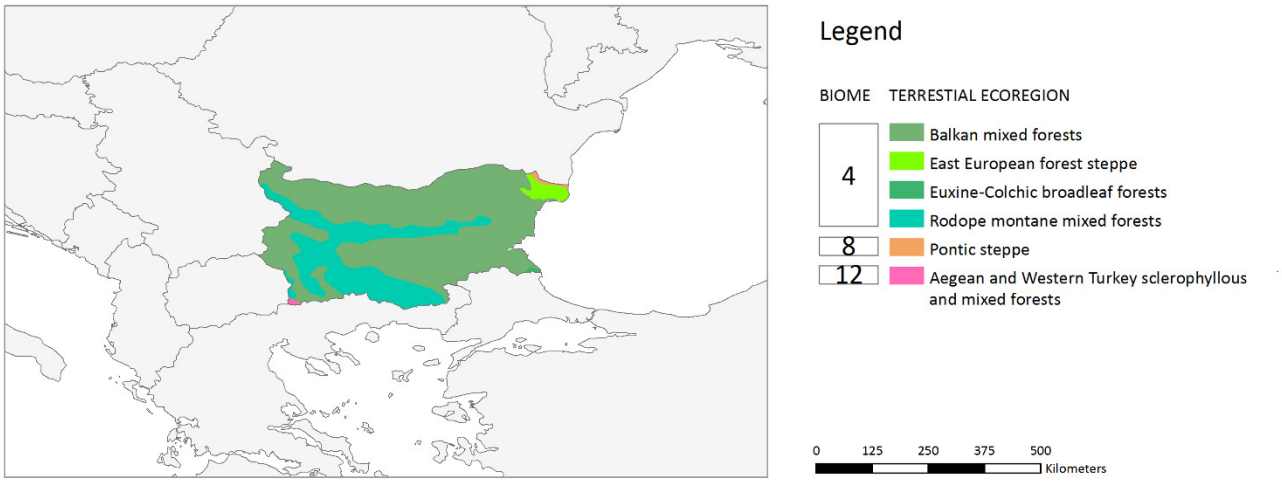


case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	National park management plan Municipality development plans Integrated plans for urban development		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.		
FURTHER INFORMATION			

proponent

ESMERALDA PARTNER	NIGGG BAS	contact person	Stoyan Nedkov NIGGG-BAS
		e-mail	snedkov@abv.bg

5. Candidate case studies for testing the final method

At this stage, the identification of the case studies for the second set of workshops (WS7 and WS8) is not required; however, we found it useful to advance a proposal already, to ensure that all the requirements for case studies seen above are actually met.
Therefore the selection for these second set of candidate case studies was made together with the identification of the first set, in the same iterative process and by applying the same criteria.

The next pages present a brief overview of the two workshops, followed by the detailed fact sheets containing all the information gathered for each candidate case study through the online questionnaire.

5.1. WORKSHOP 7 (WS7): Testing the final methods I Policy and decision-making
Italy, JANUARY 2018 – Two case studies

WS7 will be hold in Trento in January 2018, and will be hosted by the **University of Trento (UNITN).**
The aim of this workshop is to illustrate how the final methods can be used to guide real-life policy- and decision-making, across Europe and across themes. Two policy- and decision-making processes (in different sectors and geographical contexts) will be selected and used to analyse how the methods are able to inform the different stages of policy- and decision-making (including interaction with stakeholders and decision-makers), and to promote outcomes that are in line with the objectives of the EU Biodiversity Strategy. Candidate policy- and decision-making processes include, for example, spatial and land use planning, water resource management, energy policy, strategic environmental assessment, and protected area planning.
We have selected a case study dealing with urban/spatial planning and climate & energy, proposed by the host (UNITN), and two case studies by the partners from Belgium (VITO), from which to choose according to how they evolve in the upcoming period.

	NAME	COUNTRY	REGION	BIOME	STAGE	THEME
WS7_cs1	Trento ES-based adaptation to climate change	Italy	Southern	4, 5, 12	Mid-level	Urban spatial planning; Climate, Water & Energy; Heath
WS7_cs2a	Mapping green infrastructures and their ES in Antwerp	Belgium	Western	4	Front-runner	Green infrastructures; Urban/spatial planning
WS7_cs2b	Integrated ES-based planning for flood protection	Belgium	Western	4	Front-runner	Natural risk; Climate, Water & Energy; Agriculture & Forestry

5.2. WORKSHOP 8 (WS8): Testing the final methods I Policy and decision-making – Business and Citizens

Hungary, MARCH 2018 – Two case studies

WS8 will be held in Budapest in March 2018, and will be hosted by the **Regional Environmental Center (REC).**

As in the previous workshop (WS7), the aim is to illustrate how the final methods can be used to guide real-life policy- and decision-making, across Europe and across themes. Here, the focus is on the application of the methods by business and citizens. We have selected two candidate case studies from Finland, because they have a strong citizen participation component and links with the business sector. The case study from the host partner is still to be defined. Another interesting case study is the one from Sweden, involving reindeer husbandry as well as natural and cultural values in territorial planning. This last case study could be considered a backup to the Hungarian case study, or an additional case to be included in the workshop.

	NAME	COUNTRY	REGION	BIOME	STAGE	THEME
WS8_cs1	To be identified	Hungary	Eastern		Mid-level	
WS8_cs2a	Green infrastructure and urban planning in Järvenpää	Finland	Northern	4, 6, 11	Front-runner	Green infrastructures; urban/spatial planning
WS8_cs2b	Ecological connectivity and nature tourism in Kainuu Region	Finland	Northern	4, 6, 11	Front-runner	Green infrastructures; Business, industry and tourism
WS8_cs2c	Ecosystem services in Northern Sweden	Sweden	Northern	4, 6, 11	Mid-level	Agriculture & Forestry; Business, industry and tourism

5.3. Fact sheets of the candidate case studies for testing the final methods

The following pages present the detailed fact sheets of the candidate case studies for testing the final methods in WP7 and WP8:

- WS7_cs1 - Trento ES-based adaptation to climate change
- WS7_cs2a - Mapping green infrastructures and their ES in Antwerp
- WS7_cs2b - Integrated ES-based planning for flood protection
- WS8_cs2a - Green infrastructure and urban planning in Järvenpää
- WS8_cs2b - Ecological connectivity and nature tourism in Kainuu Region
- WS8_cs2c - Ecosystem services in Northern Sweden

Figure 4 shows the approximate location of the case studies (for the sake of readability, all case studies are represented by a marker point).

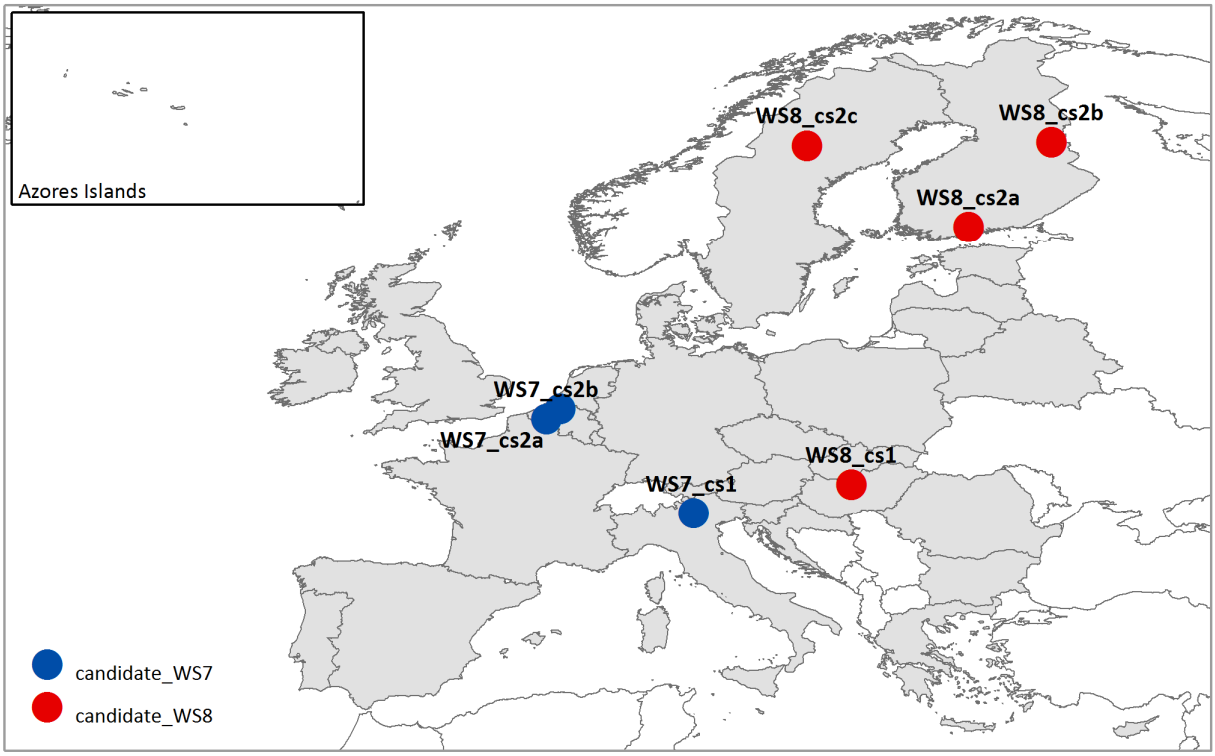


Figure 4: Map of the candidate case studies for workshops 7 and 8.

Trento ES-based adaptation to climate change

WS7_cs1

STUDY AREA: City of Trento

location

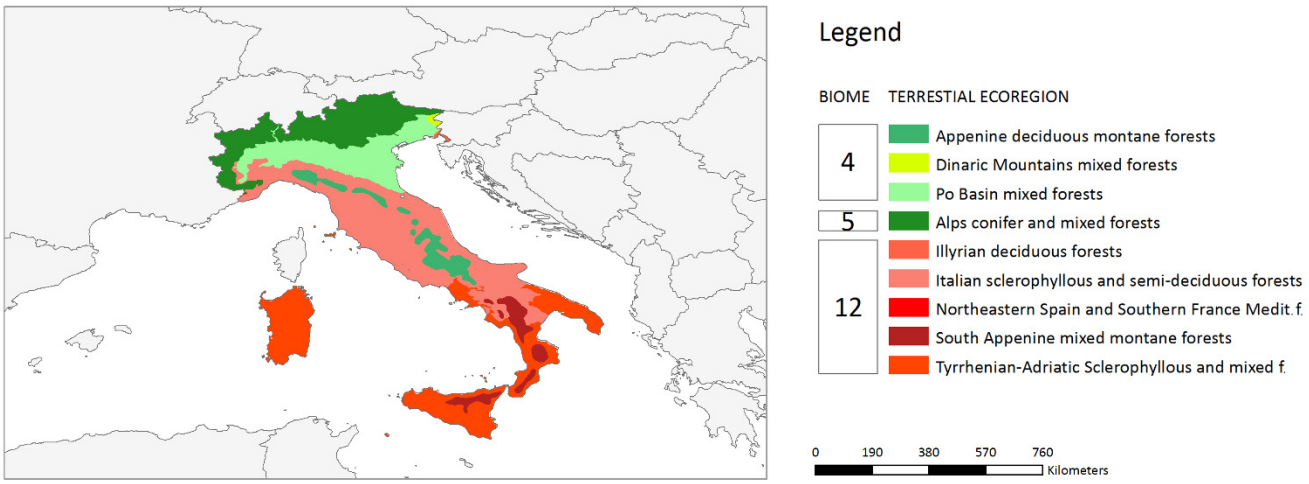
COUNTRY: Italy

STAGE: beginner | **mid-level** | front-runner

GEOGRAPHIC REGION: eastern | northern | western | **southern**

BIOMES IN COUNTRY:

1 Tropical & Subtropical Moist Broadleaf Forests	**4 Temperate Broadleaf & Mixed Forests**
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE: national | sub-national | **local**

THEMES:

nature conservation	**climate, water and energy**	marine policy	natural risk
urban and spatial planning	**green infrastructures**	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES:

urban	cropland	grassland	woodland and forest
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	Strategic Environmental Assessment and urban planning	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	UNITN	contact person	Blal Adem Esmail University of Trento
		e-mail	blal.ademesmail@unitn.it

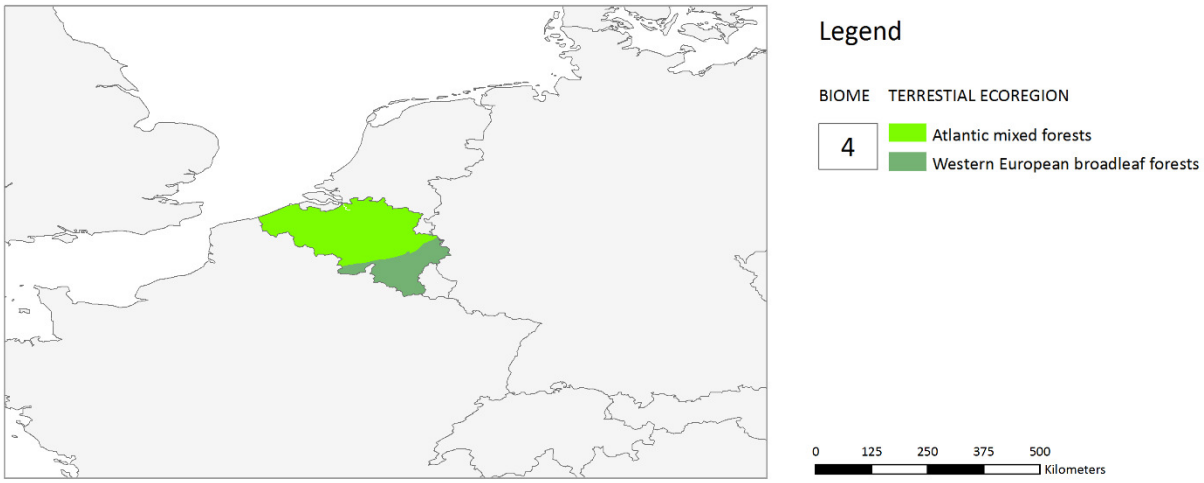
Mapping green infrastructures and their ES in Antwerp

WS7_cs2a

STUDY AREA	City of Antwerp

location

COUNTRY	Belgium			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	City of Antwerp wanted to have a tool to map and assess existing green infrastructure and the impact of green infrastructure in spatial planning on the challenges the city faces (climate change, air quality, noise, recreation, water infiltration...).		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.		
FURTHER INFORMATION	online tool available on request		

proponent

ESMERALDA PARTNER	VITO	contact person	Inge Liekens, Steven Broekx VITO
		e-mail	inge.liekens@vito.be

Integrated ES-based planning for flood protection

WS7_cs2b

STUDY AREA: Maarkebeek

location

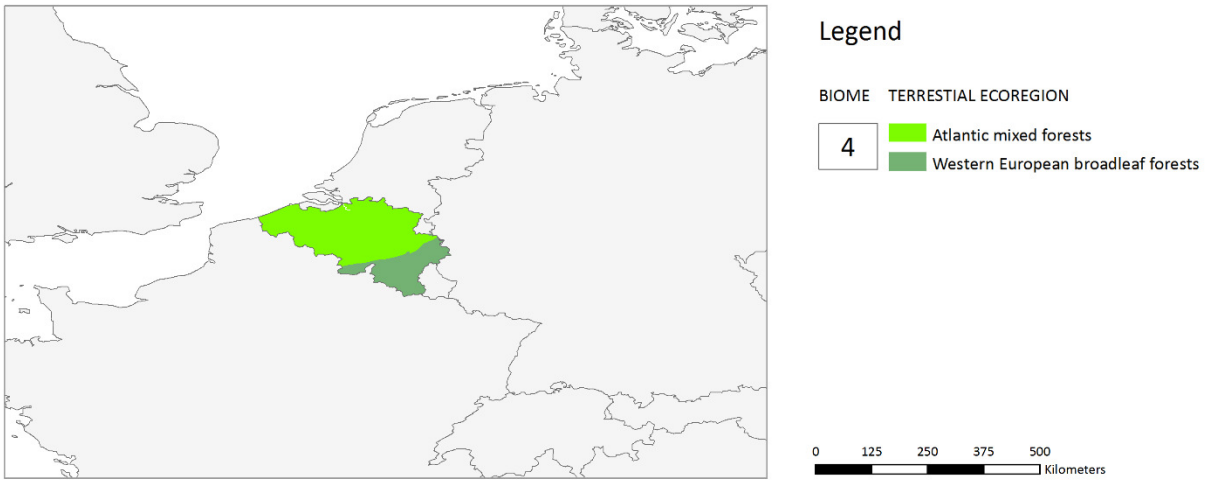
COUNTRY: Belgium

STAGE: beginner | mid-level | **front-runner**

GEOGRAPHIC REGION: eastern | northern | **western** | southern

BIOMES IN COUNTRY:

1 Tropical & Subtropical Moist Broadleaf Forests	**4 Temperate Broadleaf & Mixed Forests**
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE: national | sub-national | **local**

THEMES:

nature conservation	**climate, water and energy**	marine policy	**natural risk**
urban and spatial planning	green infrastructures	**agriculture and forestry**	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES:

urban	cropland	grassland	woodland and forest
heathland and shrub	sparsely vegetated land	wetlands	**rivers and lakes**
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	Ongoing planning process for river restoration. Main focus originally was on reducing flood risks by building additional flood control areas. However, due to difficulties in getting these areas realized because of the lack of public support, the discussion is now widened towards more integrated planning of the entire valley. End users are interested in applying the ecosystem services concept for this purpose. Up till now, no mapping and assessment of ecosystem services was performed.		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	Participative process on the different functions the area can/should provide is ongoing in the Belgian ECOPLAN project.

proponent

ESMERALDA PARTNER	VITO	contact person	Inge Liekens, Steven Broekx VITO
		e-mail	inge.liekens@vito.be

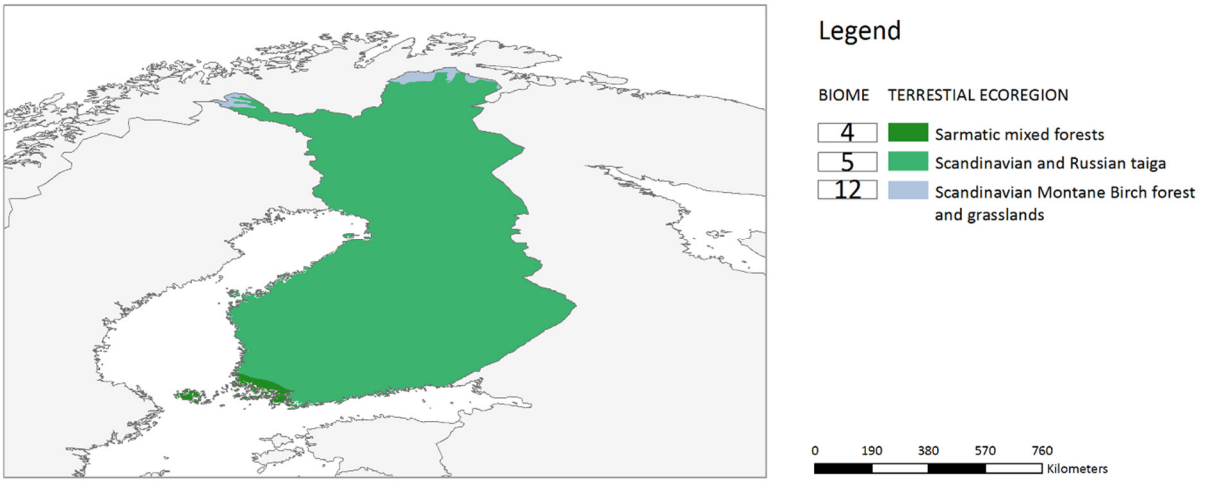
Green infrastructure and urban planning in Järvenpää

WS8_cs2a

STUDY AREA	City of Järvenpää

location

COUNTRY	Finland			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	The green infrastructure of the City of Järvenpää has been mapped based on its natural values, connectivity and ecosystem service supply and demand. This has been done in collaboration with the urban planners for identifying the least harmful sites for infill development in green areas inside this relatively compact small city. In addition, the information will later be used for the needs of renewing the local master plan.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	The project was finished by the end of year 2015. A final report will be published in Finnish in March 2016. Later on, scientific papers are planned to be produced. Some preliminary outcomes were already presented at the ESP conference in South Africa in November 2015 by Arto Viinikka (assessing connectivity of the green infrastructure in a compact city). In the City of Järvenpää we had an open workshop for residents with both a matrix-type of demand study and a map survey. In addition, we sent a map survey to all schools and kindergartens in the city and asked them to mark in the map which areas they use for educational purposes (either for their value as subject matter or for using them as a classroom) and which areas they would like to use but cannot for some reason. We also asked them to provide a written description what prohibited them from using the desired areas.

proponent

ESMERALDA PARTNER	SYKE	contact person	Leena Kopperoinen, Arto Viinikka
		e-mail	leena.kopperoinen@ymparisto.fi

Ecological connectivity and nature tourism in Kainuu Region WS8_cs2b

STUDY AREA: Kainuu Region

location

COUNTRY: Finland

STAGE

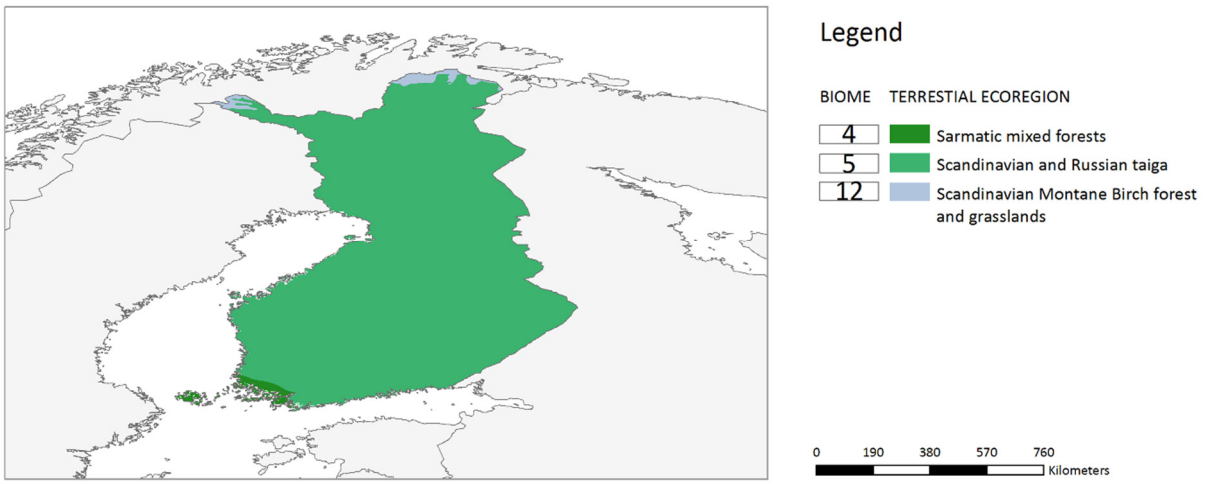
beginner	mid-level	front-runner

GEOGRAPHIC REGION

eastern	northern	western	southern

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	sub-national	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES

urban	cropland	grassland	woodland and forest
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	Kainuu Regional Council wants to have the green infrastructure of the region analysed and mapped based on ecological connectivity, silent areas and nature tourism. The connectivity information was needed especially for not harming natural species populations because of development, especially because of wind mill parks. Regional council has made a regional plan on wind energy. Silent areas are important to safeguard for recreation and for nature tourism purposes. Silent areas can be marked in a regional plan, too. Nature tourism was to be assessed from the point of view of cultural ecosystem services (CES). This has been done by using data from social media to map actual supply of / revealed demand for CES.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request. The project will be reported by the end of January 2016. The final report will be in Finnish but the results will be used for scientific outputs, too.
FURTHER INFORMATION	In the Kainuu Region we are assessing and mapping cultural ES using pictures uploaded in Flickr and Panoramio. We have classified the pictures and we also assess the important locations of various ES based on the locations where pictures have been taken.

proponent

ESMERALDA PARTNER	SYKE	contact person	Leena Kopperoinen Finnish Environment Institute SYKE
		e-mail	leena.kopperoinen@ymparisto.fi

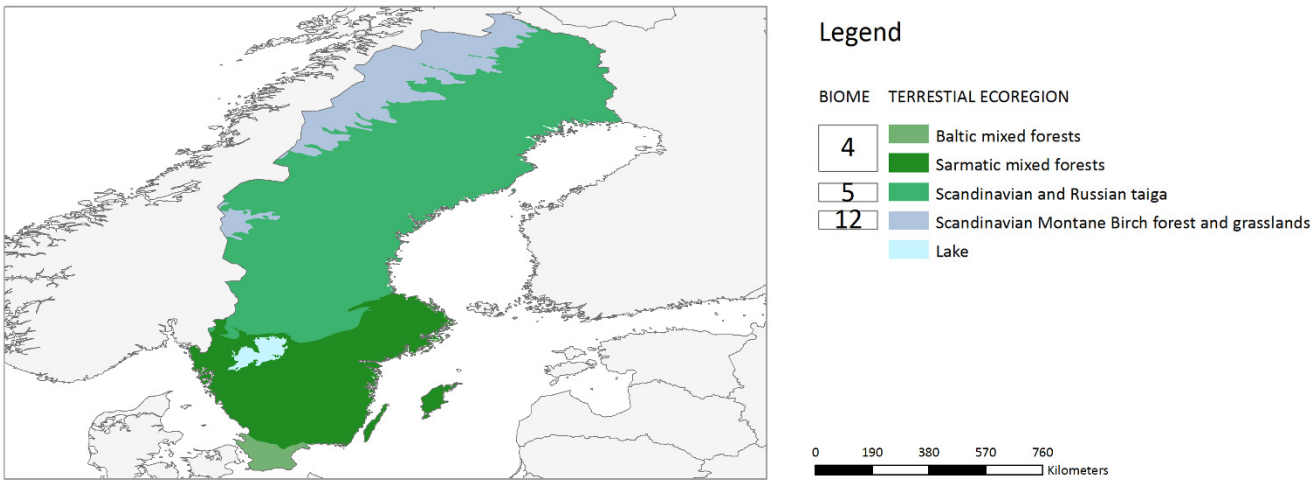
Ecosystem services in Northern Sweden

WS8_cs2c

STUDY AREA	Norther Sweden Alpine region, including transition from boreal region and sub-alpine zone

location

COUNTRY	Sweden			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	In particular on reindeer husbandry planning, nature conservation planning, Green Infrastructure, and natural and cultural values in territorial planning.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web, and can be sent upon request.
FURTHER INFORMATION	Ongoing project.

proponent

ESMERALDA PARTNER	SEPA	contact person	Hannah Östergård, Johan Svensson Swedish EPA / SLU
		e-mail	hannah.ostergard@naturvardsverket.se johan.svensson@slu.se

6. Overview and conclusions

The following **Table 6** provides an overview of the case studies selected for the two sets of workshops aimed at testing the methods developed during the ESMERALDA project. As shown, the selected sample covers, in the whole, all biomes in Continental Europe, the three scales selected to classify the case studies based on their territorial extent, as well as all themes and types of ecosystems considered, with the only exceptions of ice shelves and open oceans. Therefore, the selected sample of case studies can be considered representative of all conditions in which the mapping and assessment methods could be applied in the future.

Table 6: Overview of the selected and candidate case studies for the two sets of workshops. (* case study yet to be identified).

	BIONES	_4	_5	_6	_8	_11	_12	SCALE	_local	_sub-national	_national	THEMES	_nature conservation	_climate, water and energy	_marine policy	_natural risk	_urban/spatial planning	_green infrastructures	_agriculture and forestry	_business, industry and tourism	_health	_MAES	ECOSYSTEMS	_urban	_cropland	_grassland	_woodland and forests	_heathland and shrub	_sparsely vegetated land	_wetlands	_rivers and lakes	_marine inlets and transitional waters	_coastal	_shelf	_open ocean
FIRST SET																																			
_WS3_cs1		√									√				√					√													√		
_WS3_cs2		√	√								√											√		√	√	√	√			√	√				
_WS3_cs3		√	√						√													√			√	√	√				√				
_WS4_cs1		√							√							√									√					√	√		√		
_WS4_cs2		√	√							√	√			√			√	√	√	√				√	√	√	√			√	√				
_WS4_cs3							√			√	√											√			√			√	√			√	√		
_WS5_cs1		√					√				√											√		√	√	√	√	√	√	√	√	√	√		
_WS5_cs2							√			√			√					√									√								
_WS5_cs3		√			√		√		√				√				√	√	√	√				√		√	√	√							
SECOND SET																																			
_WS7_cs1		√	√				√		√					√			√	√			√			√											
_WS7_cs2a		√							√								√	√						√											
_WS7_cs2b		√							√				√	√		√	√		√												√				
_WS8_cs1*		√																																	
_WS8_cs2a		√		√		√			√								√	√						√	√		√				√				
_WS8_cs2b		√		√		√				√							√	√		√				√	√		√		√	√	√				
_WS8_cs2c		√		√		√				√			√					√	√	√							√	√	√	√					

Appendix 1: Additional case studies

The present appendix presents the additional case studies proposed by the ESMERALDA partners. This pool of case studies allows to quickly select a back-up case study if needed in the future, by applying the same selection criteria used in this first phase. Moreover, the database represents an interesting collection of ecosystem services mapping and assessment activities carried out in the EU member states. Partners will be encouraged and supported in applying the methods developed by the ESMERALDA project to their respective case studies, thus contributing to the testing process.

The next pages contain the detailed fact sheets for each case study:

- cs1 – Madrid rural-urban gradient
- cs2 – Smolyan development plan
- cs3 – Ecosystem services in the Ogosta basin
- cs4 – ES Trade-offs Assessment in the Třeboň Basin
- cs5 – Pilot survey of grassland ecosystem services
- cs6 – Ecosystem services in the Mondsee Catchment
- cs7 – Impact of land-use changes on arthropod biodiversity
- cs8 – Impact of land-use changes on flower visiting insects
- cs9 – ISLAND-BIODIV - Understanding biodiversity dynamics in tropical and subtropical islands as an aid to science based conservation action
- cs10 – SLAM - Long Term Ecological Study of the Impacts of Climate Change
- cs11 – Lower Danube floodplain - Greaca area
- cs12 – Long term socio-ecological research site Braila Island
- cs13 – Niraj and Târnava-Mică rivers
- cs14 – Horský park
- cs15 – Flandres ecosystem assessment
- cs16 – Planning green infrastructure in Helsinki-Uusimaa Region

Aa summary, **Figure 5** shows their approximate location (for the sake of readability, all case studies are represented by a marker point), while **Table 7** provides an overview of their classification based on biome, scale, themes and types of ecosystem addressed.

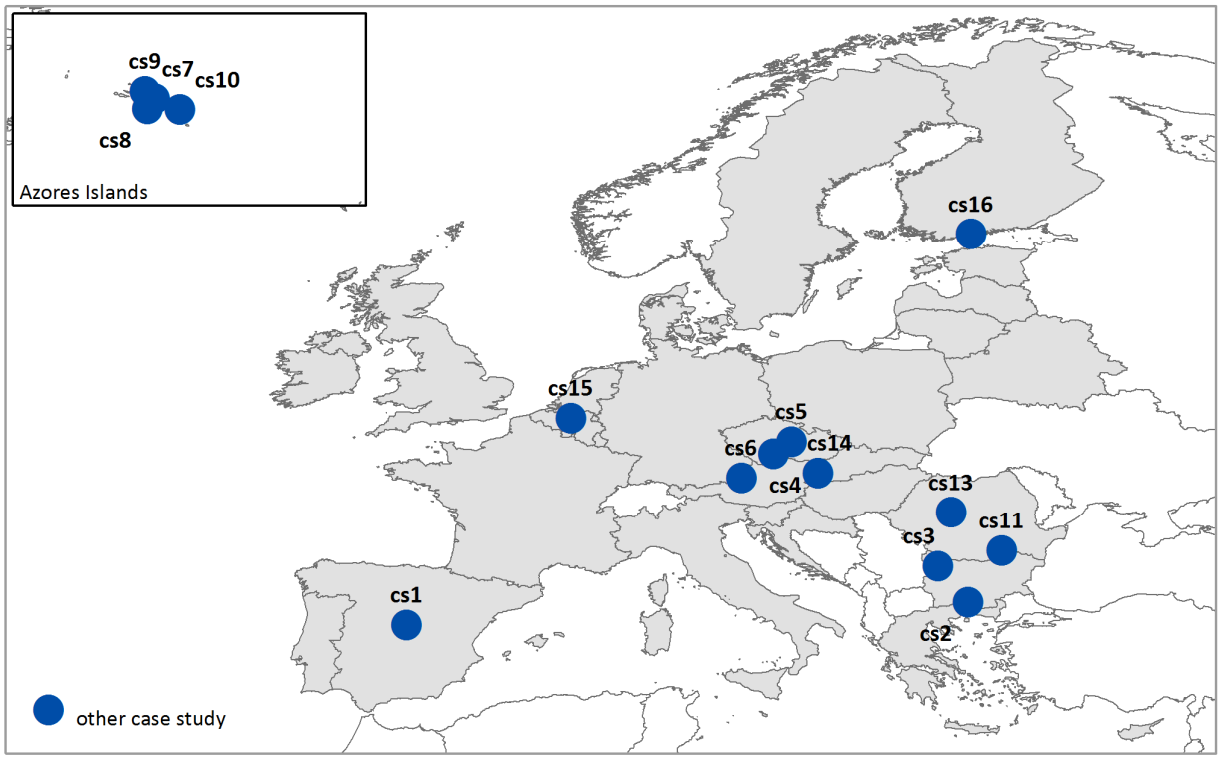


Figure 5: Map of the other case studies proposed.

Table 7: Overview of the other case studies proposed.

	BIOMES	_4_	_5_	_6_	_8_	_11_	_12_	SCALE	_local	_sub-national	_national	THEMES	_nature conservation	_climate, water and energy	_marine policy	_natural risk	_urban/spatial planning	_green infrastructures	_agriculture and forestry	_business, industry and tourism	_health	_MAES	ECOSYSTEMS	_urban	_cropland	_grassland	_woodland and forests	_heathland and shrub	_sparsely vegetated land	_wetlands	_rivers and lakes	_marine inlets and transitional waters	_coastal	_shelf	_open ocean
OTHER CS																																		
cs1		√					√			√			√				√	√	√	√	√			√	√		√								
cs2		√			√		√		√				√						√	√				√	√	√	√								
cs3		√			√		√		√													√		√	√	√	√	√							
cs4		√	√						√				√											√	√	√	√			√	√				
cs5		√	√								√		√													√									
cs6		√	√						√					√					√							√	√				√				
cs7							√			√			√													√	√								
cs8							√		√				√						√								√								
cs9							√			√			√														√								?
cs10							√			√			√	√													√								?
cs11		√	√		√				√				√	√					√						√	√	√				√				
cs12		√	√		√					√			√	√					√					√	√	√	√				√				
cs13		√	√		√					√			√	√					√						√	√	√				√				
cs14		√	√						√													√		√											
cs15		√								√												√			√	√	√	√			√		√		
cs16		√		√		√				√							√	√						√	√		√				√	√	√		

Madrid rural-urban gradient

cs1

STUDY AREA: Madrid region

location

COUNTRY: Spain

STAGE

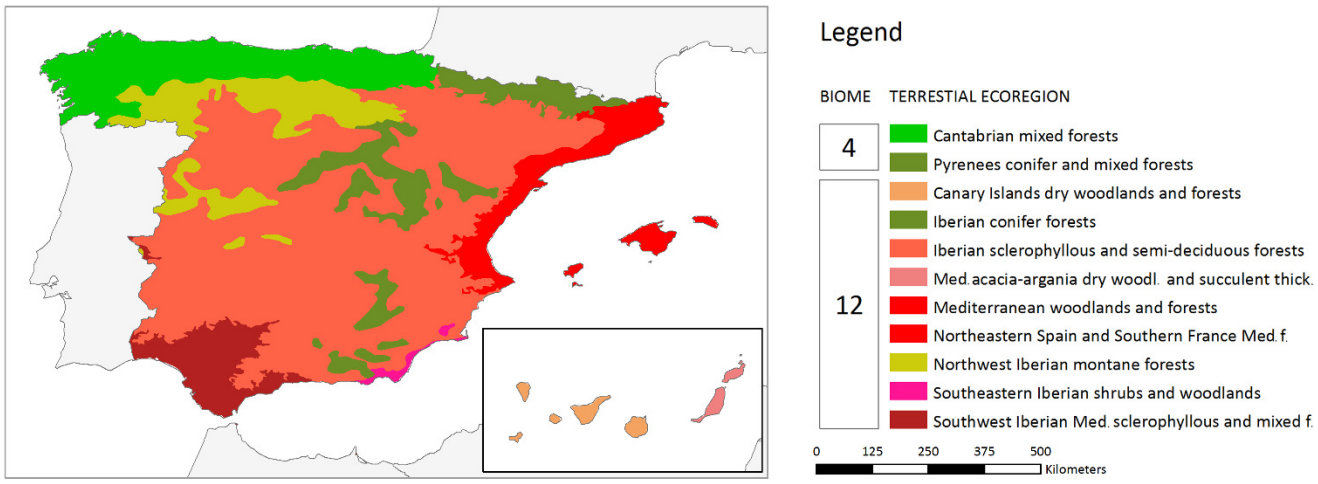
beginner	mid-level	**front-runner**

GEOGRAPHIC REGION

eastern	northern	western	**southern**

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	**4 Temperate Broadleaf & Mixed Forests**
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	**sub-national**	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	**green infrastructures**	**agriculture and forestry**	**business, industry and tourism**
health	ES mapping and assessment		

ECOSYSTEM TYPES

urban	**cropland**	grassland	**woodland and forest**
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	We are in collaboration with policy decision maker in the study area to present our results to them and see how we can help in the process.		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.		
FURTHER INFORMATION			

proponent

ESMERALDA PARTNER	UAM	contact person	Fernando Santos Martin Universdad Autónoma de Madrid
		e-mail	fernando.santos.martin@uam.es

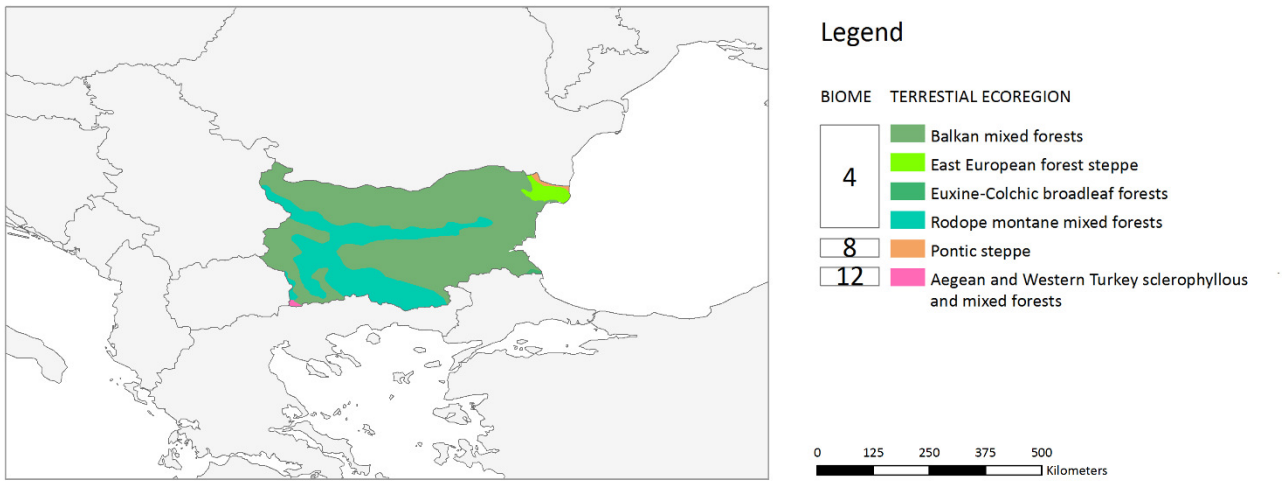
Smolyan development plan

cs2

STUDY AREA	Smolyan

location

COUNTRY	Bulgaria			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	Municipality development plans.		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	NIGGG-BAS	contact person	Stoyan Nedkov NIGGG-BAS
		e-mail	snedkov@abv.bg

Ecosystem services in the Ogosta basin

cs3

STUDY AREA: Ogosta basin

location

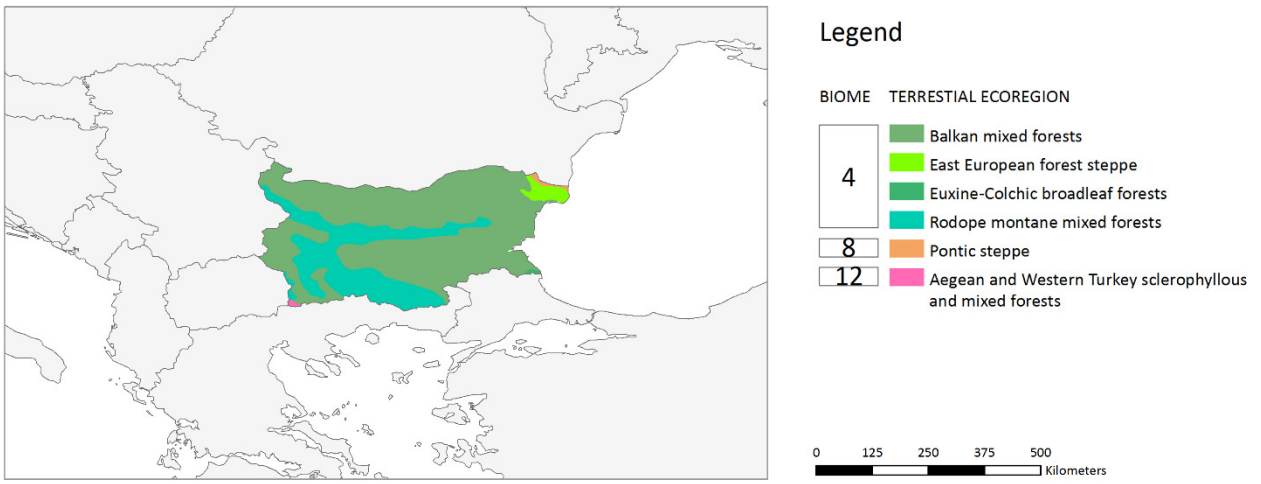
COUNTRY: Bulgaria

STAGE: beginner | **mid-level** | front-runner

GEOGRAPHIC REGION: **eastern** | northern | western | southern

BIOMES IN COUNTRY:

1 Tropical & Subtropical Moist Broadleaf Forests	**4 Temperate Broadleaf & Mixed Forests**
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE: national | sub-national | **local**

THEMES:

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	**ES mapping and assessment**		

ECOSYSTEM TYPES:

urban	**cropland**	**grassland**	**woodland and forest**
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	☐ yes	☒ no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	NIGGG-BAS	contact person	Stoyan Nedkov NIGGG-BAS
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ES Trade-offs Assessment in the Třeboň Basin

cs4

STUDY AREA: Třeboň Basin UNESCO Biosphere Reserve

location

COUNTRY: Czech Republic

STAGE

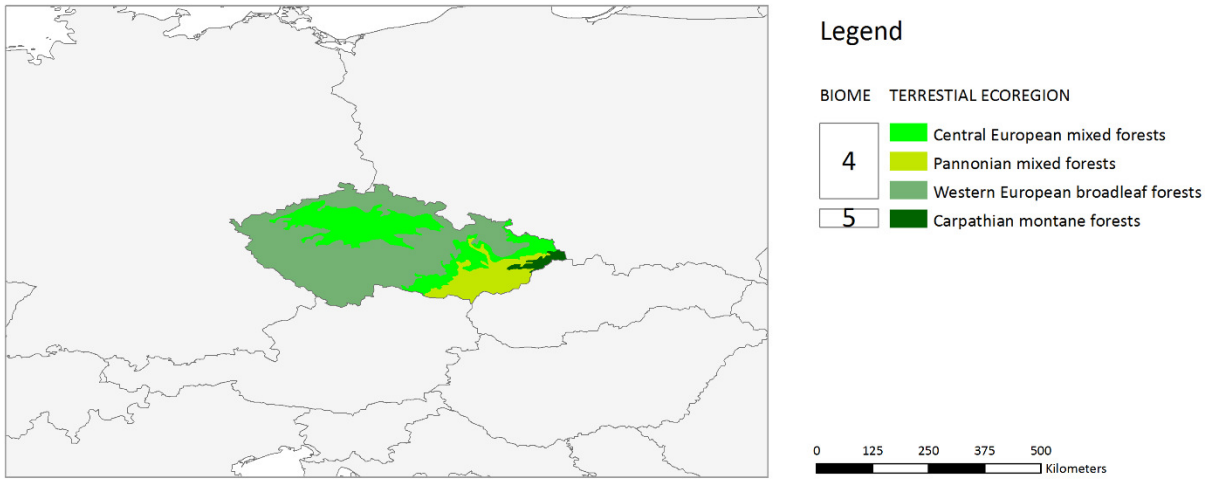
beginner	mid-level	front-runner

GEOGRAPHIC REGION

eastern	northern	western	southern

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	sub-national	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES

urban	cropland	grassland	woodland and forest
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no
	Support to local landscape protection and spatial decision-making in collaboration with the Administration of the Třeboň Basin PLA and UNESCO Biosphere Reserve.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. - Z. V. Harmáčková, D. Vačkář (2015), "Modelling regulating ecosystem services trade-offs across landscape scenarios in Třeboňsko Wetlands Biosphere Reserve, Czech Republic", *Ecological Modelling*, 295, 207-215, http://dx.doi.org/10.1016/j.ecolmodel.2014.10.003. - Certified methodology: http://www.ecosystemservices.cz/en/methodology-ltser/
FURTHER INFORMATION	

proponent

ESMERALDA PARTNER	CVGZ	contact person	Adam Pártl CzechGlobe – Global Change Research Centre
		e-mail	partl.a@czechglobe.cz

Pilot survey of grassland ecosystem services

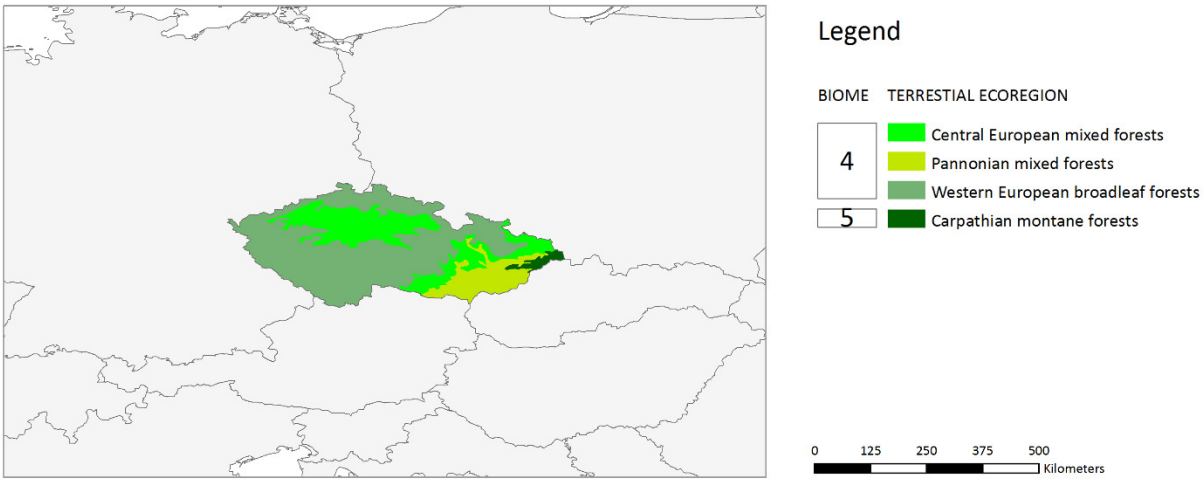
cs5

STUDY AREA: Czech Republic

location

COUNTRY: Czech Republic

STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		yes ■ no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. - I. Hönigová et al. (2012), *Survey on grassland ecosystem services. Report to the EEA – European Topic Centre on Biological Diversity.* Prague: Nature Conservation Agency of the Czech Republic. Available at: http://doc.teebweb.org/wp-content/uploads/2013/01/Survey-on-grassland-ES_2011_final-report_ISBN.pdf
FURTHER INFORMATION	Elaborated for the European Topic Centre on Biological Diversity.

proponent

ESMERALDA PARTNER	CVGZ	contact person	Adam Pártl CzechGlobe – Global Change Research Centre
		e-mail	partl.a@czechglobe.cz

Ecosystem services in the Mondsee Catchment

cs6

STUDY AREA: Mondsee Catchment

location

COUNTRY: Austria

STAGE

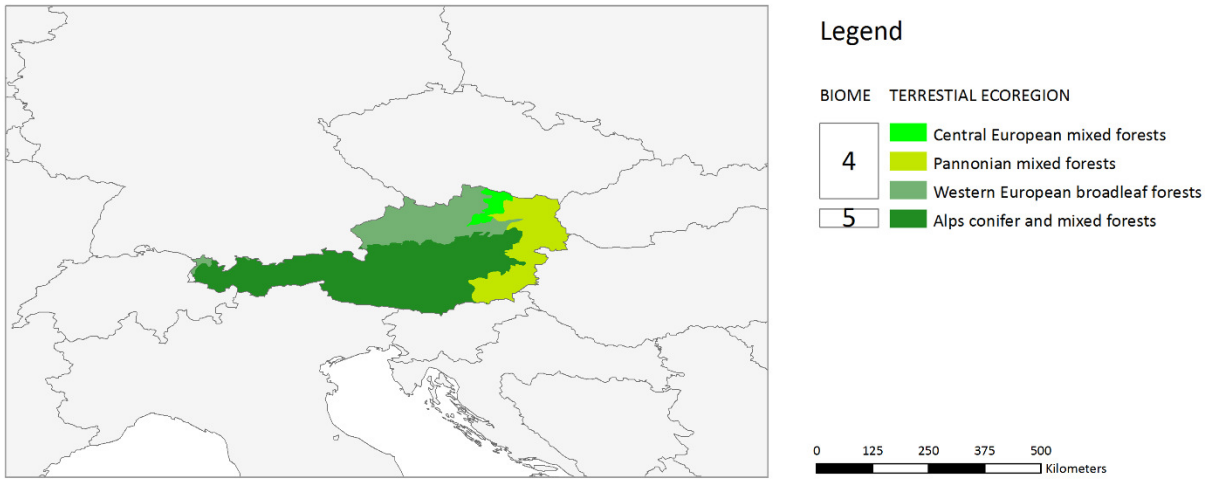
beginner	mid-level	front-runner

GEOGRAPHIC REGION

eastern	northern	western	southern

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	sub-national	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES

urban	cropland	grassland	woodland and forest
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	☐ yes	☒ no
	We are closely collaborating with the national weather administration (ZAMG), the regional federal governments in Salzburg and Upper Austria (department of hydrology and chamber for agriculture), the municipality within which the sensors are installed, the farmers providing their fields for the stations, other Universities collaborating with us.	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. - H. Klug, L. Oana (2015), "A Multi-purpose Weather Forecast Model for the Mondsee Catchment", *GI_Forum – Journal for Geographic Information Science*, 1, 600-609, doi:10.1553/giscience2015s600. - H. Klug, A. Kmoch, S. Reichel (2015), "Adjusting the Frequency of Automated Phosphorus Measurements to Environmental Conditions", *GI_Forum – Journal for Geographic Information Science*, 1, 590-599, doi:10.1553/giscience2015s590. - Hermann Klug, Alexander Kmoch (2015), "Operationalizing environmental indicators for real time multi-purpose decision making and action support", *Ecological Modelling*, 295, 66-74, http://dx.doi.org/10.1016/j.ecolmodel.2014.04.009. - D. Bertermann, H. Klug, L. Morper-Busch (2015), "A pan-European planning basis for estimating the very shallow geothermal energy potentials", *Renewable Energy*, 75, 335-347, http://dx.doi.org/10.1016/j.renene.2014.09.033. - D. Bertermann, H. Klug, L. Morper-Busch, C. Bialas (2014), "Modelling vSGPs (very shallow geothermal potentials) in selected CSAs (case study areas)", *Energy*, 71, 226-244, http://dx.doi.org/10.1016/j.energy.2014.04.054. - H. Klug (2012), "An integrated holistic transdisciplinary landscape planning concept after the Leitbild approach", *Ecological Indicators*, 23, 616-626, http://dx.doi.org/10.1016/j.ecolind.2012.05.019. - M. B. Potschin, H. Klug, R. H. Haines-Young (2010), "From vision to action: Framing the Leitbild concept in the context of landscape planning", *Futures*, 42(7), 656-667, http://dx.doi.org/10.1016/j.futures.2010.04.003. - H. Klug (2010), "Application of a vision in the Lake District of Salzburg", *Futures*, 42(7), 668-681, http://dx.doi.org/10.1016/j.futures.2010.04.004.
FURTHER INFORMATION	Real-time data will be available by next year.

proponent

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Impact of land-use changes on arthropod biodiversity

cs7

STUDY AREA: Azores Islands

location

COUNTRY: Portugal (Azores)

STAGE

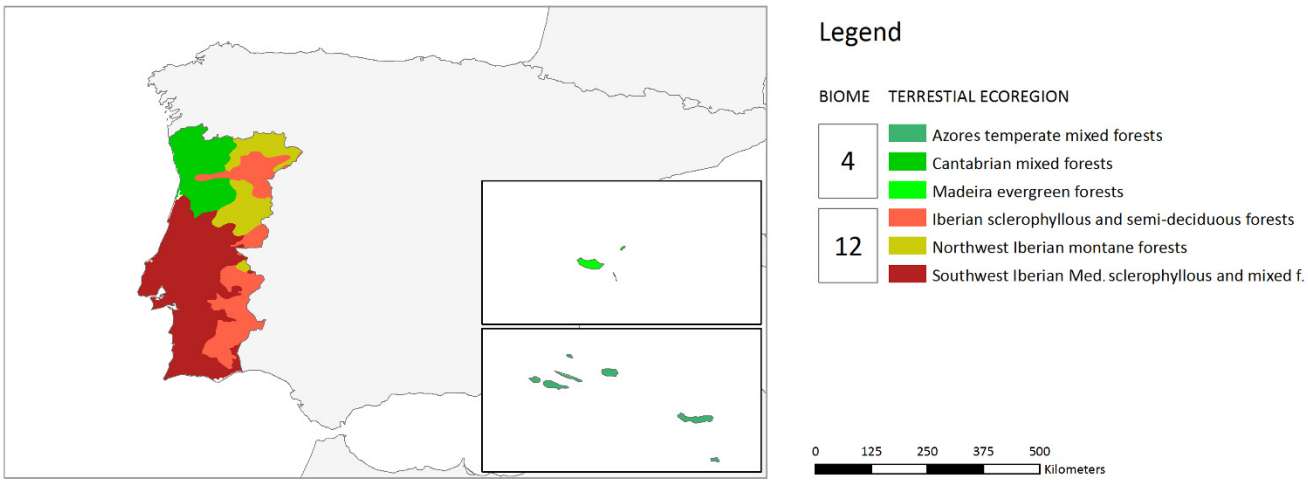
beginner	mid-level	**front-runner**

GEOGRAPHIC REGION

eastern	northern	western	**southern**

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	**sub-national**	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
heath	ES mapping and assessment		

ECOSYSTEM TYPES

urban	cropland	**grassland**	**woodland and forest**
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		yes / no: no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request. Papers: - P. Cardoso, S. C. Aranda, J. M. Lobo, F. Dinis, C. Gaspar, P. A.V. Borges (2009), "A spatial scale assessment of habitat effects on arthropod communities of an oceanic island", *Acta Oecologica,* 35, 590–597, doi:10.1016/j.actao.2009.05.005. - S. S. Meijer, R. J. Whittaker, P. A. V. Borges (2011), "The effects of land-use change on arthropod richnessand abundance on Santa Maria Island (Azores): unmanagedplantations favour endemic beetles", Journal of Insect Conservation, 5, 505-522, DOI:10.1007/s10841-010-9330-2. - S. Fattorini, P. A.V. Porges (2012), "Biogeographical kinetics on an island volcano (Capelinhos, Azores): fast colonisation rates and dominance of arthropod exotic species", *Insect Conservation and Diversity,* 5(5), 358–366, doi:10.1111/j.1752-4598.2011.00169.x. - P. Cardoso, F. Rigal, S. Fattorini, S. Terzopoulou, P. A. V. Borges (2013), "Integrating Landscape Disturbance and Indicator Species in Conservation Studies", PlosONE, 8(5): e63294, DOI:10.1371/journal.pone.0063294 - M. Florencio, P. Cardoso, J. M. Lobo, E. Brito de Azevedo, P. A.V. Borges (2013), "Arthropod assemblage homogenization in oceanic islands: the role of indigenous and exotic species under landscape disturbance", *Diversity and Distributions*, 11(11), 1450-1460, DOI:10.1111/ddi.12121 - M. Florencio, J. M. Lobo, P. Cardoso, M. Almeida-Neto, P. A. V. Borges (2015), "The Colonisation of Exotic Species Does Not Have to Trigger Faunal Homogenisation: Lessons from the Assembly Patterns of Arthropods on Oceanic Islands", PlosONE, 10(5): e0128276, DOI: 10.1371/journal.pone.0128276.
FURTHER INFORMATION	This data is also being used now by Project PREDICTS http://www.predicts.org.uk/

proponent

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Impact of land-use changes on flower visiting insects

cs8

STUDY AREA: Terceira Island

location

COUNTRY: Portugal (Azores)

STAGE

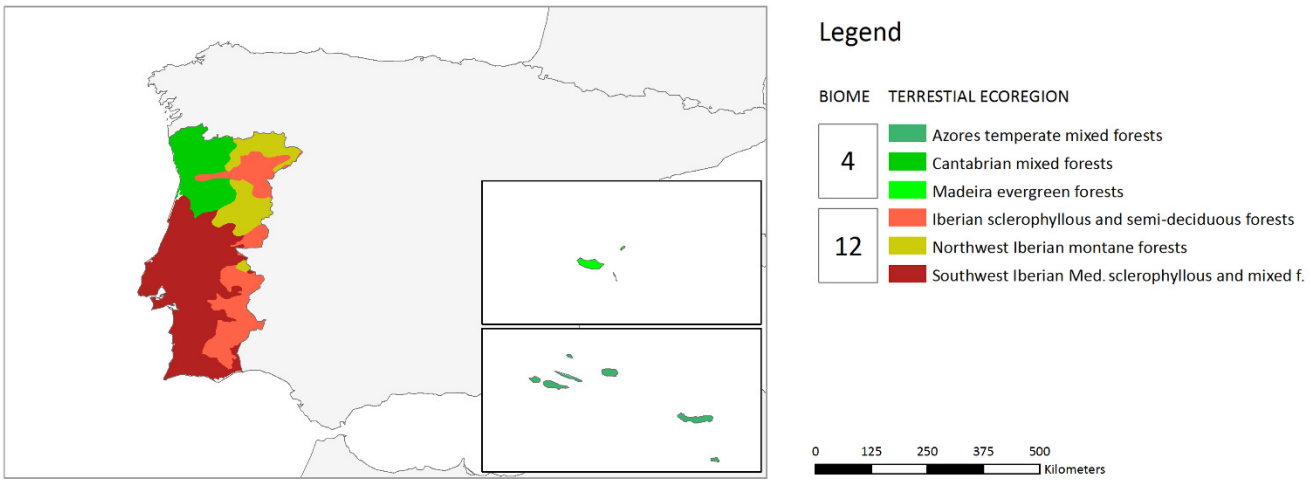
beginner	mid-level	front-runner

GEOGRAPHIC REGION

eastern	northern	western	southern

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	sub-national	local

THEMES

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES

urban	cropland	grassland	woodland and forest
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		☐ yes	☒ no

other info

AVAILABLE DOCUMENTATION	Nothing.
FURTHER INFORMATION	Ongoing PhD research.

proponent

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ISLAND-BIODIV - Understanding biodiversity dynamics in tropical and subtropical islands as an aid to science based conservation action

cs9

STUDY AREA

location

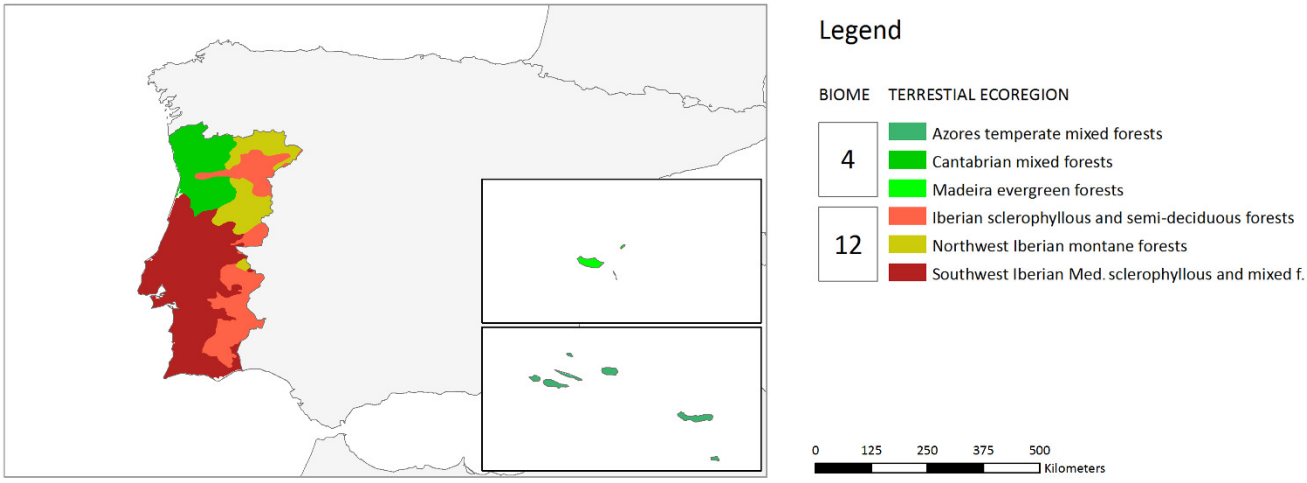
COUNTRY: Portugal (Azores)

STAGE: beginner | mid-level | **front-runner**

GEOGRAPHIC REGION: eastern | northern | western | **southern**

BIOMES IN COUNTRY:

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE: national | **sub-national** | local

THEMES:

nature conservation	climate, water and energy	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES:

urban	cropland	grassland	**woodland and forest**
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		yes	no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request. Several publications under preparation. See more about the project at http://islandlab.uac.pt/projectos/ver.php?id=67
FURTHER INFORMATION	See the official webpage at: http://island-biodiv.org/

proponent

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SLAM - Long Term Ecological Study of the Impacts of Climate Change

cs10

STUDY AREA: Natural forest of Azores

location

COUNTRY: Portugal (Azores)

STAGE

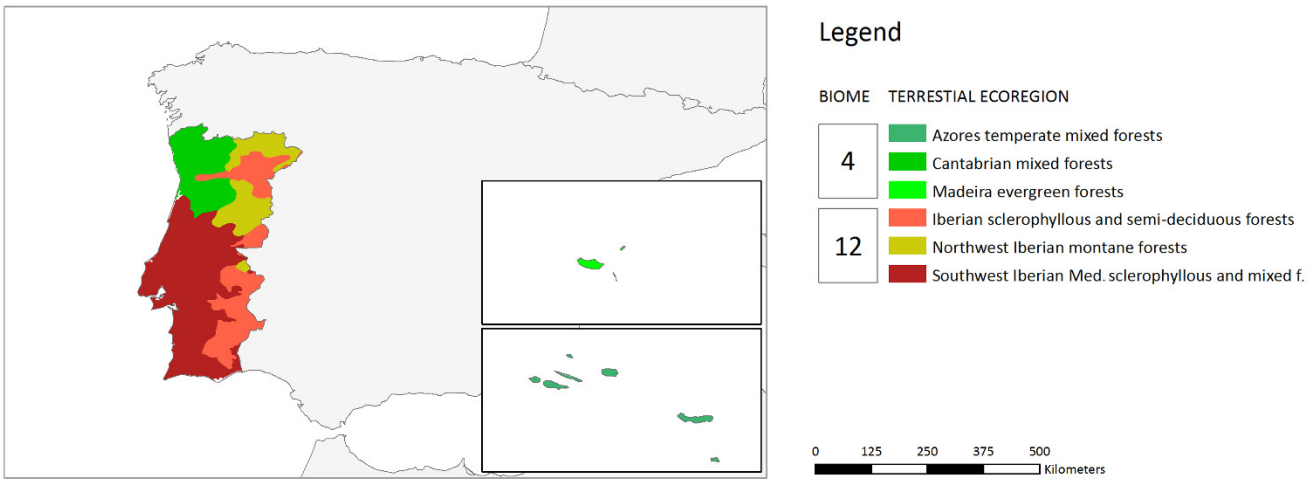
beginner	mid-level	**front-runner**

GEOGRAPHIC REGION

eastern	northern	western	**southern**

BIOMES IN COUNTRY

1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
5 Temperate Conifer Forests	6 Boreal Forests/Taiga
8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
14 Mangrove	



case study outline

SCALE

national	**sub-national**	local

THEMES

nature conservation	**climate, water and energy**	marine policy	natural risk
urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
health	ES mapping and assessment		

ECOSYSTEM TYPES

urban	cropland	grassland	**woodland and forest**
heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		yes ■ no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request. Ongoing publications in preparation.
FURTHER INFORMATION	See details of the project at: http://ce3c.ciencias.ulisboa.pt/research/projects/ver.php?id=18

proponent

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Lower Danube floodplain - Greaca area

cs11

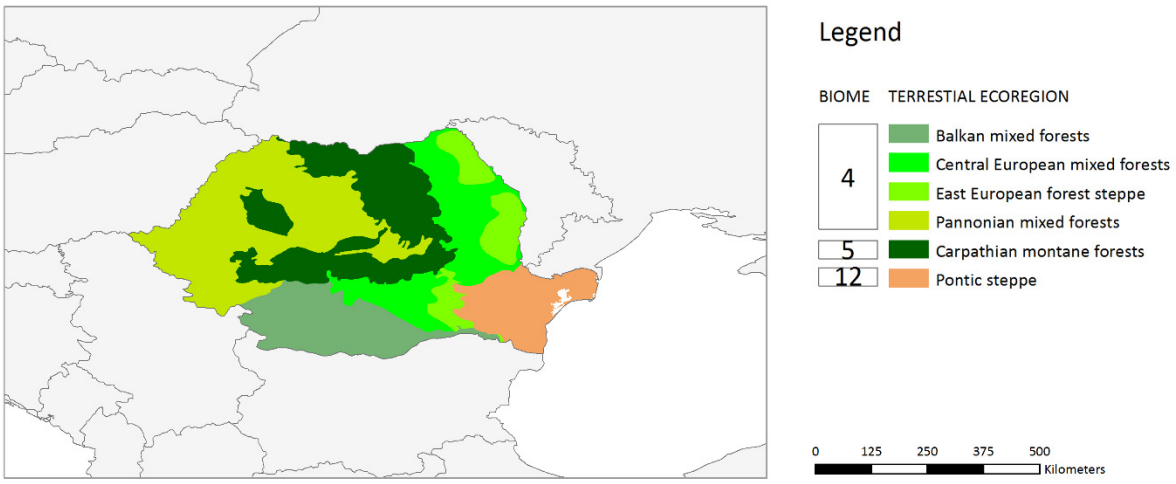
STUDY AREA: Greaca area

location

COUNTRY: Romania

STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern

BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
	14 Mangrove	



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		yes ☐ no ☒

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	

proponent

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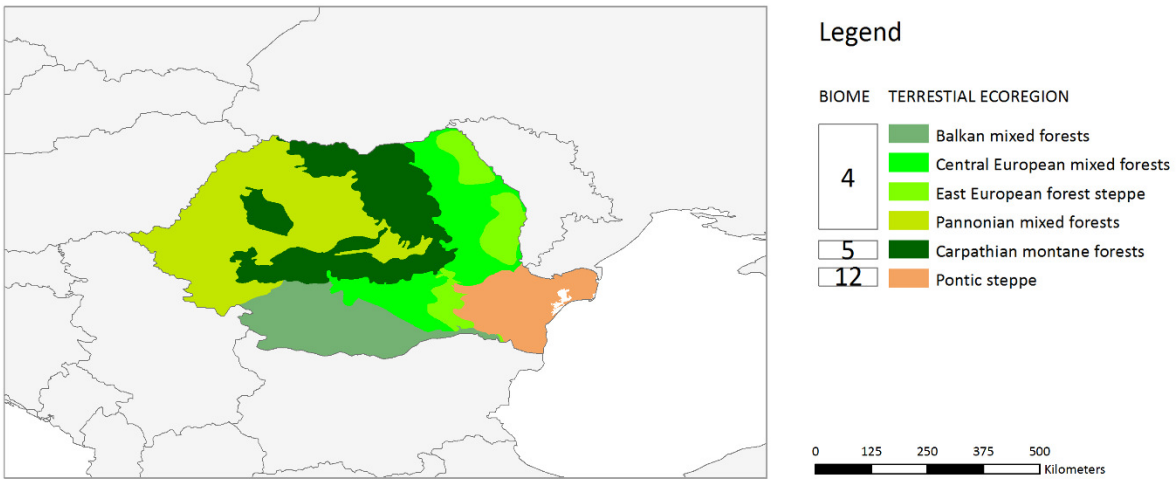
Long term socio-ecological research site Braila Island

cs12

STUDY AREA	Braila Island

location

COUNTRY	Romania			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	☐ yes	☒ no

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. - S. Stoll, M. Frenzel, B. Burkhard, et al. (2015), "Assessment of ecosystem integrity and service gradients across Europe using the LTER Europe network", *Ecological Modelling*, 295, 75-87, http://dx.doi.org/10.1016/j.ecolmodel.2014.06.019.
FURTHER INFORMATION	

proponent

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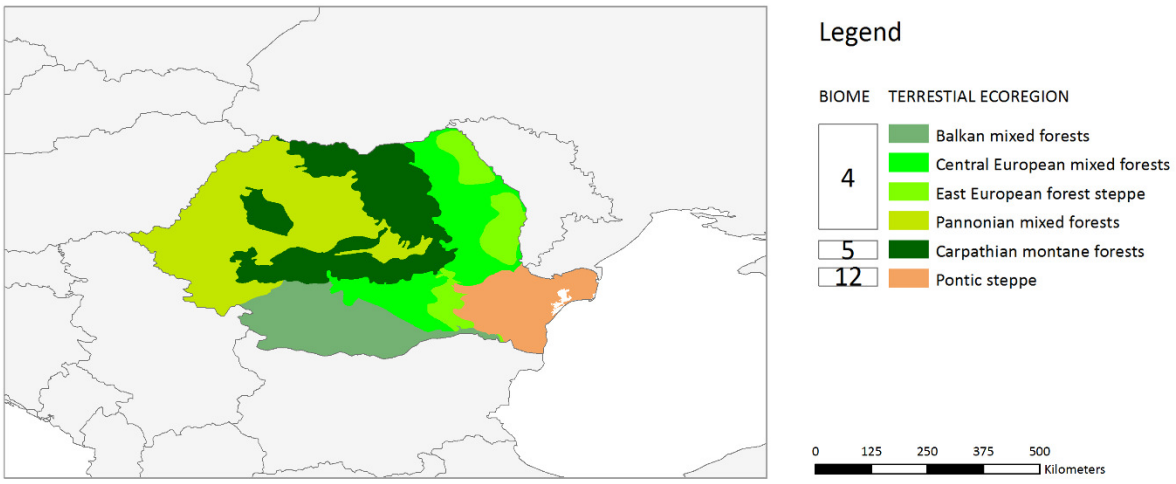
Niraj and Târnava-Mică rivers

cs13

STUDY AREA	Niraj and Târnava-Mică rivers

location

COUNTRY	Romania			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests		
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga		
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra		
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands		
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT		☐ yes ☒ no	

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) not available on the web, but can be sent upon request.
FURTHER INFORMATION	Documentation has been submitted as part of the Milestone 09 - "Mapping and assessment of ecosystem services on Natura2000 areas along Niraj and Târnava-Mică rivers (Niraj-MAES)".

proponent

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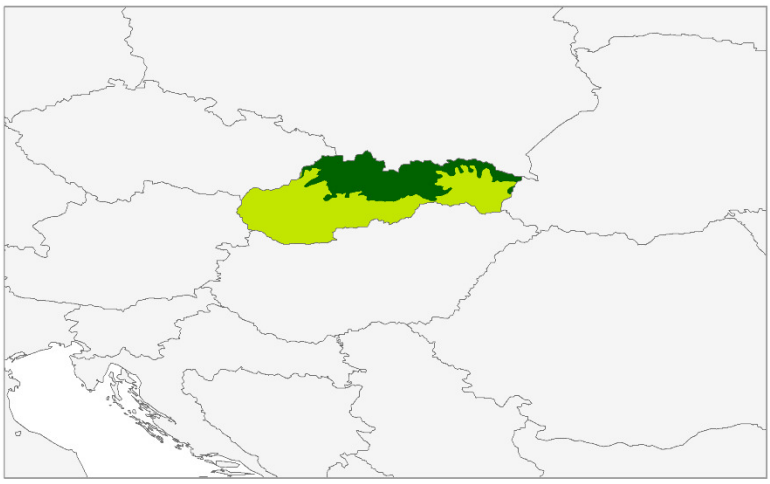
Horský park

cs14

STUDY AREA	Horský park

location

COUNTRY	Slovakia			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	☐ yes	☒ no	

other info

AVAILABLE DOCUMENTATION	Documents (eg, papers, reports) available on the web. - T. Kluvankova, U. Kovac (2015), *Managing Environmental Goods under the Global Change. Approaches and Methods.* Available at: http://www.ieep.cz/download/publikace/Managing_1.pdf
FURTHER INFORMATION	

proponent

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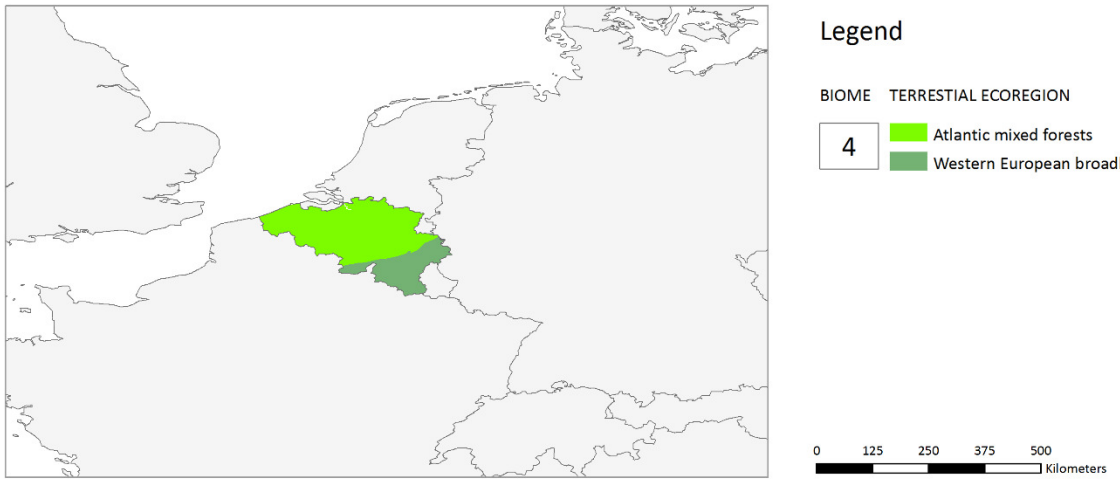
Flandres ecosystem assessment

cs15

STUDY AREA	Flandres

location

COUNTRY	Belgium			
STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern
BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests		4 Temperate Broadleaf & Mixed Forests	
	5 Temperate Conifer Forests		6 Boreal Forests/Taiga	
	8 Temperate Grasslands, Savannas & Shrublands		11 Tundra	
	12 Mediterranean Forests, Woodlands & Scrub		13 Deserts and Xeric Shrublands	
	14 Mangrove			



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes	☐ no	
	Biodiversity strategy action 5. MAES implementation.		

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web at: www.nara.be
FURTHER INFORMATION	16 different ecosystem services assessed in different levels of complexity. Supply/demand maps. Methodology currently being tested for the Netherlands.

proponent

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Planning green infrastructure in Helsinki-Uusimaa Region

cs16

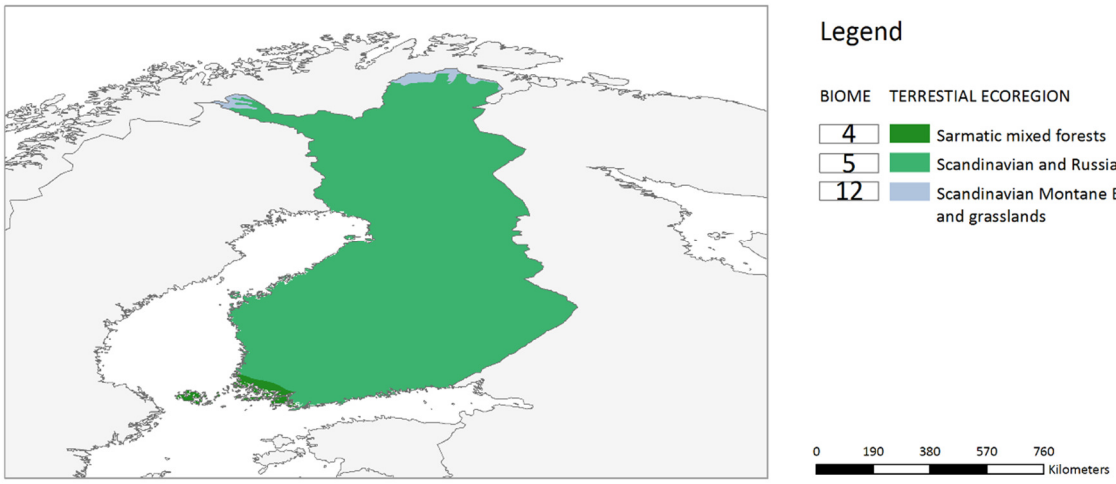
STUDY AREA: Helsinki-Uusimaa Region

location

COUNTRY: Finland

STAGE	beginner	mid-level	front-runner	
GEOGRAPHIC REGION	eastern	northern	western	southern

BIOMES IN COUNTRY	1 Tropical & Subtropical Moist Broadleaf Forests	4 Temperate Broadleaf & Mixed Forests
	5 Temperate Conifer Forests	6 Boreal Forests/Taiga
	8 Temperate Grasslands, Savannas & Shrublands	11 Tundra
	12 Mediterranean Forests, Woodlands & Scrub	13 Deserts and Xeric Shrublands
	14 Mangrove	



case study outline

SCALE	national	sub-national	local	
THEMES	nature conservation	climate, water and energy	marine policy	natural risk
	urban and spatial planning	green infrastructures	agriculture and forestry	business, industry and tourism
	health	ES mapping and assessment		
ECOSYSTEM TYPES	urban	cropland	grassland	woodland and forest
	heathland and shrub	sparsely vegetated land	wetlands	rivers and lakes
	marine inlets and transitional waters	coastal	shelf	open ocean

context

REAL-LIFE PLANNING OR POLICY CONTEXT	■ yes ☐ no
	The Helsinki-Uusimaa Regional Council prepared Phased Regional Land Use Plan 4 for the Helsinki-Uusimaa Region, which complements the previous regional land use plans. The goal of the plan is to ensure the competitiveness of the region while not exceeding the limits of sustainable development. The Regional Plan 4 concentrates on five particular themes, namely green infrastructure, business and innovation, logistics, wind energy and cultural heritage. This regional case study on the green infrastructure and mapping of ecosystem services in the Helsinki-Uusimaa Region was implemented in cooperation with the Helsinki-Uusimaa Regional Council and the results were utilised in the planning of the green infrastructure theme of the Regional Plan 4.

other info

AVAILABLE DOCUMENTATION	Documents (e.g., papers, reports) available on the web. - P. Itkonen, L. Kopperoinen, A. Viinikka, E. Olazábal, V. Heikinheimo (2015), "Case: Mapping green infrastructure and ecosystem services in the Helsinki-Uusimaa Region", in: J.P. Jäppinen, J. Heliölä (Eds.), *Towards A Sustainable and Genuinely Green Economy. The value and social significance of ecosystem services in Finland (TEEB for Finland)*, The Finnish Environment 1/2015, Ministry of the Environment, Department of the Natural Environment, pp.46-55. Available at: https://helda.helsinki.fi/handle/10138/152815 - "Mapping and assessment of forest ecosystems and their services. Applications and guidance for decision making in the framework of MAES." Manuscript. Includes a chapter of the Helsinki-Uusimaa Region case study.
FURTHER INFORMATION	In the Helsinki-Uusimaa case we carried out an Internet-based public participatory GIS survey with which we collected information on the cultural ES related perceptions people have in the Region. The derived information was then overlaied with maps resulting from the ES provision potential analysis.

proponent

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Appendix 2: Biomes and Terrestrial Ecoregions in the EU-28 countries

As part of the activities within TASK 5.1, preparatory to the selection of case studies, we identified the biomes and ecoregions in Europe as well as their distribution in the EU-28 countries (Annex A).

Starting from the definition of biomes given in the ESMERALDA Glossary, we have adopted the WWF classification of biomes (Olson et al. 2001). Hence, based on the Terrestrial Ecoregions of the World (TEOW) mapped by Olson et al (2001), we have identified biomes and ecoregions in each of the EU-28 countries. In Annex B, we provide working definitions and more details about the WWF biome and terrestrial ecoregion classifications.

As a result, we have identified nine biomes in the EU-28 countries, of which three biomes are located in the outermost regions. **Figure 1** and **Table 4** in the text show the distributions of the biomes in the EU-28 countries, including the Outermost regions. A more detailed breakdown at the level of Terrestrial Ecoregions has been made for each country separately. The maps included in the case studies fact sheets show the Terrestrial Ecoregions present in the respective countries. For the sake of completeness, in Annex C, we also provide maps for countries with no case studies.

ANNEX A

European Union – List of EU-28 countries + Switzerland

Nr.	Country Name (EN)	Official name	Code
1	**Austria**	**Republic of Austria**	**AT**
2	**Belgium**	**Kingdom of Belgium**	**BE**
3	**Bulgaria**	**Republic of Bulgaria**	**BG**
4	**Czech Republic**	**Czech Republic**	**CZ**
5	**Denmark**	**Kingdom of Denmark**	**DK**
6	**Germany**	**Federal Republic of Germany**	**DE**
7	Estonia	Republic of Estonia	EE
8	Ireland	Ireland	IE
9	Greece	Hellenic Republic	EL
10	**Spain**	**Kingdom of Spain**	**ES**
11	France	French Republic	FR
12	Croatia	Republic of Croatia	HR
13	**Italy**	**Italian Republic**	**IT**
14	Cyprus	Republic of Cyprus	CY
15	**Latvia**	**Republic of Latvia**	**LV**
16	Lithuania	Republic of Lithuania	LT
17	Luxembourg	Grand Duchy of Luxembourg	LU
18	**Hungary**	**Hungary**	**HU**
19	**Malta**	**Republic of Malta**	**MT**
20	**Netherlands**	**Kingdom of the Netherlands**	**NL**
21	**Poland**	**Republic of Poland**	**PL**
22	**Portugal**	**Portuguese Republic**	**PT**
23	**Romania**	**Romania**	**RO**
24	Slovenia	Republic of Slovenia	SI
25	**Slovakia**	**Slovak Republic**	**SK**
26	**Finland**	**Republic of Finland**	**FI**
27	**Sweden**	**Kingdom of Sweden**	**SE**
28	**United Kingdom**	**United Kingdom of Great Britain and Northern Ireland**	**UK**
29	Switzerland	Swiss Confederation	CH

ANNEX B

WWF classification of biomes and corresponding Terrestrial Ecoregions in the EU-28 countries (Based on Olson et al 2001)

Nr.	Biome name	Notes
1	Tropical & Subtropical Moist Broadleaf Forests	Tropical and subtropical, humid
2	Tropical & Subtropical Dry Broadleaf Forests	Tropical and subtropical, semihumid
3	Tropical & Subtropical Coniferous Forests	Tropical and subtropical, semihumid
4	Temperate Broadleaf & Mixed Forests	Temperate, humid
5	Temperate Conifer Forests	Temperate, humid to semihumid
6	Boreal Forests/Taiga	Subarctic, humid
7	Tropical & Subtropical Grasslands, Savannas & Shrublands	Tropical and subtropical, semiarid
8	Temperate Grasslands, Savannas & Shrublands	Temperate, semiarid
9	Flooded Grasslands & Savannas	Temperate to tropical, fresh or brackish water inundated
10	Montane Grasslands & Shrublands	Alpine or montane climate
11	Tundra	Arctic
12	Mediterranean Forests, Woodlands & Scrub	Temperate warm, semihumid to semiarid with winter rainfall
13	Deserts and xeric shrublands	Temperate to tropical, arid
14	Mangrove	Subtropical and tropical, salt water inundated
15	Lakes	
16	Rock and Ice	

Biome	Terrestrial Eco-Region in the EU-28 countries
1	Comoros forests Guianan Highlands moist forests Guianan moist forests Leeward Islands moist forests Mascarene forests Windward Islands moist forests
2	Lesser Antillean dry forests
4	Apennine deciduous montane forests Atlantic mixed forests Azores temperate mixed forests Balkan mixed forests Baltic mixed forests Cantabrian mixed forests Celtic broadleaf forests Central European mixed forests Dinaric Mountains mixed forests East European forest steppe English Lowlands beech forests Euxine-Colchic broadleaf forests Madeira evergreen forests North Atlantic moist mixed forests Pannonian mixed forests Po Basin mixed forests Pyrenees conifer and mixed forests Rodope montane mixed forests Sarmatic mixed forests Western European broadleaf forests
5	Alps conifer and mixed forests Caledon conifer forests Carpathian montane forests
6	Scandinavian and Russian taiga
8	Pontic steppe
11	Scandinavian Montane Birch forest and grasslands
12	Aegean and Western Turkey sclerophyllous and mixed forests Canary Islands dry woodlands and forests Corsican montane broadleaf and mixed forests Crete Mediterranean forests Cyprus Mediterranean forests Iberian conifer forests Iberian sclerophyllous and semi-deciduous forests Illyrian deciduous forests Italian sclerophyllous and semi-deciduous forests Mediterranean acacia-argania dry woodlands and succulent thickets Mediterranean woodlands and forests Northeastern Spain and Southern France Mediterranean forests Northwest Iberian montane forests Pindus Mountains mixed forests South Apennine mixed montane forests

	Southeastern Iberian shrubs and woodlands Southwest Iberian Mediterranean sclerophyllous and mixed forests Tyrrhenian-Adriatic Sclerophyllous and mixed forests
13	Caribbean shrublands
14	Amazon-Orinoco-Southern Caribbean mangroves Bahamian-Antillean mangroves

DEFINITIONS

- **BIOME:** "the largest unit of ecological classification that is convenient to recognize below the entire globe. Terrestrial biomes are typically based on dominant vegetation structure (e.g. forest, grassland). Ecosystems within a biome function in a broadly similar way, although they may have very different species composition. For example, all forests share certain properties regarding nutrient cycling, disturbance, and biomass that are different from the properties of grasslands. Marine biomes are typically based on biogeochemical properties. The WWF biome classification is used in the MA" (ESMERALDA Glossary).

- **TERRESTRIAL ECOREGIONS OF THE WORLD (TEOW):** "a biogeographic regionalization of the Earth's terrestrial biodiversity. Our biogeographic units are ecoregions, which are defined as relatively large units of land or water containing a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions. There are 867 terrestrial ecoregions, classified into 14 different biomes such as forests, grasslands, or deserts. Ecoregions represent the original distribution of distinct assemblages of species and communities." (Olson et al .2001)

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Olson, D. M., E. Dinerstein, E. D. Wikramanayake, N. D. Burgess, G. V. N. Powell, E. C. Underwood, J. a. D'amico, I. Itoua, H. E. Strand, J. C. Morrison, C. J. Loucks, T. F. Allnutt, T. H. Ricketts, Y. Kura, J. F. Lamoreux, W. W. Wettengel, P. Hedao, and K. R. Kassem. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. BioScience 51(11):933. (SHAPEFILE)

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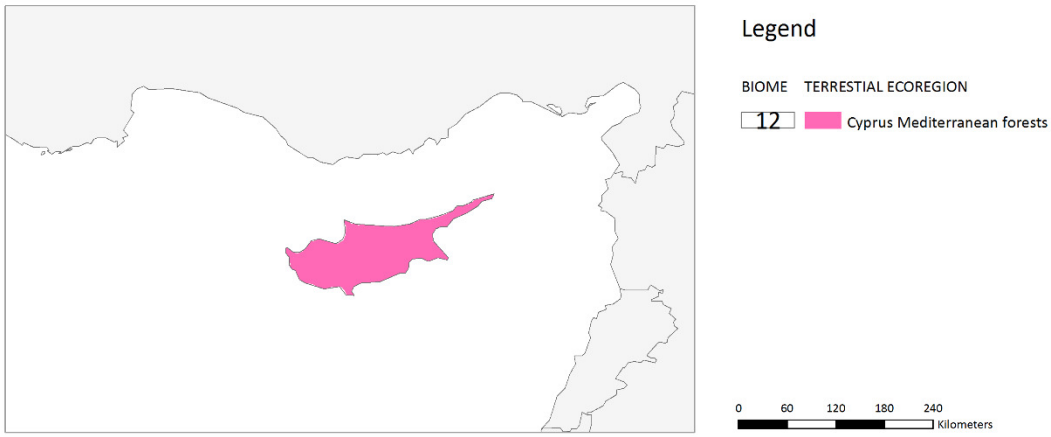
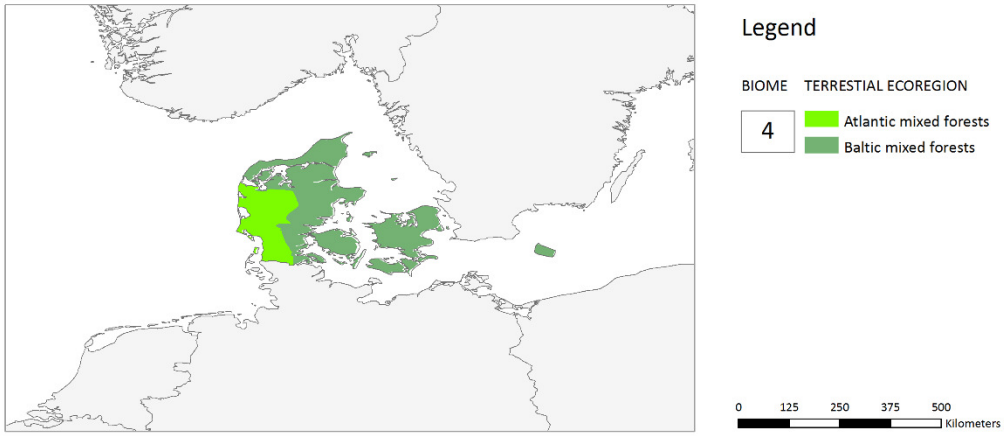
ANNEX C

BIOMES AND TERRESTRIAL ECOREGIONS[2]
(Based on Olson et al for WWF – Version 2.0_2004)

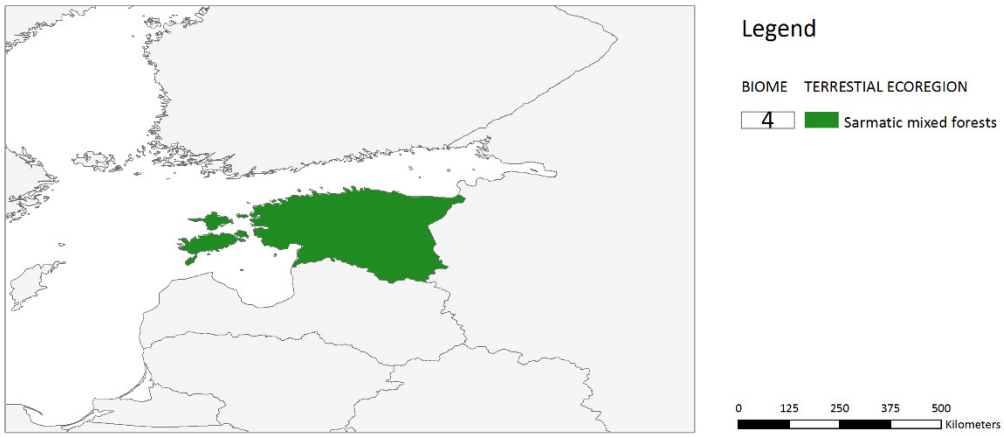
CY_Cyprus



DK_Denmark

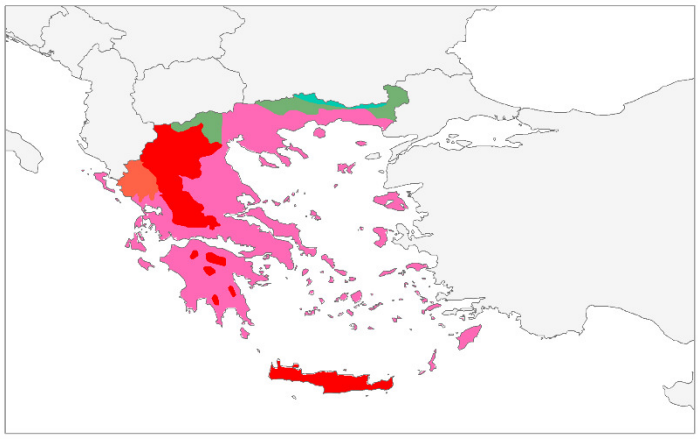


EE_Estonia



[2] In this annex, we only provide maps for countries with no case study. For the others, maps are included in the case studies fact sheets.

EL_Greece

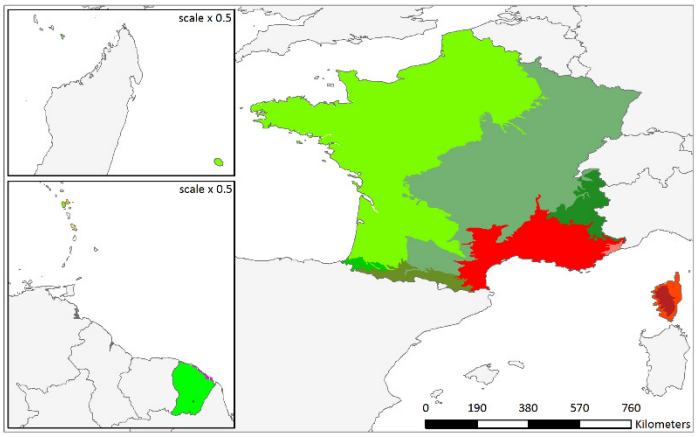


Legend

BIOME	TERRESTIAL ECOREGION
4	Balkan mixed forests
	Rodope montane mixed forests
12	Aegean and Western Turkey scl. and mixed forests
	Crete Mediterranean forests
	Illyrian deciduous forests
	Pindus Mountains mixed forests

0 125 250 375 500 Kilometers

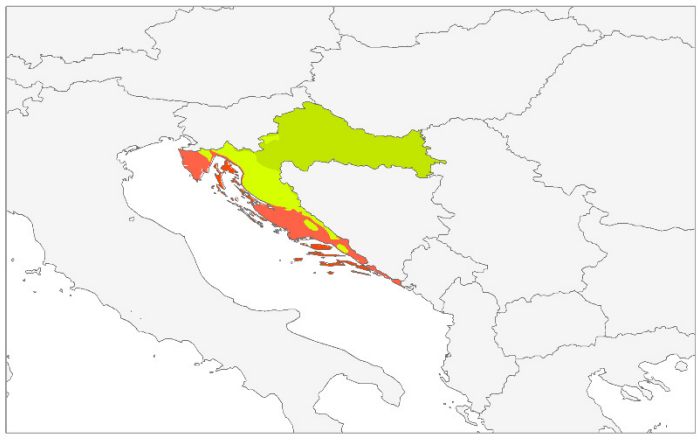
FR_France



Legend

BIOME	TERRESTIAL ECOREGION
1	Comoros forests
	Guianan Highlands moist forests
	Guianan moist forests
	Leeward Islands moist forests
	Mascarene forests
	Windward Islands moist forests
2	Lesser Antillean dry forests
4	Atlantic mixed forests
	Cantabrian mixed forests
	Pyrenees conifer and mixed forests
	Western European broadleaf forests
5	Alps conifer and mixed forests
12	Corsican montane broadleaf and mixed forests
	Italian sclerophyllous and semi-deciduous forests
	Northeastern Spain and Southern France Mediterranean forests
	Tyrrhenian-Adriatic Sclerophyllous and mixed forests
13	Caribbean shrublands
14	Amazon-Orinoco-Southern Caribbean mangroves
	Bahamian-Antillean mangroves

HR_Croatia

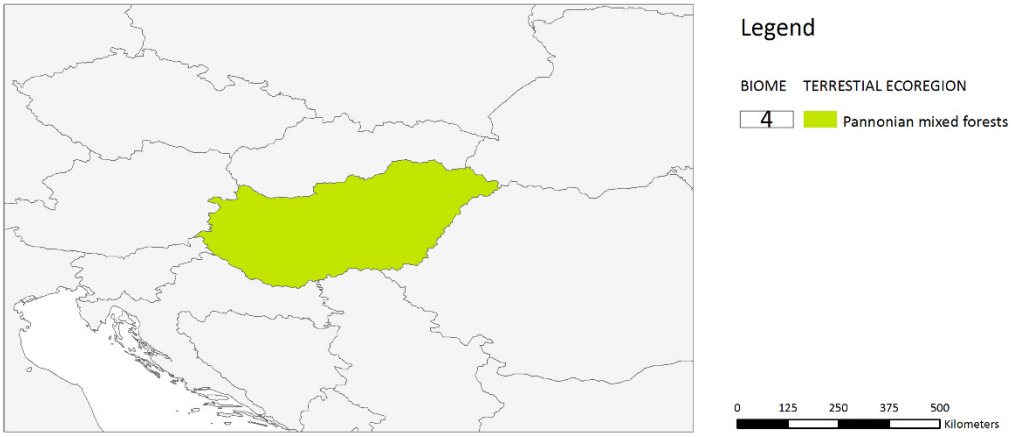


Legend

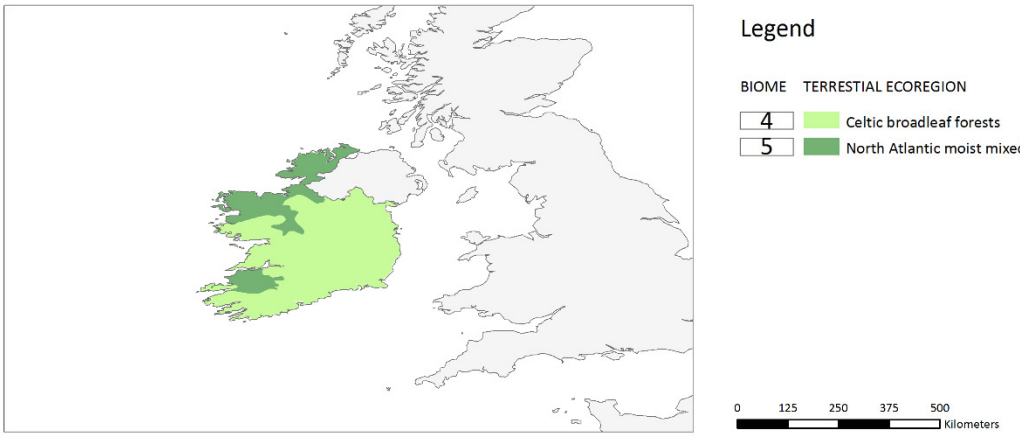
BIOME	TERRESTIAL ECOREGION
4	Dinaric Mountains mixed forests
	Pannonian mixed forests
12	Illyrian deciduous forests
	Tyrrhenian-Adriatic Sclerophyllous and mixed f.

0 125 250 375 500 Kilometers

HU_Hungary

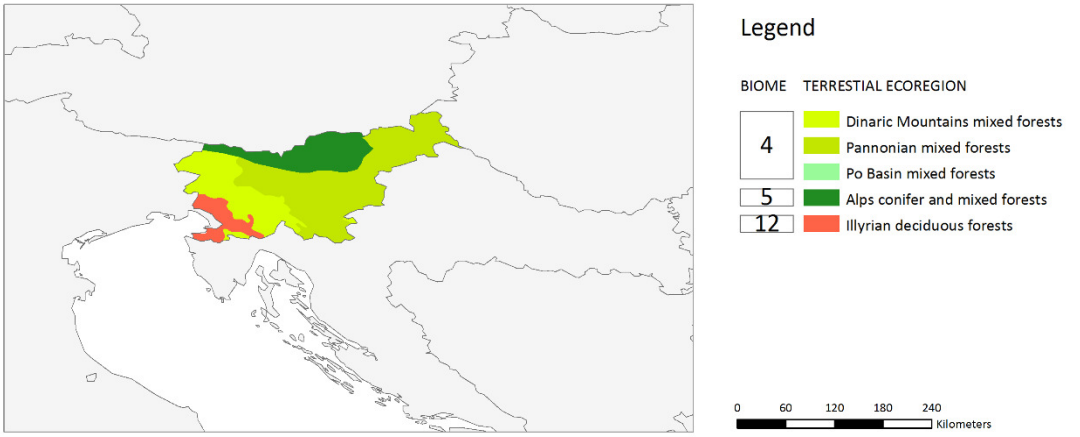


IE_Ireland



LU_Luxembourg

SI_Slovenia



UK_United Kingdom