



TAKING  
**COOPERATION**  
FORWARD

📍 12th Meeting of the Carpathian Convention Implementation Committee | Krakow 18 Nov. 2021

💬 **Carpathian Ecosystem Services Toolkit**

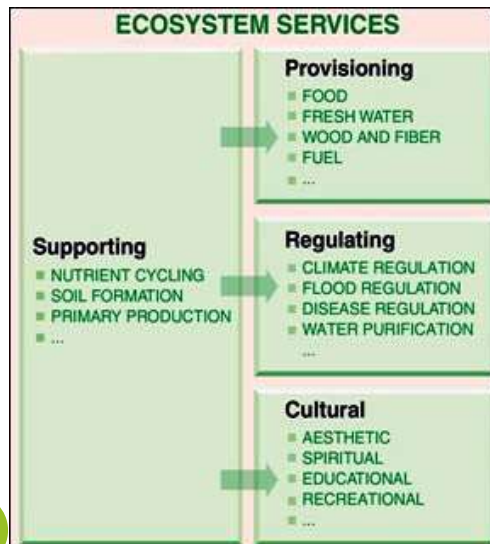
👤 Centralparks | Ján Kadlečík & Ján Černecký | SNC SR | Peter Mederly | PRONATUR

## ECOSYSTEM SERVICES (ES)

considered as contribution of ecosystems (living systems - natural or semi-natural) to human well-being. Ecosystem services are dependent on natural resources as soil, air, water, biodiversity and wildlife, generally named as *natural capital*.



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Ecosystem services are simply „benefits provided directly or indirectly to people by ecosystems“ - linked to their structure, processes and functions. Through nature and its services people meet big part of their needs, especially:

- Basic resources necessary for survival (food, fresh water, raw materials...)
- Adequate quality of environment and its components (air, water, soil, biota and biodiversity...)
- Socio-cultural outputs (relief, education, spiritual values...)

# CONCEPT OF ES IN BROADER CONTEXT

- ES concept is not the theme only of nature conservation, it is related to various policies and fields
- Typical multi-sectoral theme linking interests of various stakeholders - suitable concept for multi-sectoral cooperation



- Protection of ecosystems and their services provide benefits not only to biodiversity



# CLASSIFICATION OF ECOSYSTEM SERVICES



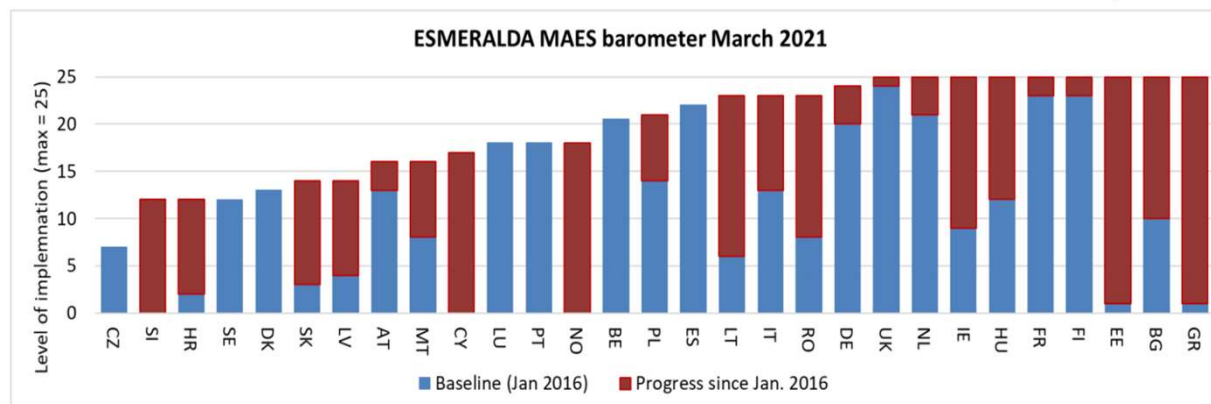
International classifications

- Provisioning Services
- Regulating Services
- Supporting (Maintenance) Services
- Cultural Services



# CONCEPT OF ES IN THE CARPATHIANS

- ES assessment increasingly considered by policy-makers around the world to inform their policies, decisions and management practices
- Recognized in the Carpathian countries, analysis made on ES mapping and assessment, recommendations for further assessment and opportunities how to integrate economic values of ES into accounting and reporting systems, improve knowledge and tools to take ecosystems and their services systematically into account



# CARPATHIAN ECOSYSTEM SERVICES TOOLKIT (CEST)



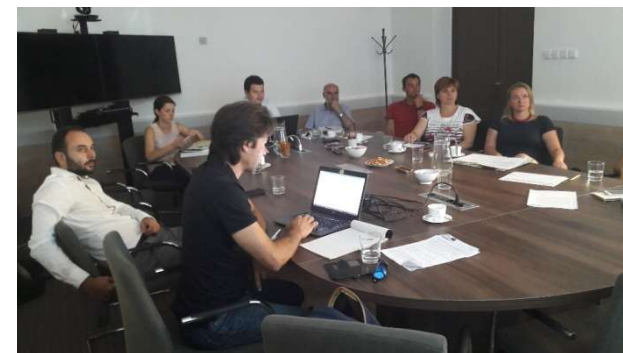
- WPT3 of the **Centralparks** project
- Interdisciplinary Toolkit for Managers and Analysts for ES assessment - a useful tool for analysis and decisions, adapted to Carpathian conditions
- Aimed to support institutions of local, regional and national public authorities, sectoral agencies, higher education and research institutions, education/training centres, schools and other stakeholders in using ES concept, informed and evidence-based decision making, policy making and management practices in
  - nature conservation
  - urban and spatial planning
  - green infrastructure, agriculture and forestry
  - involvement of stakeholders in this process
  - mainstreaming of ES
- Provides step-by-step guidance on ES assessment and for understanding what can be gained or lost in different management options; can help managers to better understand and solve potential problems and reduce conflicts.





# CARPATHIAN ECOSYSTEM SERVICES TOOLKIT (CEST)

- Developed by the expert group from all project countries (workshops, consultations), final version provided in September 2021
- Translated to Czech, Hungarian, Polish and Slovak languages
- CEST trainings for stakeholders based on CEST final elaboration (CZ, HU, SK)



# CARPATHIAN ECOSYSTEM SERVICES TOOLKIT (CEST)



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# CEST - CONTENTS

## EXECUTIVE SUMMARY

## INTRODUCTION

## CHAPTER 1: FOUNDATIONS

### 1.1 Foundation of ecosystem services

- 1.1.1 Definition of ecosystem services
- 1.1.2 The overview of function/implementation of ecosystem services approach
- 1.1.3 The value of ES in environmental policy and decision making

### 1.2 Classification of ecosystem services

### 1.3 The approaches to ecosystem services evaluation

- 1.3.1 Biophysical approaches
- 1.3.2 Socio-cultural approaches
- 1.3.3 Economic and monetary approaches, natural capital
- 1.3.4 Integrated assessment of ES
- 1.3.5 Rapid assessment of ES

### 1.4 Development of ecosystem services assessment in the European Union

### 1.5 Ecosystem services assessment in (selected) Carpathian countries

## CHAPTER 2: THE ECOSYSTEM SERVICES ASSESSMENT PROCEDURE

### 2.1 Basic ES assessment framework

### 2.2 Ecosystem services assessment phases and steps

- 2.2.1 Ecosystem services assessment
- 2.2.2 Brief description of the main phases and steps of ES assessment

### 2.3. Further reading - resources for the ES assessment process, methods and tools

### 2.4. Examples of step by step ES assessment for policy and decision making

## CHAPTER 3: ADDRESSING ECOSYSTEM SERVICES IN DIFFERENT POLICY AND DECISION CONTEXTS

### 3.1 Introduction

### 3.2 Nature and landscape protection

### 3.3 Spatial planning and environmental impact assessment

- 3.3.1 ES assessment and spatial planning
- 3.3.2 ES assessment and environmental impact assessment

### 3.4 Stakeholders involvement

### 3.5 Mainstreaming of ES

## CHAPTER 4: RECOMMENDATIONS AND CHALLENGES IN THE ES ASSESSMENT

## CHAPTER 5: BEST PRACTICE EXAMPLES

### 5.1 Case studies from the world

### 5.2 Case studies from the Carpathian countries

## CONCLUSIONS

## GLOSSARY

## LIST OF ABBREVIATIONS

## REFERENCES

## ANNEXES

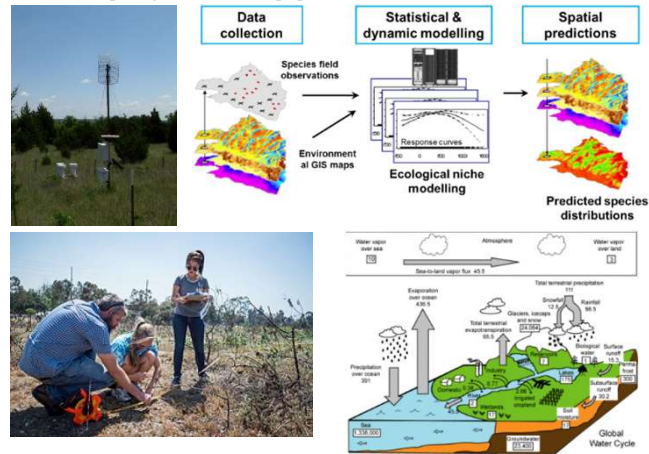
### Annex 1 National ecosystem services assessment in Carpathian countries

### Annex 2 Examples of mainstreaming of ES in Carpathian countries



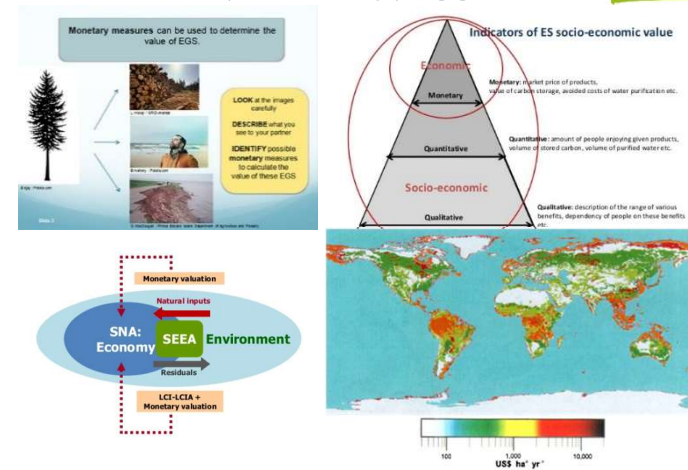
# APPROACHES TO ES EVALUATION

## Biophysical approaches

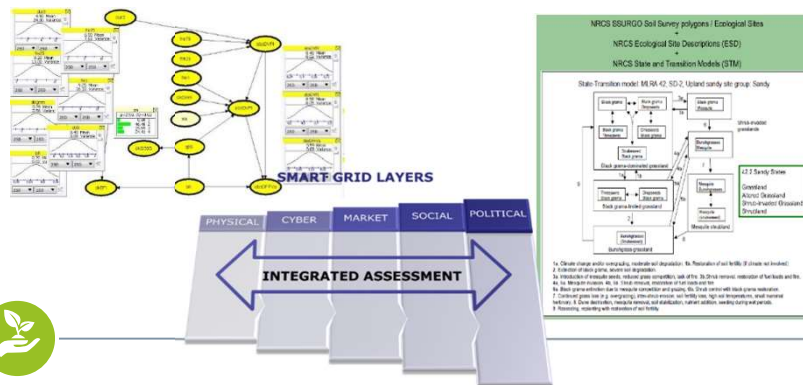


## Economic (monetary) approaches

**Centralparks**



## Integrated assessment

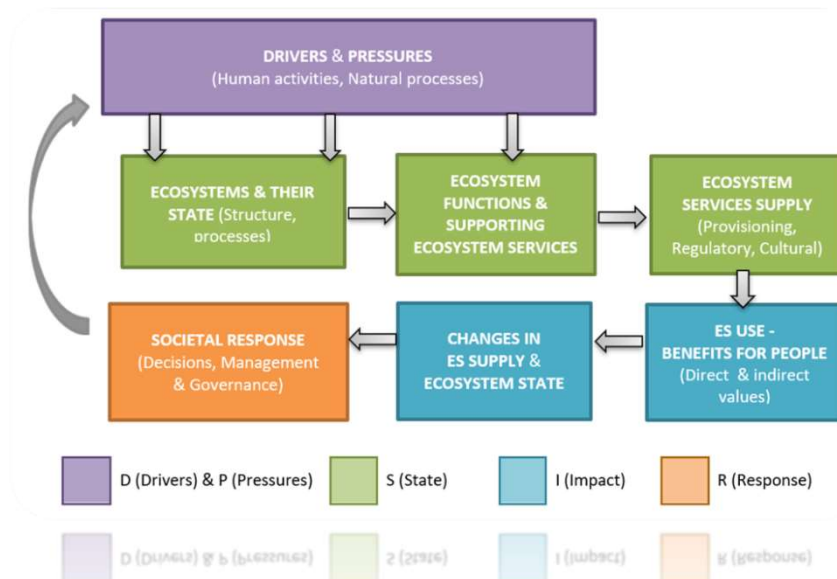


## Socio-cultural approaches



# ES ASSESSMENT PROCEDURE

## Basic ES assessment framework (Rounsevell et al. 2010)



## Process of ES evaluation, planning stages



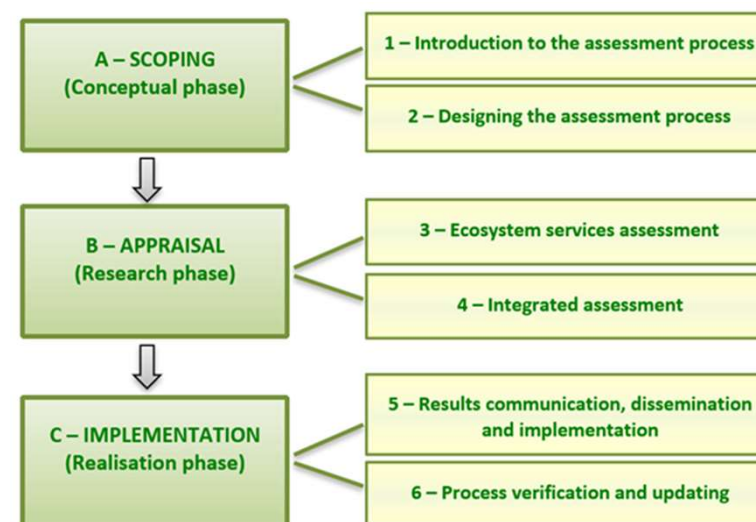
## ESMERALDA MAES Explorer <http://www.maes-explorer.eu/>



# STEP BY STEP GUIDE FOR USING THE CEST

Phase	Step	Milestone/Outcome
A - SCOPING (Conceptual phase)	1 - Introduction to the assessment process	Introductory report (Terms of reference)
	2 - Designing the assessment process	Procedure and methodology of the ES assessment (Scoping document)
B - APPRAISAL (Research phase)	3 - Ecosystem services assessment	Ecosystem services assessment report
	4 - Integrated assessment	Integrated and/or context specific ES assessment report
C - IMPLEMENTATION (Realisation phase)	5 - Results communication, dissemination and implementation	Implementation plan
	6 - Process verification and updating	Monitoring & re-assessment report

- ES assessment phases, steps, milestones/outcomes
- Useful information sources for respective steps





# EXAMPLES OF STEP BY STEP ES ASSESSMENT

Country	Number of eval. ES	Provisioning ES	Regulation & Maintenance ES	Cultural ES	References
Czech Republic (CZ)	18	7	5 / 4	2	Frélichová et al., 2014, Vačkář et al., 2018
Denmark (DK)	11	3	1 / 2	5	Turner et al., 2014
Finland (FI)	28	10	8 / 4	6	Jappinen, Heliola et al., 2015
Flanders (BE)	16	5	6 / 4	1	Stevens et al., 2015
Netherlands (NL)	19	5	5 / 5	4	CBS et al., 2015, PBL Netherlands 2019
Ireland (IE)	28	9	5 / 6	8	Parker et al., 2016
Lithuania (LT)	31	14	6 / 5	6	Depellegrin et al., 2016
Luxembourg (LU)	13	4	4 / 4	1	Becerra-Jurado et al., 2016
Germany (DE)	18	5	5 / 5	3	Rabe et al., 2016, Albert et al. 2016, Grunewald et al. 2016
Romania (RO)	12	4	3 / 2	3	NEPA et al., 2017
Russia (RU)	19	4	6 / 4	5	Bukhareva et al., 2017
Spain (ES)	22	7	4 / 4	7	Santos-Martín et al., 2016
United Kingdom (UK)	26	12	4 / 5	5	UKNEA 2011
Portugal (PT)	6	3	0 / 3	4	Schröter et al., 2016 (secondary cit.)
Norway (NO)	26	7	5 / 5	9	Schröter et al., 2016 (secondary cit.)
Israel (IS)	3*	0	0 / 3	1	Lotan et al., 2018
Italy (IT)	5*	0	2 / 2	1	Giarratano et al., 2018



National ES assessment in Europe in 2020



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# CASE STUDIES OF ES MAPPING AND ASSESSMENT

Country	Case Study	Scale*	Area (Km <sup>2</sup> )
Belgium	Mapping green infrastructures and their ES in Antwerp	L	205
Bulgaria	Mapping and assessment of ES in Central Balkan area at multiple scales	L/SN	2,999
Czechia	Pilot National Assessment of ES	N	78,000
Finland	Green infrastructure and urban planning in the City of Järvenpää	L	40
Germany	Mapping ES dynamics in an agricultural landscape	L/SN	60
Hungary	ES mapping and assessment for developing pro-biodiversity businesses in the Bükk National Park	L	432
Italy	ES mapping and assessment for urban planning in Trento	L	156
Latvia	Mapping marine ES in Latvia	N	28,518
Malta	Assessing and mapping ES in the mosaic landscapes of the Maltese Islands	SN/N	316
Netherlands	ES mapping and assessment for developing pro-biodiversity businesses in the Bükk National Park	L	432
Poland	ES mapping and assessment for developing pro-biodiversity businesses in the Bükk National Park	L	432
Portugal (Azores)	BALA - Biodiversity of /		
Spain	ES mapping and assessment for developing pro-biodiversity businesses in the Bükk National Park	L	432
Sweden	ES mapping and assessment for developing pro-biodiversity businesses in the Bükk National Park	L	432

Case Study	EU-relevant Policy Domains								
	Nature Conservation	Climate, Water, Energy	Marine and Maritime Policy	Natural Risks	Urban and Spatial Planning	Green Infrastructure	Agriculture and Forestry	Business, Industry and Tourism	Health
Belgium		X		X	X	X			
Bulgaria	X			X	X	X	X	X	
Czechia	X			X					
Finland	X				X	X			X
Germany		X					X		
Hungary	X						X	X	
Italy		X			X	X			X
Latvia	X	X	X		X			X	
Malta						X	X		
Netherlands	X	X		X		X	X	X	
Poland	X	X		X	X	X	X	X	
Portugal (Azores)	X					X	X		
Spain	X								
Sweden	X				X	X	X	X	

ESMERALDA case studies (Source: Geneletti et al. 2020)

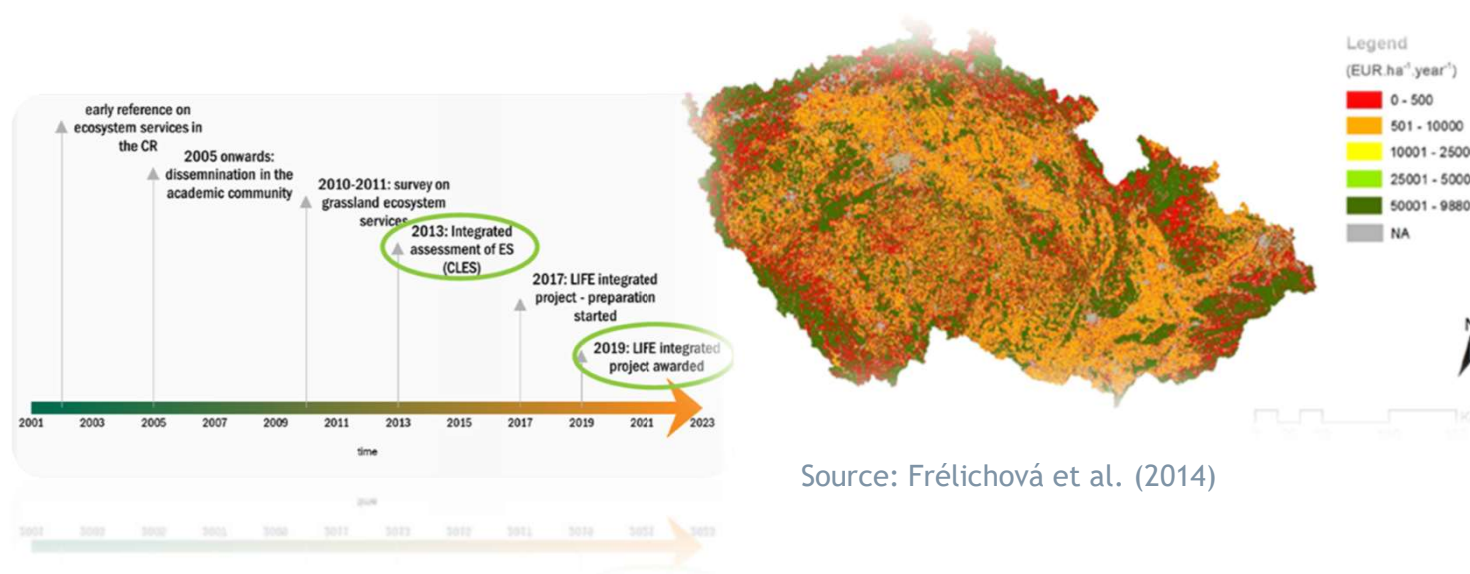




# NATIONAL ES ASSESSMENT IN CARPATHIAN COUNTRIES

Current state, methodology, results, future plans

## ■ Czech Republic



Source: Frélichová et al. (2014)

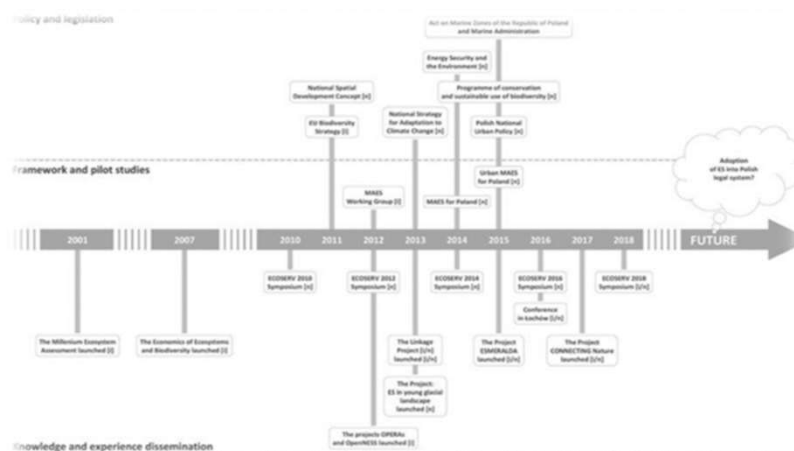


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# NATIONAL ES ASSESSMENT IN CARPATHIAN COUNTRIES

- Poland
- Hungary
- Romania

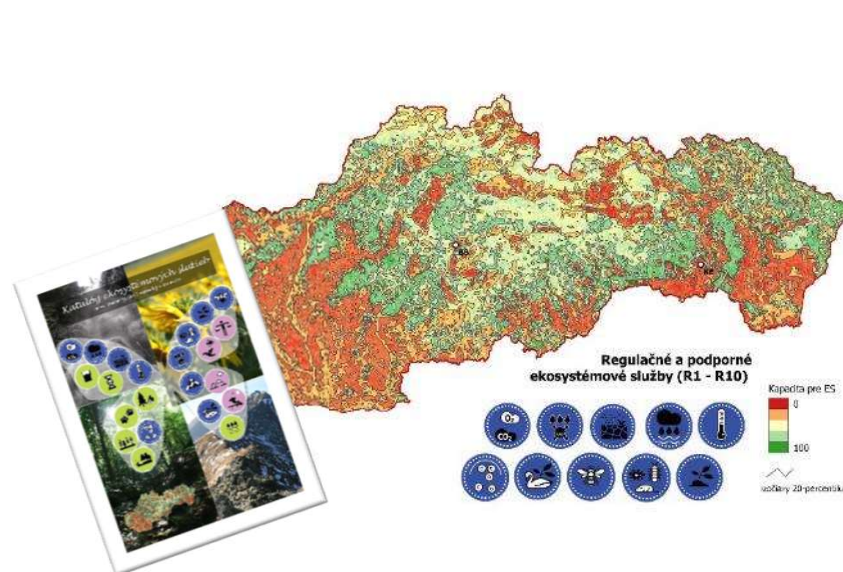


Source: Stepniewska et al. (2018)

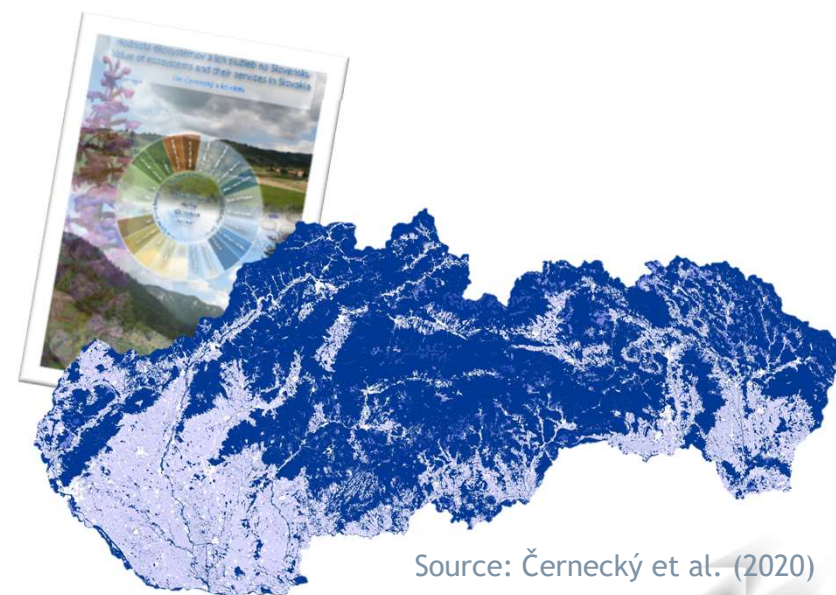


# NATIONAL ES ASSESSMENT IN CARPATHIAN COUNTRIES

## ■ Slovakia



Source: Mederly et al. (2020)



Source: Černecký et al. (2020)



# CEST

Addressing ES in different policy and decision contexts

- Nature and landscape protection;
- Spatial planning and environmental impact assessment;
- Stakeholders involvement;
- Mainstreaming of ES



Recommendations and challenges in the ES assessment

Best practice examples



Glossary



# CEST



- Will be available online on the project website and web site of the Carpathian Convention and in national languages on websites of the project partners
- Feedback from users expected

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Project web site:

<https://www.interreg-central.eu/Content.Node/Centralparks.html>

<https://www.facebook.com/Centralparks/>



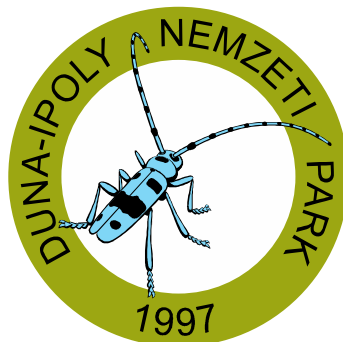
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research



**PRO**  
**NATUR**



Let's  
get  
Wild!



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20