SaveGREEN: modelling of ecological corridors & GIS application for monitoring structural and functional connectivity

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Protected Areas – Cornerstones of Ecological Connectivity in the Carpathians and Beyond
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SaveGREEN will contribute to improving structural and functional ecological connectivity in bottleneck areas by adapting land use and management in the surroundings involving stakeholders from different fields of experience in Austria, Bulgaria, Czech Republic, Hungary, Romania, Slovakia and Ukraine.

Duration:
1 July 2020 – 31 December 2022 -> ongoing project
13 Project Partners from 6 European countries
20 Associated Strategic Partners from 4 more countries
Lead Partner:
WWF Central and Eastern Europe
Project value:
~2.7 Mio EUR, ~2.3 Mio EUR ERDF Funds

SaveGREEN pilot areas

Austria
1 Kobernausser forest
2 Pöttsching (Alpine-Carpathian Corridor)

Czech Rep./Slovakia
3 Beskydy-Kysuce CZ-SK cross-border area

Hungary/Slovakia
4 Novohrad-Nógrád SK-HU cross-border area

Ukraine
5 Zakarpattia region

Romania
6 Mureş valley (Arad-Deva)
7 Mureş Valley (Târgu Mureş – Târgu Neamţ)

Bulgaria
8 Rila-Verila-Kraishte corridor

Examples target species

Large carnivores

Wild boar

Fish

Amphibians

Bats

Birds

Red deer

Reptiles

Pollinators

Roe deer

Cray fish

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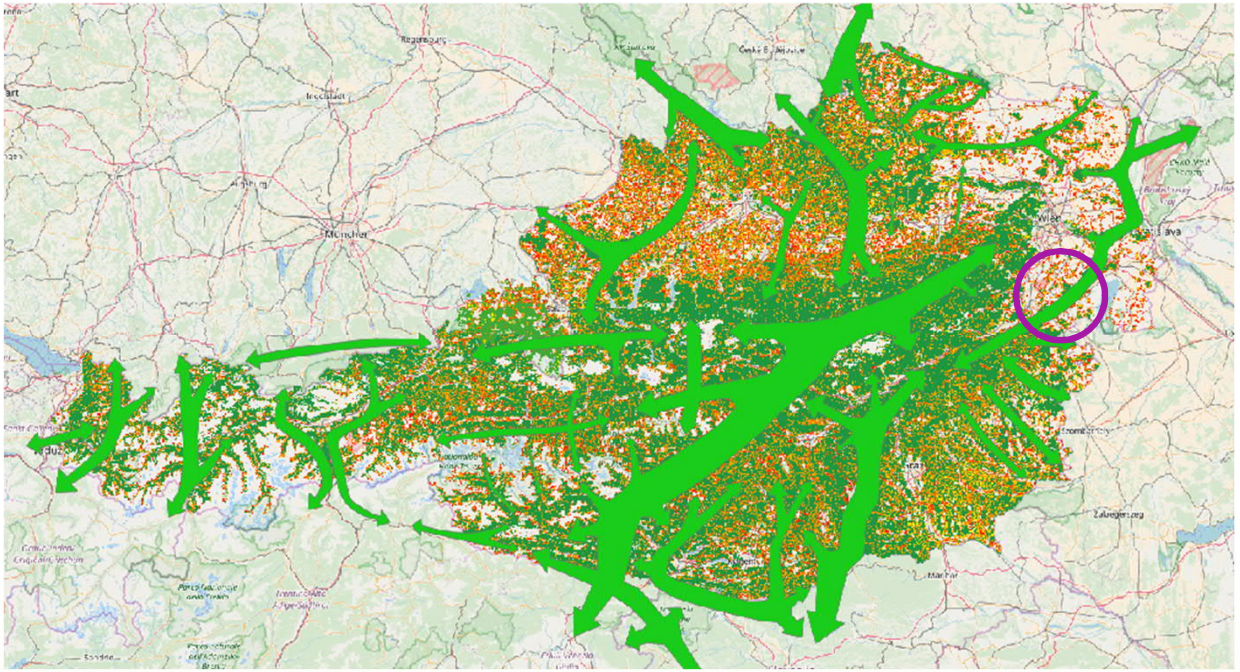
A particular interest of SaveGREEN is the interplay of different aspects of corridors:

On a landscape-scale, the structural connectivity describes the permeability of the landscape due to land-cover and land-use characteristics, while the functional connectivity relates to the interactions of animals with the landscape and its structures due to their needs.

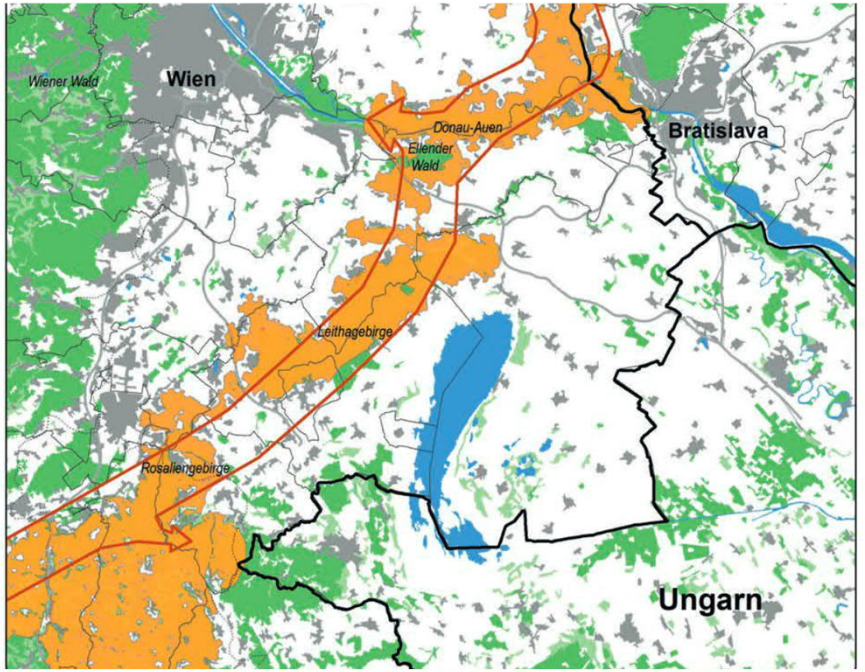
Structural connectivity: assessment by using GIS techniques based on data mostly derived by remote sensing.

Functional connectivity (the "species perspective"): each of the eight pilot areas will collect field survey data at locations identified as bottleneck situations in the monitoring of the structural connectivity. This will be done for a set of different species groups like large carnivores, large herbivores, medium-sized mammals and others.

Part of Alpine-Carpathian Corridor



© Köhler (2005)

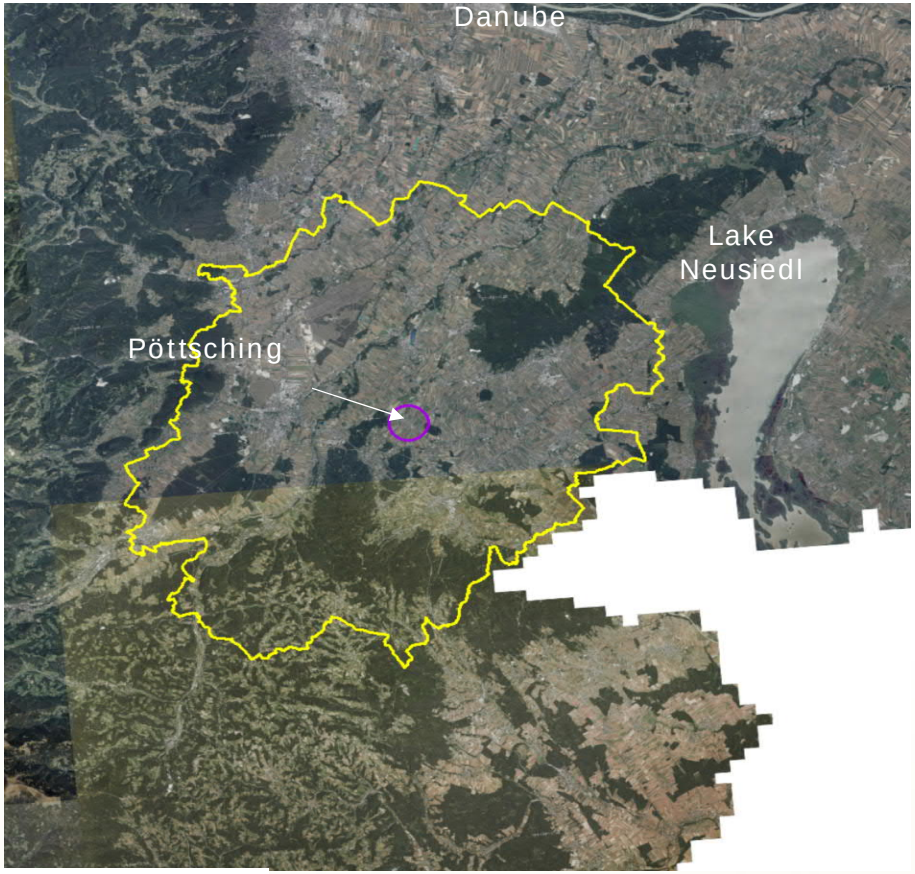


© Suppan (2012)

Development of spatially explicit model to identify bottleneck situations along corridors for functional monitoring.

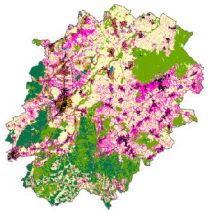
- Transparency
- Transferability
- Repeatability

Management tool vs. best ecological model



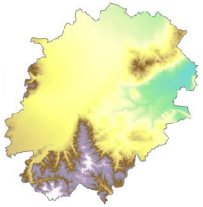
Input data & model framework

Land cover



Sentinel 2*

Altitude, Slope



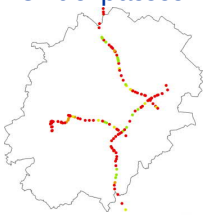
EU-DEM*

RESOLUTION:
10x10 meters

Rivers

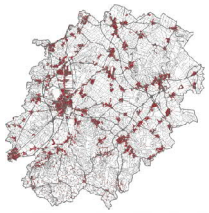
EU-HYDRO*

Over- and Underpasses



ASFINAG

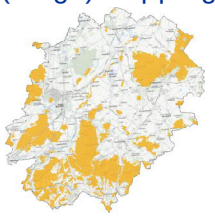
Buildings, Road, Rail



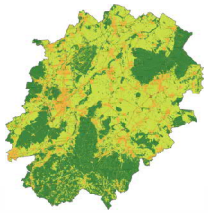
OSM*

RULES

Core areas & (Large) stepping stones

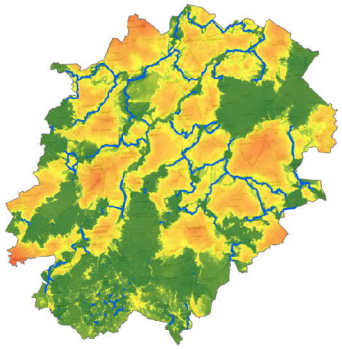


Resistance surface



LPT**

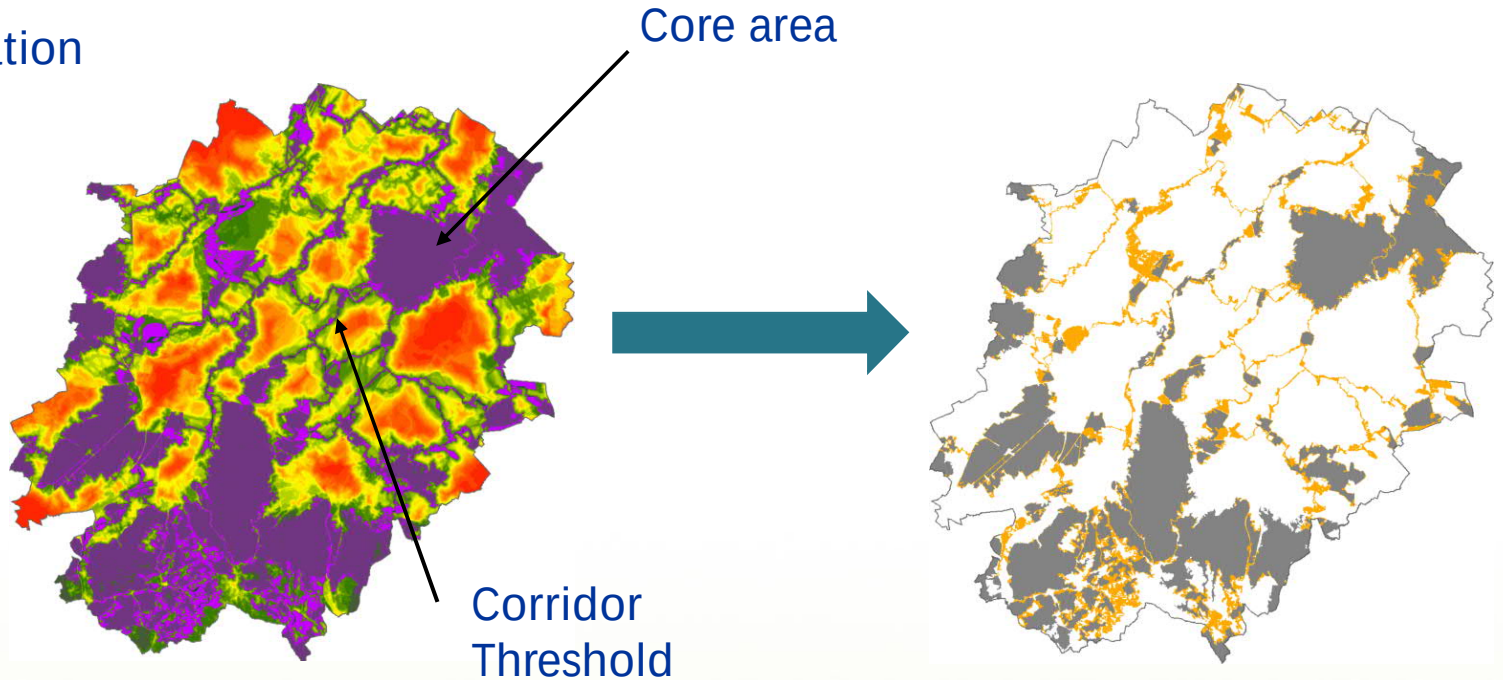
Corridors



* available for most of the pilot areas

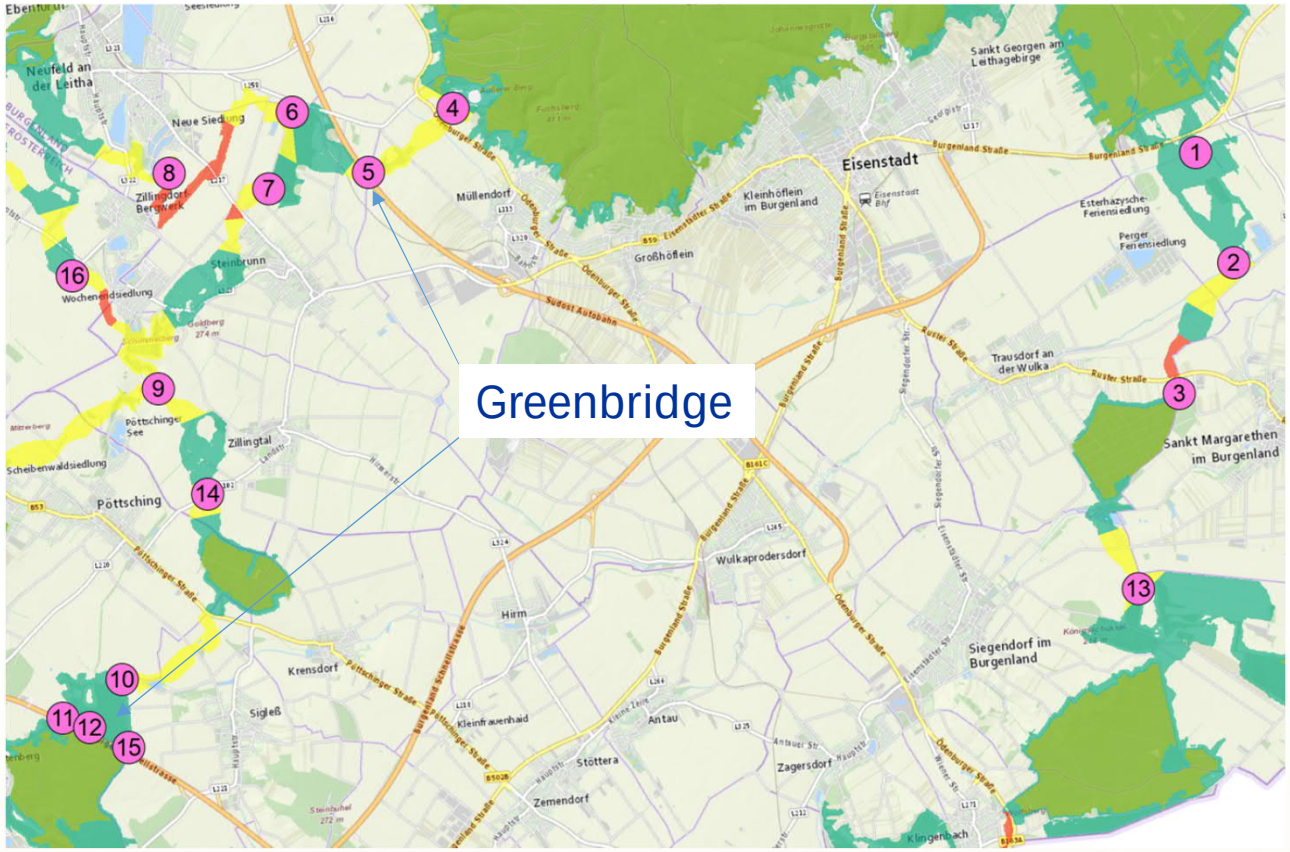
** Linkage Pathways Tool

Raster representation

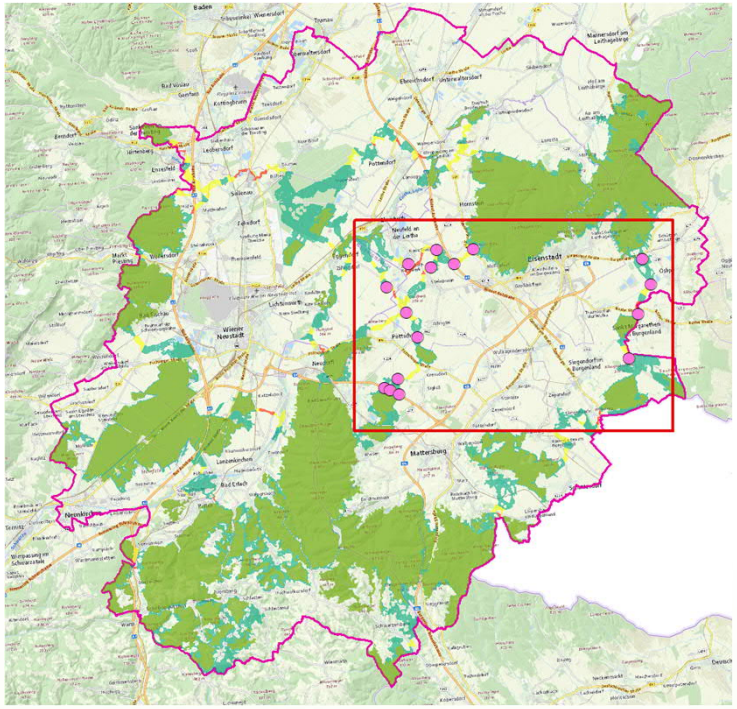


Determination of the provisional monitoring sites

Interreg Danube Transnational Programme ConnectGREEN



Overview:



Functional monitoring Methodology

Surrounding habitat types according to grouping of monitoring organisms	Inland surface waters (C)	Mires, bogs and fens (D)	Grassland and lands dominated by forbs, mosses or lichens (E)	Woodland, forest and other wooded land (G)	Inland unvegetated or sparsely vegetated habitats (H)	Regularly or recently cultivated agricultural, horticultural and domestic habitats (I)	Constructed, industrial and other artificial habitats (J), Habitat complexes (X)
large carnivores	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T
large sized mammals	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T
medium sized mammals	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T	F & Si & T
small sized mammals	F - S - Lf	F - S - Lf	F - S - Lf	F - S - Lf	F - S - Lf	F - S - Lf	F - S - Lf
Bats	N - D - Rk	N - D - Rk	N - D - Rk	N - D - Rk	N - D - Rk	N - D - Rk	N - D - Rk
Birds	A - Ad - Rk	A - Ad - Rk	A - Ad - Rk	A - Ad - Rk	A - Ad - Rk	A - Ad - Rk	A - Ad - Rk
Amphibians	Kv - Zk - F - A - Hn - Ef - Ad - Rk	Kv - Zk - F - A - Hn - Ef - Rk	Kv - Zk - A - Rk	Kv - Zk - A - Rk	Kv - Zk - A - Rk	Kv - Zk - A - Rk	Kv - Zk - A - Rk
Reptiles	Kv - F - A - Hn - Ef	Kv - F - A	Kv - F - A	Kv - F - A	Kv - F - A	Kv - F - A	Kv - F - A
Pollinators (incl. Butterflies)	A - N	A - N	A - N	A - N		A - N	
Ground beetles	Ba - A	Ba - A	Ba - A	Ba - A	Ba - A	Ba - A	
Spiders	Ba - A	Ba - A	Ba - A	Ba - A	Ba - A	Ba - A	
Molluscs	Ha	Ha	Ha	Ha		Ha	

Habitats

Species groups

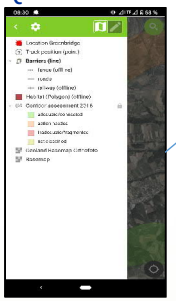
Methods

A = personal observation
Ad = acoustic detector
Ba = Barber traps
Bc = Batcorder
D = detector
Ef = electrofishing
F = photo trap
Ha = collection by hand
Hn = handling net
Kv = artificial hiding place
Lf = live trap
N = net
Rk = collecting of road killed individuals (these methods must to use by all species!!)
S = track collector
Si = signs
T = animal track in winter (total area)
Zk = fence-bucket method

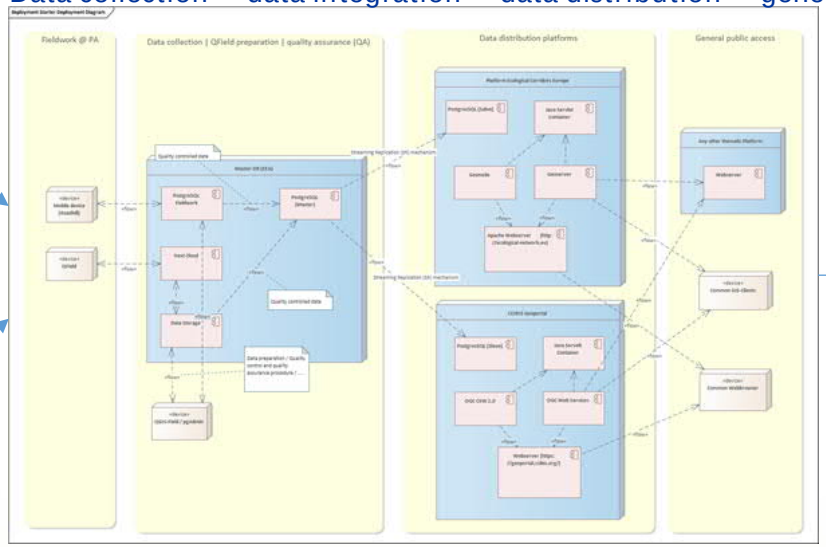
Functional monitoring
Electronic application toolbox

Roadkill

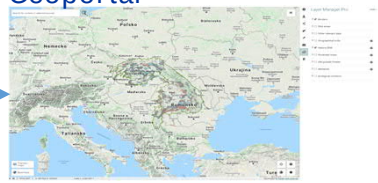
QField



Data collection → data integration → data distribution → general public access



e.g. CCIBIS Geoportal



CARPATHIAN COUNTRIES INTEGRATED BIODIVERSITY INFORMATION SYSTEM

- Standardized methodology for monitoring structural and functional connectivity incl. application toolbox for fieldwork & analysis
- Local cross-sectoral operational plans for each pilot area incl. preparatory actions for its implementation
- International on-site workshops to develop solutions & exchange experience held in the pilot areas
- Capacity building program for authorities & training events for public authorities and key players on cost/benefit analysis.
- Joint political declaration on maintaining and restoring Green Infrastructure with a focus on spatial planning
- Recommendations towards the integration of mitigation measures into the national and EU level policy processes (GI funding measure)
- International conference in coordination with IENE 2022 Conference

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