DaRe to Connect

Supporting Danube Region´s ecological Connectivity by linking Natura 2000 areas along the Green Belt

Protected Areas – Cornerstones of Ecological Connectivity in the Carpathians and Beyond

International Conference, Visegrád, Hungary, 28-30 September 2021 - Project co-funded by European Union Funds (ERDF, IPA)

Project overview

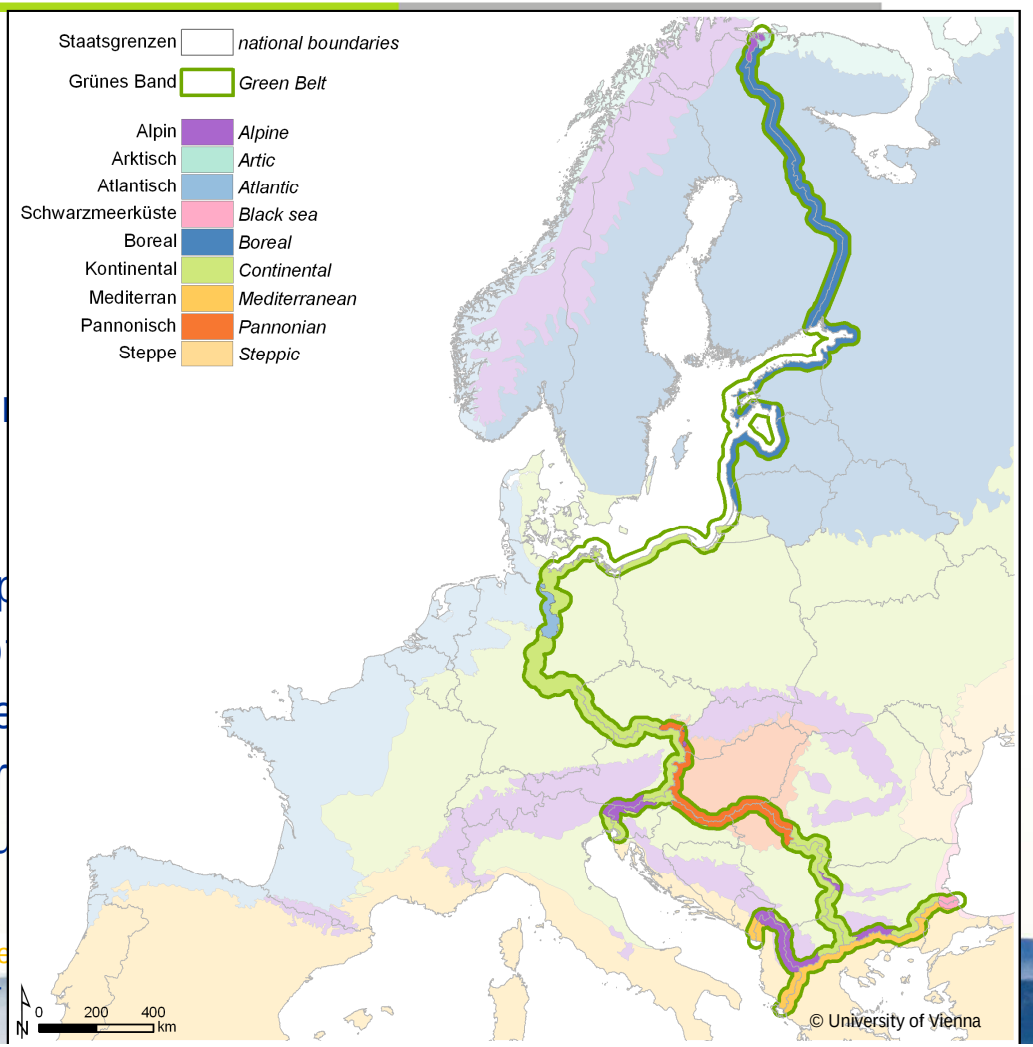
- Duration: June 2018 – November 2021
- Partner Consortium: 11 partners from 8 countries
  + 14 associated strategic partners from 10 countries
- Lead Partner: BUND Dept. Green Belt
- Funding by:
  - ERDF (European Regional Development Fund)
  - IPA (Instrument for Pre-Accession Assistance)

Main objectives

- Contribute to the implementation of the EU Strategy for the Danube Region (EUSDR) by further development of the connectivity of PAs along the Green Belt
- Identification of ecological corridors between existing Natura 2000 areas and other protected areas along the EGB and maintain and enhance ecosystems and their services
- To improve capacities and the level of trans-national and trans-boundary cooperation between GOs, NGOs and on policy level
- Support the aim of the EGB-Initiative to nominate the European Green Belt as UNESCO World Heritage

Project area

- The European Green Belt – Danube Region
- 12.500 km in length, passes through 8 biogeogr
- Includes:
  - Wilderness areas
  - Cultural landscapes
  - Water ecosystems and coasts
  - Endangered animal and plant sp
- Thus contributes significantly to the diversity o
- Makes an enormous contribution to the Europe
- More than 1100 protected areas in a 100 km cor
- Unique European memorial that combines natu



Project area

Source: http://www.interreg-danube.eu/approved-projects/d2c

- 6 Pilot Regions along the EGB:

1. Bavarian Forest-Mühlviertel-Šumava (DE/AT/CZ)
2. Zahorie-Little Carpathians (SK)
3. Őrség-Goričko (HU/SL)
4. Iron Gates-Djerdap (RO/SRB)
5. Drava River in Virovitica-Podravina County (HR)
6. Danube River oxbows (HU)

Project area

Source: http://www.interreg-danube.eu/approved-projects/d2c

- 6 Pilot Regions along the EGB:

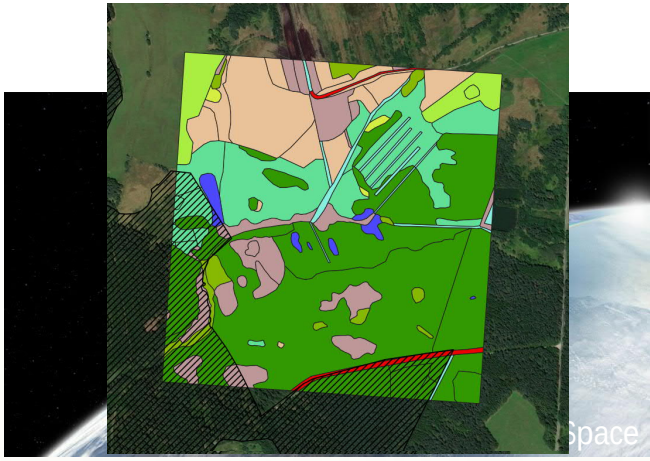
1. Bavarian Forest-Mühlviertel-Šumava (DE/AT/CZ)
2. Zahorie-Little Carpathians (SK)
3. Őrség-Goričko (HU/SL)
4. Iron Gates-Djerdap (RO/SRB)
5. Drava River in Virovitica-Podravina County (HR)
6. Danube River oxbows (HU)

Approach for the Pilot Regions

- Remote sensing data from EU Sentinel-2 satellites (10m res.)
- Time series of 2017/18:
  - Multi-sprectral data (13 bands – RGB, NIR, SWIR)
  - Products (NDVI, Moisture Index, NDWI)
  - Elevation products (EU-DEM, Slope, Aspect)

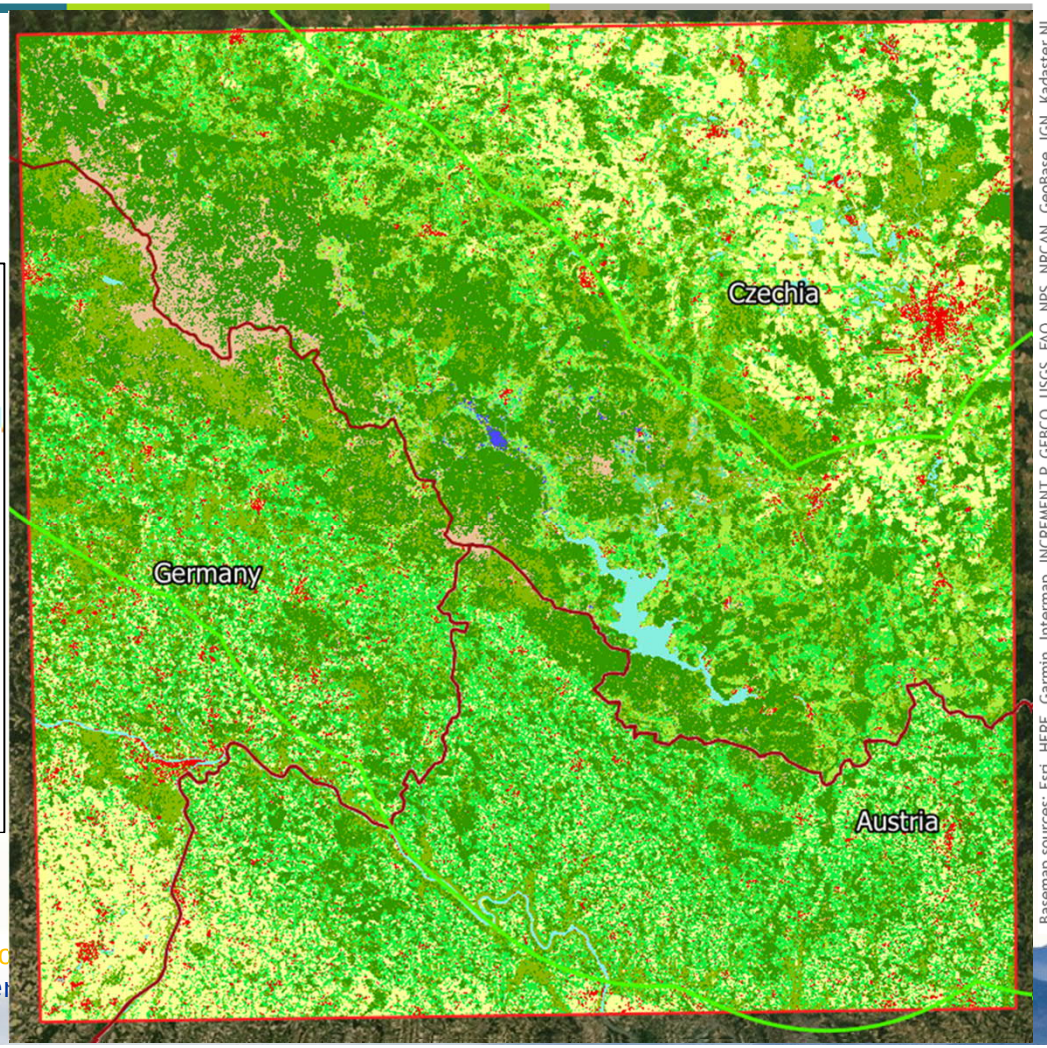
→Pixel-based classification by machine learning

  - Trainings data: using unified classification of EUNIS



Broader Habitat Types of PR 1 “Bavarian Forest-Mühlviertel-Šumava”

- C1 - Inland surface waters
- D - Mires, bogs and fens
- E1 - Dry grasslands
- E2.6 - Agriculturally-improved, re-seeded and heavily fertilised grassland
- E2b - Mesic grassland, medium intensive
- Permanent mesotrophic pastures and aftermath-grazed meadows
- E3 - Seasonally wet and wet grasslands
- G1 - Broadleaved deciduous woodland
- G3 - Coniferous woodland
- G5.8/E5 - Woodland fringes and clearings and tall forb stands
- I1 - Arable land and market gardens - intensive
- Ja - Constructed, industrial and other artificial habitats



Approach for the EGB

- Comprehensive, EU-wide dataset needed

→ EUNIS habitat classification (100m res.)

- Thematic resolution: EUNIS Level 1&2 (= broadleaved deciduous forests, coniferous forests, mesic grassland, etc.)

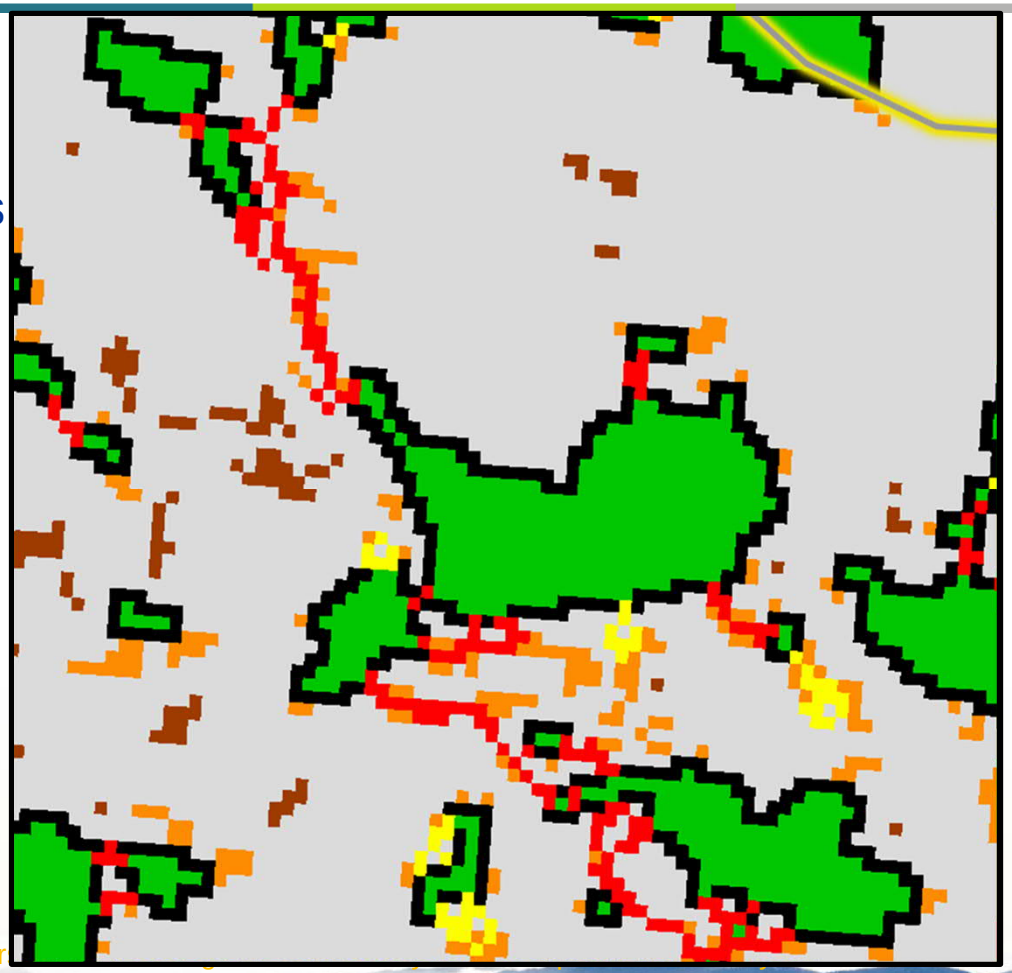
→ Translation to the Broader Habitat Types for further analysis

Analyses of Connectivity

https://forest.jrc.ec.europa.eu/en/activities/lpa/gtb/.

- Morphological Spatial Pattern Analysis (MSPA)
  → describes the geometry, connectivity & spatial arrangement of image components (Vogt et al., 2007)
- Classification in one of 7 categories
- In our case: Broader Habitat Types (all or specific habitats)

Example:
Connectivity analysis of broadleaved & coniferous forests



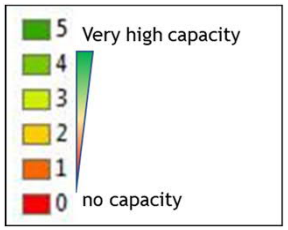
Analyses of Functionality

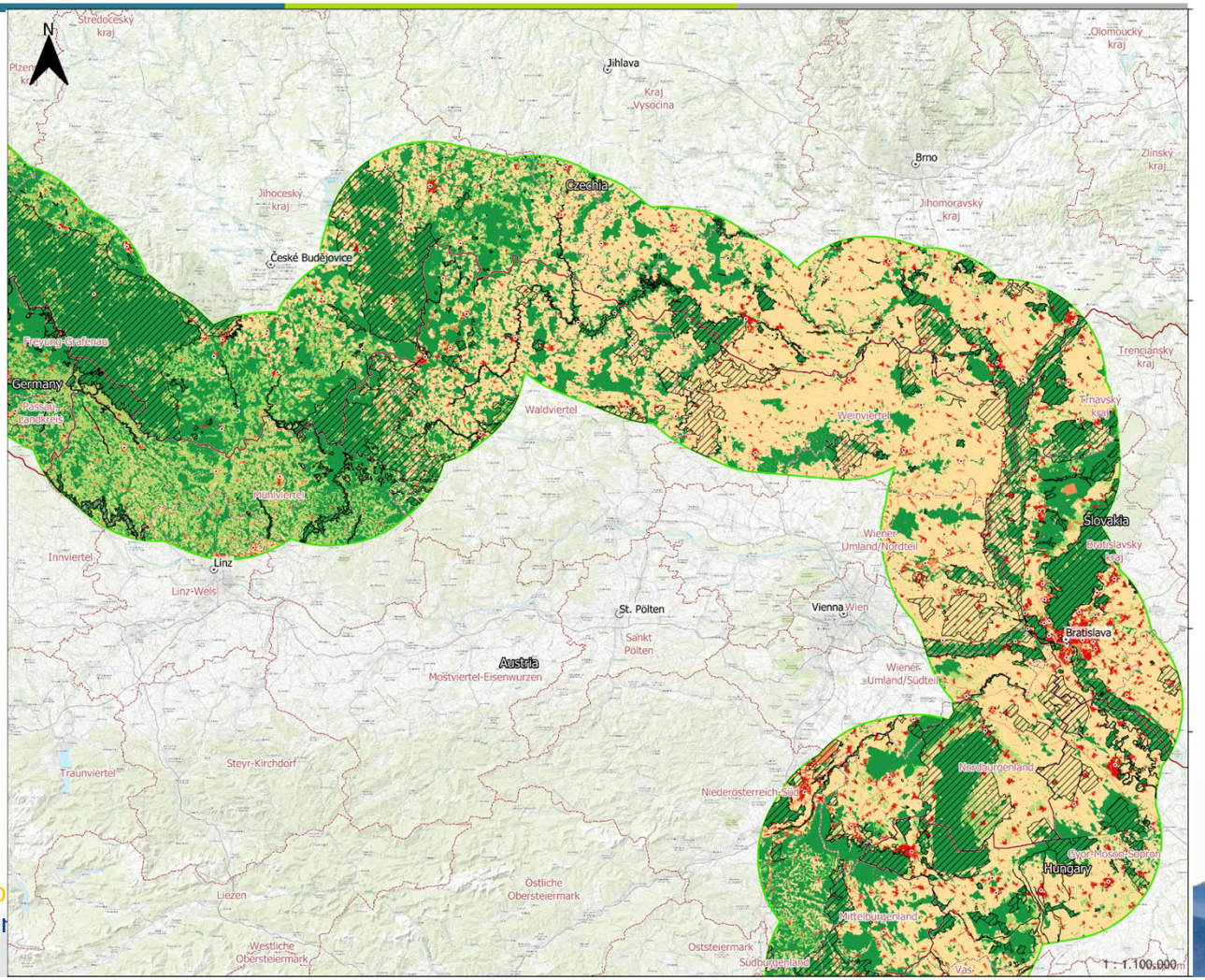
- Capacity Matrix of Ecosystem Services (ESS) linked to the BHTs

→describes the functional quality & highlights human benefits

- 30 singles ESS (Climate regulation, Refugium function, Genetic resources, etc.) are summed up in
- 5 Main services (Regulation, Habitat, Production, Information, Carrier functions)
- Total amount of all ESS = Total Function Value

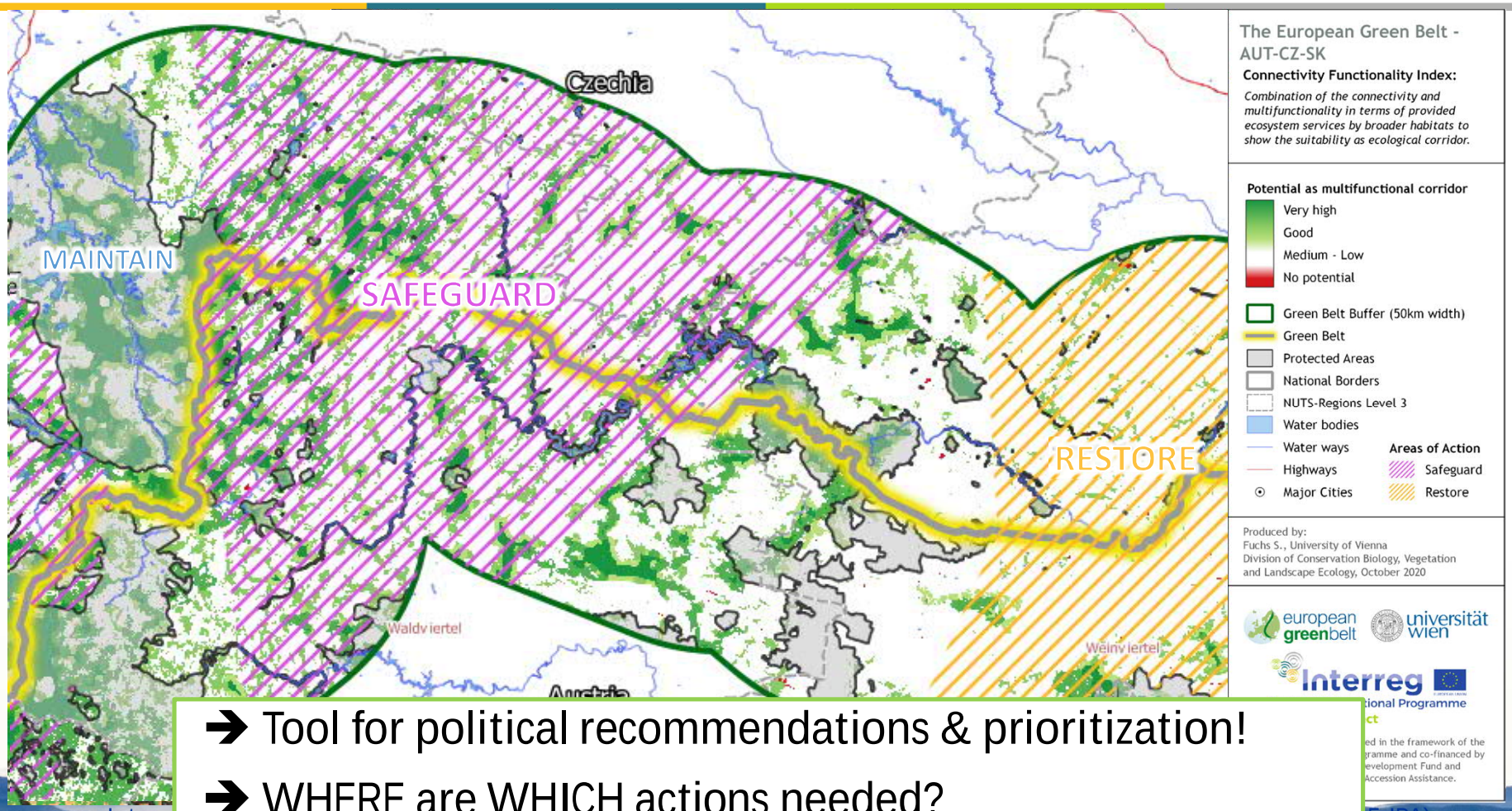
Example:
Habitat function at the AT section of the EGB





Connectivity-Functionality Index (CFI)

- Combination of the results of both analyses
- CFI = Indicator for areas with high potential as multifunctional corridor between protected areas
- Elements of high functional value & connecting importance



➔ Tool for political recommendations & prioritization!

➔ WHERE are WHICH actions needed?

Intern

F, IPA)

Main Outputs

- High resolution habitat classification & analysis of 4 PRs
- Hot & Cold Spots of BHTs with potential as multifunctional corridors along the European Green Belt (→ Areas of Action)
- Foundation for planning of implementation measures & further projects
  (all remote sensing results will be available in a web GIS-tool)
- Promotion of the results
  (events on EU level, stakeholder workshops, press-tours, etc.)

Thank you for your attention!

Danube Transnational Programme
DaRe to Connect

Contact:

DaRe2Connect — www.interreg-danube.eu/d2c

Stefan Fuchs, MSc — stefan.a.fuchs@univie.ac.at

University of Vienna,
Department of Botany and Biodiversity Research,
Division of Conservation Biology, Vegetation & Landscape Ecology