PATTERN LANGUAGE

Alpine GI Concept

Green Infrastructure and spatial planning

Potential components of a Trans-European Network for Green Infrastructure (TEN-G):

- Natura 2000 sites
- Regional and National parks
- Multi-functional sustainably managed agricultural landscapes
- Wilderness zones
- High nature value farmland
- Ecological networks with cross-border areas
- Local nature reserve
- Multi-use forests (such as watershed forests)
- Allotments and orchards
- City reserves
- Metropolitan park systems
- …

(European Commission, Directorate-General for the Environment 2016: 10)

„The lack of coordinated management between sectorial departments is one obstacle to the deployment of GI. [..] The EU GI strategy aims to ensure that the creation and enhancement of GI become an **integral part of spatial planning and territorial development**."
(Estreguil et al. 2019: 10; Publications Office of the European Union)

GREEN INFRASTRUCTURE (GI): DIFFERENTIATED UNDERSTANDING

origins

- USA greenway movement
- "regenerative system" idea
- European Union GI strategy

rationales for action

- environmental perspective
- socio-economic perspective

semantic content

- physical elements
  - …within a system
  - …to create connectivity
  - …regarding scale and type of area
- benefits and functions
  - …as a continuum

purpose for spatial planning

- sustainable land use planning
- increased value of ecological concerns

SEIWERT, A & RÖßLER, S. (2020): Understanding the term green infrastructure: origins, rationales, semantic content and purposes as well as its relevance for application in spatial planning. In: *Land Use Policy* 97 (2020), 1-9

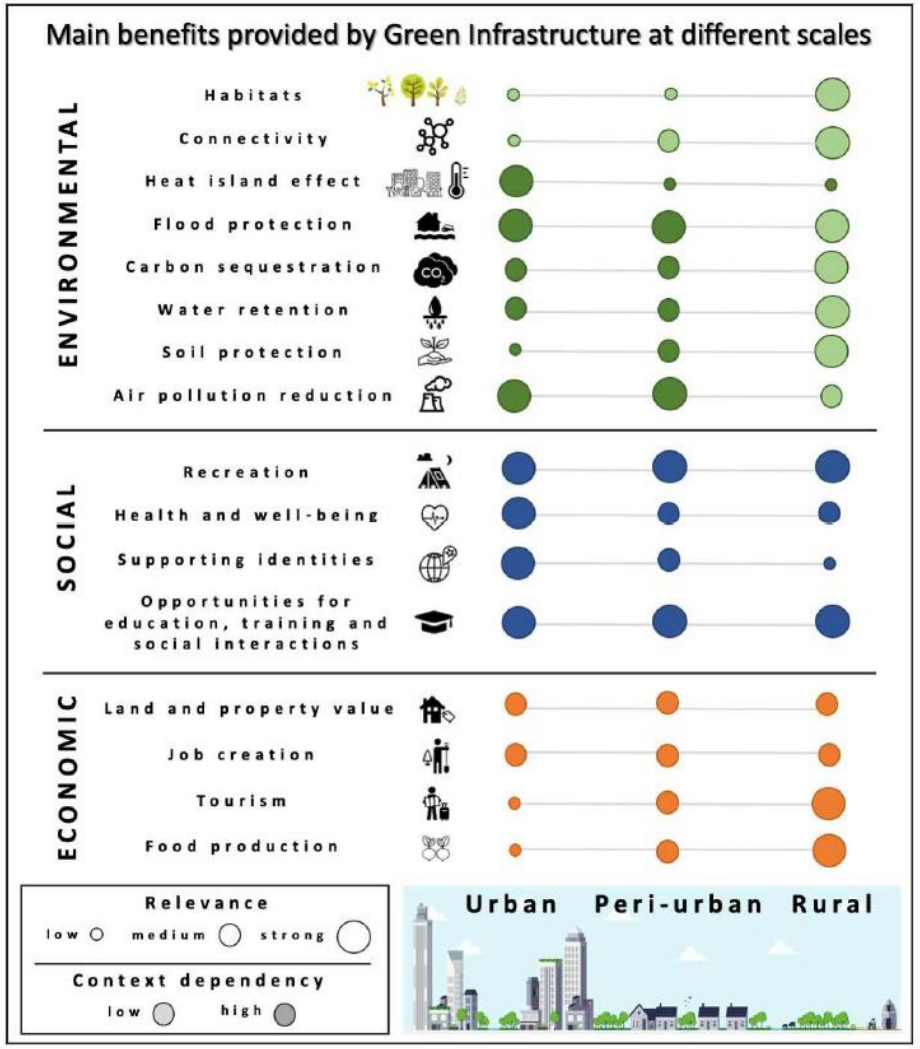
GREEN INFRASTRUCTURE: MAIN RESULTS/PRODUCTS OF ESPON GRETA PROJECT

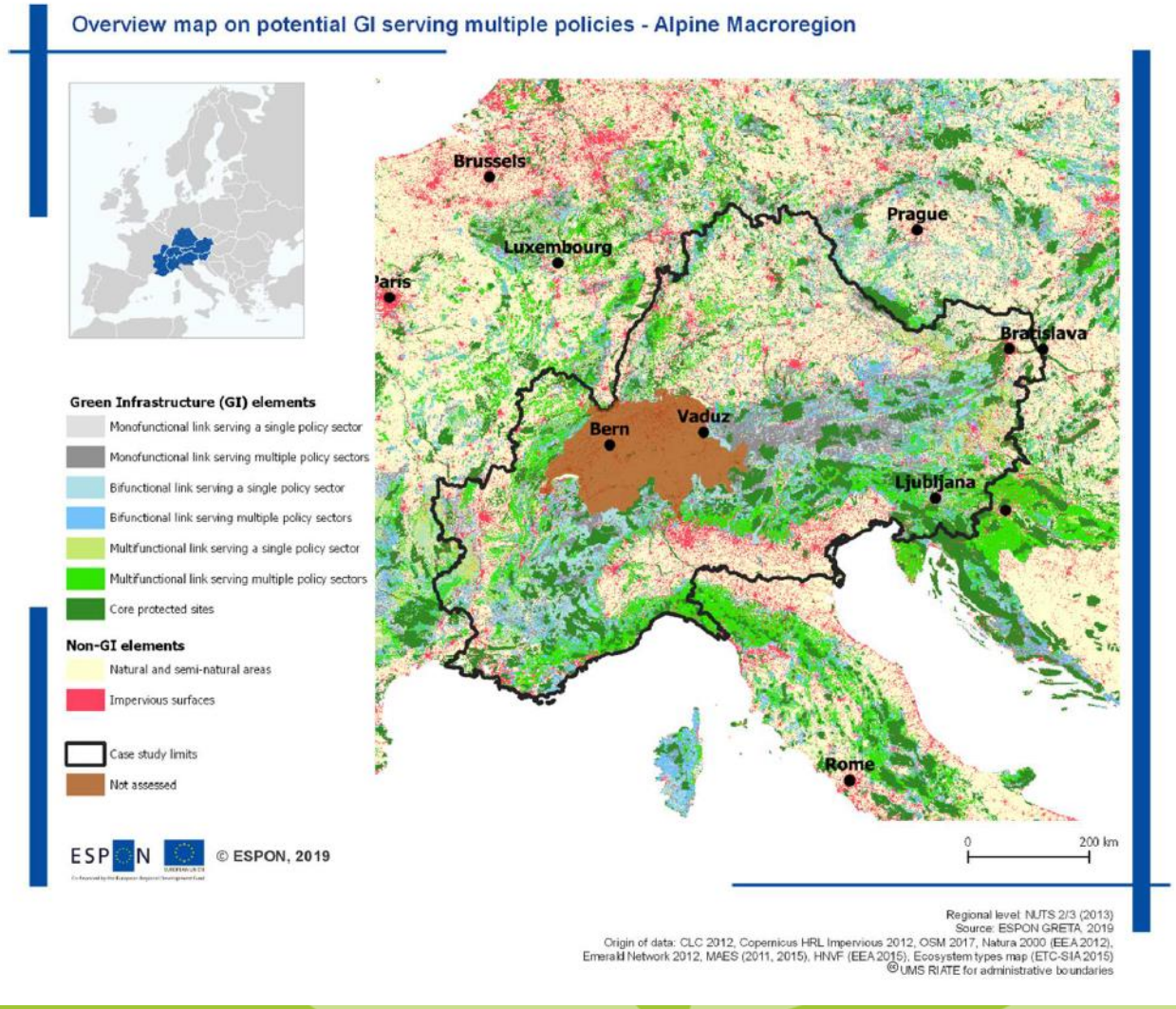
- Mapping of potential GI elements as well as regional distribution of demand/supply
- Analysis of interaction between GI and ecosystem services in various policy sectors

e.g.

- 3 briefings for public, practitioners and policy-makers: “Unpacking green infrastructure”, “relating Green Infrastructure to the Strategic Environmental Assessment”, “Planning for green infrastructure: Methods to support practitioners and decision-making”
- case study with focus on Alpine Macroregion (mainly on legal and governance framework)

GREEN INFRASTRUCTURE: MAIN RESULTS/PRODUCTS OF ESPON GRETA PROJECT





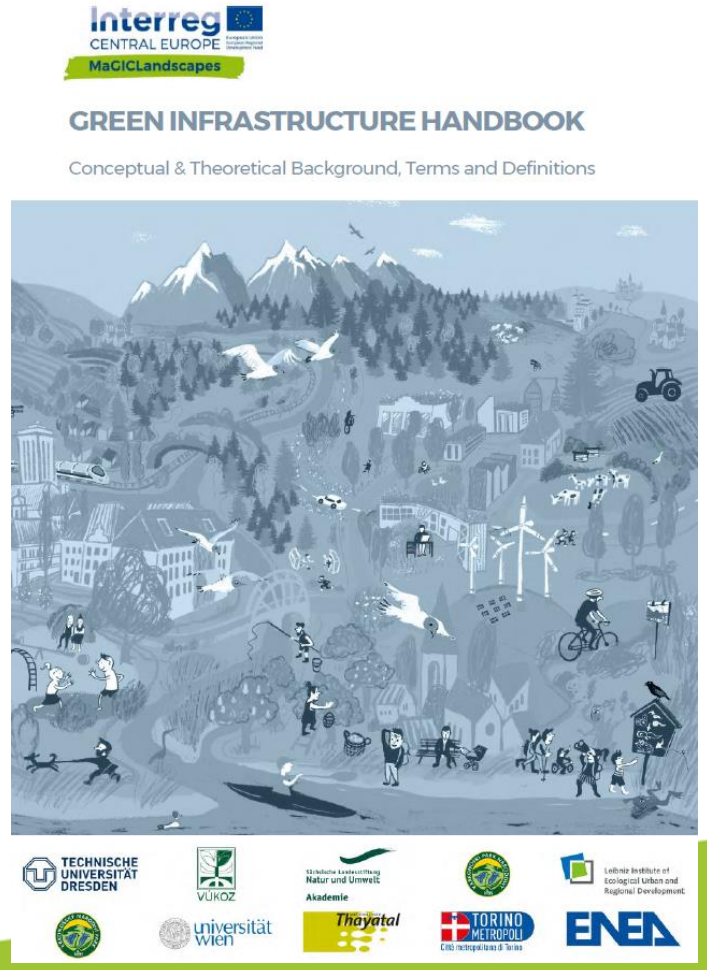
GREEN INFRASTRUCTURE: MAIN RESULTS/PRODUCTS OF INTERREG CENTRAL EUROPE MaGICLANDSCAPES PROJECT

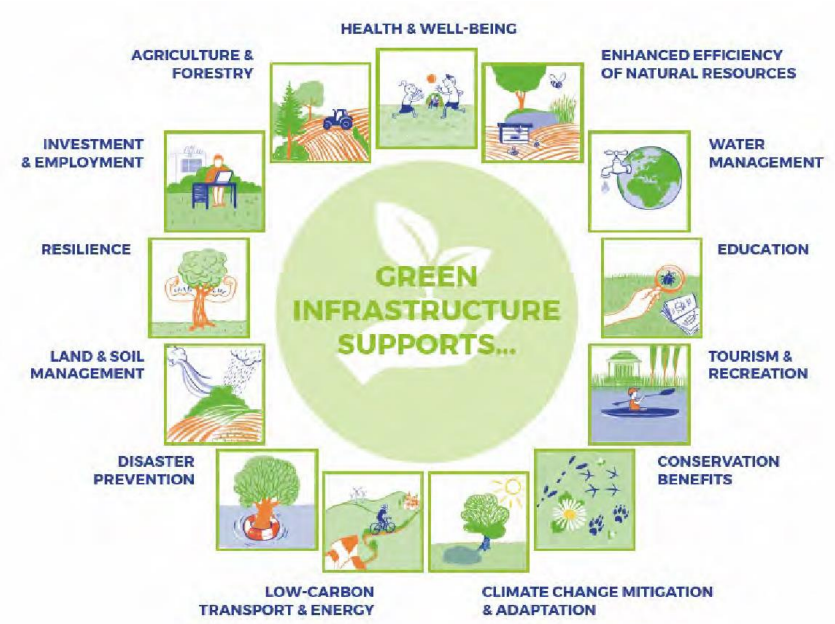
- Transnational Framework of Green Infrastructure Assessment
- Green Infrastructure Functionality Assessment
- Strategies for Intervention at European, Regional and Local Level

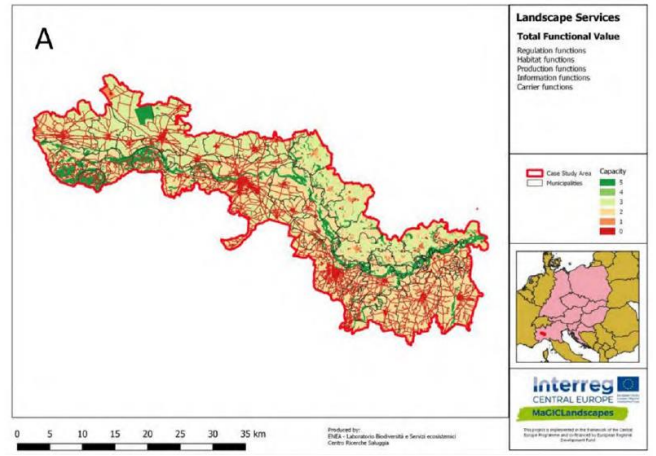
e.g.

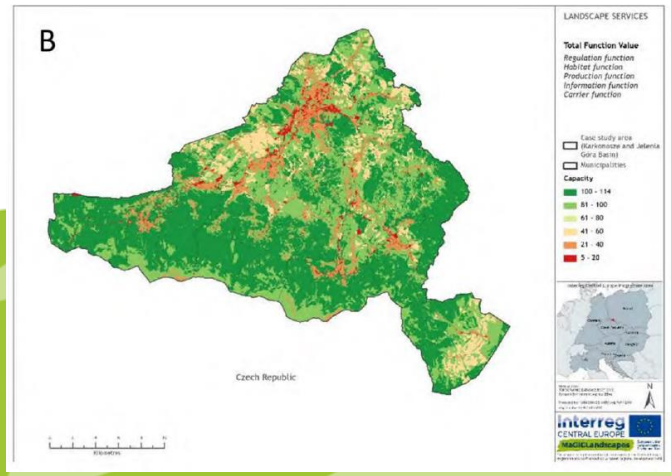
- Decision Support Tools (Manual of transnational Green Infrastructure Assessment, Manual of Green Infrastructure Functionality Assessment)
- Green Infrastructure Handbook (Conceptual & Theoretical Background, Terms and Definitions)

GREEN INFRASTRUCTURE: MAIN RESULTS/PRODUCTS OF INTERREG CENTRAL EUROPE MaGICLANDSCAPES PROJECT









CONCLUSIONS FOR THE ALPINE GI CONCEPT PROCESS

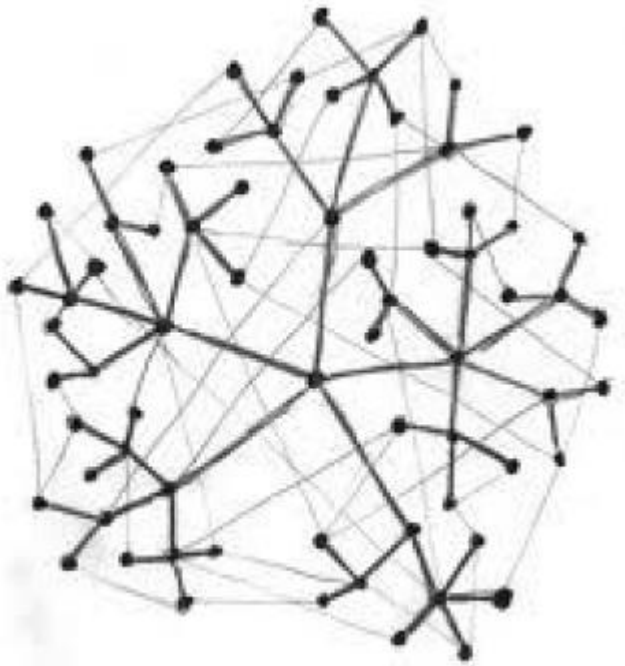
- previous projects produced very sophisticated and valuable results/products (e.g. methodology on identifying GI)
- some products are directly targeted at specific stakeholder groups (e.g. planning practitioners)
- however, results are often displayed in a quite complex way (lot of text, lack of specific examples on a landscape level)

→ need to develop further (visualisation) techniques and to summarize/ break down existing knowledge in order to initiate/ support GI planning

→ need to develop adapted GI analysis/ strategies for the specific context of the Alpine Macroregion

WHAT IS PATTERN LANGUAGE?

This language thus enables to **organise notions in a connected, systematised and problematized way.**



Description Pattern Language

Description Pattern Language

- to use an easier language to understand GI and their interconnection
  - Visualisation of landscape patterns (state) and what happens when changes occur
- Pictures/Visualisation says more than words
- facilitate (local) decision maker's and planner's understanding of GI components and their interaction
- easy-to-use toolbox for people who are not familiar with sophisticated approaches and the EU level discourse

→It would give **guidance** on how to deal with the described issues. Using this language, we could develop **recommendations** for target groups.

For example, concerning ORCHARDS: What main challenges are they facing and what are the main principles to follow/the main elements to consider regarding their establishment/preservation/…?

Ex. of association handbook/map

Région Rhone-Alpes „7 familles des paysages“

- 7 categories of landscapes (not really patterns: very short, no recommandations)
- Located on a map
- Online on the website of the region

La DREAL Rhône-Alpes définit et identifie ces 7 familles de paysages à l'échelle de la région :

Des grands paysages naturels : ce sont tous les espaces où l'impact de la main de l'homme est perçue comme « marginale » (haute-montagne, zones humides, forêts,...) ~17% du territoire.

Des paysages naturels de loisirs : ce terme désigne certains territoires naturels, initialement vierges, sur lesquels se sont implantés les grands domaines skiables. ~2% du territoire régional.

Des paysages agraires, assimilés à des espaces façonnés et gérés par l'activité agricole, habités visiblement par l'homme de façon permanente (présence de champs, cultures, ...). ~29% du territoire.

Des paysages ruraux patrimoniaux : ils se distinguent des paysages agraires en raison de structures paysagères singulières qui leur confèrent une identité forte (petit patrimoine rural, traces d'une histoire ancienne). ~34% du territoire.

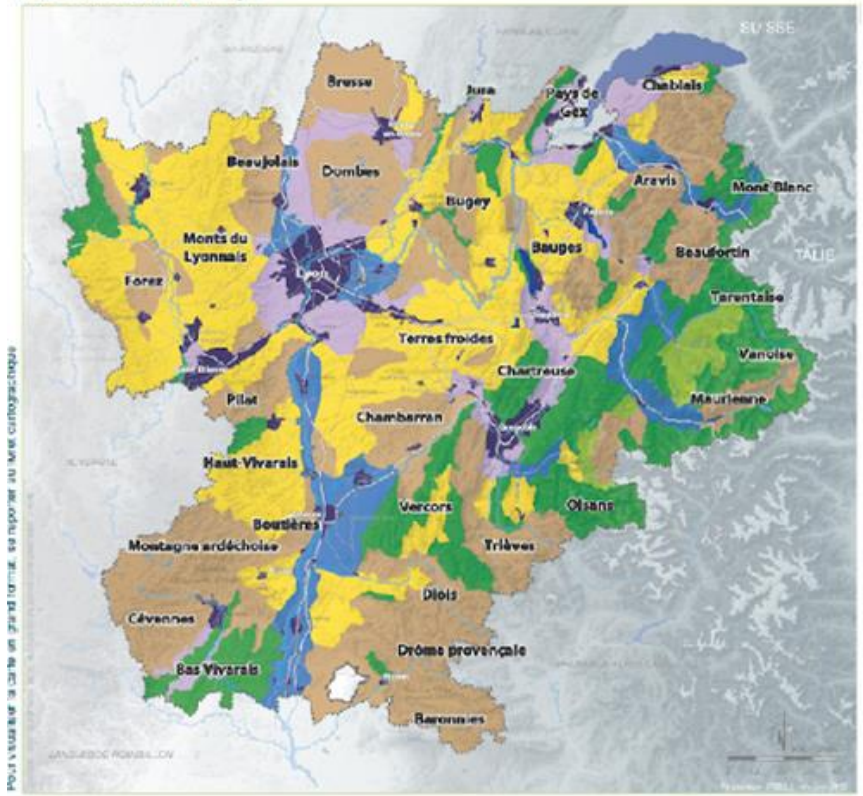
Des paysages émergents : ce sont des paysages naturels ou ruraux qui ont évolués à partir de la seconde moitié du XX^{ème} siècle vers des formes d'urbanisation diffuse à vocation résidentielle (constructions, aménagements et comportements liés à l'urbanité, mais faible densité globale d'urbanisation). ~6% du territoire.

Des paysages marqués par de grands aménagements : ils correspondent essentiellement à des couloirs géographiques fortement aménagés aux XX^{ème} et XX^{ème} siècles. Initialement naturels ou ruraux, ils sont ponctués de grands équipements industriels ou énergétiques. ~7% du territoire.

Des paysages urbains et périurbains : c'est l'ensemble des territoires qui présentent visuellement une part prépondérante de constructions, d'infrastructures, d'espaces revêtus ou bâtis, aménagements hydrauliques...). ~5% du territoire.

(Source : les 7 familles de paysages en Rhône-Alpes, DREAL Rhône-Alpes)

Carte 4 : Territoires de Rhône-Alpes



= Natural pastures, natural recreational landscapes, rural heritage landscapes, …

Alpine Green Infrastructure

Quelle: Bayerisches Staatsministerium für Umwelt und Verbraucherschutz

Wildlife crossing structures

Quelle: Transgreen, Interreg Danube. [10]

(Introductive paragraph, pattern as contribution to other bigger patterns)

Wildlife-crossing structures (e.g., overpasses, tunnels, and culverts) provide habitat connectivity between isolated patches. They cover all bridge-like structures/tunnels/culverts of whatever size, designed for use by fauna or, at the most, for dual use by farm vehicles and wildlife, and planted with grass, shrubs, or trees. Overpasses are far more common on roads than other linear infrastructures (e.g., railway lines)." [11]

***

(Problem)

„Roads and traffic are pervasive components of landscapes throughout the world: they cause wildlife mortality, disrupt animal movements, and increase the risk of extinction. Expensive engineering solutions, such as overpasses and tunnels, are increasingly being adopted to mitigate these effects."[12]

(Developments)

The barrier effect caused by infrastructures, especially roads, may have direct and indirect consequences.
„The damage that highways inflict on wildlife is not limited to direct mortality. It starts with the destruction of habitat, and continues with the construction of the road itself, which causes more wildlife mortality. Chemical and physical alteration of the surrounding environment and introduction of potentially invasive species accompany construction and use of roads. Once roads are constructed, development often follows, further degrading habitat. Roads in rural and remote areas allow humans access to previously undisturbed habitats and the plants and animals they harbor."[13]
Barrier effect could also be the reason for a reduction of gene flow between subpopulations and a decrease in genetic diversity. The literature lacks information about this genetic aspect.

Another problem: „A noise protection wall eliminates the effect of disturbance while also increasing the barrier effect."[14] „Transparent walls along roads in towns are often the cause of high bird mortality."[15]

(Solution)

When building a road (or other linear Infrastructures), it is important to guaranty crossing possibilities for animals to mitigate the barrier effect. This prevents population extinction - even if the overpasses reduced, but not completely remove the negative effects of a road. [16]
The crossing structure should be large enough to support a large number of animals and especially large mammals.
Anschauen, wo davor die tiere sich bewegten

(Diagram)

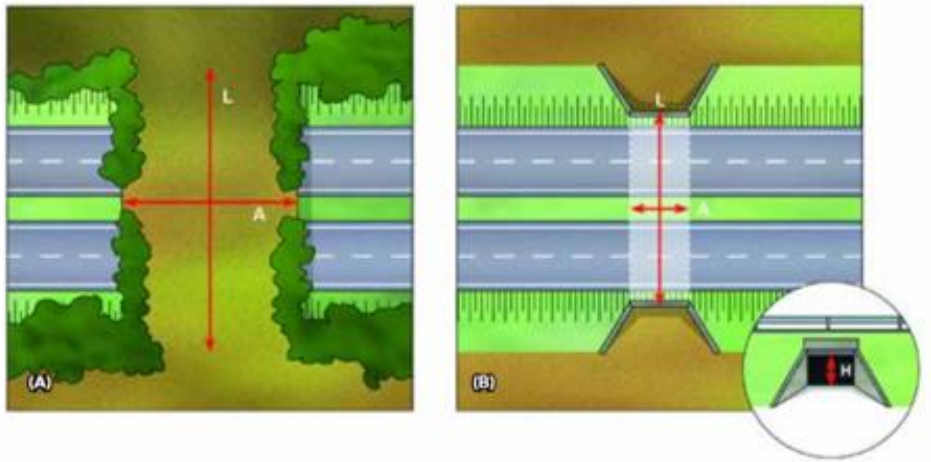


Fig. 3.1 General scheme of a wildlife overpass (A) and a wildlife underpass (B), showing also their basic dimensions (L - length, W - width, H - height). © Spain. Ministry for Ecological Transition. 2016. Technical prescriptions for wildlife crossing and fence design (second edition, revised and expanded) [on line]. Madrid: MAPAMA. Illustrations made by Pep Gaspar, ARTENTRAC

Quelle: Transgreen, Interreg Danube. [17]

***

(Link to smaller patterns)

Wildlife overpass
Wildlife tunnel
Wildlife culverts
Fish passage technologies