Are Spontaneous Urban Nature Spaces Taken into Account in Local No Net Land Take Policies? A Case Study for Charleroi (Wallonia, Belgium)

International seminar "(Post) Extractivism and Ecological Controversies in Research by Design"

Brussels – June 26th, 2025

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PART 1 : Introduction

Why Spontaneous Urban Nature (SUN) matters ?

How to halt land take in the EU

Land take: increasing infrastructural and urban development means that ecosystem services of key importance to human life are being lost. Of high concern is the amount of land being covered with impervious materials, which halts natural soil processes. What measures can avoid, reduce or compensate for land take?

Science for Environment Policy (2016) *No net land take by 2050?* Future Brief 14. Produced for the European Commission DG Environment by the Science Communication Unit, UWE, Bristol. Available at: http://ec.europa.eu/science-environment-policy

PART 1 : Introduction

What are SUN spaces ?


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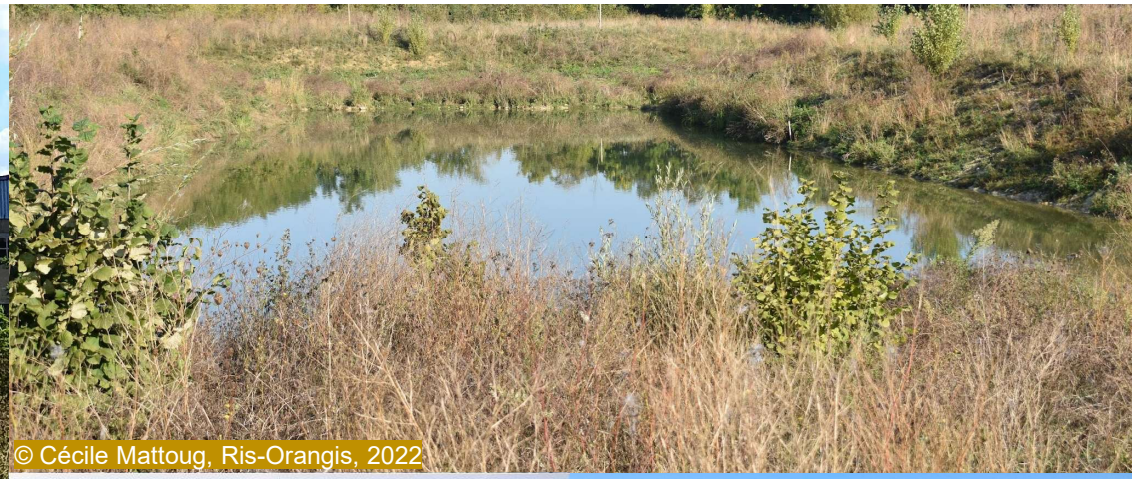
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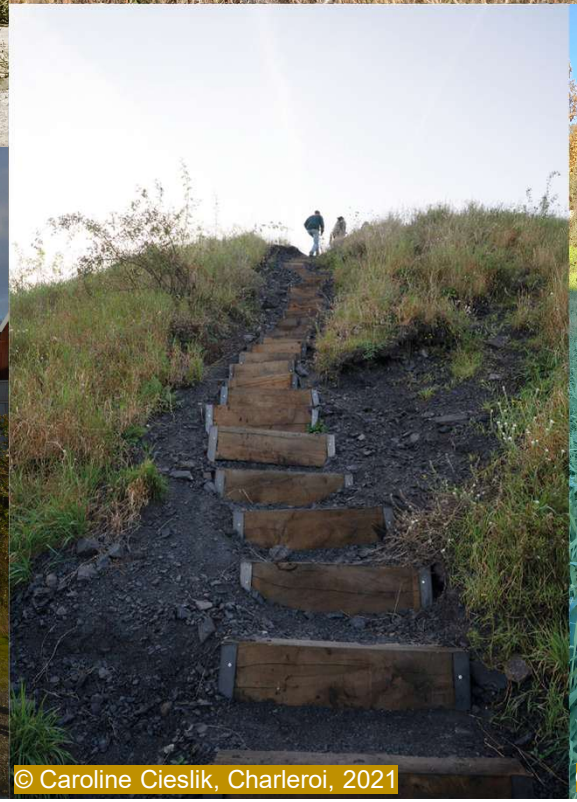
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PART 1 : Introduction

What are the ecological roles of SUN ?

PART 1 : Introduction

Ecological roles of SUN

- **Biodiversity Reservoirs** (Threlfall et Kendal, 2018; Bonthoux et Chollet, 2021; Woźniak et al, 2022;)
- **Ecological Connectivity** (Di Pietro et Brun, 2015)
- **Ecosystem Services** (Chen et Hashimoto, 2025)

PART 1 : Introduction

What are the controversies surrounding SUN?

Issues of INTER-FRICHES research

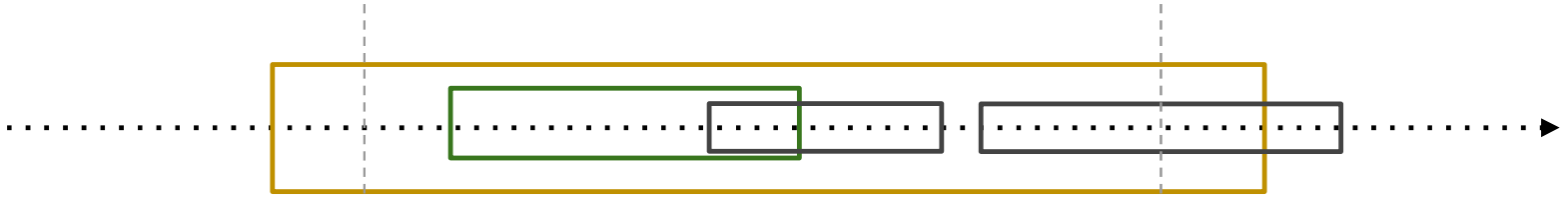
Wasteland: an interstitial, multidimensional, and complex topic…

Ecology

Built environment

Social sciences

Socioecological process



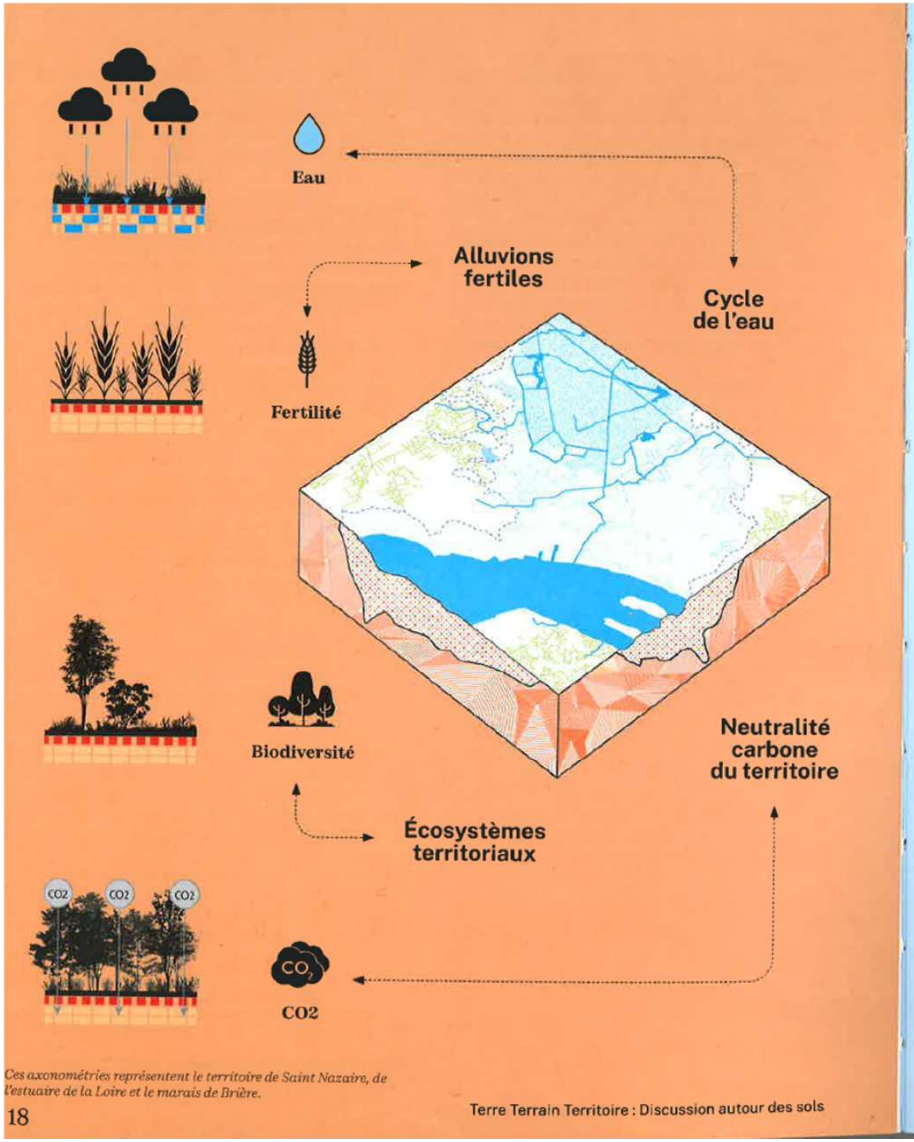
inter-friches
réseau de recherche

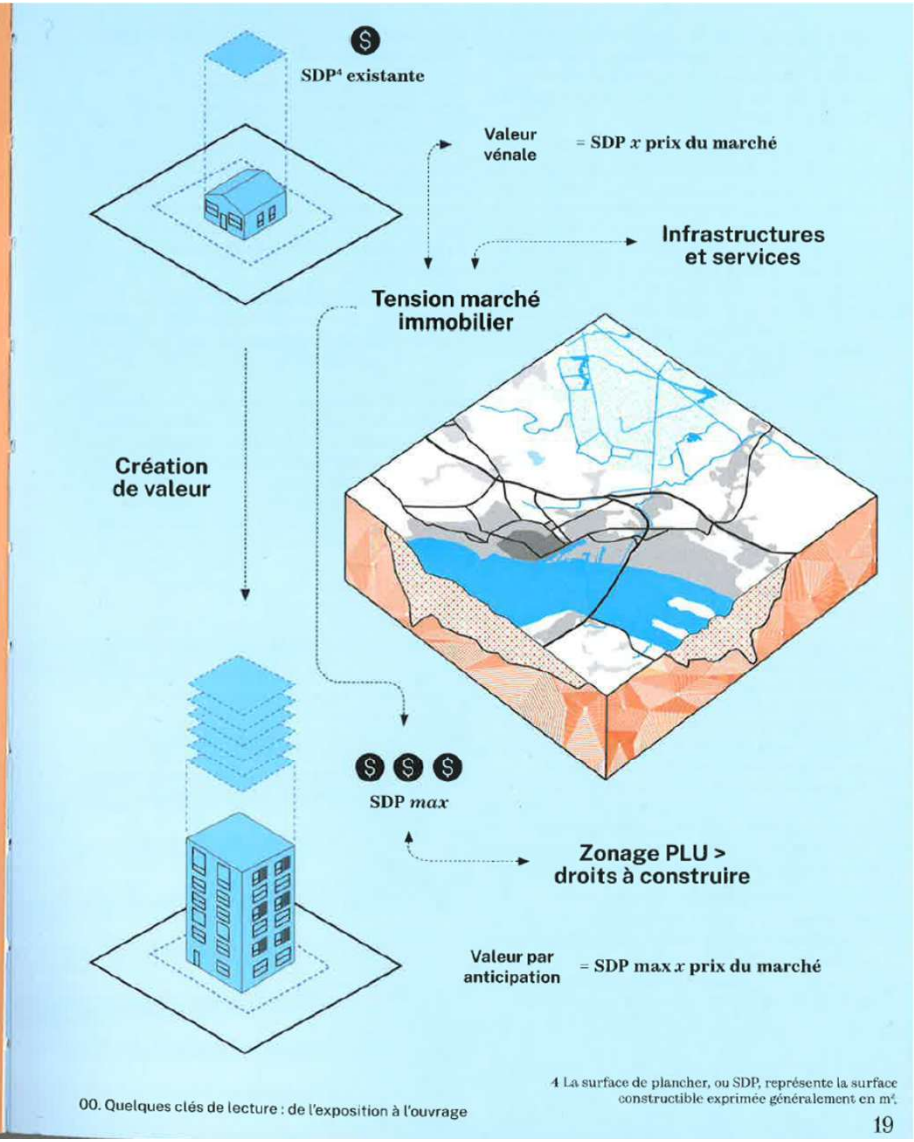
…a fragment of the urban socio-ecosystem

https://interfriches.hypotheses.org/

Soil :
ecological value and its functionalities

Land:
economic value and its constructibility

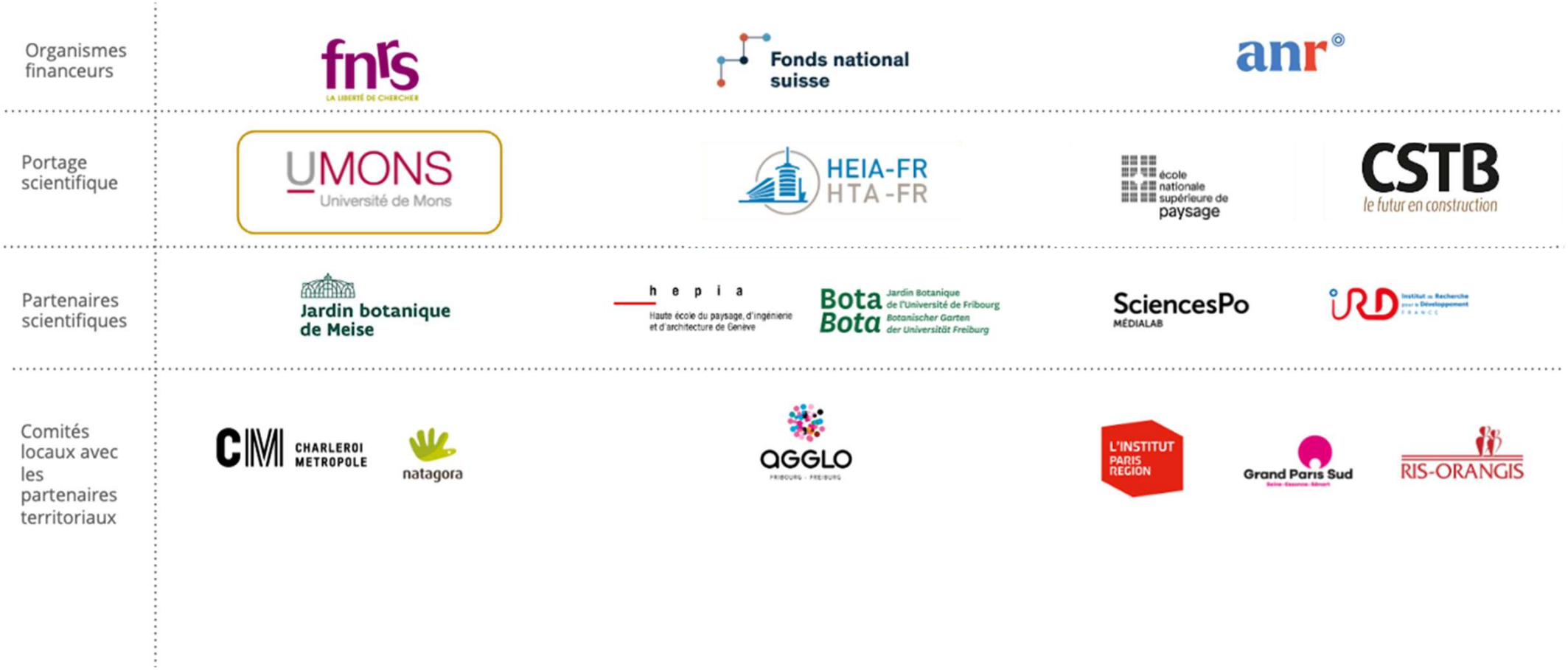




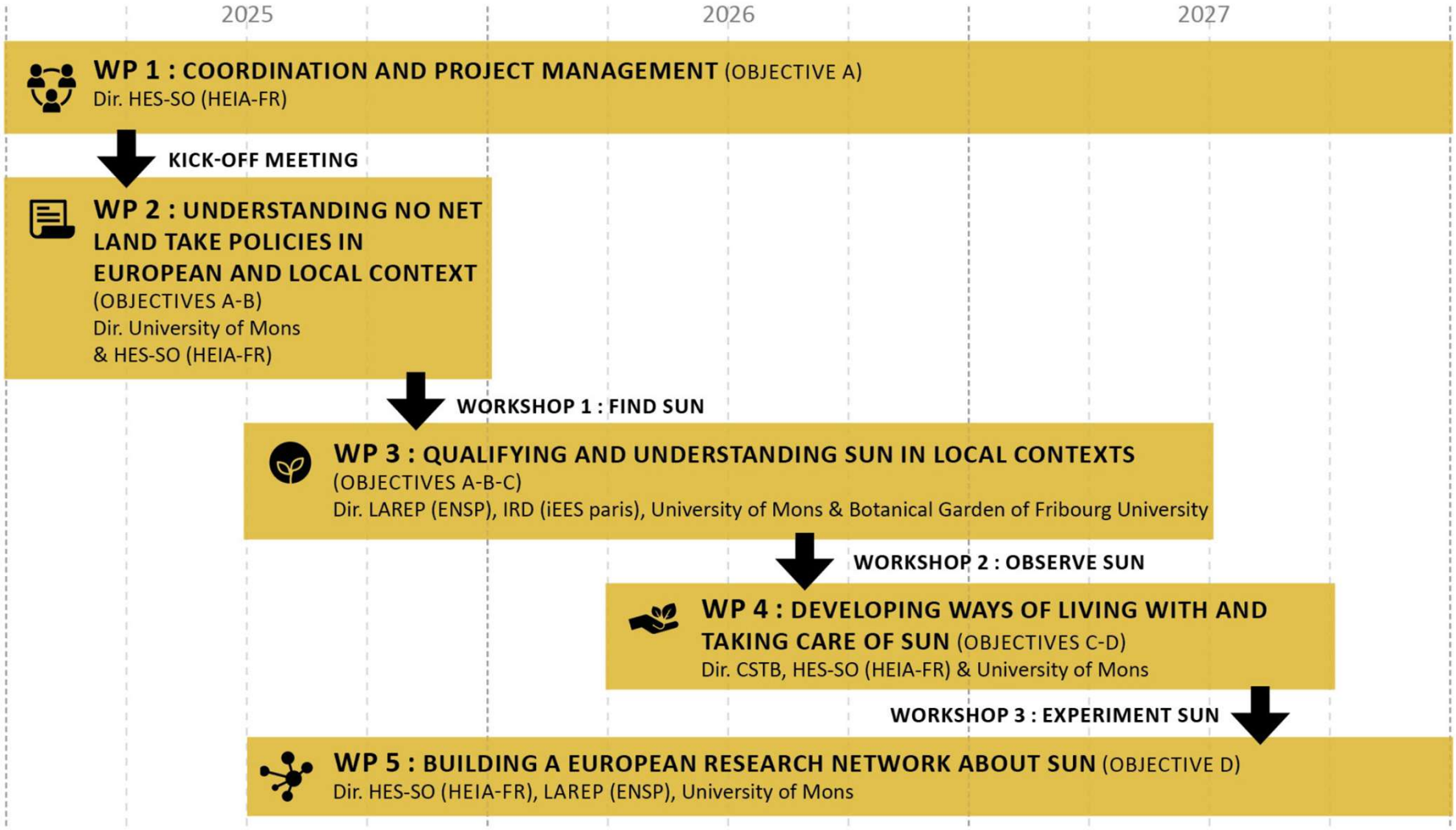
ANMA Architectes Urbanistes, 2024. *Terre, Terrain, Territoires, Discussion autour des sols.*

PART 1 : Introduction

What are the objectives of SUNLOOP project research?

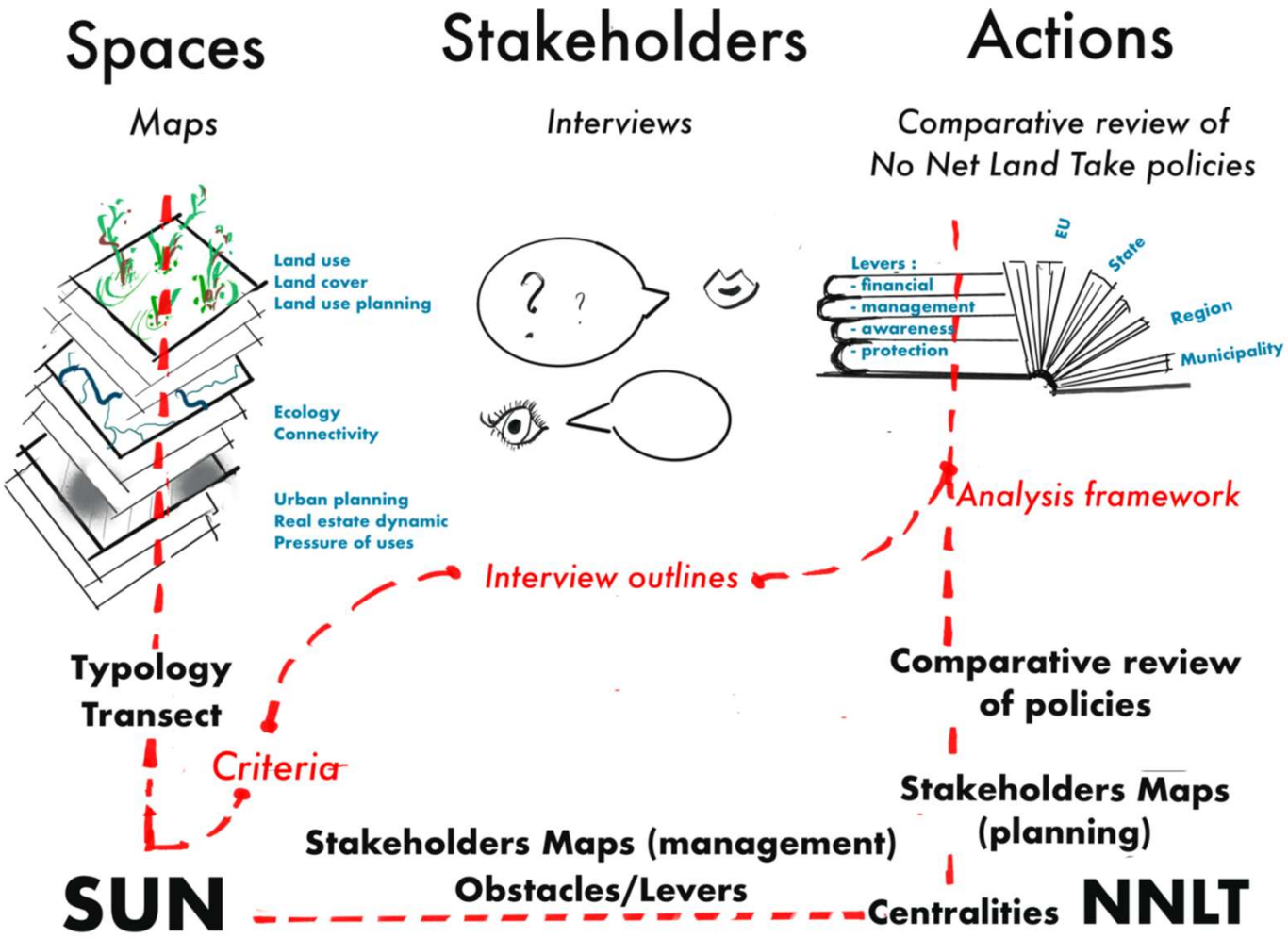


Consortium of SUNLOOP projet research



Timeline of SUNLOOP projet research

PART 2 : Methodology




Urban leftover Charleroi– 2024
photo: Marie Pairon


Brownfield Broucheterre– 2024
photo: Marie Pairon

Pied de terril –2024
photo: Marie Pairon

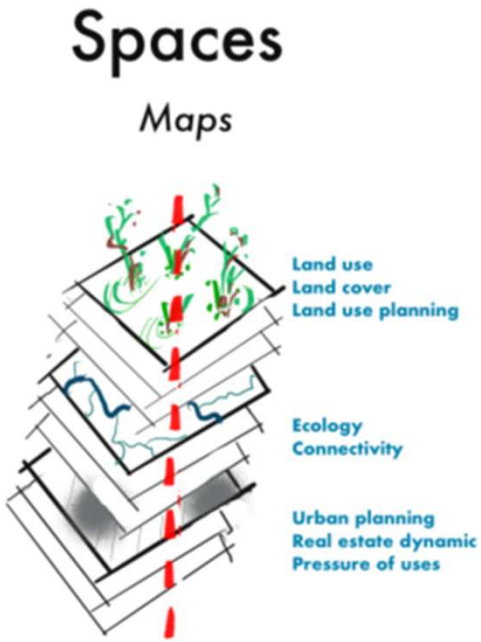

Terril des piges – 2024
photo: Marie Pairon

Mapping will be used as a step to help defining them

- Are they ‘urban abandoned’ sites ?
- More generally “places that have been released from their previous function or were never functional for the urban system ? “ (Ludovici and Pastore, 2024)

→ SUN spaces are multiples (urban leftovers, vacant lots, etc…) and are not only brownfields

PART 2 : Methodology



Mapping Spontaneous Urban Nature (SUN) and Planning Constraints

1. Spatial identification of SUN based on land use and land cover data.

2. Evaluation of ecological value using habitats and species data.

3. Comparison with regional centralities and local master plans

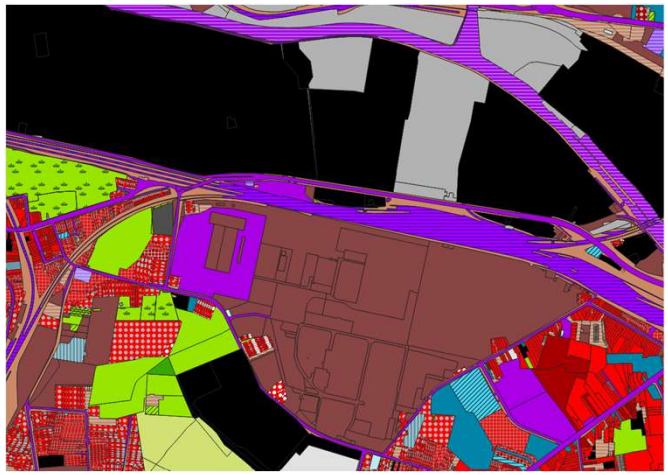
PART 2 : Methodology

1. Spatial identification of SUN based on land use and land cover data.

Places that have been released from their previous function or were never functional

→ No clear consensus on wastelands/brownfields location in Wallonia
→ Two different data sources were used

Walloon land use (WalOUS, SPW, 2018)



- ☑ Other uses
- ☑ Abandoned land
- ☑ Unknown use (registered)
- ☑ Unknown use (unregistered)

Inventory of Sites to Be Redeveloped (SAR)

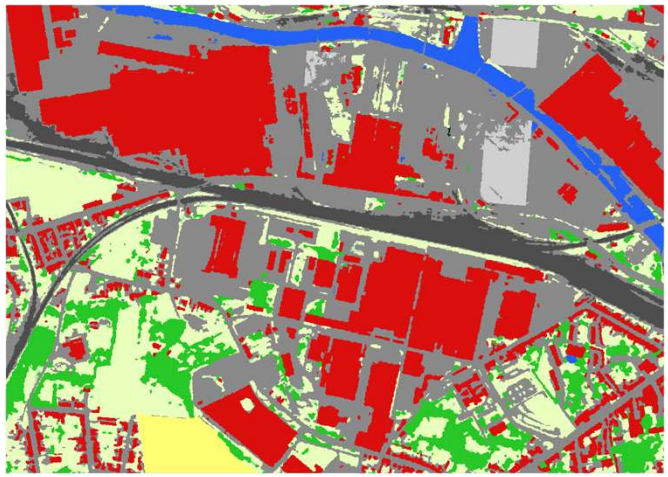
PART 2 : Methodology

1. Spatial identification of SUN based on land use and land cover data.

Places that have been recolonised by vegetation

→ Use of land cover to select places where spontaneous vegetation can be observed

Walloon land cover (WalOUS, SPW, 2018)



- Bare soils
- Herbeaceous lands
- Coniferous (> 3 m)
- Coniferous (< 3 m)
- Hardwood (> 3 m)
- Hardwood (> 3m)

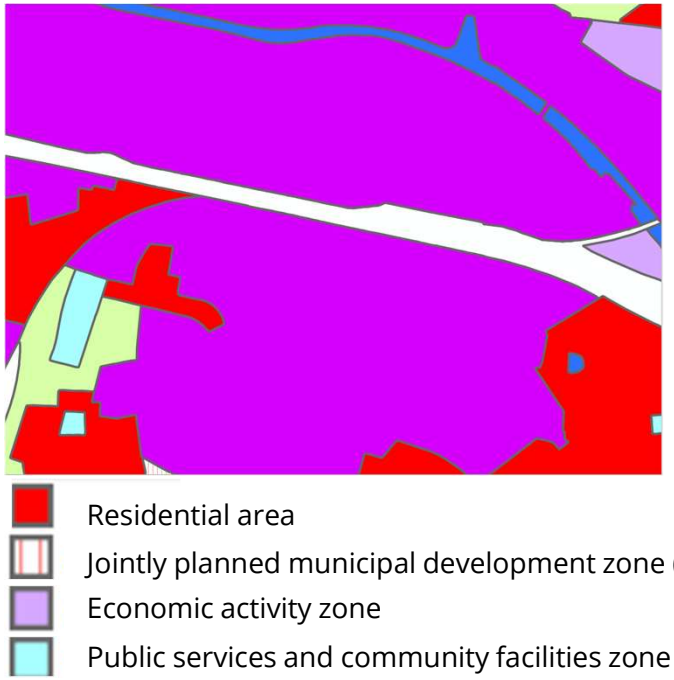
PART 2 : Methodology

1. Spatial identification of SUN based on land use and land cover data.

Places under land use pressures

→ Areas designated for future urban development

Walloon land use plan (SPW, 2025)

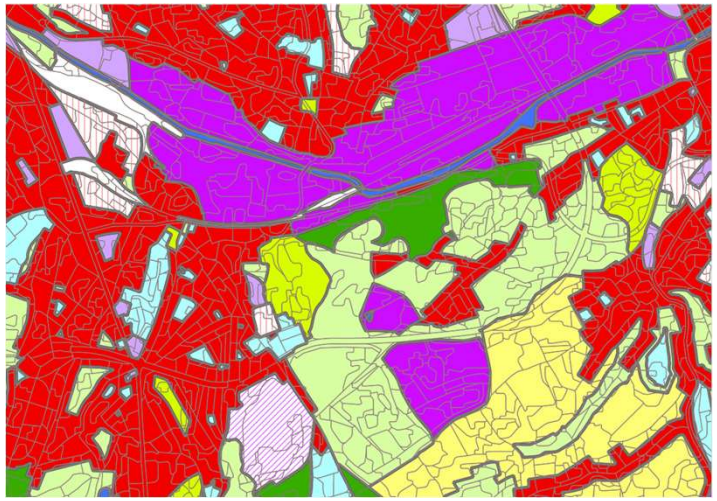


PART 2 : Methodology

1. Spatial identification of SUN based on land use and land cover data.

Multiple data sources with varying geometries: the need for integration into a common spatial reference framework.

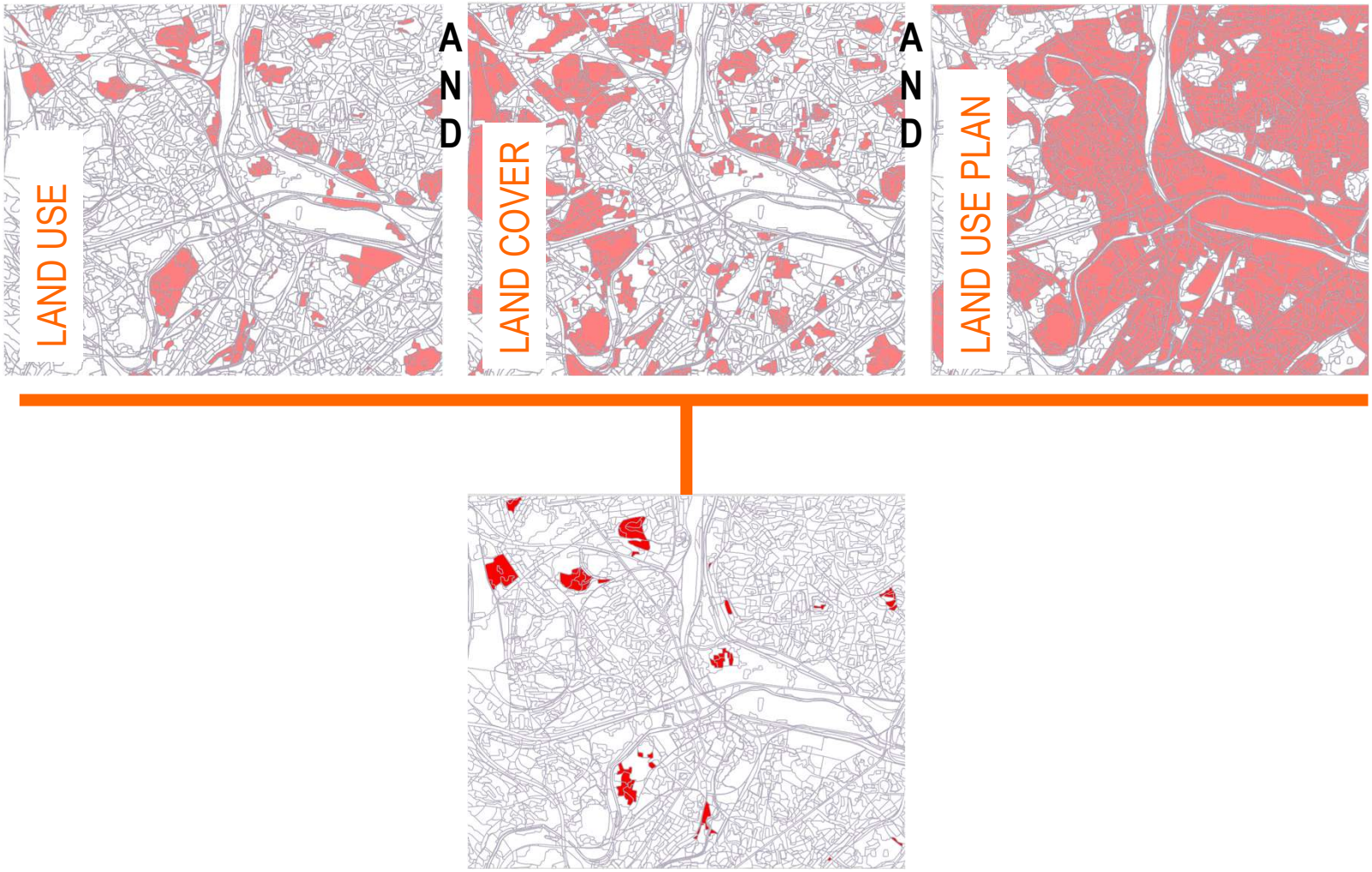
Corine Land Cover plus backbone (EEA, 2024)



Walloon land use plan (SPW, 2025)

PART 2 : Methodology

1. Spatial identification of SUN based on land use and land cover data.



PART 2 : Methodology

2. Evaluation of ecological value using habitats and species data.

Identification of the biological value of these areas, based on multiple data sources, diverse protection statuses, and varying spatial scale

Regional data – high conservation status
- Natura 2000 sites (2018)
- Sites of Local Nature Conservation (LCN) – 2025

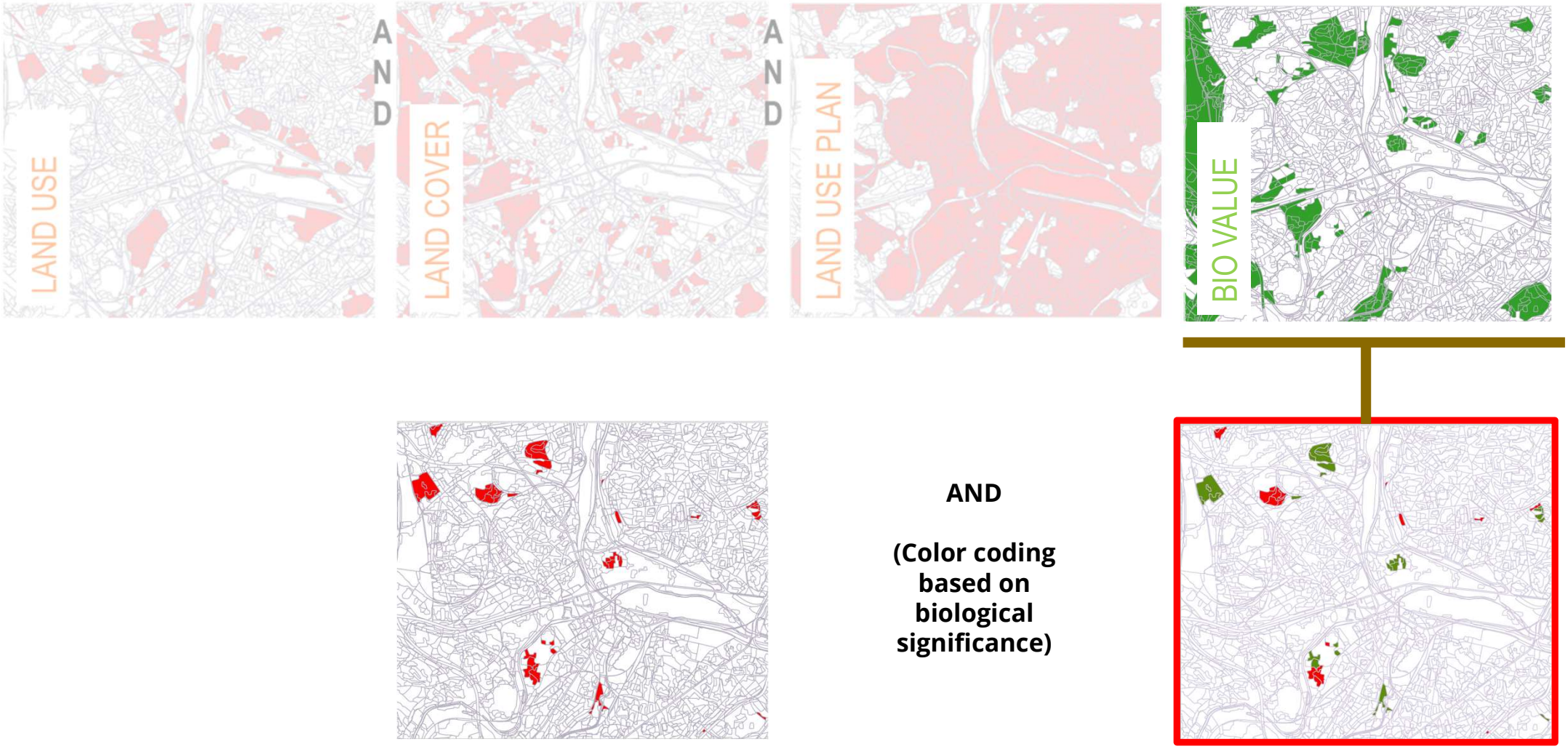
Regional data – protection applies to certain taxa, but not to habitats
- Flora and fauna observation data (OFFH – DEMNA, 2025)

Regional data – no conservation status
- Sites of Great Biological Interest (SGIB) – 2022
- Ancient semi-natural forests (2020)
- Open habitats of biological interest (LifeWatch Ecotope – 2022)

Local data – no conservation status
- PCDN (Municipal Nature Development Plans)– Core areas (1992)

PART 2 : Methodology

2. Evaluation of ecological value using habitats and species data.



AND

(Color coding based on biological significance)

PART 2 : Methodology

3. Comparison with regional centralities and local master plans

Additional pressure on these environments resulting from the recent development of spatial optimization strategies and ongoing master planning projects.

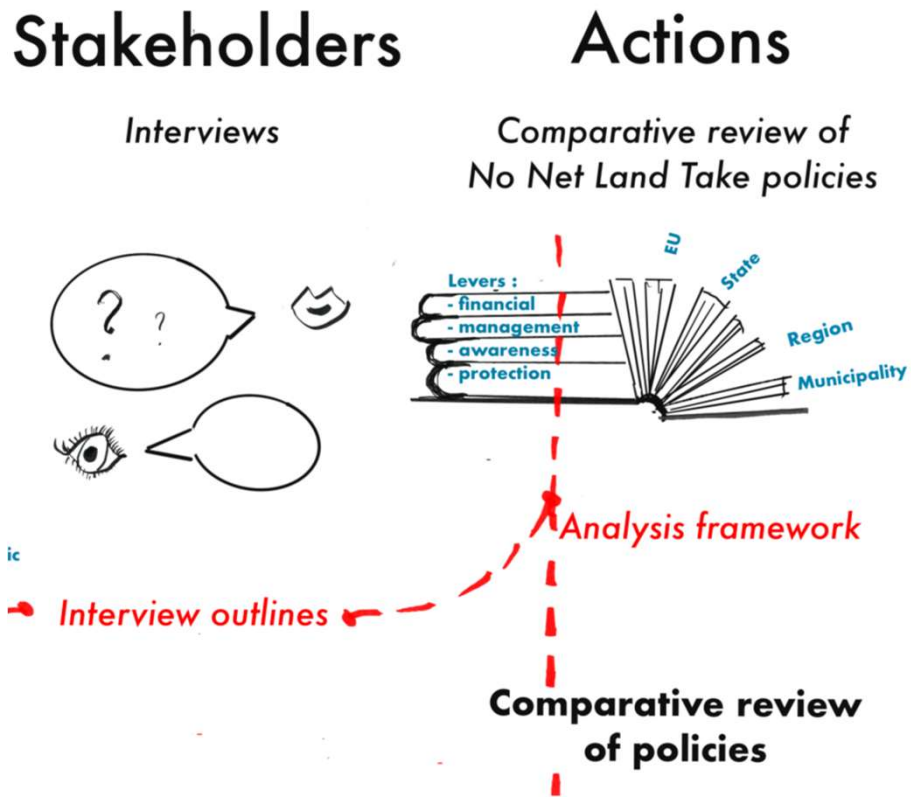
Urban centrality of a regional hub (SDT, 2024)

Charleroi Master Plans

PART 2 : Methodology

Comparative review of No Net Land Take policies trough “biodiversity”

1. Collection of ZAN public policies, at different levels in the 3 countries
2. Analysis framework built on the scientific literature on biodiversity issues in NNLT policies
3. Comparative review
4. Interview survey
5. Identification of the perception of SUNs, blockages and levers for taking SUNs into account in planning

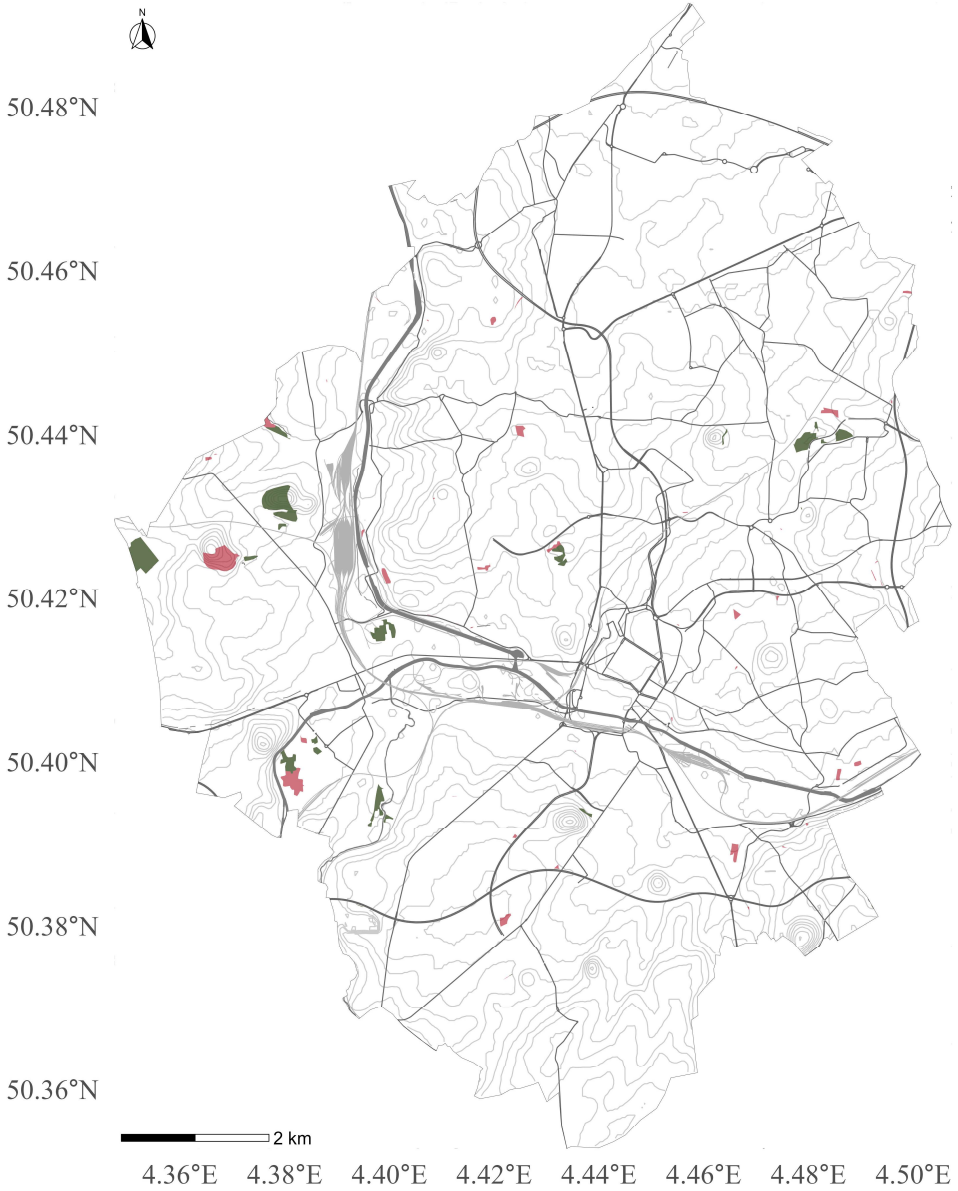


PART 3 : Results

Descriptives statistics (m²)	All SUN spaces	SUN with recognized biological value
Minimum value	134,70	282,44
Median	2.115,56	5.614,91
Mean	12.986,45	22.806,23
Maximum value	137.409,40	137.409,40
Standard deviation	35.711,60	28.336,49
Number (N)	68,00	24,00
Total Area (ha)	**92,92**	**57,82**

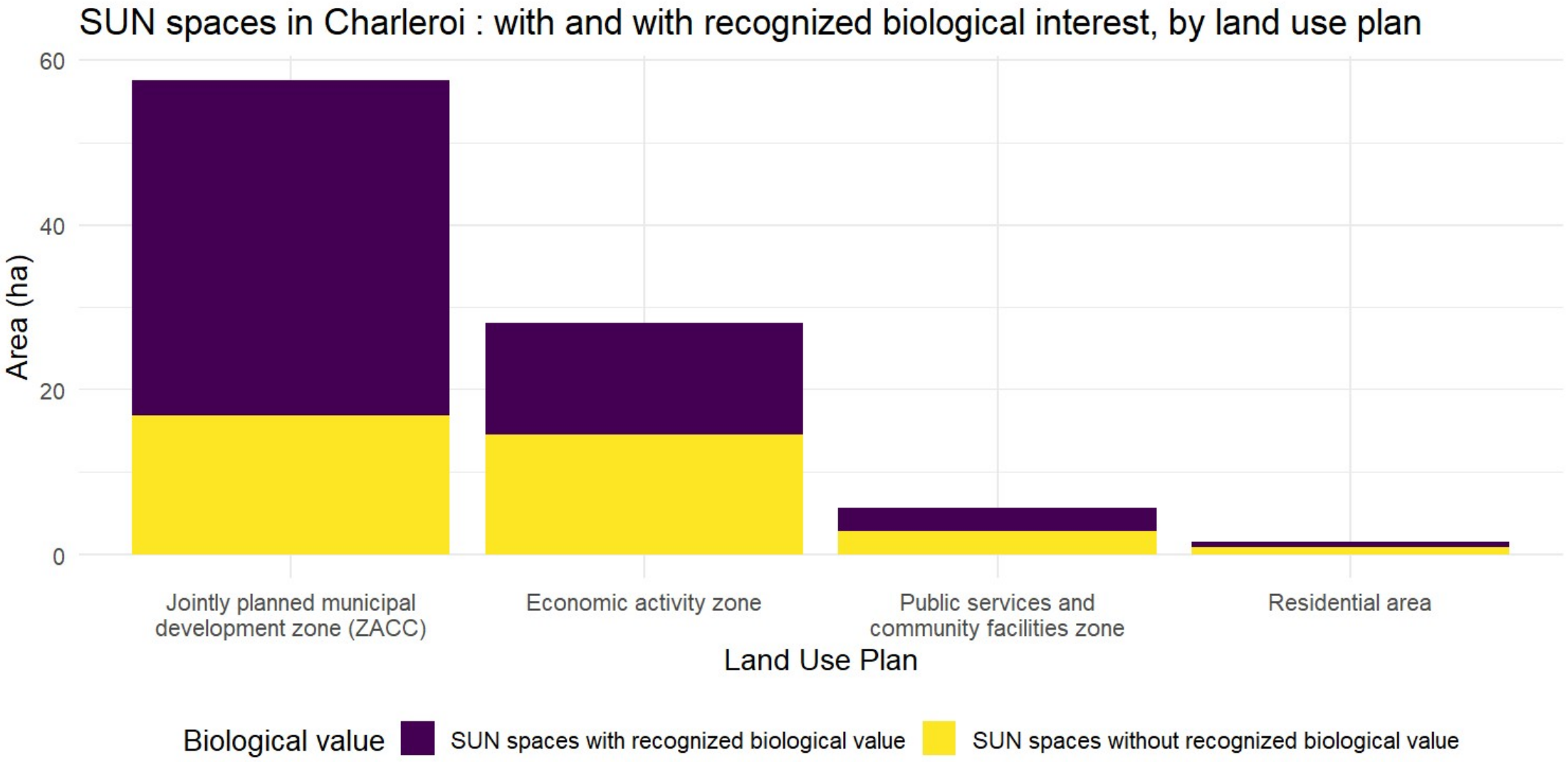
SUN spaces without recognized biological value

SUN spaces with recognized biological value



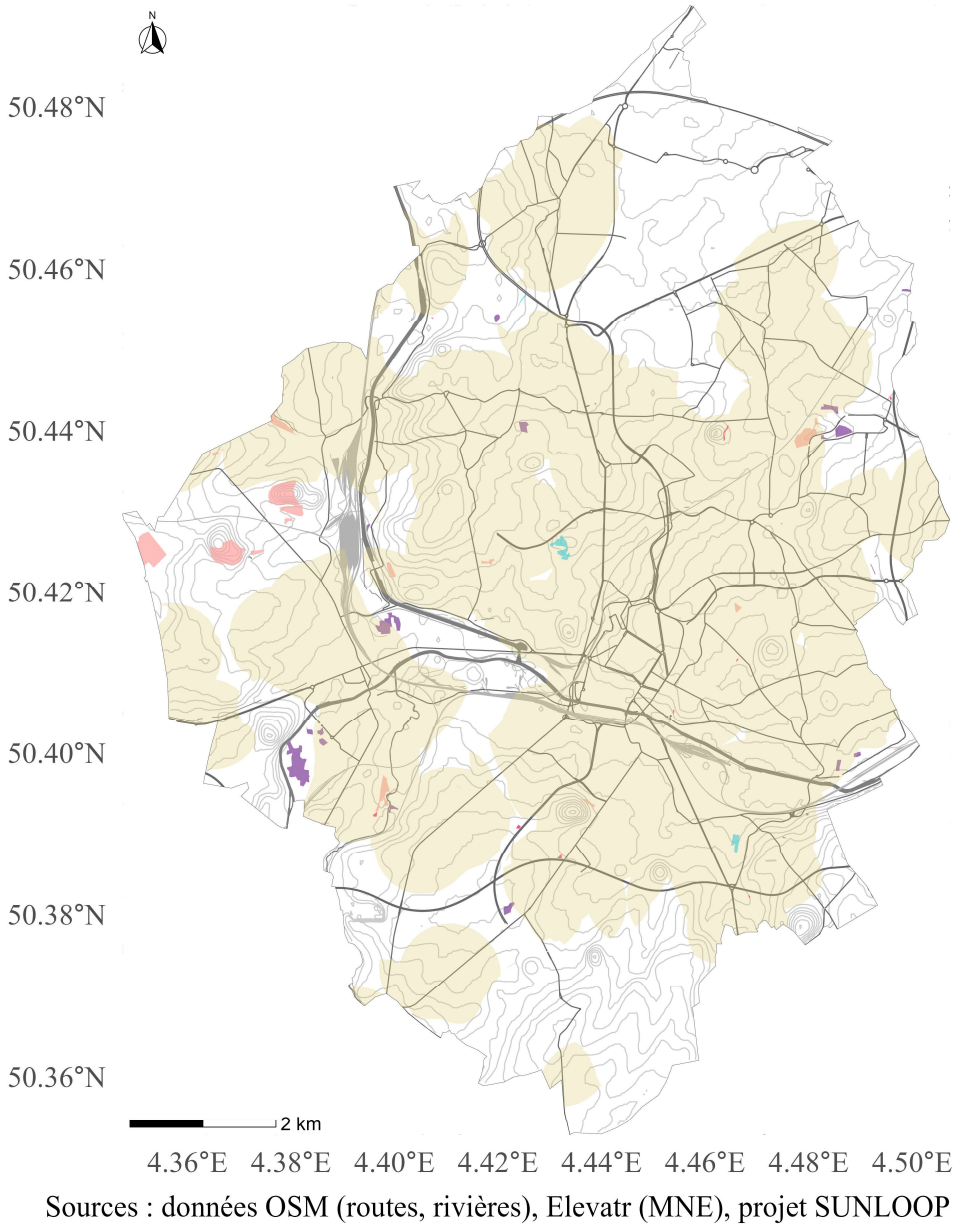
Sources : données OSM (routes, rivières), Elevatr (MNE), projet SUNLOOP

PART 3 : Results



PART 3 : Results

- Urban centrality
- Economic activity zone
- Jointly planned municipal development zone (ZACC)
- Residential area
- Public services and community facilities zone



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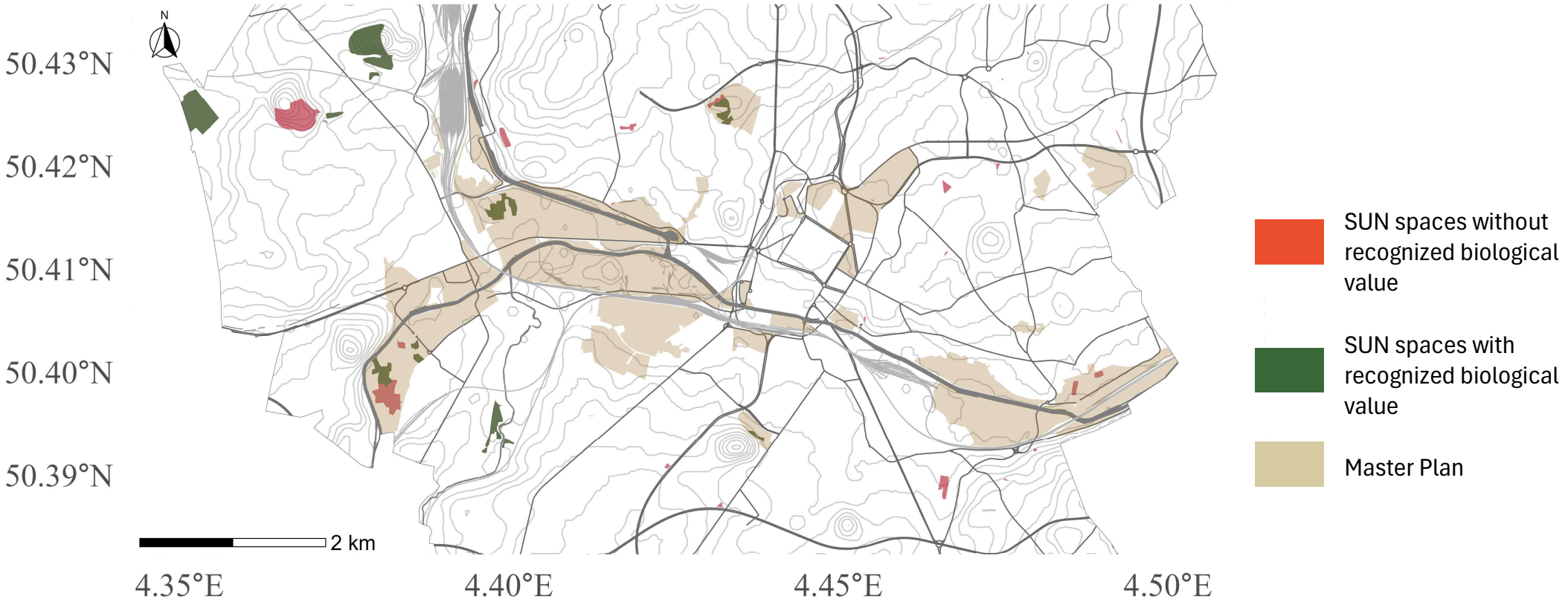

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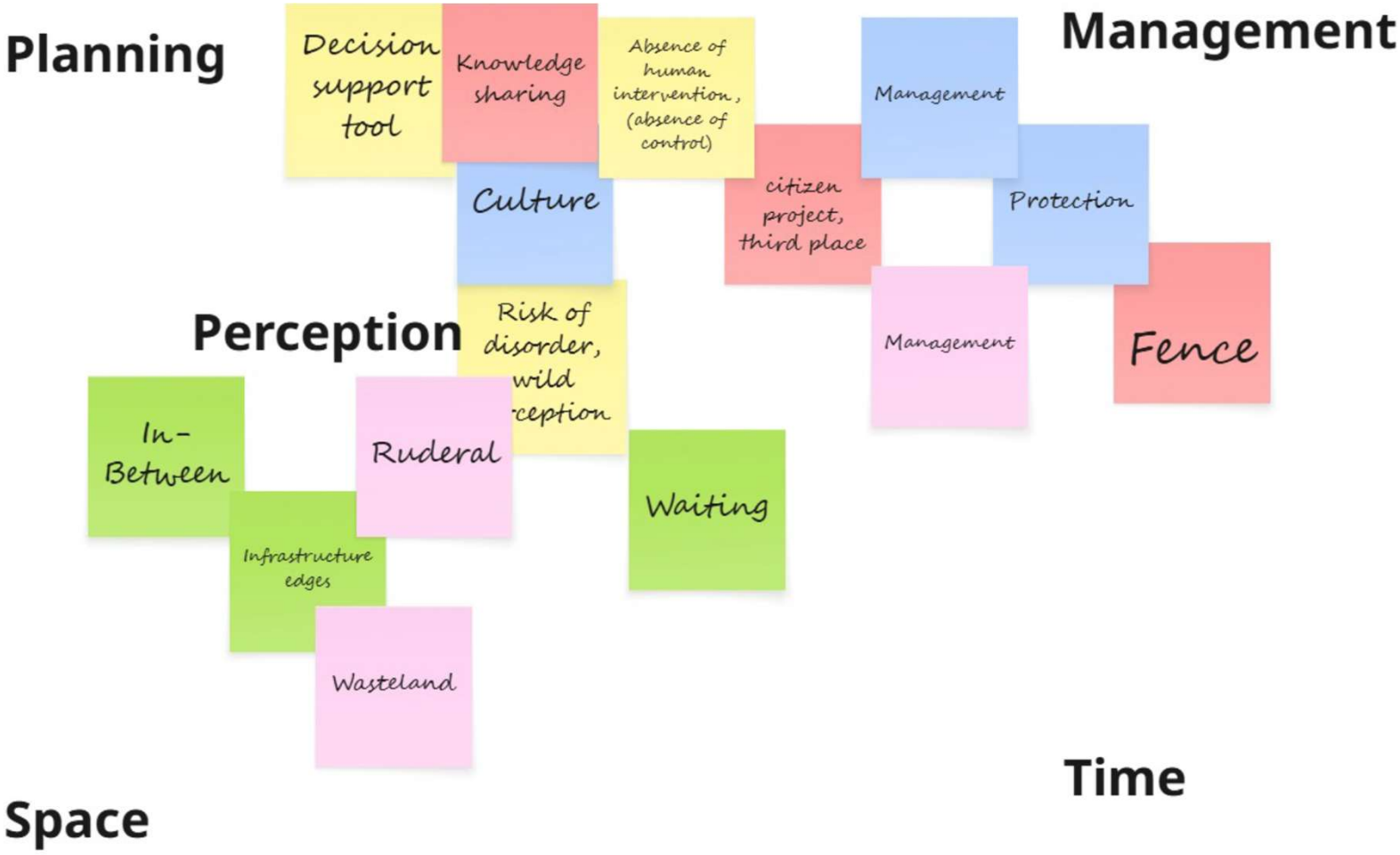

PART 4 : Perspectives and conclusions

PART 3 : Results