BetterLife Spring School, April 9-10, 2024

BETTER Life

Urban Ecosystem Disservices for engaging communities to the discussion over the management of urban nature

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DE HEUVEL
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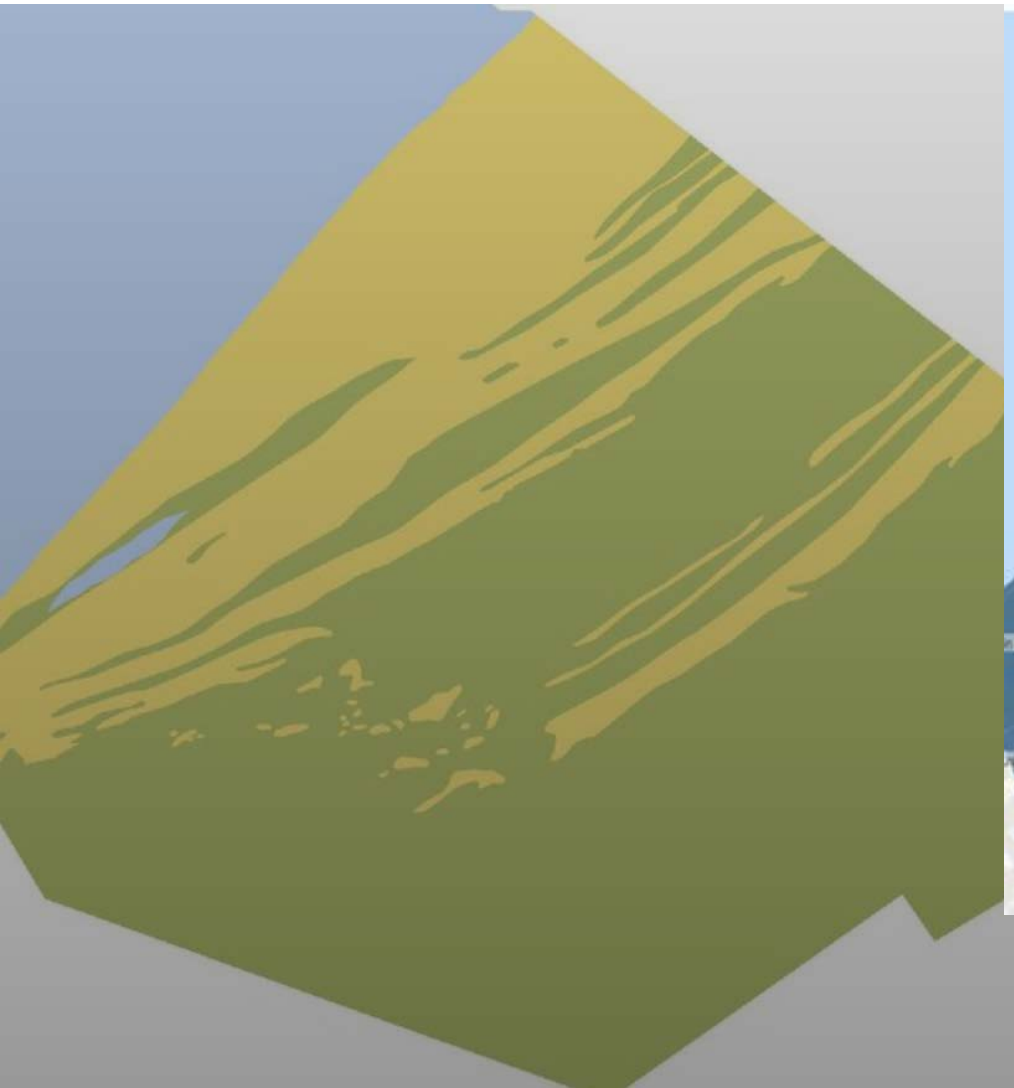
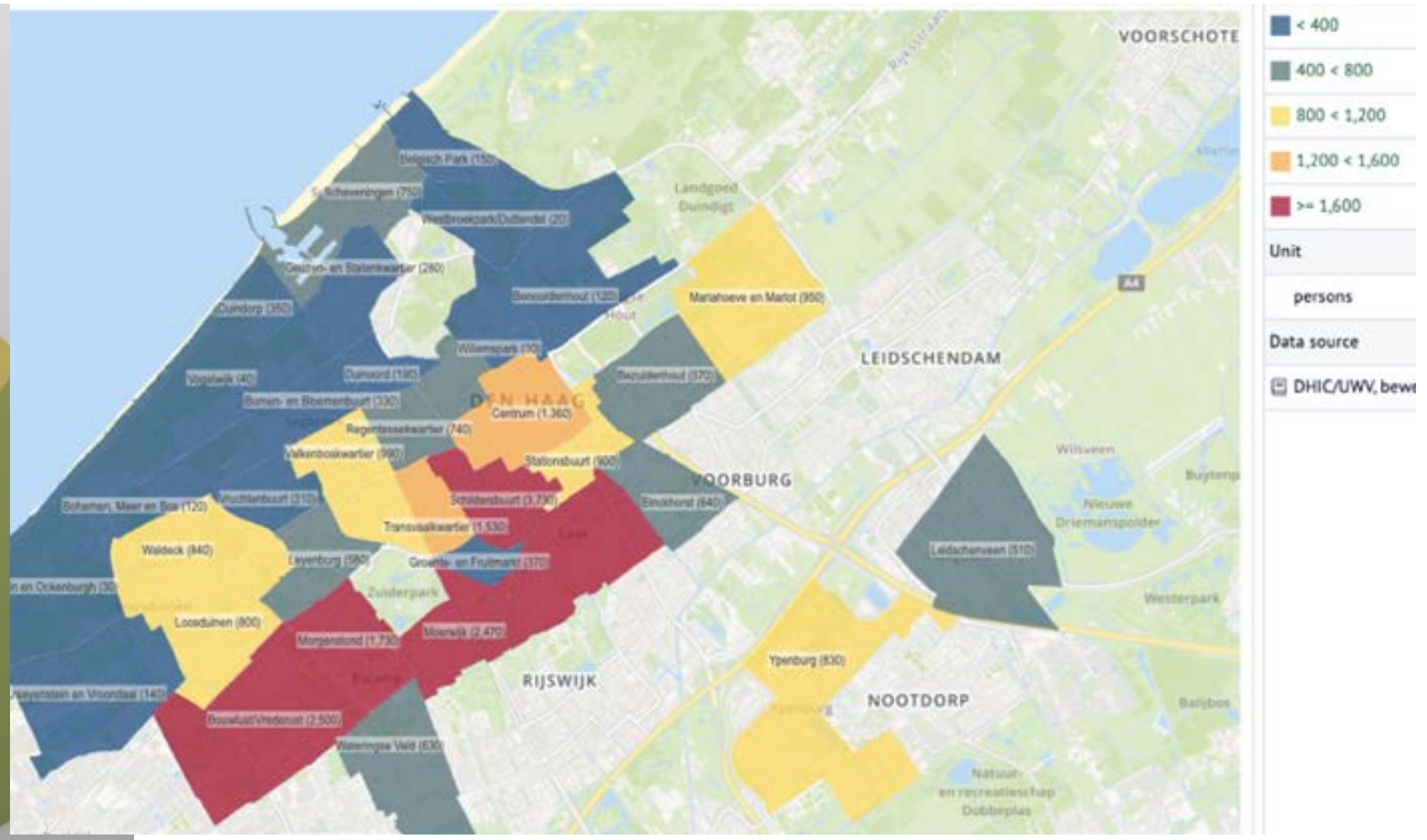
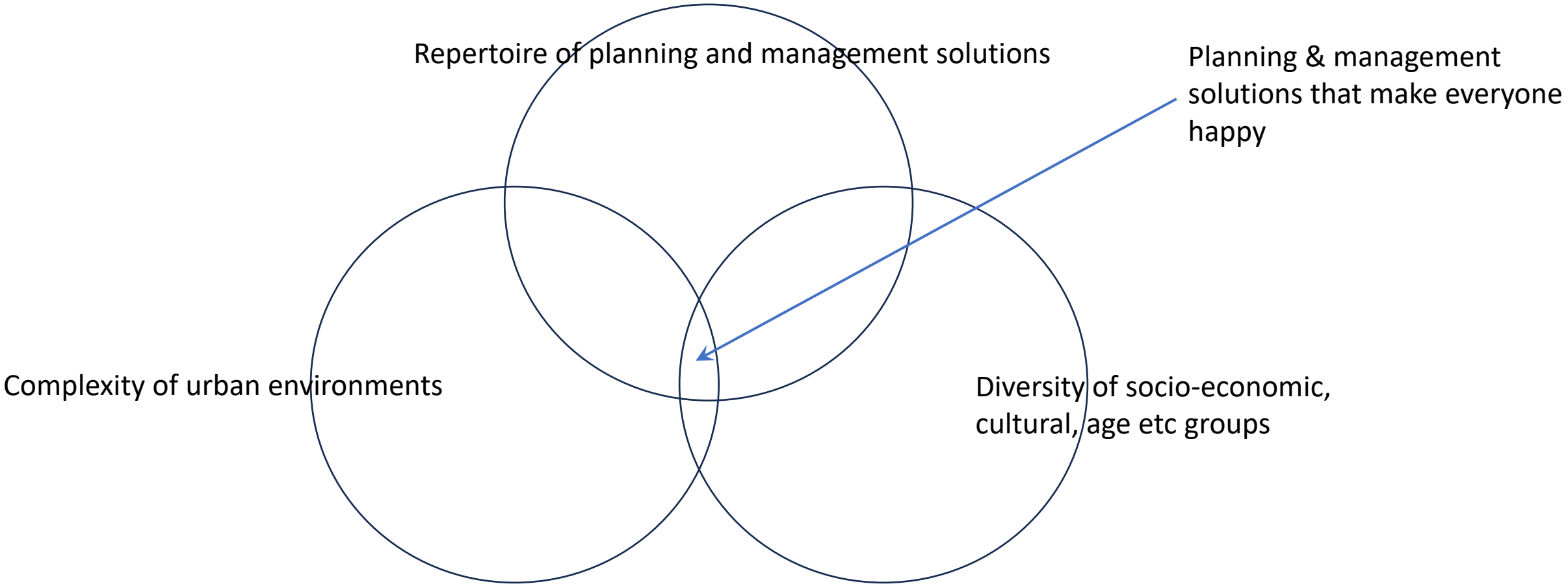
HET LOO
A12
N14
Voorburg
GAMMA bouwmarkt
Leidschenveen, Den...
Cafe Bar Sensatie
Heineken
uitgezonderd

The Hagenees versus the Hagenaar



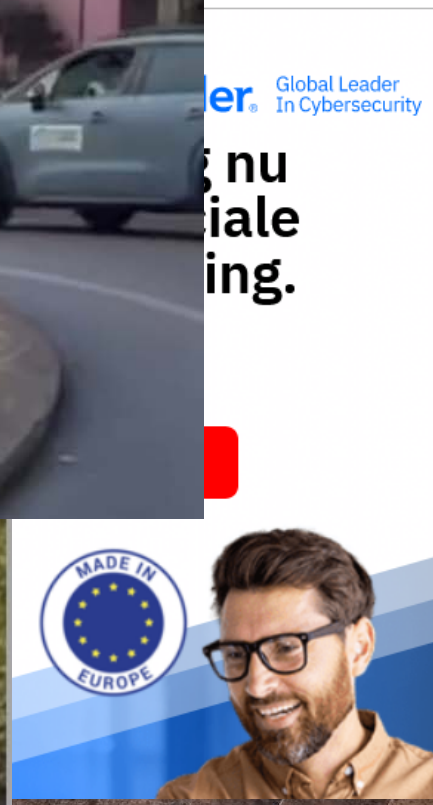


Complexity of urban governance

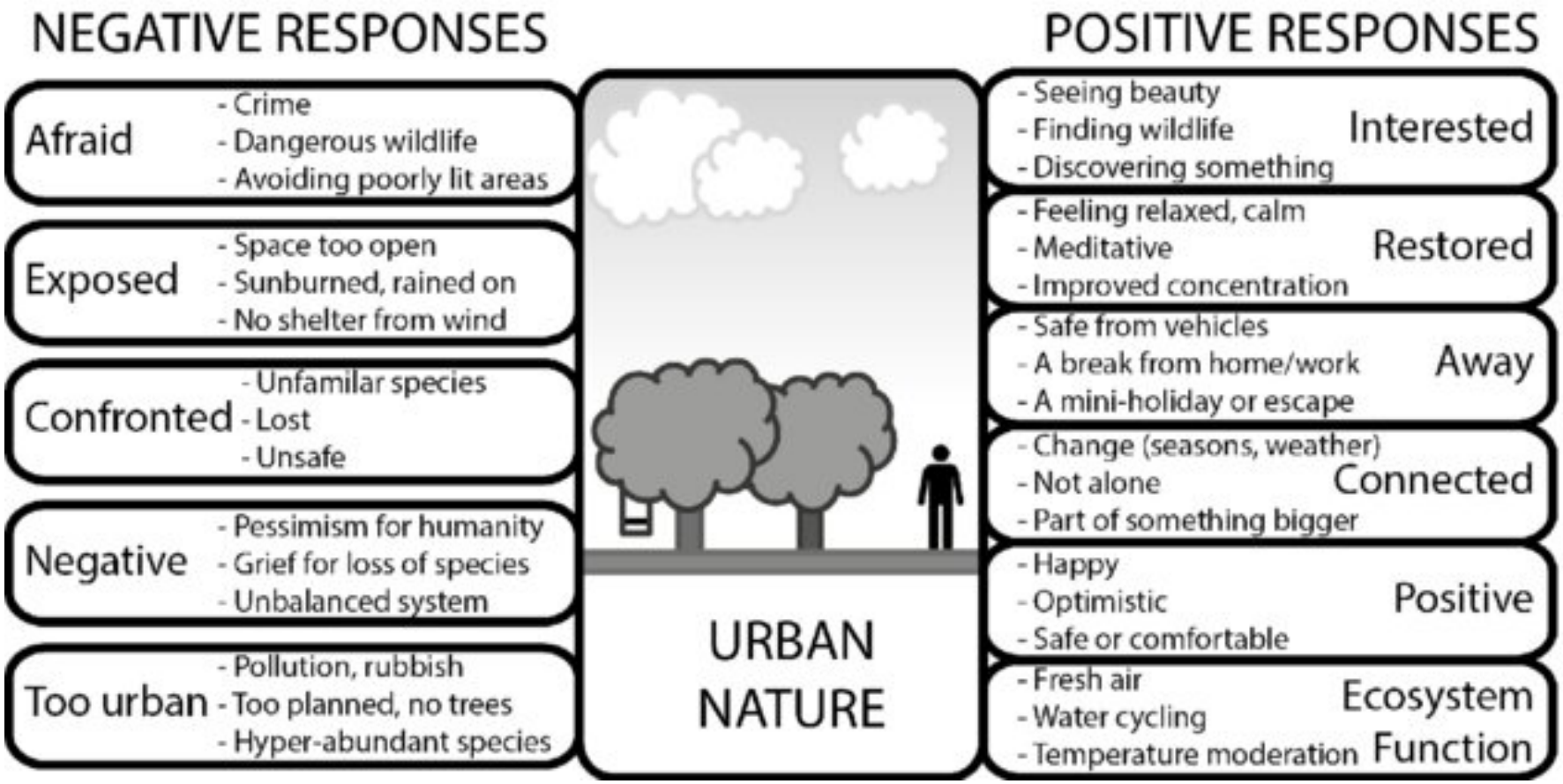


Cinghiali alla riscossa, branco notato in zona Centova a Perugia 🔴 📸 VIDEO E FO

er il parco».



Focus: urban nature (2)



Taylor, Leckey & Hochuli, 2020; DOI: 10.1007/s11252-019-00910-5

Ecosystem disservices …

- … functions and properties of ecosystems delivering discomfort to citizens (Döhren & Haase 2015; Lyytimäki 2014)

EDS have been used to evaluate

- the value of green space for urban residents (Lyytimäki and Sipilä, 2009; Lyytimäki et al., 2008)

- green spaces can provide many ES but also a range of EDS, from allergenic substances and volatile compounds emitted by vegetation (Dobbs et al., 2014), to blocking of sunlight by trees (Roy et al., 2012), and the presence of wild animals in people's backyards (Lyytimäki, 2014).

An integrated assessment of ES and EDS will help towards a more

- holistic understanding of the role of nature regarding human well-being,

- effective and innovative sustainability policies (Lyytimäki, 2014; Schaubroeck, 2017).

Blanco et al. (2019) claimed that ES as well as EDS should be integrated in planning designs:

(1) EDS encompass the diversity of the adverse impact of ecosystems, (2) EDS and regulating ES are driven by distinct processes, (3) EDS allow better integration of a multiplicity of values, (4) EDS are different from ES trade-offs, (5) EDS emphasize that adverse impact is co-produced by humans and ecosystems

Challenge for integrating assessment EDS

- many trade-offs, such as choices between e.g., space and commercial development benefits vs. ES

- conflicting perspectives and preferences of various stakeholder

We assume that there are at least two compelling reasons for EDS to be addressed by the planning process in its broad sense

(1) for urban nature in order to survive, and

(2) for citizens in order to benefit from the services it provides.

Focus on

- The formulation of multistakeholder consensus over EDS/ES in terms of inclusive planning

Examples of disservices: ecosystem attributes and functions

Unacceptable ecosystem - bog

Invasive species - hogweed

Flood

Falling old trees and branches

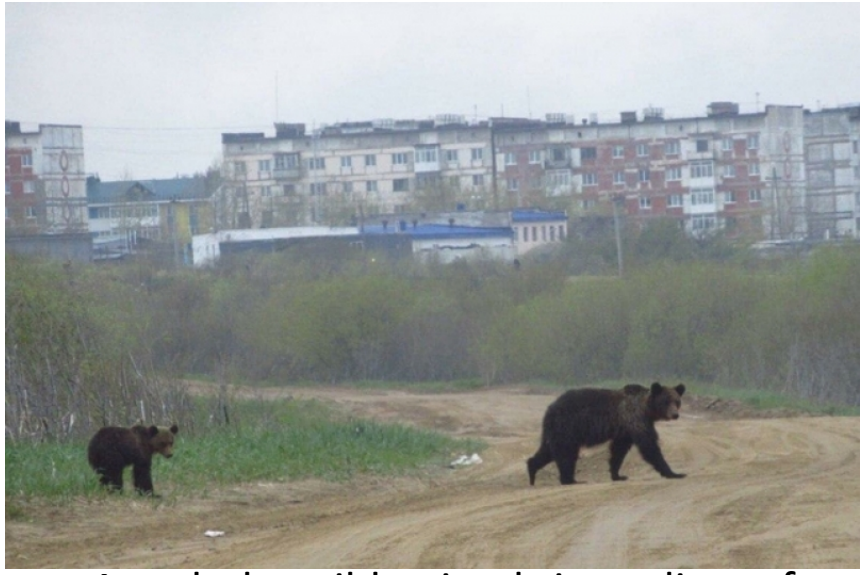
Seeds and pollen
causing stain and dirt

Algae bloom

Examples of disservices: human health and aesthetic issues

Allergies

Tick bites



Attacks by wild animals in reality + fear of such probability

Fear of wild animals

Unmanaged green areas

Unpleasant smell

Examples of disservices: restrictions and inhibition of urban planning and development

Protected species and areas inhibit planning and construction

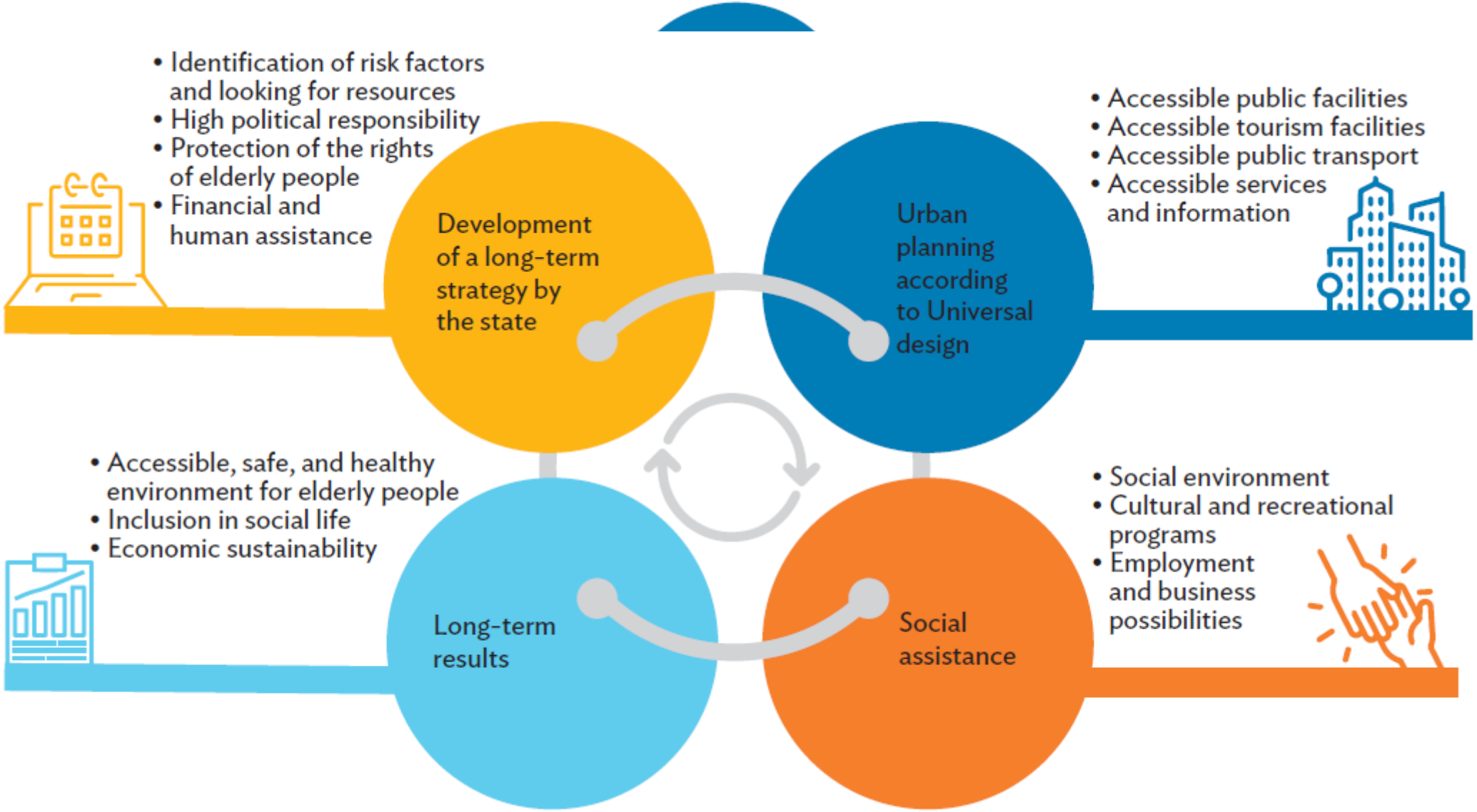
Poor condition of unpaved pads

Protected areas block of transport connectivity

Crimes connected with urban parks

Shade from vegetation

Visual obstacles from vegetation



Source: Asian Development Bank.

Source: United Nations Entity for Gender Equality and the Empowerment of Women (UN Women). 2011. *Building Safe and Inclusive Cities for Woman: A Practical Guide*. New Delhi.

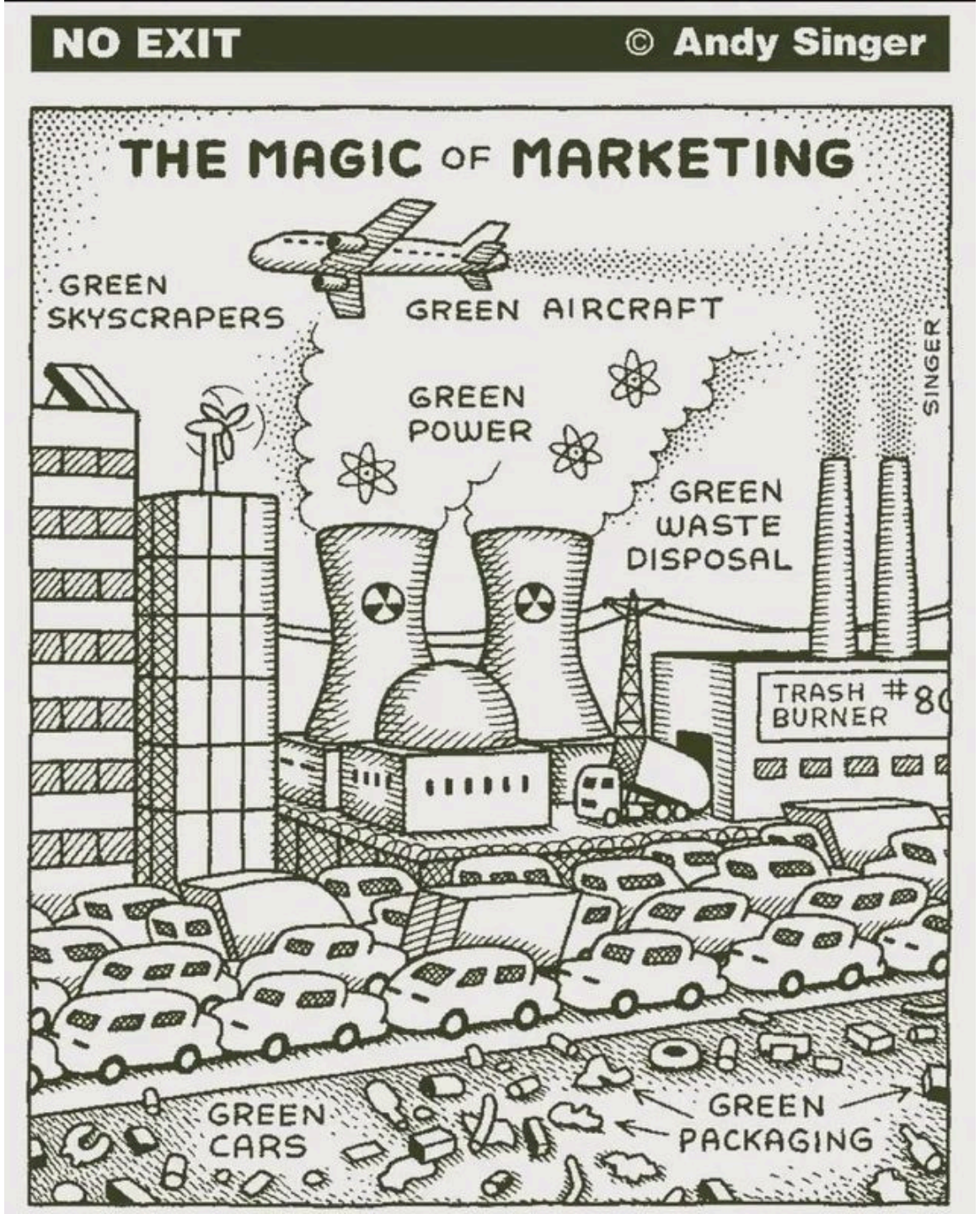
A classification of ecosystem disservices

EDS group	EDS sub-group	EDS examples
I. Ecosystem attributes and functions	Ia. Ecosystem attributes	"Unacceptable" ecosystems (for example wetlands), invasive species
	Ib. Events generated by urban ecosystems	Floods, landslides, erosion, forest, grassland or pit bog fires
	Ic. Functioning of urban ecosystems	Harm from bird excrement on artificial surface, risks of falling old trees and branches, harm from roots from pavements and constructions, leaf litter, seeds and pollen causing stain and dirt, fire-prone vegetation, algae bloom (including filamentous algae), methane emissions by plants
II. Human health	IIa. Risks related to human health	Allergies and diseases, hygiene and health problems associated with animal excrements, toxic species in urban ecosystems, biting animals and attacks by wild animals
	IIb. Nature related fears	Fear of wild animals, fear of darkness, fear of wild nature in general
III. Aesthetic issues	N/A	Loud voices of birds, dogs, and etc., excrement in green areas, species looking ugly, unmanaged bushes, trees and green areas, presence of weeds, pests or nuisance species such as gulls, mosquitoes, mugwort or nettle, unpleasant smell
IV. Restrictions and inhibition of urban planning and development	IVa. Restrictions caused by nature protection	Protected species and areas inhibit planning and construction
	IVb. Inhibition of activities	Crimes connected with urban parks, poor condition of unpaved pads, shade and visual obstacles from vegetation, block of transport connectivity

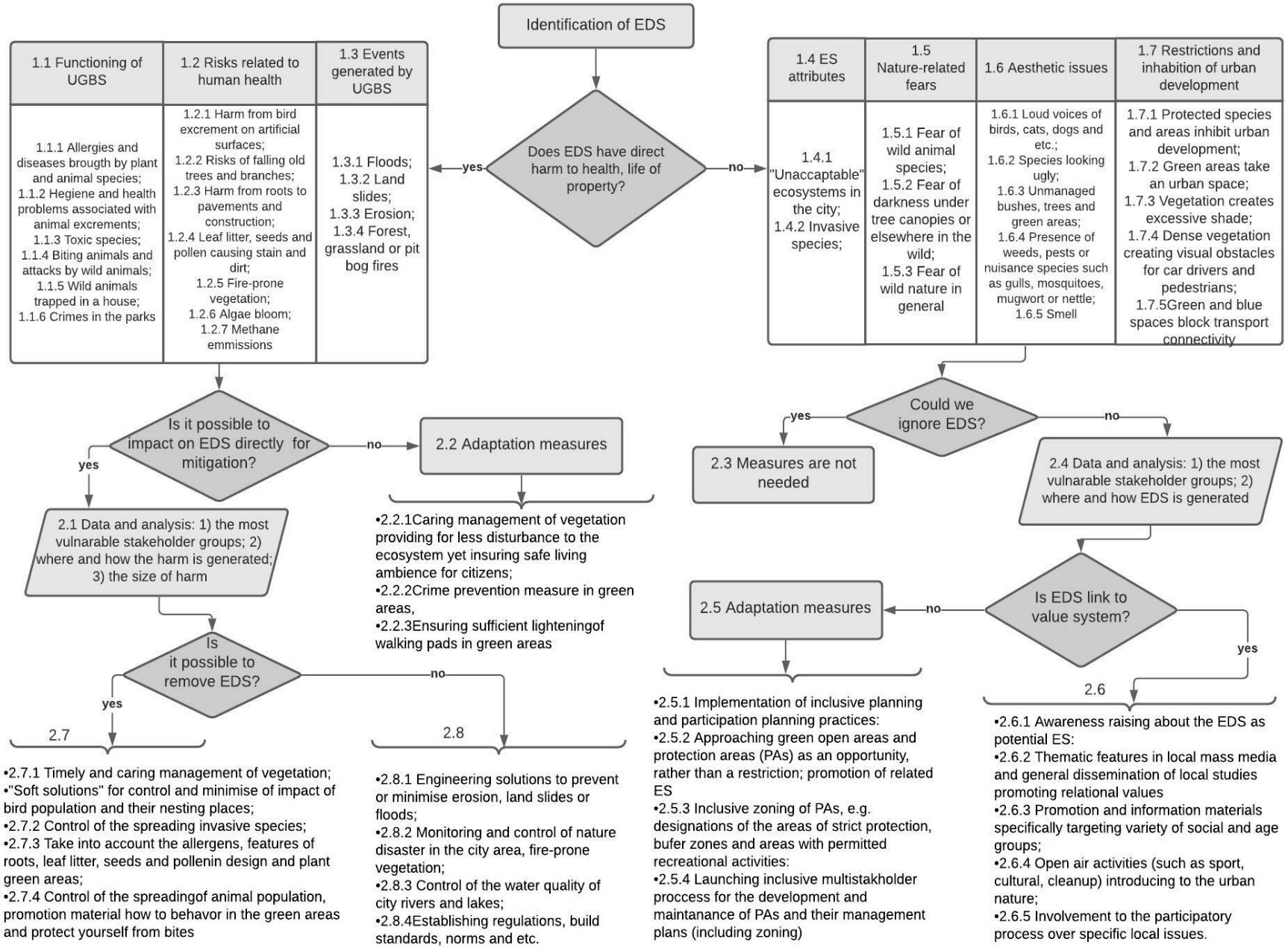
EDS – how to?

- Management action (e.g. adding or maintaining infrastructure)
- Communication strategy
- Awareness rising

- **Avoid greenwashing!!!**

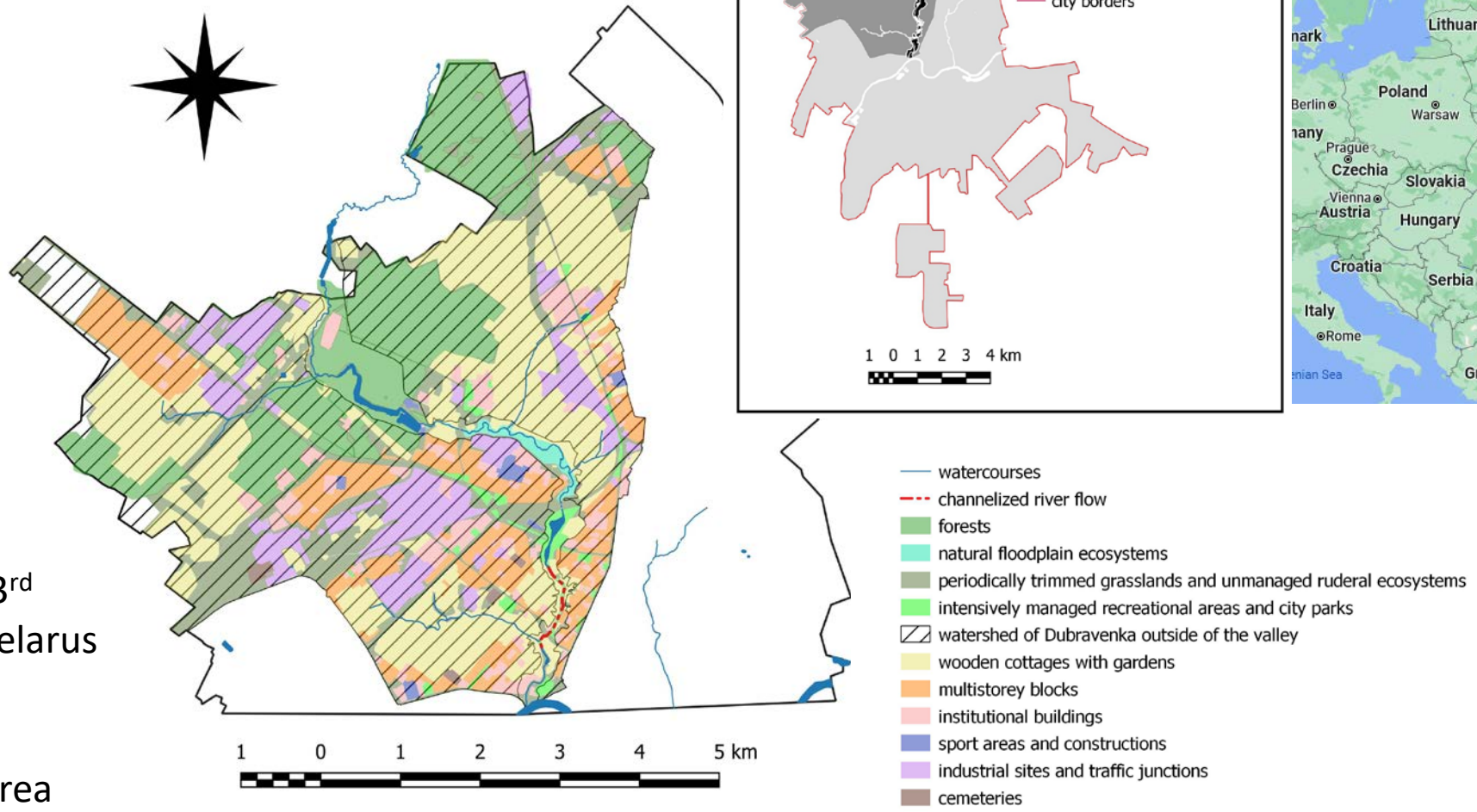


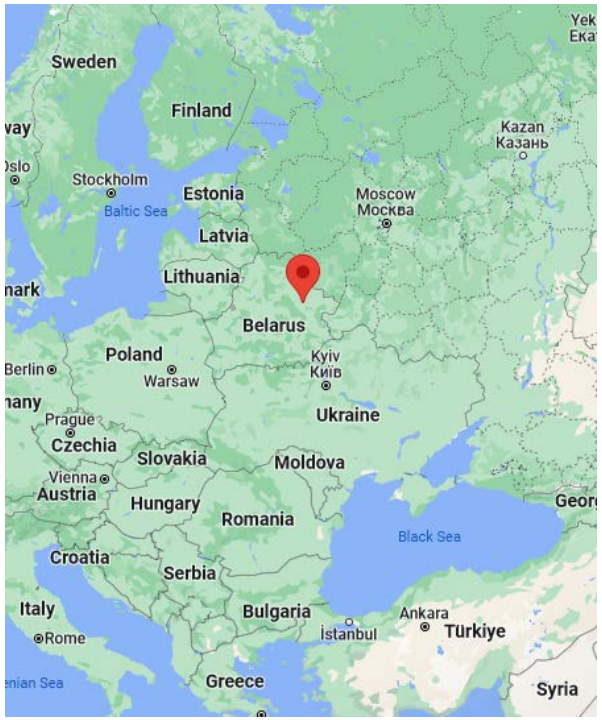
The decision-making tree for the identification and management of EDS in cities



Tentative case-study analysis

- 32 interviews
- 6 stakeholder workshops between 2010 and 2021





Mahilioŭ is the 3rd largest city on Belarus population over 380,000 administrative area round 120 km^2

The river of Dubrabenka and its valley stretch for over 10 km across most of Mahilioŭ with the valley reaching 600 m wide.

Situation 1: what opportunities for mindset transformation are worth considering, but were not so far

EDS

irect
e of

no

1.4 ES attributes	1.5 Nature-related fears	1.6 Aesthetic issues	1.7 Restrictions and inhabition of urban development
1.4.1 "Unacceptable" ecosystems in the city; 1.4.2 Invasive species;	1.5.1 Fear of wild animal species; 1.5.2 Fear of darkness under tree canopies or elsewhere in the wild; 1.5.3 Fear of wild nature in general	1.6.1 Loud voices of birds, cats, dogs and etc.; 1.6.2 Species looking ugly; 1.6.3 Unmanaged bushes, trees and green areas; 1.6.4 Presence of weeds, pests or nuisance species such as gulls, mosquitoes, mugwort or nettle; 1.6.5 Smell	1.7.1 Protected species and areas inhibit urban development; 1.7.2 Green areas take an urban space; 1.7.3 Vegetation creates excessive shade; 1.7.4 Dense vegetation creating visual obstacles for car drivers and pedestrians; 1.7.5Green and blue spaces block transport connectivity

Could we ignore EDS?

yes

2.3 Measures are not needed

no

2.4 Data and analysis: 1) the most vulnarable stakeholder groups; 2) where and how EDS is generated

Is EDS link to value system?

no

2.5 Adaptation measures

- 2.5.1 Implementation of inclusive planning and participation planning practices:
- 2.5.2 Approaching green open areas and protection areas (PAs) as an opportunity, rather than a restriction; promotion of related ES
- 2.5.3 Inclusive zoning of PAs, e.g. designations of the areas of strict protection, bufer zones and areas with permitted recreational activities:
- 2.5.4 Launching inclusive multistakholder proccess for the development and maintanance of PAs and their management plans (including zoning)

yes

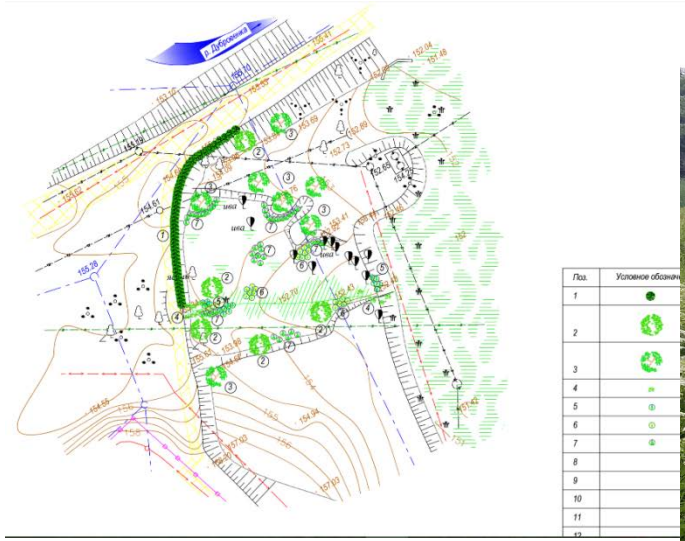
2.6

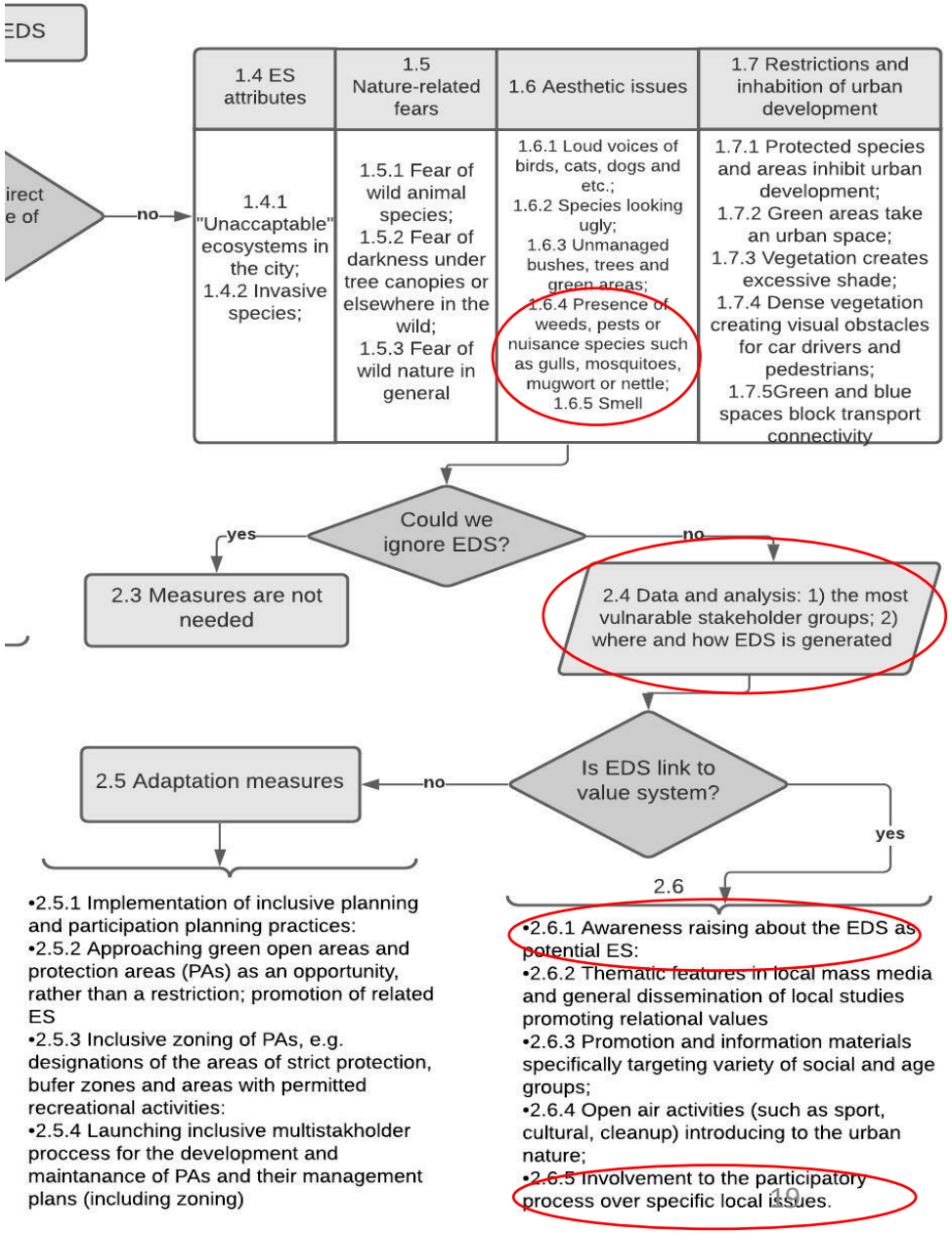
- 2.6.1 Awareness raising about the EDS as potential ES:
- 2.6.2 Thematic features in local mass media and general dissemination of local studies promoting relational values
- 2.6.3 Promotion and information materials specifically targeting variety of social and age groups;
- 2.6.4 Open air activities (such as sport, cultural, cleanup) introducing to the urban nature;
- 2.6.5 Involvement to the participatory process over specific local issues.

An option for a solution

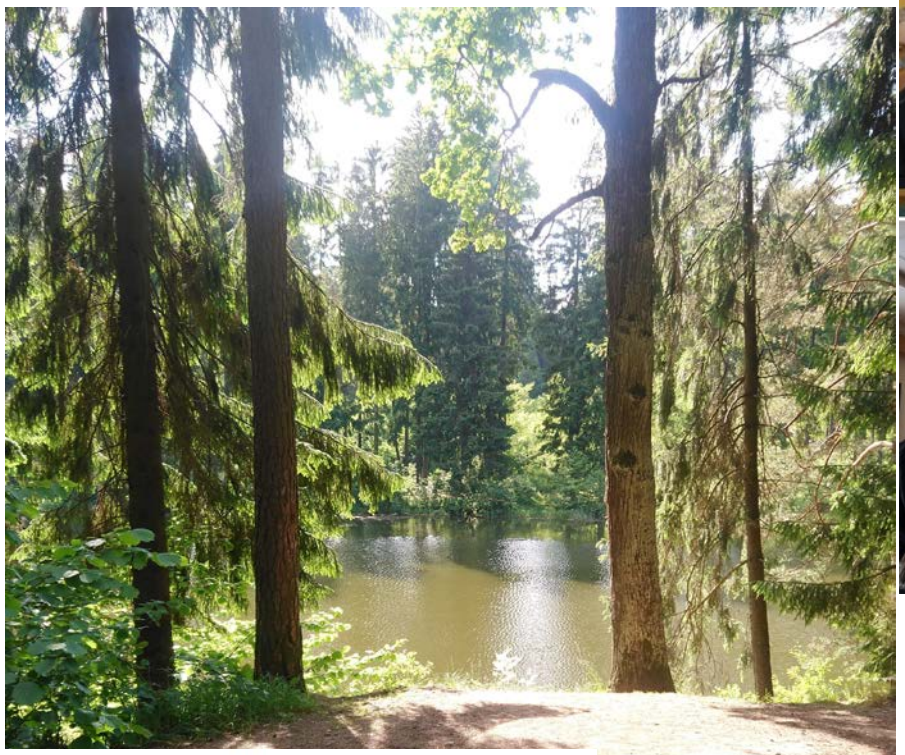
Мишээл байгаль орчин / Michel Nature Park, Ulaanbaatar, MN

Situation 2: how citizens actively resist when communication was not convincing





Situation 3: what adaptation of mindsets took place, and what hopes it gives



Сохраним Печерский лесопарк

Зелёное сердце Могилева сохранят. Печёрский лесопарк станет заказником местного значения

И этого добились местные жители.

01.12.2020 | Экалогія горада | Аўтар: Марина Мишкина | Фота: Михаил Копычко

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Ecosystem disservices in literature

Ecosystem Disservices (EDS)		Region		Approches/methods	References
Sub group	*Types*	*Ecosystem type*	*Town/City/Country*		
Ecosystem and its element	*Invasive species*	Urban Green Space (UGS)	Cape town, South Africa	Remote Sensing and GIS	(Potgieter et al., 2019a)
		Urban Wetland	Taiwan	Quantitative analysis	(Yam et al., 2015)
		Urban Freshwater Lake	Srinagar, india	Qualitative analysis (Questionnaire/interview)	(Sheergojri et al., 2022)
		UGS	Baden-Württemberg, Germany	Public participation GIS mapping	(Baumeister et al., 2022)
		UGS	Cape Town, South Africa	Qualitative analysis	(Potgieter et al., 2019b; Vaz et al., 2017)
Functioning of UGBS	*Risks of falling old trees and branches*	UGS	Sao Paulo, Brazil	Statistical analysis	(Manfra et al., 2022)
		UGS	PA, USA	Qualitative analysis	(Roman et al., 2021)
		UGS	New South Wales, Australia	Qualitative and Statistical analysis	(Tovar Tique et al., 2021)
		UGS (Park)	Bucharest, Romania	(Qualitative) Questionnaire + GIS	(Stoia et al., 2022)
		UGS	Bologna, Italy	Statistical analysis	(Caggiu et al., 2023)
		UGS	Viterbo, Central Italy	Statistical analysis	(Masini et al., 2023)
		UGS	Bolzano, Italy	Qualitative online survey + participatory approach	(Speak et al., 2022)
		UGS	Yokohama, Japan	Questionnaire + Statistical analysis	(Koyata et al., 2021)
	Cracking pavements and foundations due to wandering tree roots	UGS	Sao Paulo, Brazil	Statistical analysis	(Manfra et al., 2022)
		UGS	Johannesburg	Remote Sensing and GIS	(Jombo et al., 2020)
		UGS	Rio de Janeiro, Brazil	Qualitative and Statistical analysis	(Piston et al., 2022)
		UGS	Viterbo, Central Italy	Statistical analysis	(Masini et al., 2023)
	Nuisances from litter	UGS	Malmo, Sweden	Qualitative analysis	(Roman et al., 2021)
		UGS	New South Wales, Australia	Qualitative and Statistical analysis	(Tovar Tique et al., 2021)
		UGS	Yokohama, japan	Questionnaire + Statistical analysis	(Koyata et al., 2021)
	Staining of car caused by falling fruits	UGS (Park)	Bucharest, Romania	Questionnaire + GIS	(Stoia et al., 2022)
	Infrastructure damage	UGS	Beijing, China	Statistical analysis	(Wu et al., 2021)
Risks related to human health		UGS	Bolzano, Italy	Qualitative online survey + participatory approach	(Speak et al., 2022)
		UGS	Florence, Italy	Questionnaire + Remote Sensing and GIS	(Speak & Salbitano, 2021)
		UGS	Illinois, USA	Qualitative analysis	(Belaire et al., 2015)
	Bio-emissions by plants breathed by humans/air pollutiom	UGS (Lawns)	Europe (Germany, Sweden and Russia), New Zealand (Christchurch), USA (Syracuse, NY) and Australia (Perth)	Qualitative analysis	(Ignatieva et al., 2020)
		UGS	Maastricht (The Netherlands)	Participatory Qualitative approach	(Oosterbroek et al., 2024)
		Urban Constructed Wetlands	Beijing, China	Statistical analysis	(Shah et al., 2023)
	Deterioration in water quality	Blue-Green Space (BGS)	UK	Qualitative analysis (Questionaire)	(Wood et al., 2022)
	Harmful algal bloom	UGS	Cornwall, UK	Qualitative approach (interviews/questionnaire)	(Willis et al., 2018)
	Allergies and diseases	BGS	Rzeszow, Poland	Qualitative analysis	(Cwik et al., 2021)
		UGS	New South Wales, Australia	Qualitative and Statistical Analysis	(Tovar Tique et al., 2021)
		UGS	Baden-Württemberg, Germany	Public participation GIS mapping	(Baumeister et al., 2022)
		UGS	Naples, Italy	Remote Sensing and GIS	(Prigioniero et al., 2022)
		UGS	Johannesburg Cape Town	Sampling method	(Gharbi et al., 2023)
		UGS	Barranquilla Metropolitan Area, Colombia	Remote sensing and GIS	(Juanita et al., 2019)
		UGS	Berlin, Germany	Remote Sensing and GIS	(von Döhren & Haase, 2022)
		UGS (Park)	France	Qualitative + Statistical analysis	(Campagne et al., 2018)
		UGS	Hong Kong	Qualitative (Questionnaire) + Statistical analysis	(Hui & Jim, 2022)
	Dangerous diseases caused by ticks	UGS	Finland	Remote sensing and GIS	(Ala-Hulkko et al., 2019)
		UGS	Maastricht (The Netherlands)	Spatial modelling	(Oosterbroek et al., 2023)
Nature related fears	*Bitten by snakes*	UGS	Singapore	Qualitative analysis (Questionnaire)	(Hwang & Roscoe, 2017)
	Fear of human-wildlife conflict	UGS	Namibia	Qualitative analysis	(Luetkemeier et al., 2023)
		UGS	Barranquilla Metropolitan Area, Colombia	Remote sensing and GIS	(Juanita et al., 2019)
		UGS	Tokyo, Japan	Qualitative analysis (Questionnaire/interview)	(Hosaka et al., 2017)
		UGS	Bengaluru, India	Questionnaire + Statistical analysis	(Thapa et al., 2023)
		UGS (Park)	France	Qualitative + Statistical analysis	(Campagne et al., 2018)
		UGS	Nagoya, Tokyo	Remote Sensing and GIS	(Azmy et al., 2016)
		UGS	Sweden	Questionnaire + modelling	(Eriksson et al., 2020)
	Fear of darkness	UGS	Barranquilla Metropolitan Area, Colombia	Remote sensing and GIS	(Juanita et al., 2019)
Wild nature objects perceived as ugly and/or unpleasant due to our aesthetic, cultural, religious or ohter values and beliefs	*Presence of insects/pests*	UGS (Park)	Bucharest, Romania	Questionnaire + GIS	(Stoia et al., 2022)
		UGS	Can Tho, Vietnam	Statistical analysis	(Toledo-Gallegos et al., 2022)
		UGS	Yokohama, japan	Questionnaire + Statistical analysis	(Koyata et al., 2021)
	Presence of mosquitoes	Urban Wetlands	Sydney, Australia	Remote Sensing and GIS	(Hanford et al., 2019)
		Urban Constructed Wetlands	Beijing, China	Statistical analysis	(Shah et al., 2023)
		UGS	Singapore	Qualitative survey + Statistical analysis	(Drillet et al., 2020)
	Loud noise	UGS	Barranquilla Metropolitan Area, Colombia	Remote sensing and GIS	(Juanita et al., 2019)
		UGS	Bursa City, Turkey	Statistical analysis	(Yildirim et al., 2022)
		UGS	Illinois, USA	Qualitative analysis	(Belaire et al., 2015)
	Unattractive view/unpleasant/dirty	UGS	Maastricht (The Netherlands)	Spatial modelling	(Oosterbroek et al., 2023)
		UGS (Lawns)	Europe New Zealand (Christchurch), USA (Syracuse, NY) and Australia (Perth)	Qualitative analysis	(Ignatieva et al., 2020)
		UGS	Rio de Janeiro, Brazil	Qualitative and Statistical analysis	(Piston et al., 2022)

Concluding remarks

The concept of EDS is fully operational as a planning instrument

Our decision making tree can be used as a tool supporting the inclusive planning process or, just ensuring the level of acceptance that would let the project move forward

EDS indeed need to be considered in their specific socio-cultural context, and accounting for their biophysical nature and time scales

The promotion of urban nature is, in most cases, is a problematic affair, and to achieve stakeholder acceptance it requires timely deliberation based on the understanding of their perspectives, and at a pace that is acceptable to them

The most challenging step is understanding why and by whom exactly (including the route causes) urban nature is perceived as EDS

We have recognized the issues : (1) the emergence of unexpected stakeholders that obscure inclusiveness and transparency principle of communicative planning; (2) the hidden connections that deliberately exclude the planning and design team; and (3) value conflicts that distorted the effectiveness of communicative actions

Group Work

Cinghiali di Perugia: what realistic and proportional measures you could come up with? If you find it useful, please deploy the decision-making tree. Please make sure that the measures are realistic and proportional, and that multiple governance levels are accounted for

Other wildlife conflicts in cities: beavers, bats, monkeys etc. Please come up with a specific case and realistic solutions. Deploy the classification tree and the EDS classification where neccessery

Large trees on city streets: “tree rights” vs. comfortable urban living. Pick up a specific location and develop realistic solutions

A case study of your liking: any EDS case is good as long as it is relevant and well supported by evidence

Timeline:

- Case study proposals and groups – 20 min
- Work on solutions; independent work and consultations – 40 min
- Pitches – 20 min

BetterLife Spring School, April 9-10, 2024

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