

## Supplementary Materials S2

Table S16. Expert-based ES matrix approach, ES supply, urban region of Rostock, n=15. Weighted mean values.

	Food (from cultivated terrestrial plants)	Raw materials (from cultivated terrestrial plants)	Drinking water	Maintaining nursery populations and habitats	Pollination	Flood and coastal protection	Local climate regulation	Recreation	Aesthetic
Water bodies	1.07	1.74	4.69	4.00	1.37	3.67	3.91	3.74	4.03
Agricultural areas	4.41	3.94	2.10	2.42	2.90	1.68	2.55	1.74	2.76
Forests	1.11	3.40	2.75	4.25	3.48	2.99	4.53	4.17	4.21
Open vegetation	0.90	1.21	2.30	3.82	3.70	2.45	3.18	2.81	3.48
Wetlands	0.44	0.83	3.12	4.04	3.30	3.82	4.05	2.33	3.66
Urban green areas	0.33	0.46	1.51	3.21	3.13	1.59	3.66	3.73	3.29
Residential area	0.25	0.15	0.54	1.16	0.74	1.02	0.83	0.66	0.98
Infrastructure	0.00	0.00	0.17	0.58	0.34	0.64	0.29	0.82	0.52
Industrial and commercial areas	0.30	0.31	0.49	1.24	0.92	0.65	0.77	0.36	0.33

Table S17. Expert-based ES matrix approach, ES supply, urban region of Munich, n=12. Weighted mean values.

	Food (from cultivated terrestrial plants)	Raw materials (from cultivated terrestrial plants)	Drinking water	Maintaining nursery populations and habitats	Pollination	Flood and coastal protection	Local climate regulation	Recreation	Aesthetic
Water bodies	0.00	0.36	1.32	3.10	0.00	2.96	2.95	3.30	3.02
Agricultural areas	3.96	3.37	1.28	2.10	1.93	1.73	2.59	2.45	1.17
Forests	0.66	3.33	2.61	3.18	2.67	2.47	3.67	3.75	3.34
Open vegetation	0.51	1.02	1.93	3.62	3.40	2.06	2.76	3.74	3.33
Wetlands	0.83	1.01	1.82	3.36	2.58	3.34	3.30	2.91	3.10
Urban green areas	0.25	0.56	0.78	2.83	3.01	1.80	3.41	4.42	3.67
Residential area	0.15	0.00	0.06	1.07	0.44	0.22	0.38	0.20	0.46
Infrastructure	0.00	0.16	0.00	0.86	0.46	0.02	0.26	0.40	0.22
Industrial and commercial areas	0.16	0.33	0.06	0.59	0.38	0.48	0.71	0.09	0.07

Table S18. Similarity values of the map comparison between the maps from expert estimates (expert-based ES matrix approach) and the indicator *green and blue area (%)* (LULC data) in the urban region of Munich. 0 indicates no similarity. and 1 very high similarity between the compared maps.

LULC	Mean	Std. dev.
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Residential area	0.92	0.08
Industrial and commercial areas	0.88	0.07
Urban green areas	0.52	0.20
Water bodies	0.52	0.13
Agricultural areas	0.58	0.13
Forests	0.49	0.22
Open vegetation	0.57	0.14
Wetlands	0.46	0.14
Infrastructure	0.92	0.12

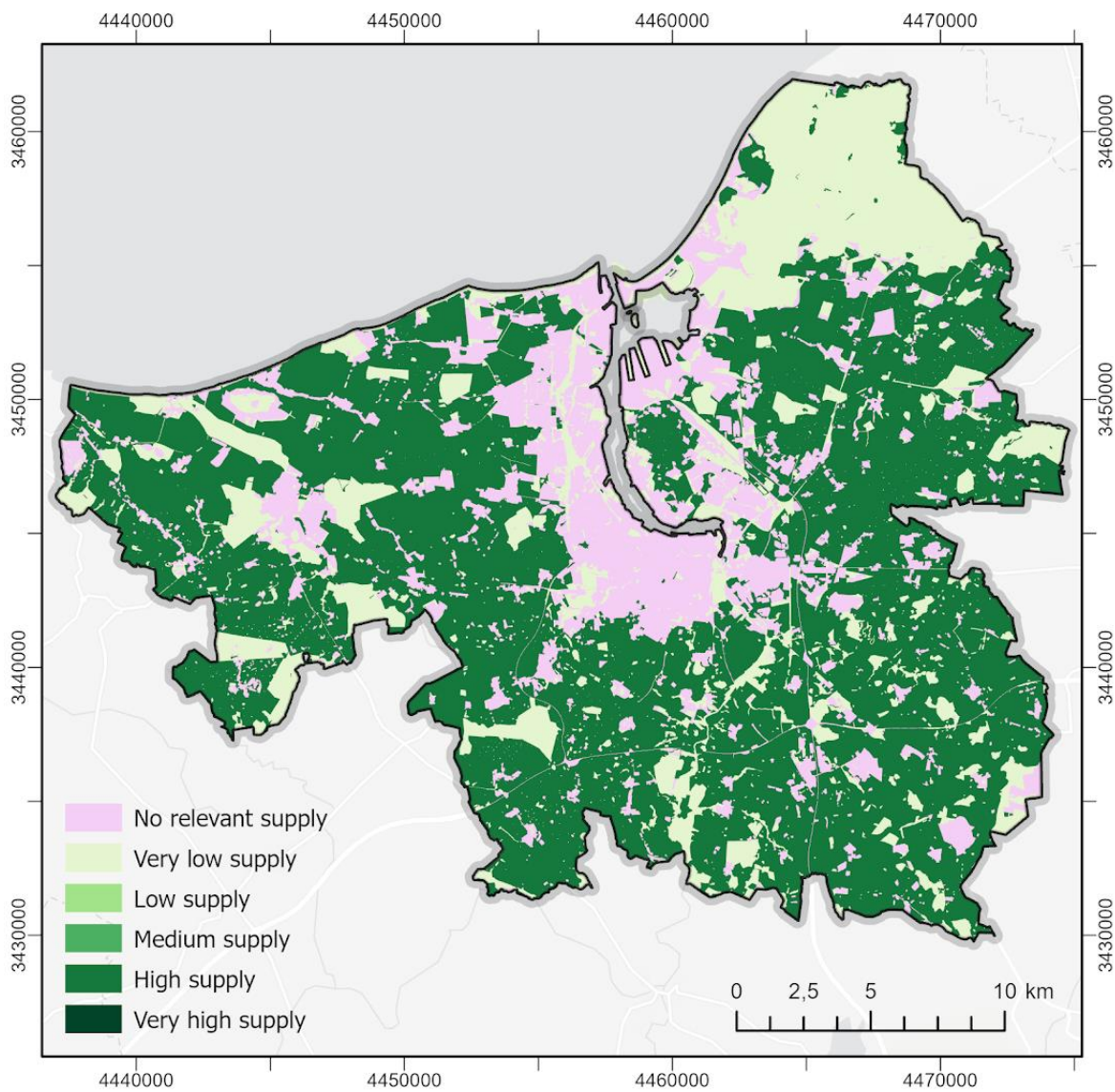
Table S19. Similarity values of the map comparison between the maps from expert estimates (expert-based ES matrix approach) and the indicator *f-ETP-Index* (literature data) in the urban region of Munich. 0 indicates no similarity. and 1 very high similarity between the compared maps.

LULC	Mean	Std. dev.
Residential area	0.89	0.09
Industrial and commercial areas	0.82	0.09
Urban green areas	0.68	0.17
Water bodies	0.65	0.13
Agricultural areas	0.96	0.10
Forests	0.91	0.10
Open vegetation	0.86	0.17
Wetlands	0.86	0.09
Infrastructure	0.90	0.12

Table S20. Similarity values of the map comparison between the maps from expert estimates (expert-based ES matrix approach) and the indicator *heat mitigation index* (InVEST model *Urban cooling*) in the urban region of Munich. 0 indicates no similarity. and 1 very high similarity between the compared maps.

LULC	Mean	Std. dev.
Residential area	0.84	0.22
Industrial and commercial areas	0.86	0.26
Urban green areas	0.76	0.15
Water bodies	0.66	0.10
Agricultural areas	0.58	0.10
Forests	0.75	0.06
Open vegetation	0.64	0.11
Wetlands	0.66	0.02
Infrastructure	0.70	0.30

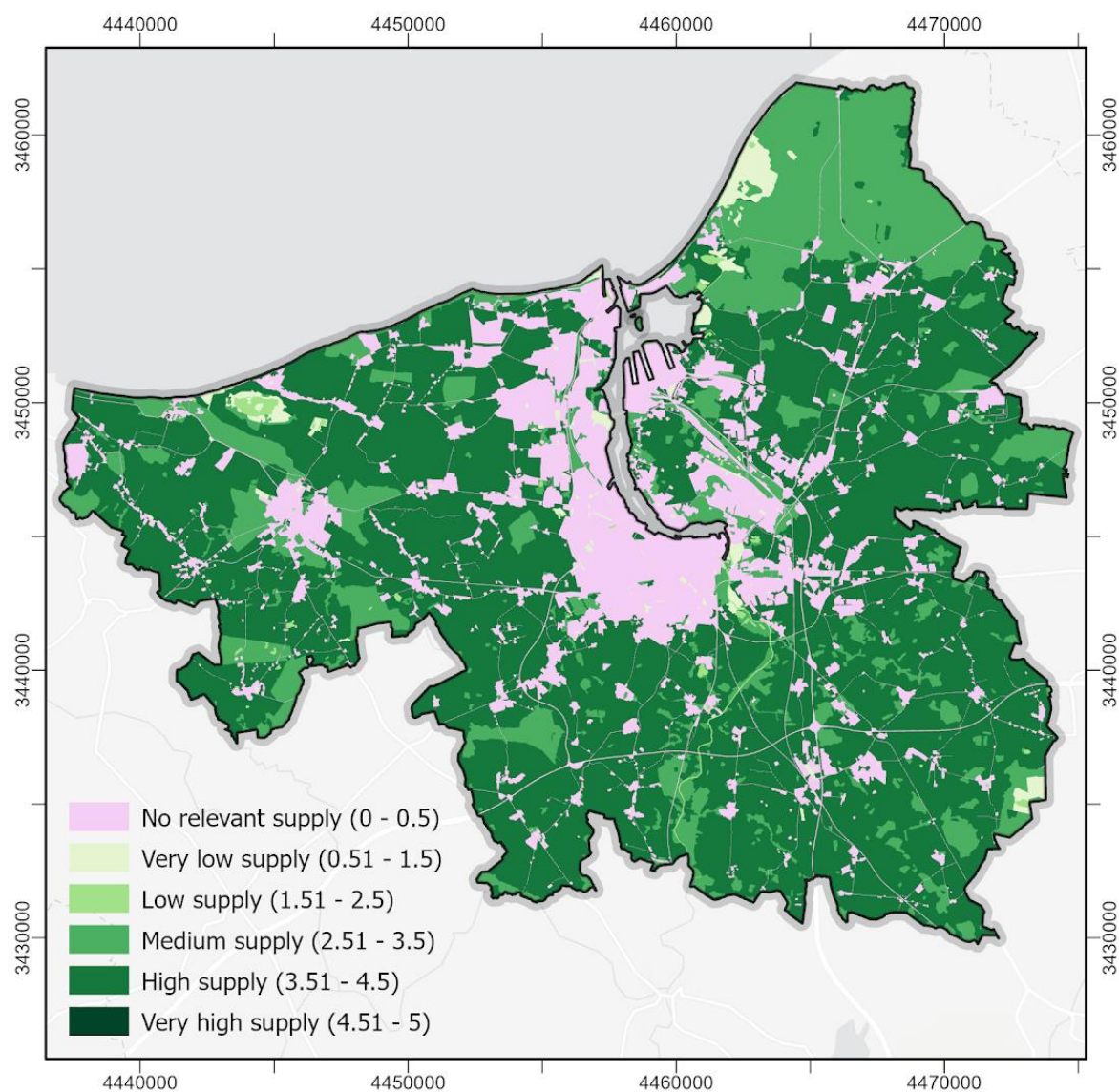
Figure S2. Expert estimates of ES supply of food (from cultivated terrestrial plants). Urban region of Rostock.



Data: Expert-based ES supply assessment, n=15; ATKIS © GeoBasis-DE/M-V 2017; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

Figure S3. Expert estimates of ES supply of raw materials (from cultivated terrestrial plants). Urban region of Rostock.

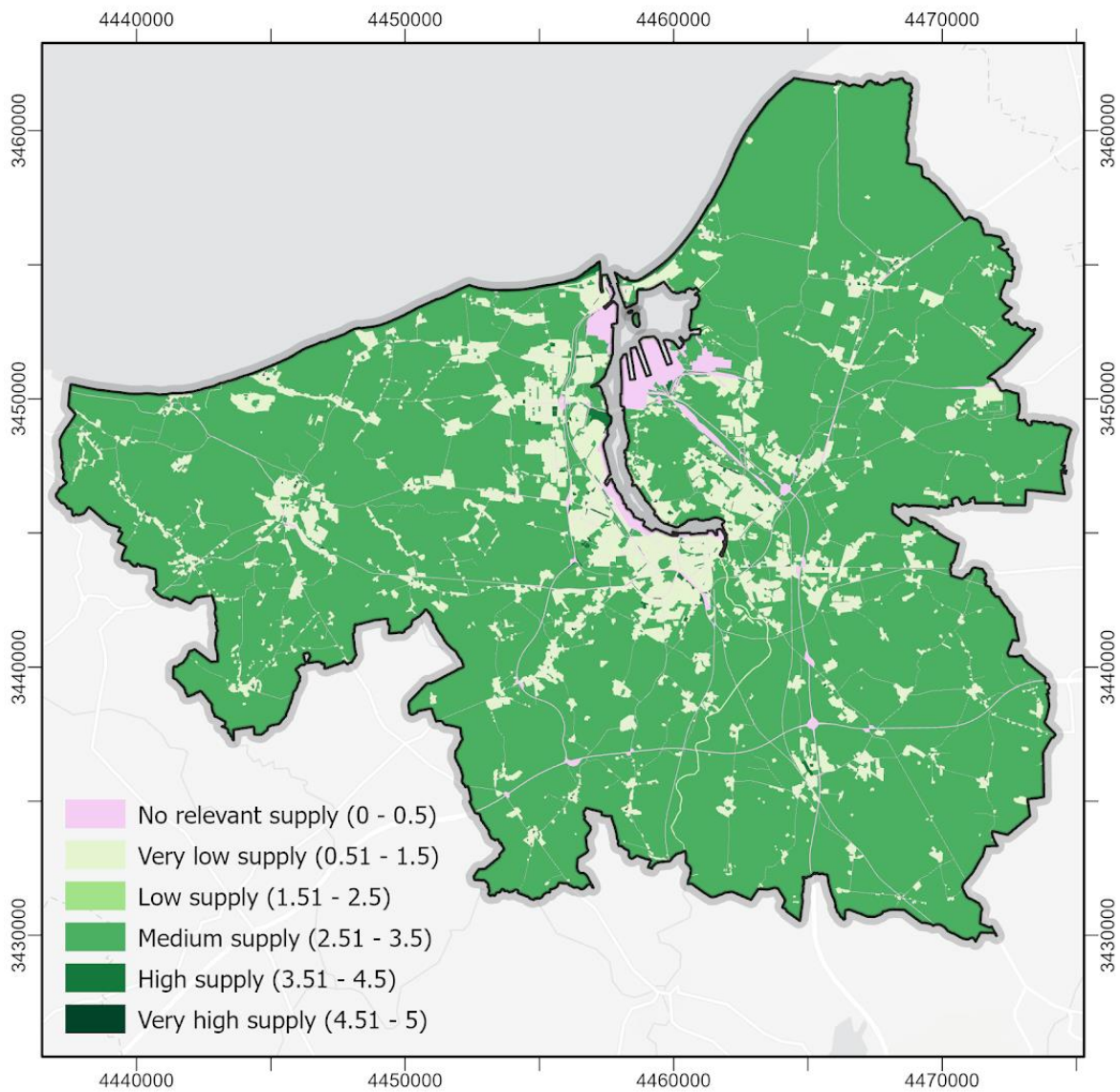


Data: Expert-based ES supply assessment, n=15; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.



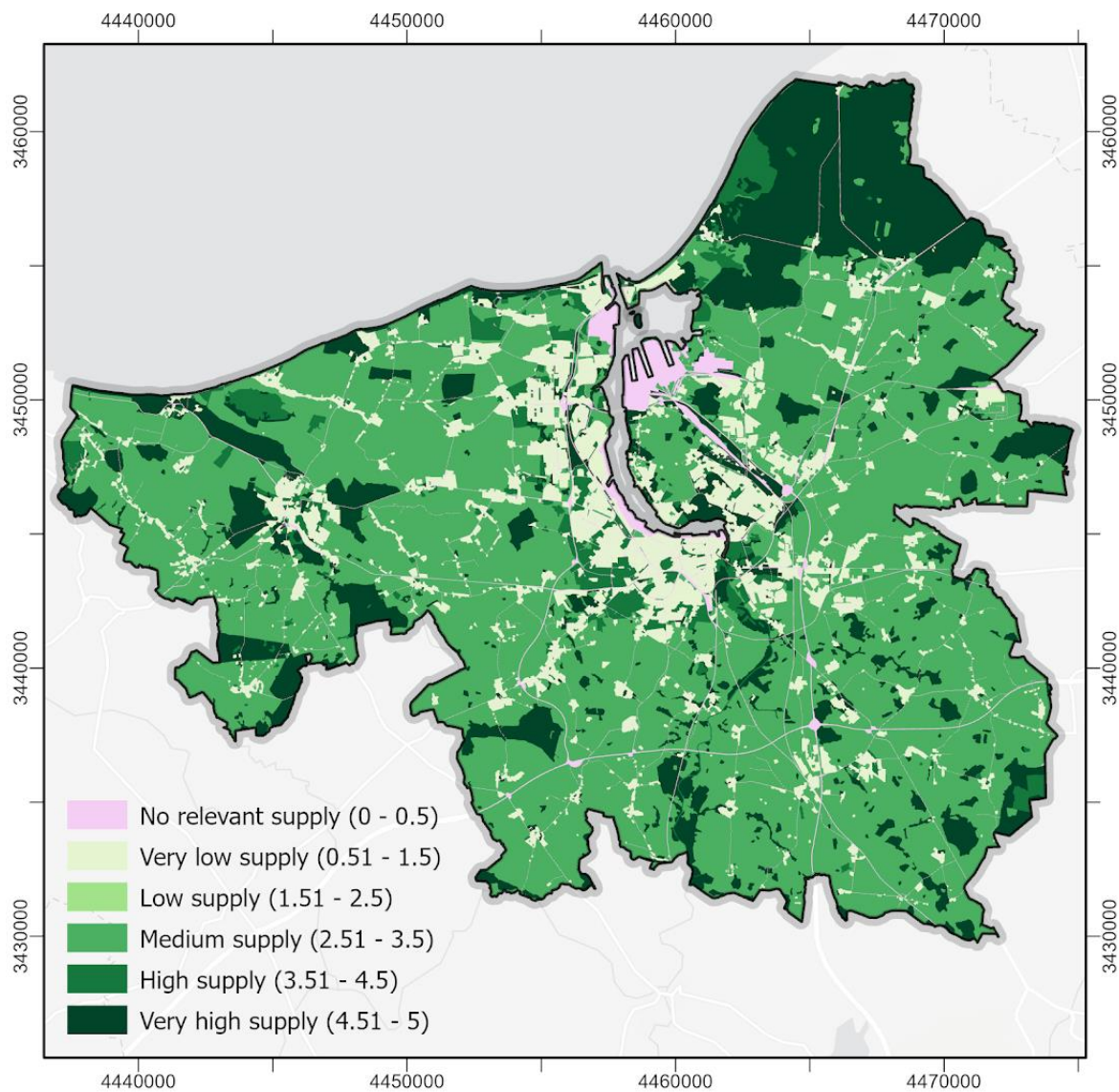
Figure S4. Expert estimates of ES supply of pollination. Urban region of Rostock.



Data: Expert-based ES supply assessment, n=15; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

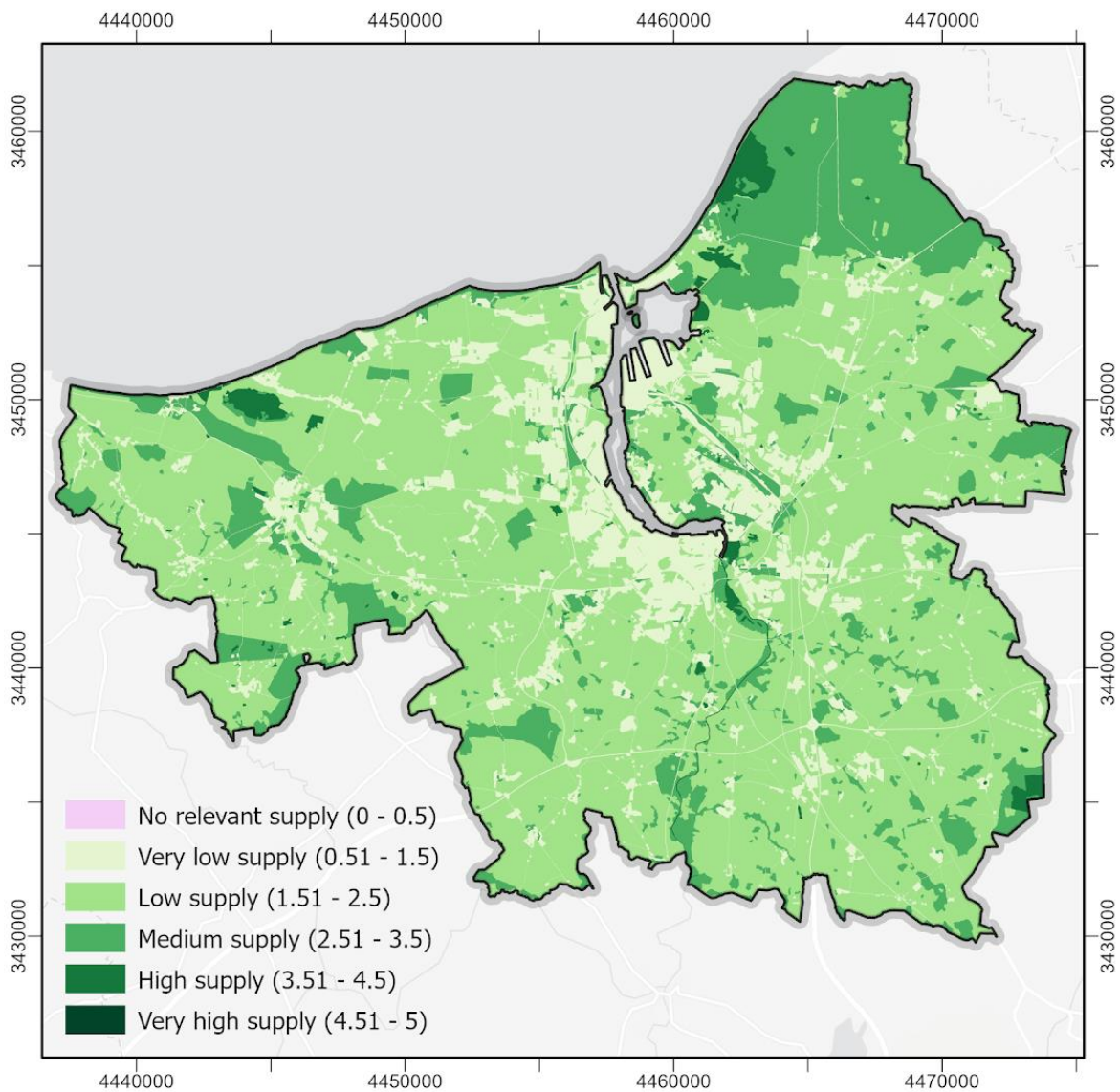
Figure S5. Expert estimates of ES supply of local climate regulation. Urban region of Rostock.



Data: Expert-based ES supply assessment, n=15; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

Figure S6. Expert estimates of ES supply of flood and coastal protection. Urban region of Rostock.

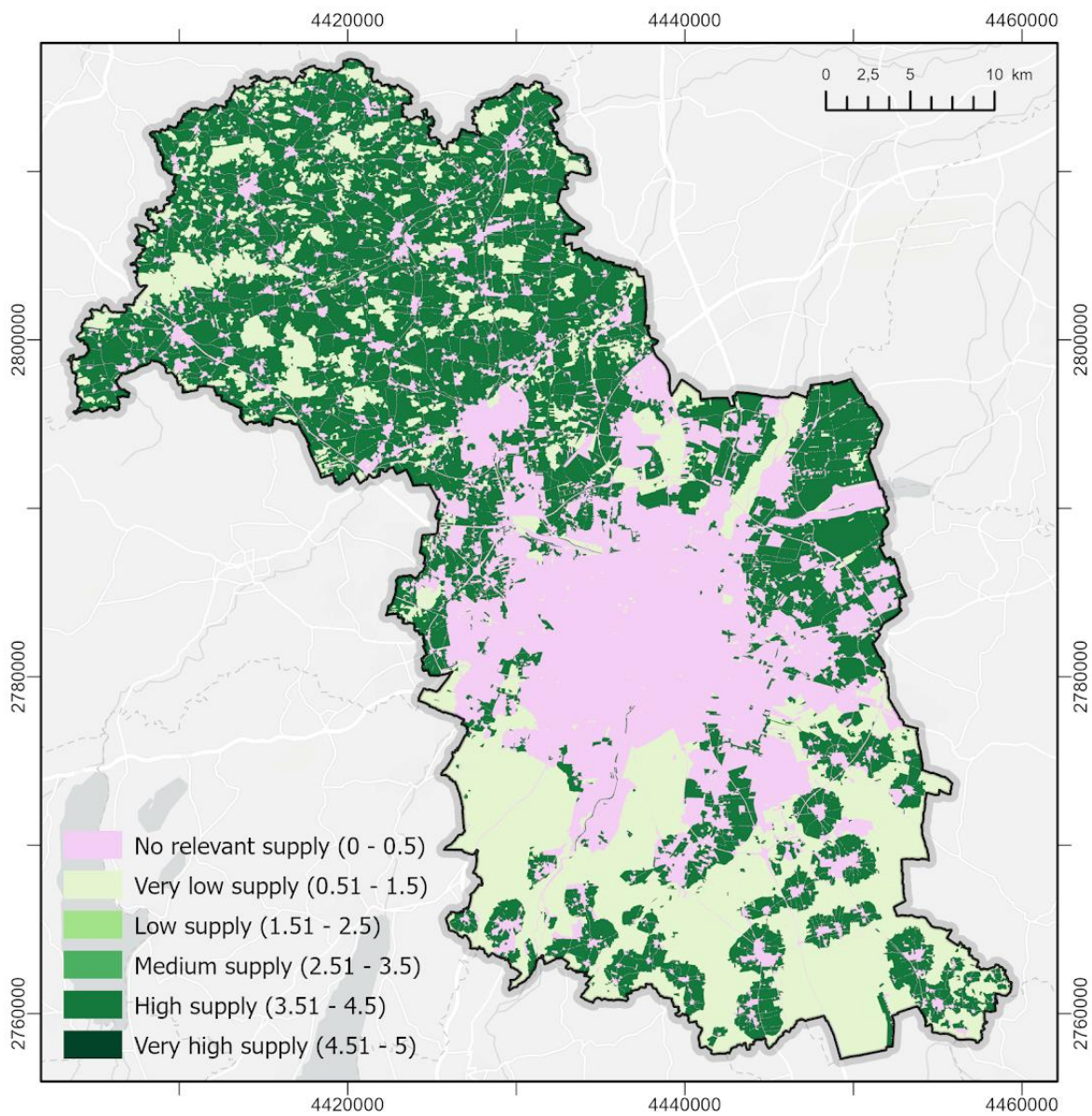


Data: Expert-based ES supply assessment, n=15; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.



Figure S7. Expert estimates of ES supply of food (from cultivated terrestrial plants). Urban region of Munich

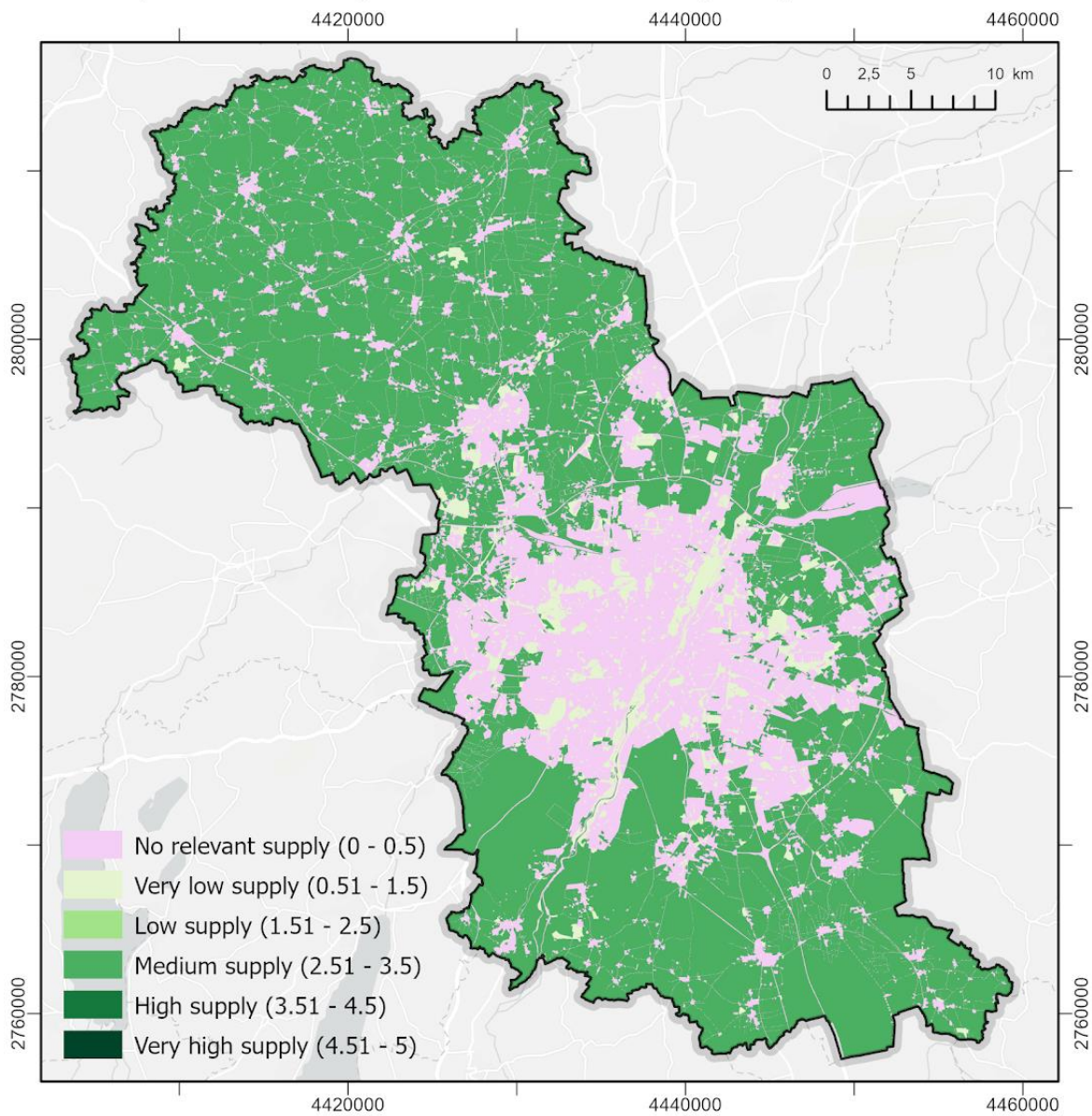


Data: Expert-based ES supply assessment, n=12; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.



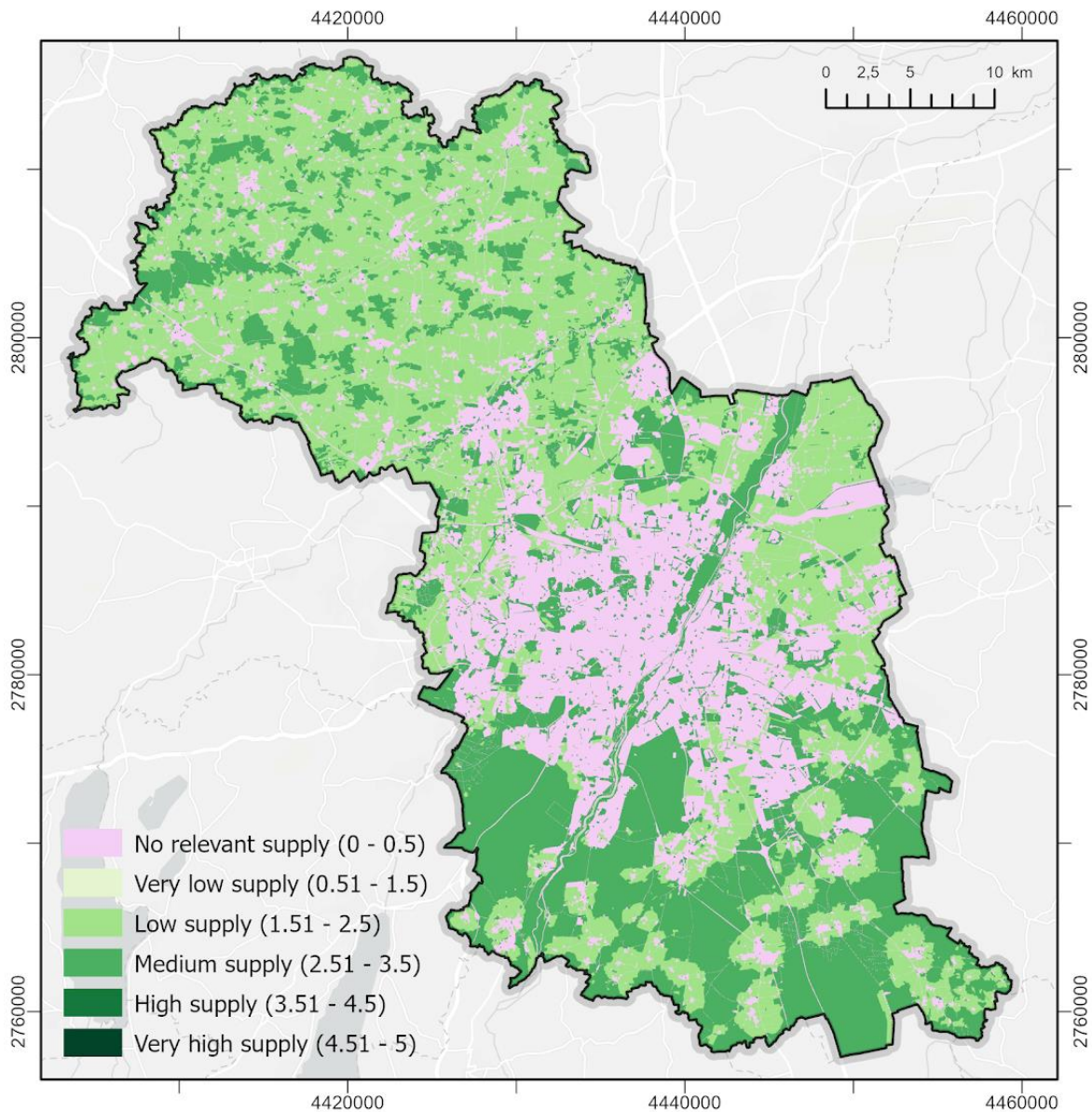
Figure S8. Expert estimates of ES supply of raw materials (from cultivated terrestrial plants). Urban region of Munich.



Data: Expert-based ES supply assessment, n=12; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

Figure S9. Expert estimates of ES supply of pollination. Urban region of Munich.

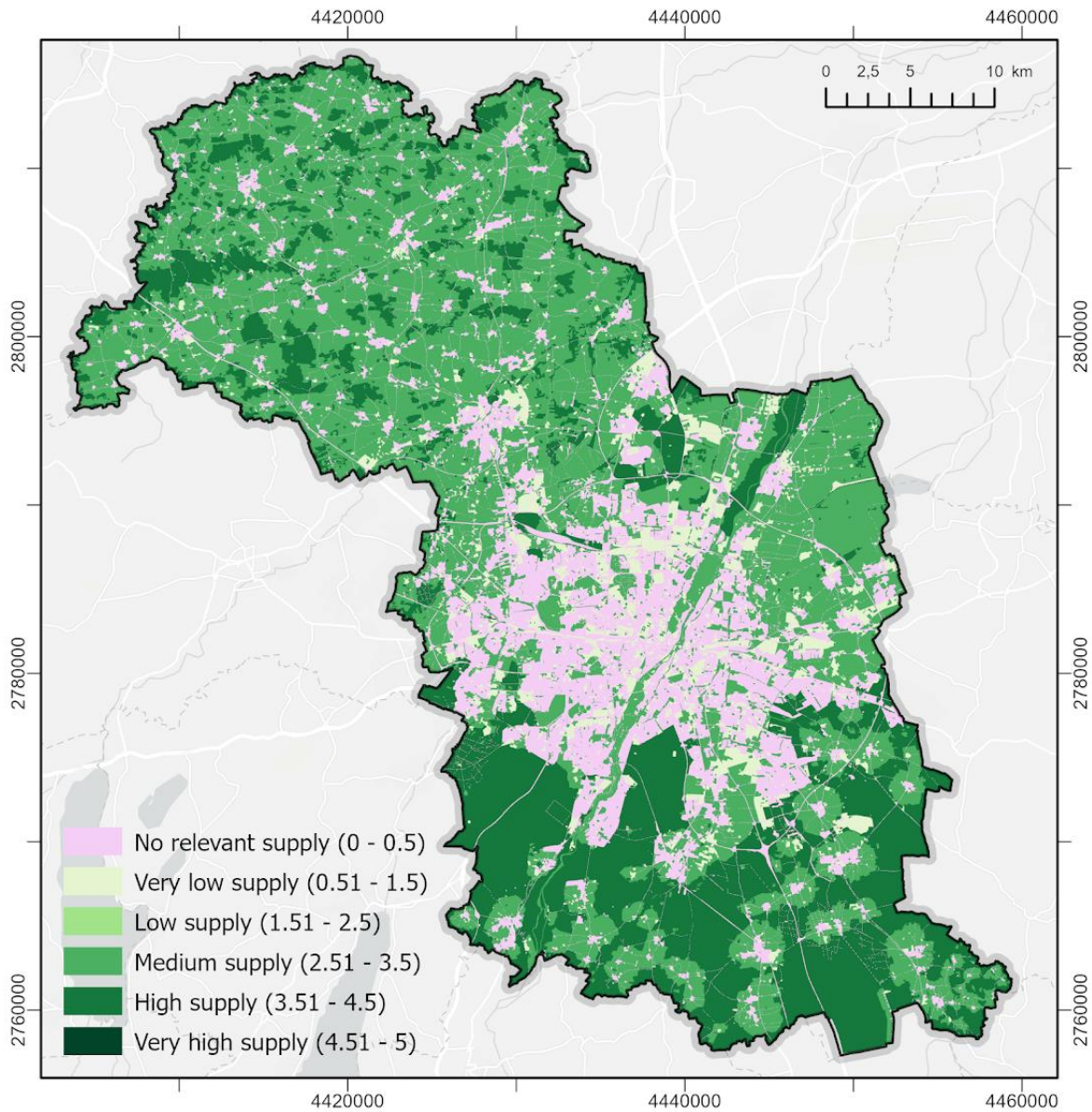


Data: Expert-based ES supply assessment, n=12; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.



Figure S10. Expert estimates of local climate regulation. Urban region of Munich.

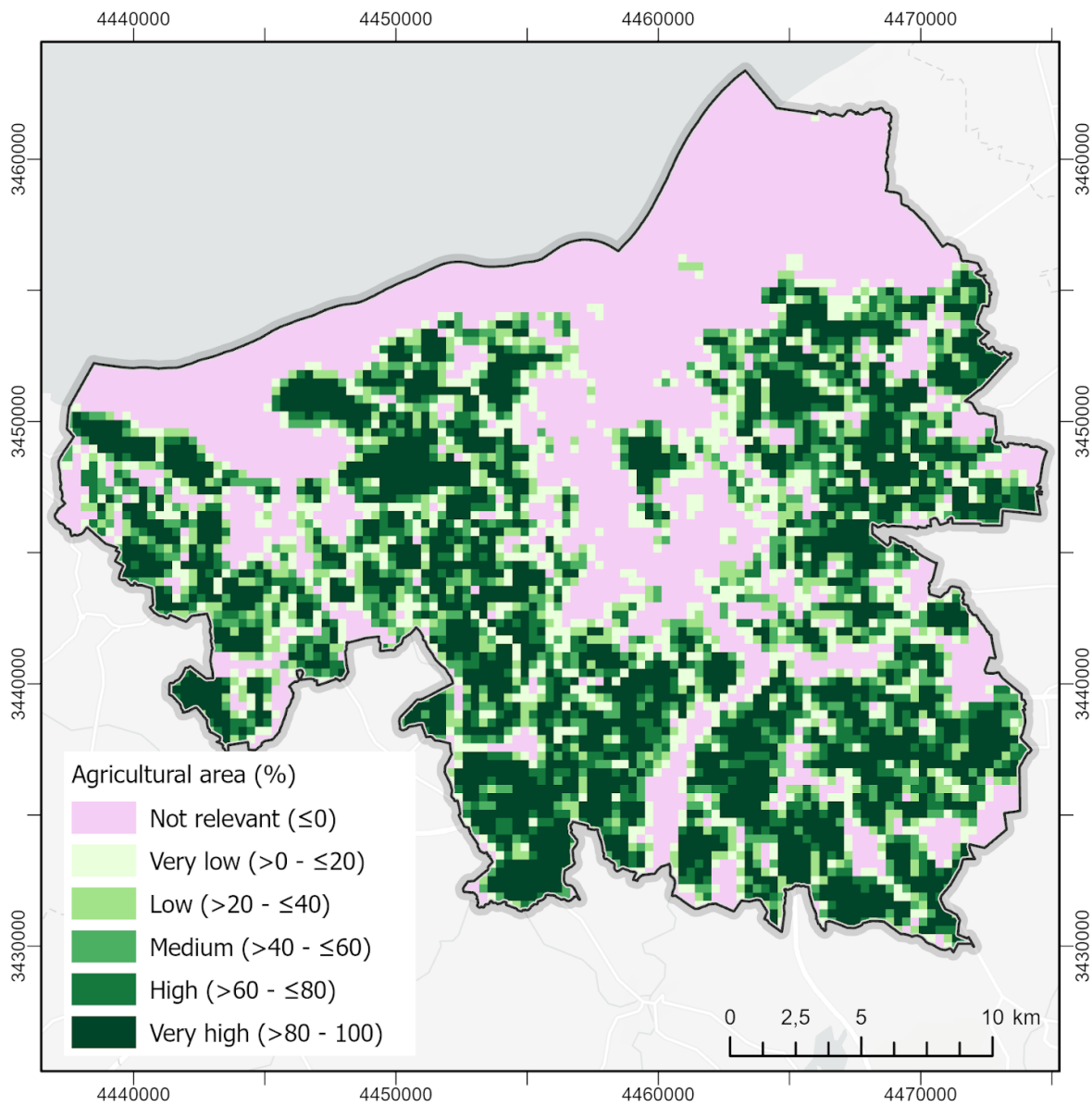


Data: Expert-based ES supply assessment, n=12; Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.



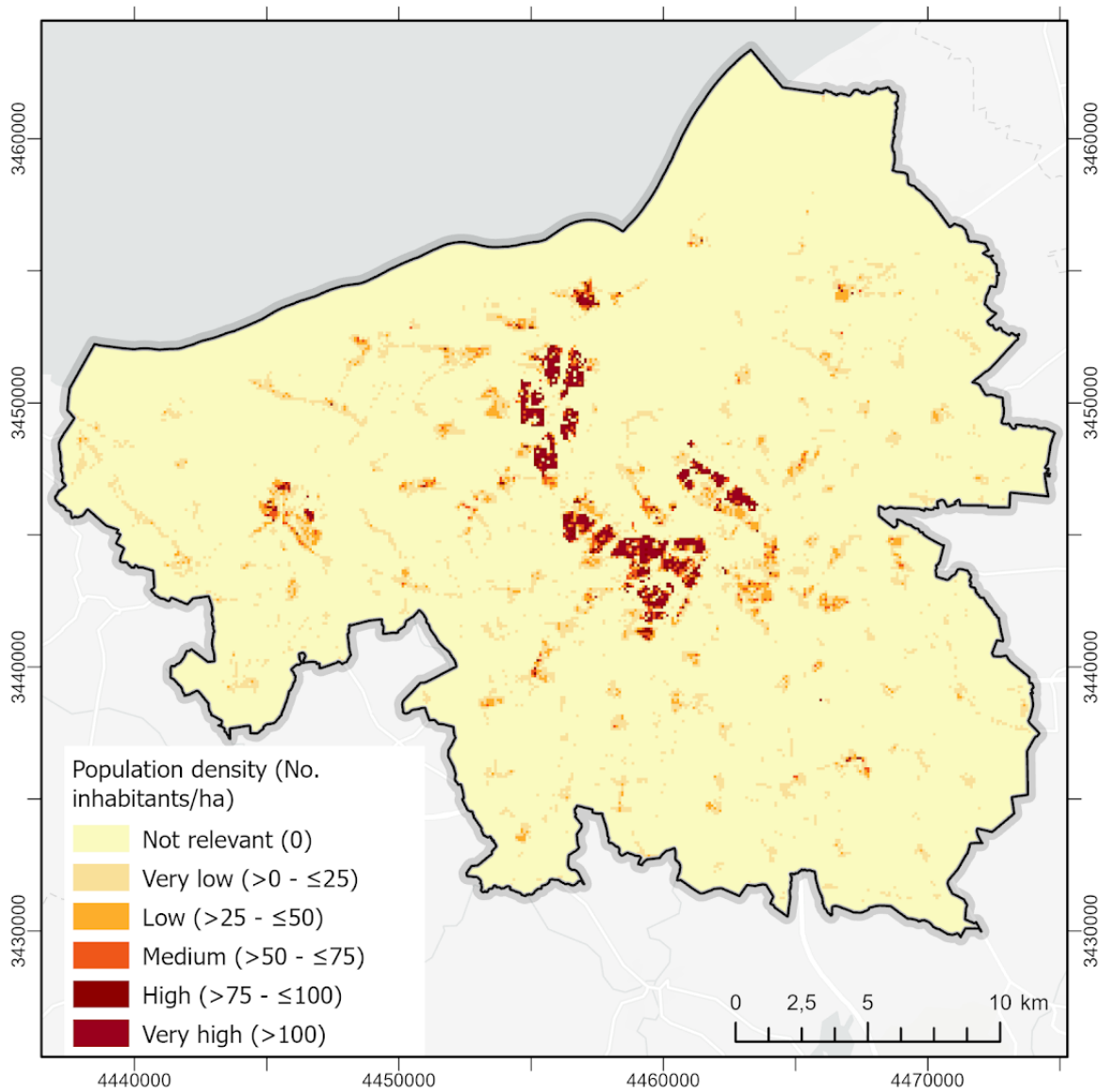
Figure S11. Food (from cultivated terrestrial plants). Indicator: Agricultural area (%). Urban region of Rostock.



Data: Urban Atlas © EEA 2016: © EuroGeographics for the administrative boundaries (2020).

Basemap: ESRI. HERE. Garmin. FAO. METI/NASA. USGS

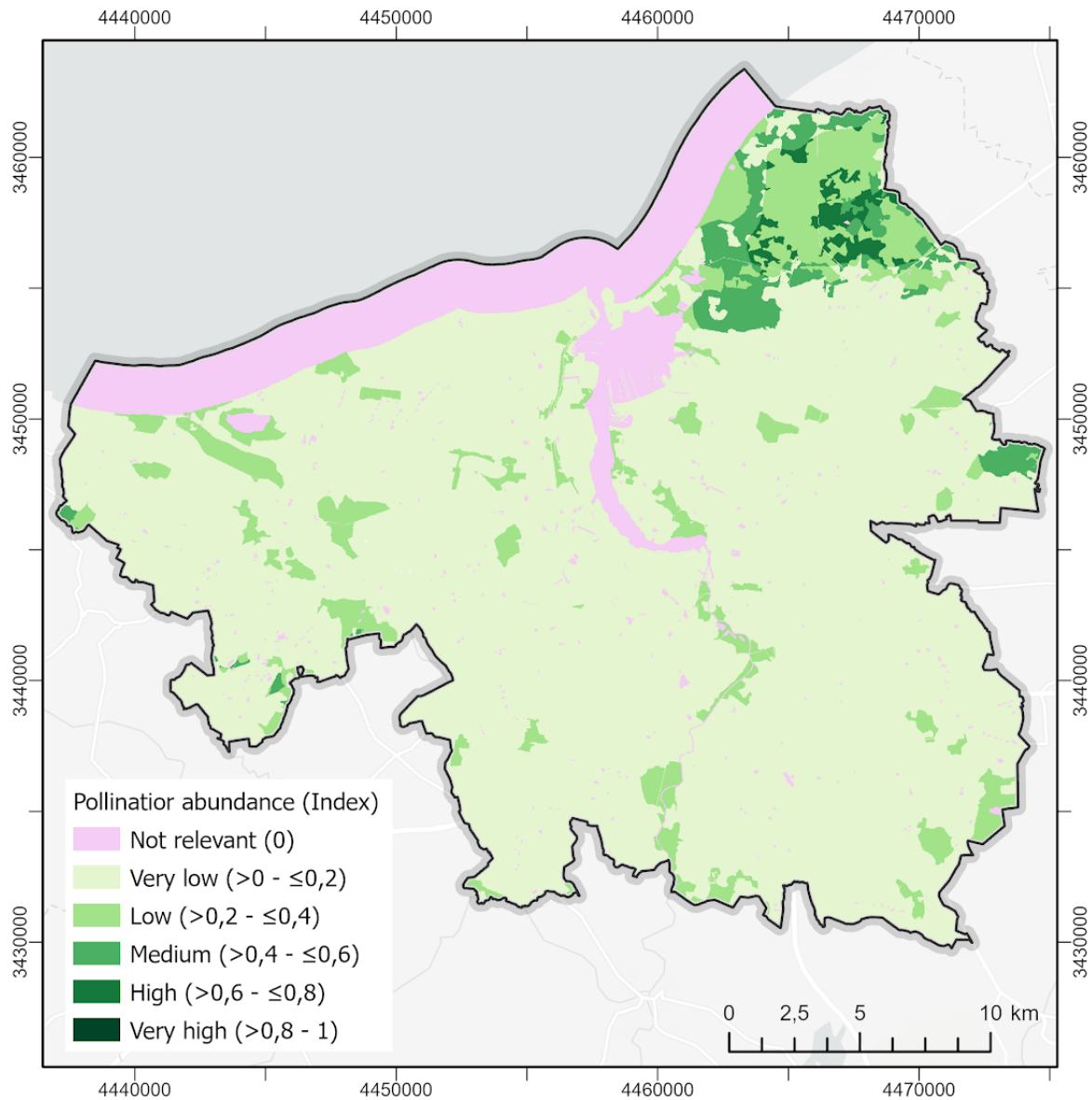
Figure S12. Food (from cultivated terrestrial plants). Indicator: Population density (Inhabitants  $\text{ha}^{-1}$ ). Urban region of Rostock.



Data: Population density: Statistisches Bundesamt (2015); BKG 2020; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

Figure S13. Pollination. Indicator: Pollinator Abundance (Index 0 to 1). Urban region of Rostock.

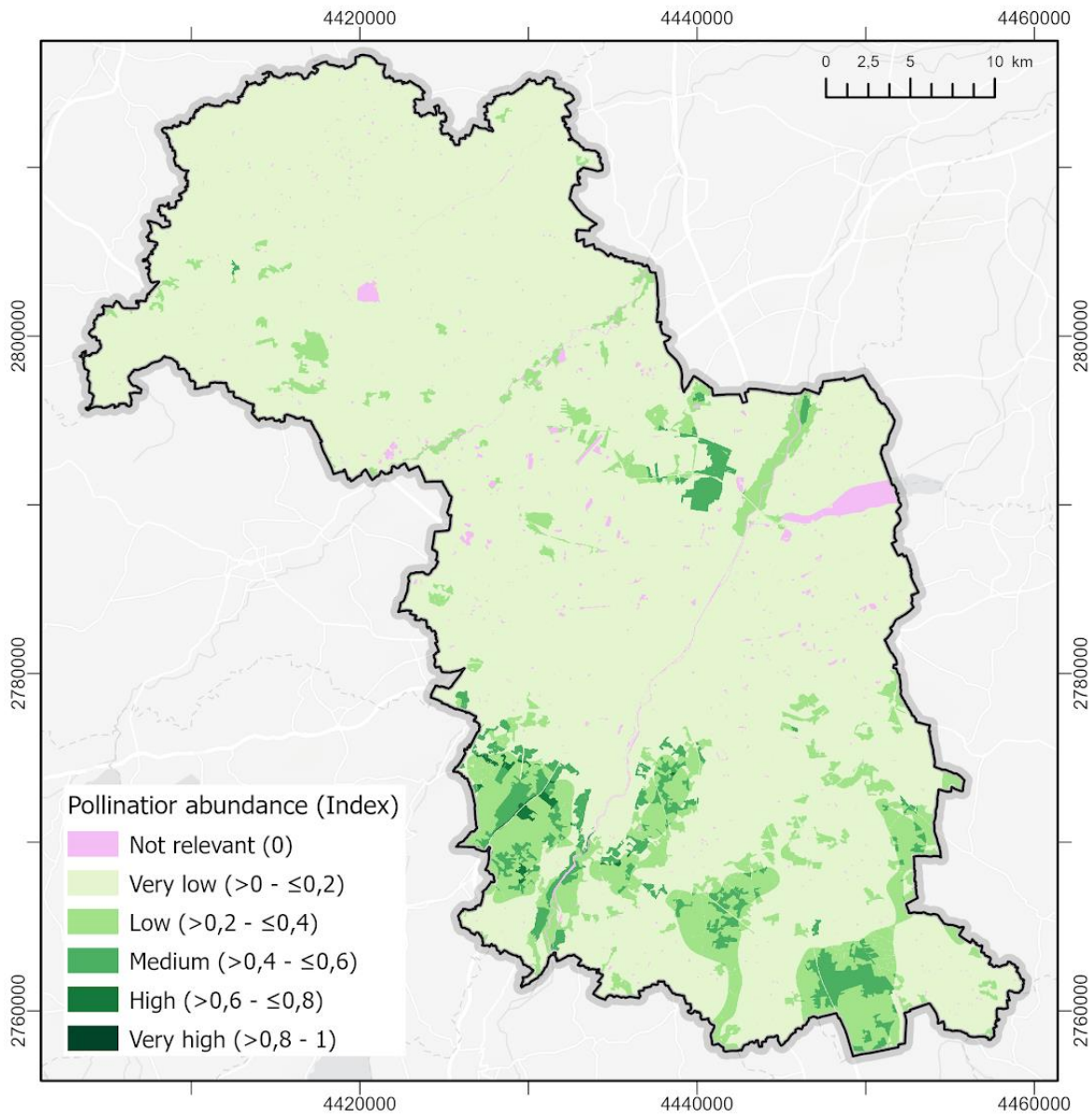


Data: Urban Atlas © EEA 2016; Corine Land Cover © EEA 2019; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.



Figure S14. Pollination. Indicator: Pollinator Abundance (Index 0 to 1). Urban region of Munich.



Data: Urban Atlas © EEA 2016; Corine Land Cover © EEA 2019; EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

Figure S15. Coastal protection. Indicator: Human health at risk of coastal flooding. Urban region of Rostock.

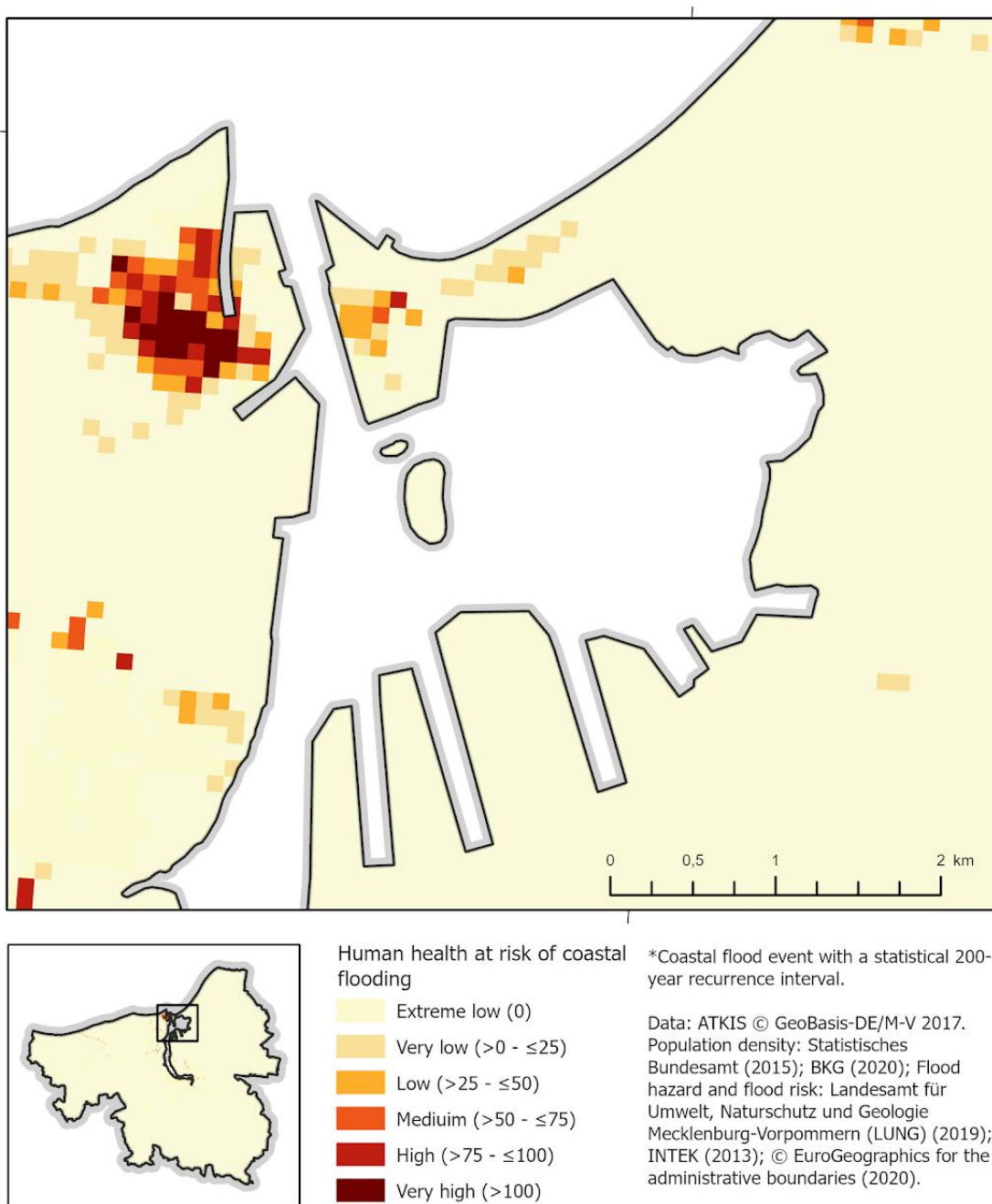


Figure S16. Coastal protection. Indicator: Infrastructure at risk of coastal flooding. Urban region of Rostock.

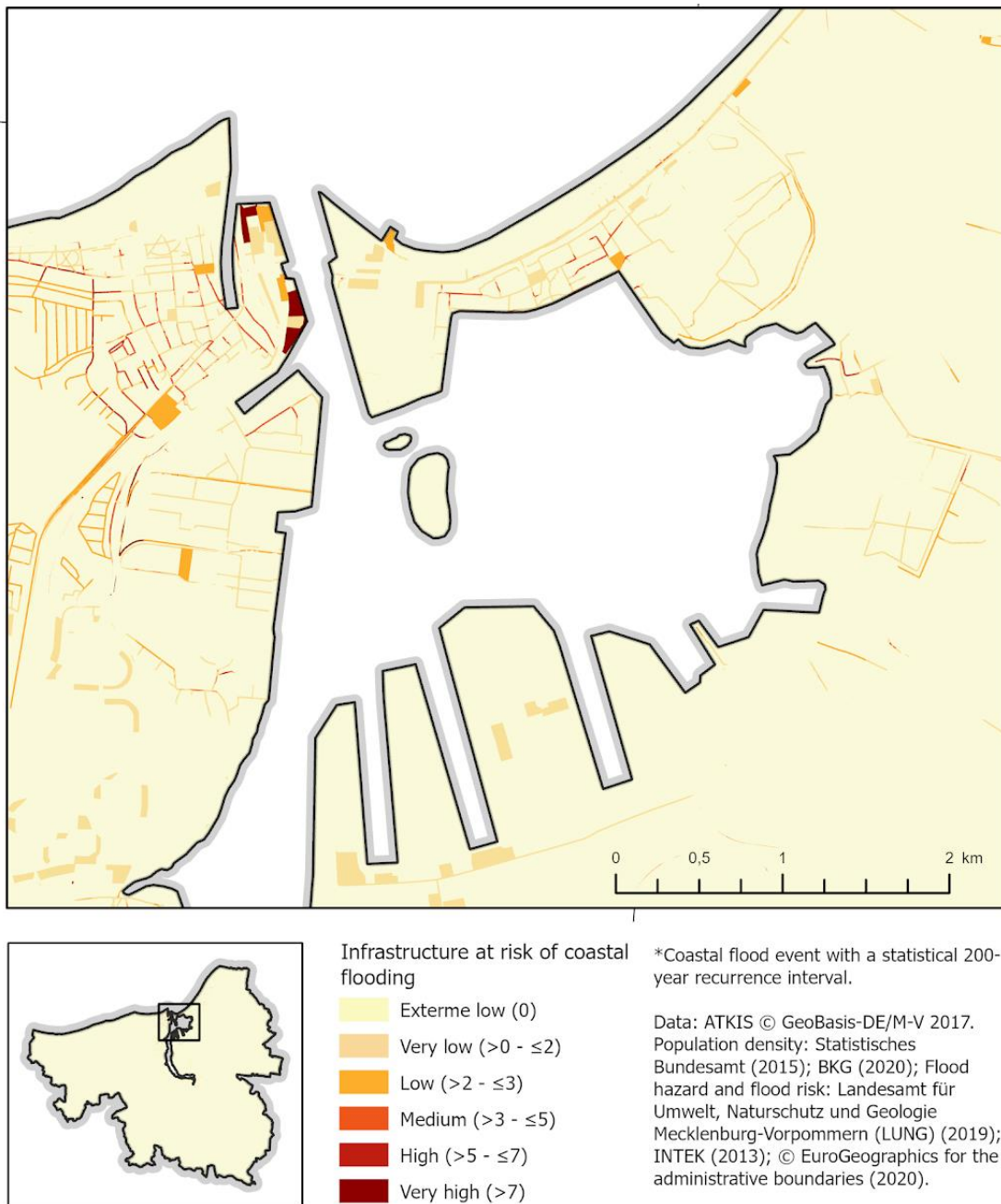
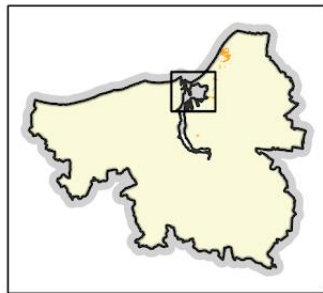
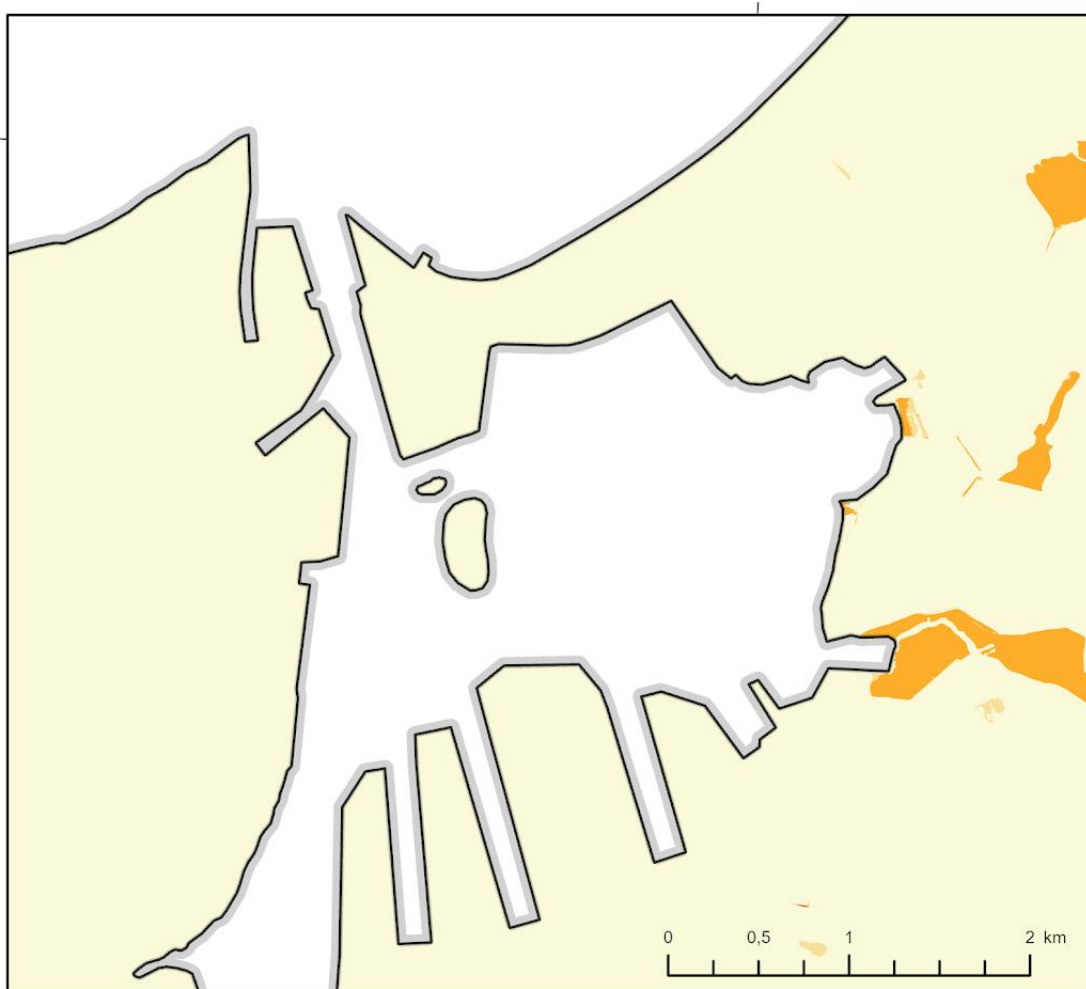




Figure S17. Coastal protection. Indicator: Environment (biotopes) at risk of coastal flooding. Urban region of Rostock.



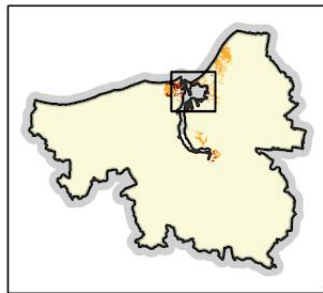
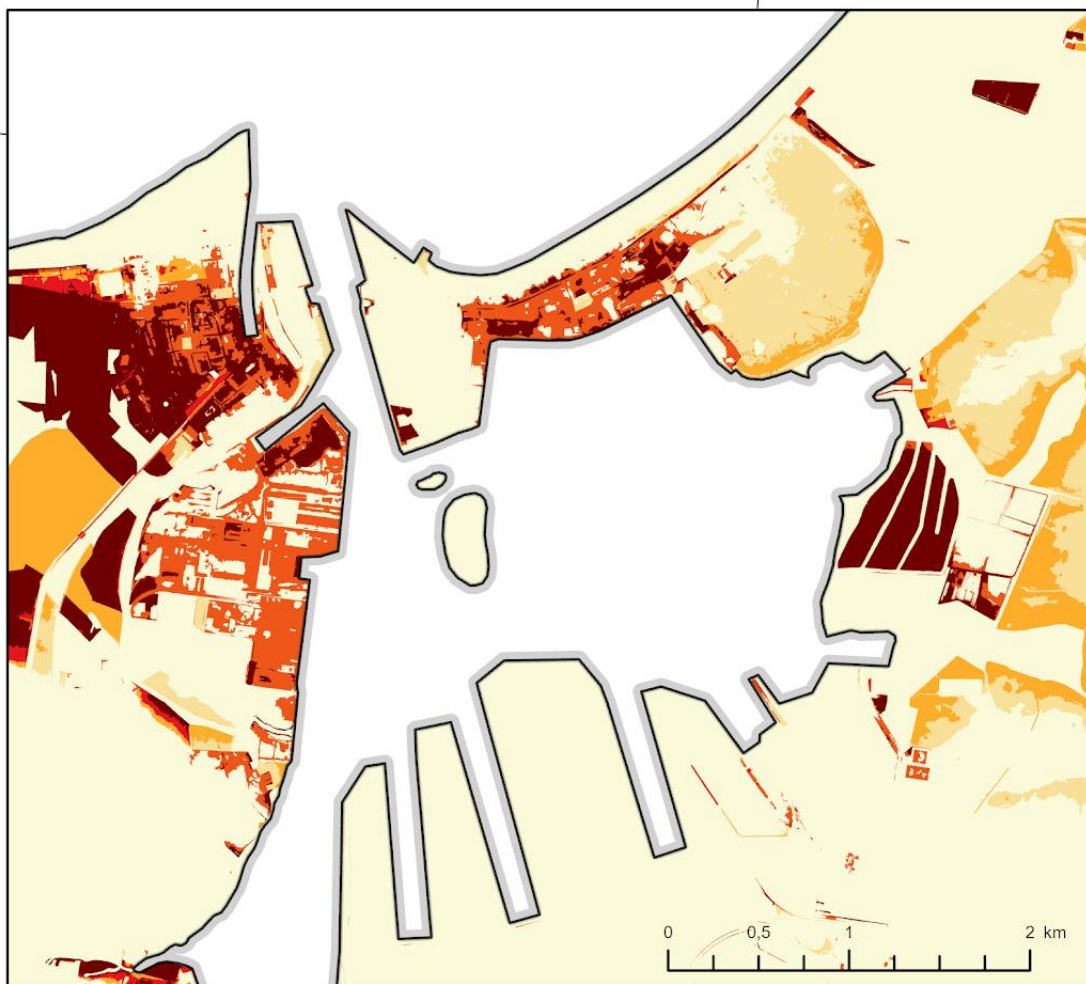
Environment (biotops) at risk of coastal flooding

- Extrem low (0)
- Very low ( $>0 - \leq 2$ )
- Low ( $>2 - \leq 3$ )
- Medium ( $>3 - \leq 5$ )
- High ( $>5 - \leq 7$ )
- Very high ( $>7$ )

\*Coastal flood event with a statistical 200-year recurrence interval.

Data: ATKIS © GeoBasis-DE/M-V 2017.  
Population density: Statistisches Bundesamt (2015); BKG (2020); Flood hazard and flood risk: Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG) (2019); INTEK (2013); © EuroGeographics for the administrative boundaries (2020).

Figure S18. Coastal protection. Indicator: Human economic activities at risk of coastal flooding. Urban region of Rostock.



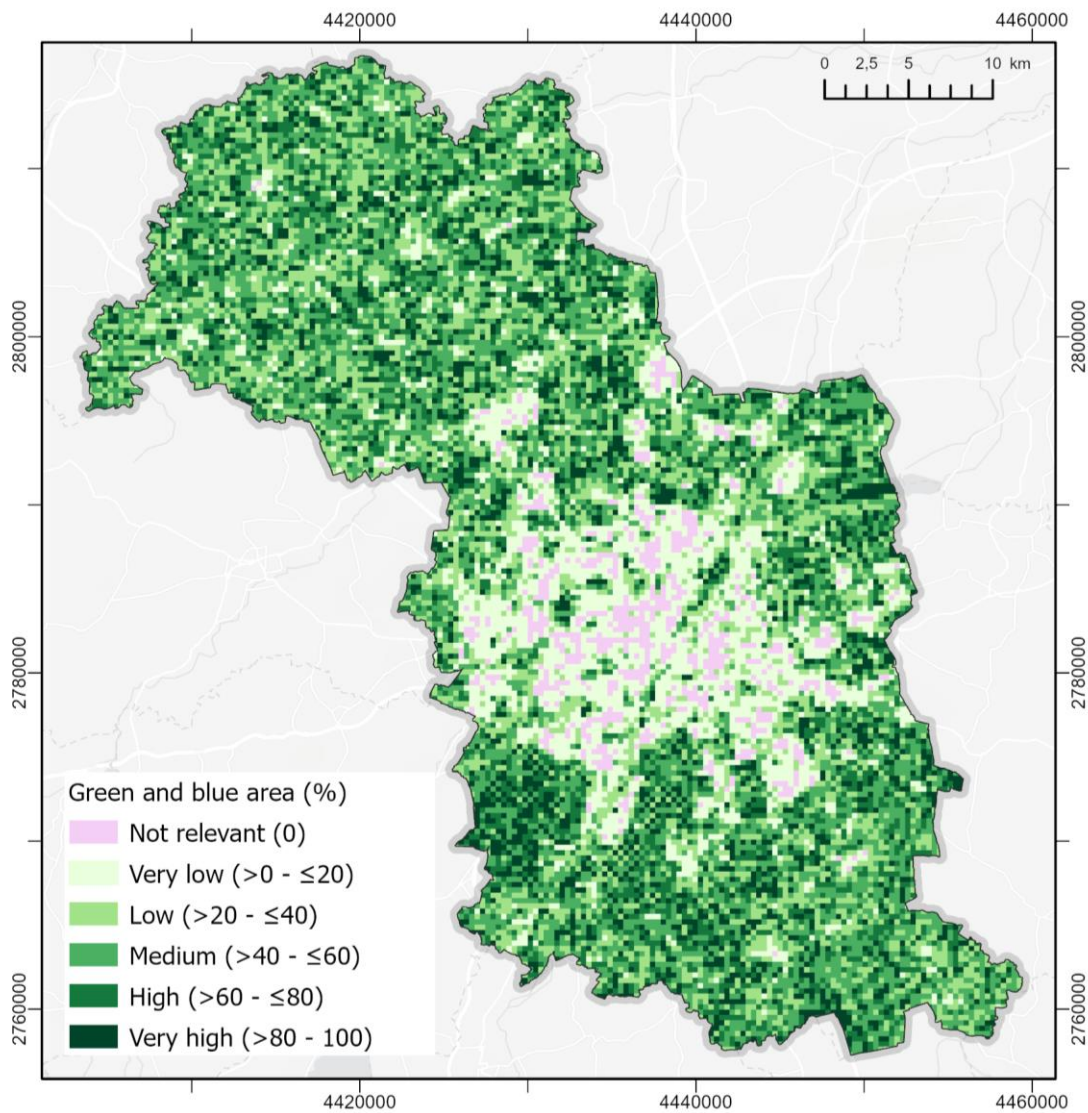
Human economic activities at risk of coastal flooding

- Extrem low (0)
- Very low ( $>0 - \leq 2$ )
- Low ( $>2 - \leq 3$ )
- Medium ( $>3 - \leq 5$ )
- High ( $>5 - \leq 7$ )
- Very high ( $>7$ )

\*Coastal flood event with a statistical 200-year recurrence interval.

Data: ATKIS © GeoBasis-DE/M-V 2017.  
Population density: Statistisches Bundesamt (2015); BKG (2020); Flood hazard and flood risk: Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG) (2019); INTEK (2013); © EuroGeographics for the administrative boundaries (2020).

Figure S19: Local climate regulation. Indicator: Green and blue area (%). Urban region of Munich.

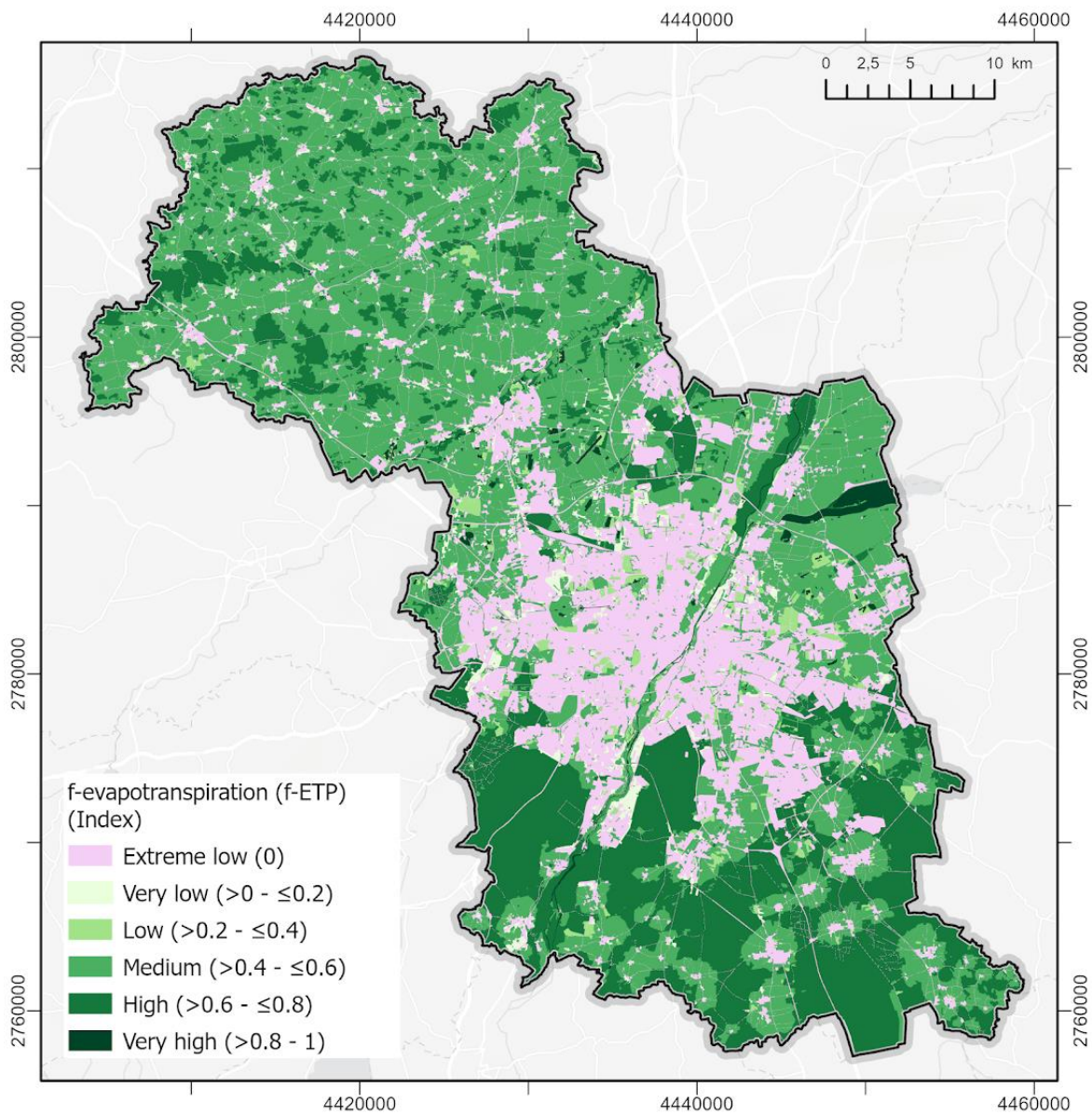


Data: Urban Atlas © EEA 2016; © EuroGeographics for the administrative boundaries (2020).

Basemap: ESRI. HERE. Garmin. FAO. METI/NASA. USGS



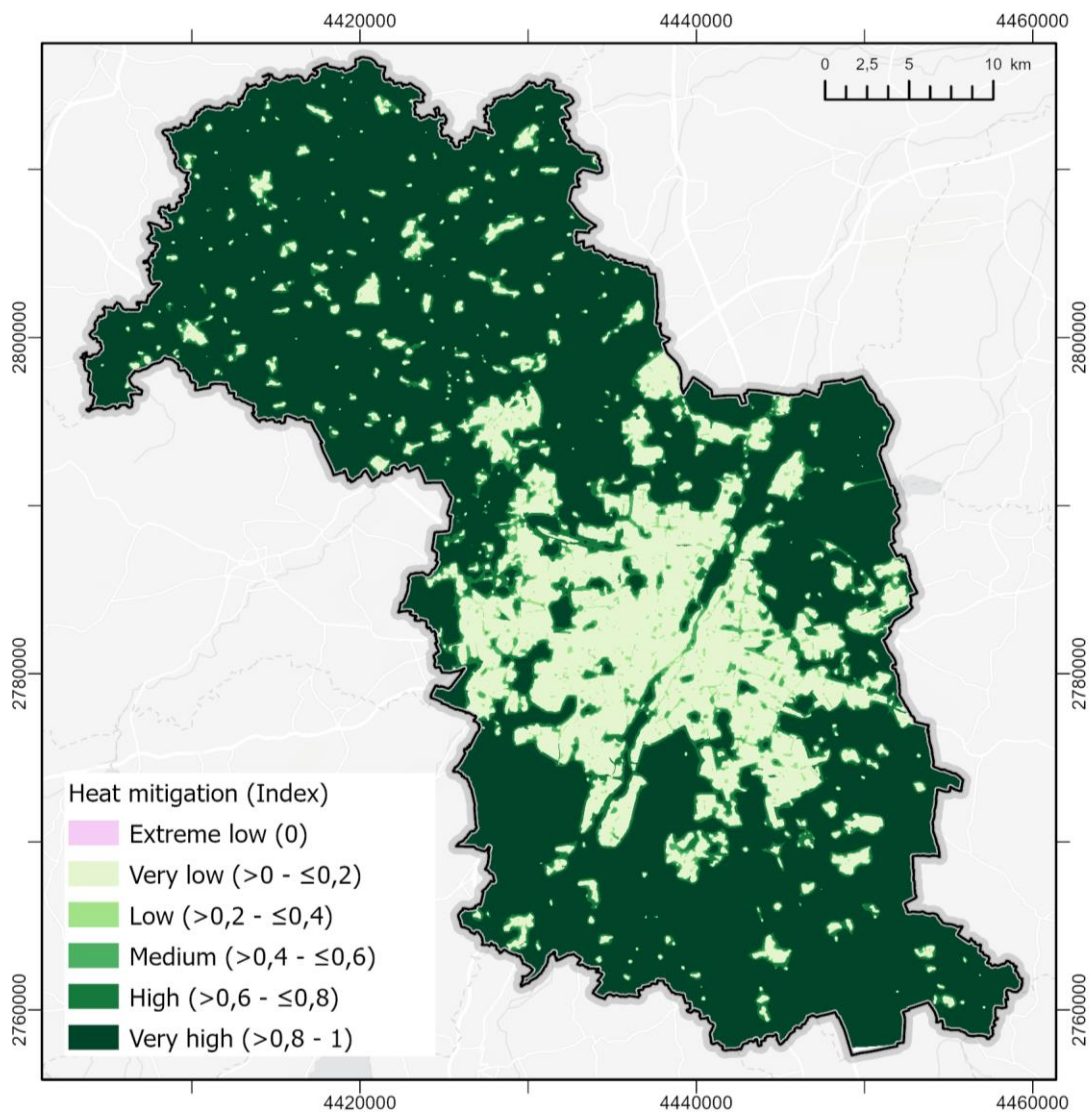
Figure S20. Local climate regulation. Indicator:  $f$ -evapotranspiration ( $f$ -ETP) (Index 0 to 1). Urban region of Munich.



Data: Urban Atlas © EEA 2016; Corine Land Cover © EEA 2019; EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.

Figure S21. Local climate regulation. Indicator: Heat mitigation (Index 0 to 1). Urban region of Munich.



Data: Urban Atlas © EEA 2016; Corine Land Cover © CDC 2018a; © CDC 2019; © CDC 2020; Yale University 2019; Nistor 2016; Stewart and Oke 2012; © EuroGeographics for the administrative boundaries (2020).

Basemap: Esri, HERE, Garmin, FAO, METI/NASA, USGS.