

Interreg



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LUMAT

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COOPERATION
FORWARD



Towards the Integrated Environmental Land Management in Central Europe
LUMAT Final Conference
Katowice, PL | 15th April 2019



Presentation of the Project Pilot Area - Saxony

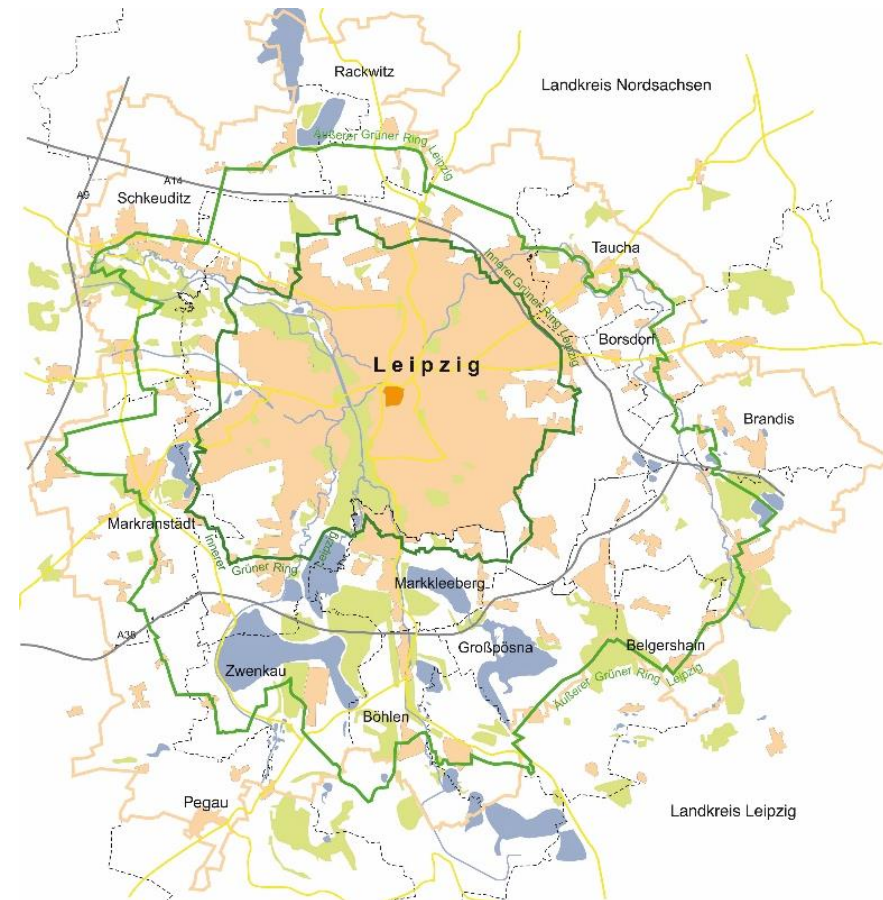


Saxon State Office for Environment, Agriculture and Geology | Siemer, Eckert, Ferber & Weder

LUMAT Pilot Area Green Ring Leipzig (GRL):

City	Population (2018)
Leipzig	591,686
Borsdorf	8,355
Böhlen	6,701
Brandis	9,626
Großpösna	5,285
Markranstädt	15,551
Markkleeberg	24,644
Rackwitz	4,985
Taucha	15,543
Zwenkau	9,222
Pegau	6,279
Belgershain	3,374
Schkeuditz	17,905
Sum	719,159

- 13 Municipalities,
- 2 Counties,
- 700.000 residents



Source: Green Ring Leipzig, 2017



Goals in the Pilot Area Saxony

- Sustainable land use management
- Identify potentials for improving ecosystem services:
 - Soil, Water, Climate Adaption

Approach

- Stakeholder Management
- Publications and Communication
- Development of a Tool: LUMATO!

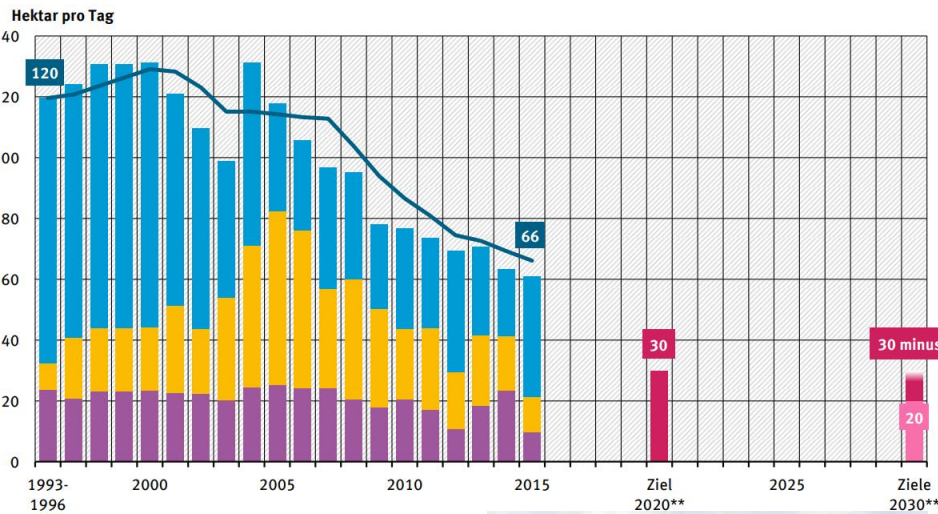
Achievements

- Update of the sustainable land management in GRL
- Tool development and application
- Initiation of pilot actions on brownfields for revitalization



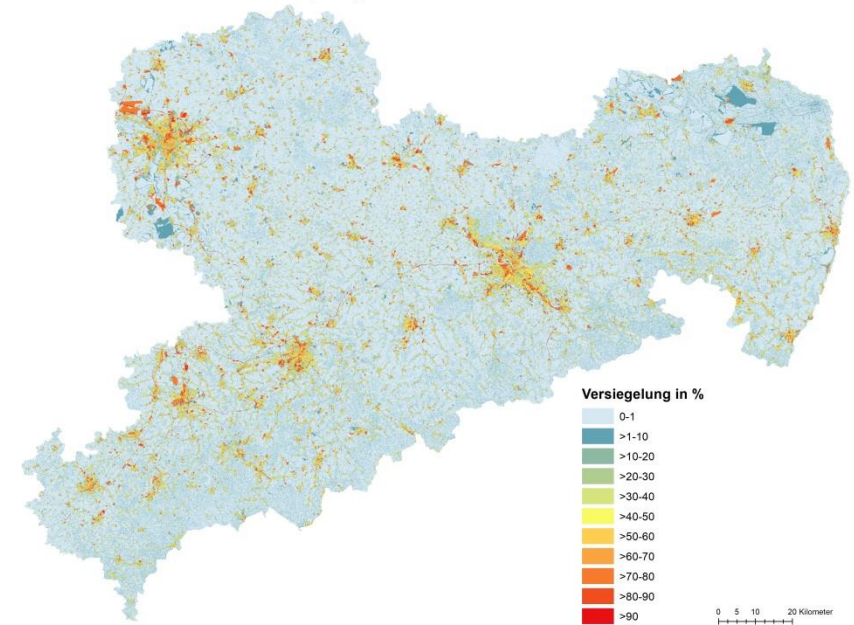
Situation

- Massive suburbanisation trends in the region of Leipzig since 1990
- Goal State of Saxony by 2020: reduce daily land consumption to 2 ha per day



Soil Sealing in Saxony 2018

Bodenversiegelung des Freistaates Sachsen im 25m-Gitter



LfULG 2018

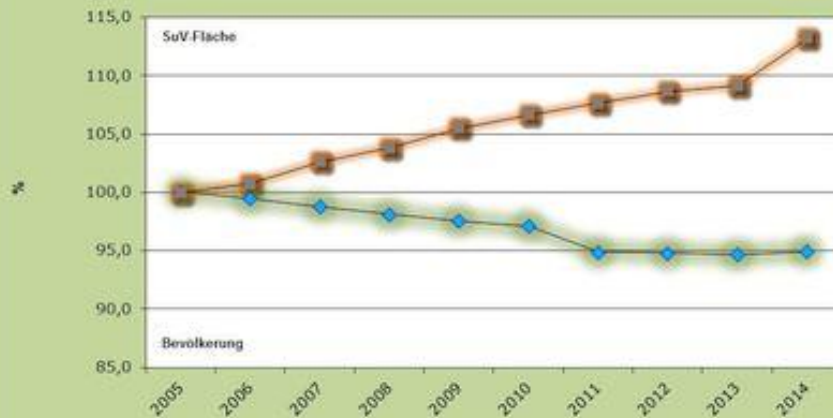


Situation

- (2018) Current statistics in Saxony show: Land consumption = 5 ha/d = 50.000 m²/d

Soil consumption and demographic development in Saxony

Entwicklung von Bevölkerung und SuV-Fläche
nach Art der tatsächlichen Nutzung (2005 = 100%)

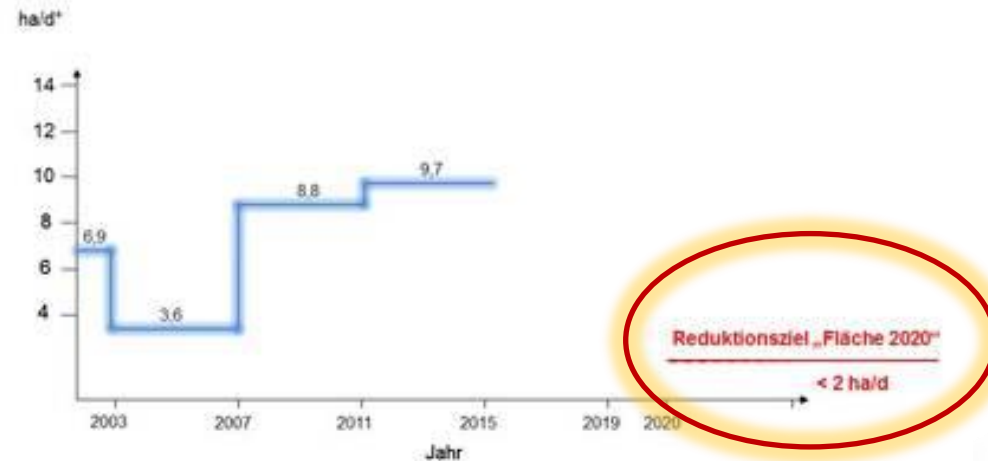


Datenquelle: <https://www.statistik.sachsen.de/html/40585.htm>

Flächeninanspruchnahme Freistaat Sachsen

Durchschnittliche Zunahme der Siedlungs- und Verkehrsfläche in ha/d*

* nach Art der tatsächlichen Nutzung



Field Analysis Results (2017 - 2018)

Municipality	Mapped Brownfields (ha)	Mapped Brownfields (nr.)
Leipzig	850.0	3047
Borsdorf	14.8	8
Böhlen	9.3	11
Brandis	106.5	18
Großpösna	3.2	5
Markranstädt	17.2	15
Markkleeberg	13	8
Rackwitz	8.7	12
Taucha	25.8	16
Zwenkau	11.7	10
Pegau	3.6	11
Belgershain	2.4	4
Schkeuditz	10.2	16
TOTAL	1076.4	3181



Causes:

- Fall of the wall, the „transition“ (Wende)
- Restructuring from the manufacturing to a service industry
- Out-migration
- Settlement of shopping centers, commercial districts or residential housing districts on greenfields

Dangers and Effects:

- Lack of water retention/run-off on sealed surfaces
- Vandalism and effect upon the social cohesion
- Lowering of the attractiveness for city development
- Maintenance cost are often passed on to the public



BROWNFIELDS

Goals:

Brownfields in urban and peri-urban areas: Evaluation for the reuse to be urban or green/open space e.g. to provide a cooling function on urban land to improve the micro/mesoclimate.

Brownfields in rural areas: Normally entails a return to green, e.g. use as a compensation site



START-UP-PLAN DOCUMENT

Evaluated sites in the municipalities:

- Ahlten
- Böhlen
- Taucha
- Großsteinberg
- Naunhof



START-UP-PLAN

FLURSTÜCKE 375/2, 362/1, 396/16,
397/2, 397/40 UND 674/7
GEMARKUNG UND GEMEINDE TAUCHA

Version 1
09 2017

Dr. Uwe Ferber, Malve Heinz, StadtLand UG



LANDESAMT FÜR UMWELT,
LANDWIRTSCHAFT
UND GEOLOGIE  Freistaat
SACHSEN

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(Soil) Threats

- Brownfields
- Urban sprawl
- Sealed area: risk of over-warming
- Sensitive soils: risk of over-fertilization and water contamination

Further Information

- Location - settlement area, peri-urban area and hinterland
- Flooding zones (HQ100)
- Environmental protection zones (nature, landscape & water)



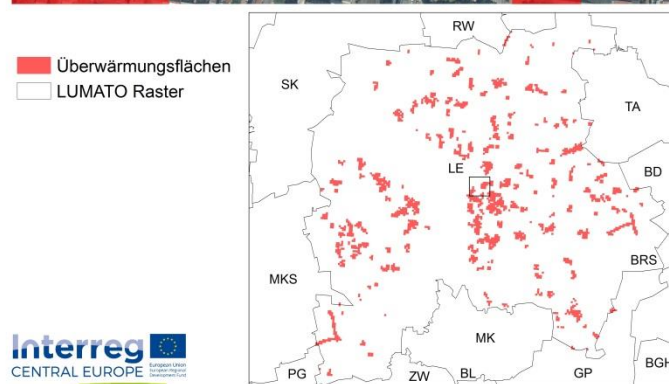
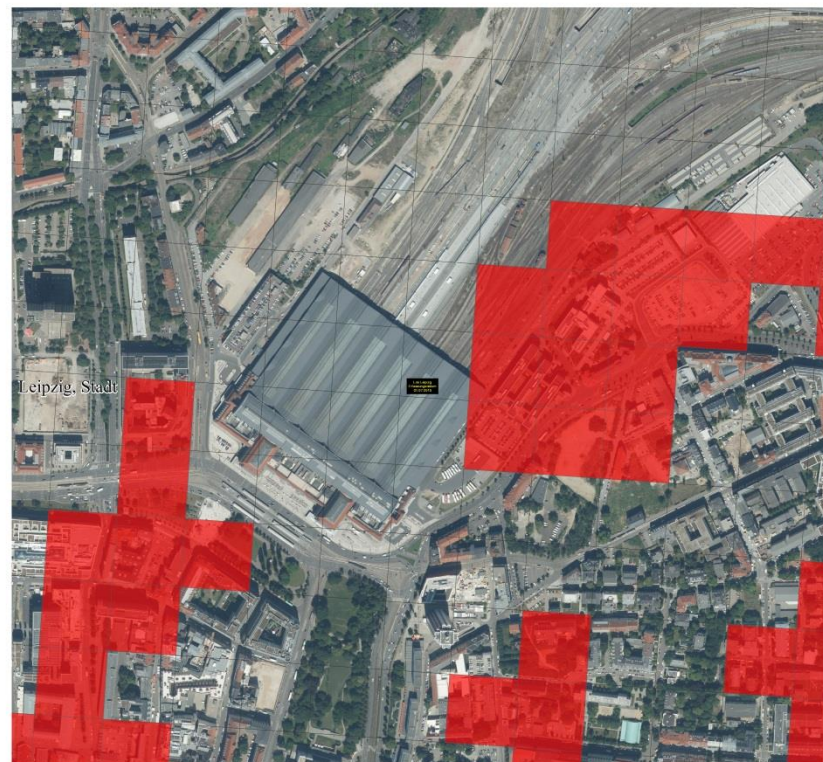
LUMATO - TOOL LUMAT

SUSTAINABLE DEVELOPMENT IN ACTION

LUMAT INSPIRE grid: Total of 78,000
100mx100m Grid Cells

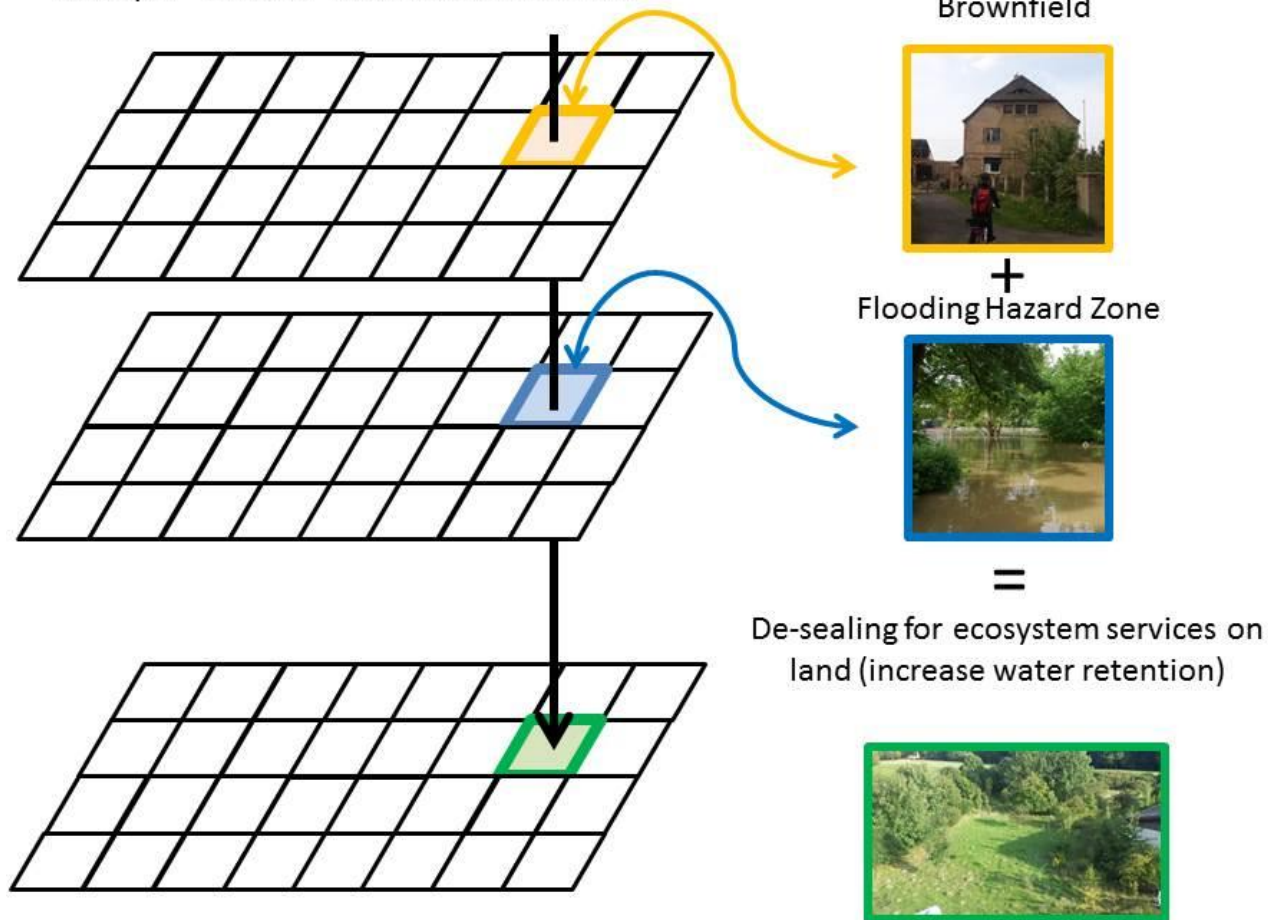
Facts of the INSPIRE Grid:

1. Homogenous Information according to EU-wide INSPIRE standards
2. Protection of person related data
3. Integrated collection of various environmental data types into a common layer (integrated Environmental Management!)
4. No new software required or new set of skill sets required
5. Steering of ecological actions -
“Make the places more livable!”



DECISION SUPPORT LAYER CREATION

Example - LUMAT Pilot Area INSPIRE Grid



DSS 1: SUSTAINABLE LAND USE ON BROWNFIELDS

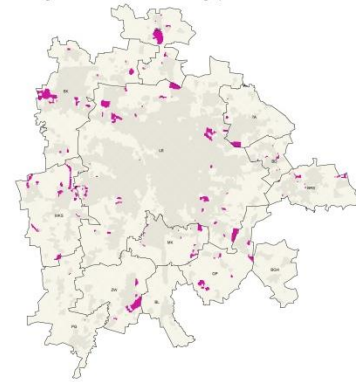
Input Data:

- Spatial Planning Information System Saxony
- Brownfield Mapping from LfULG
- Inter-municipal brownfield Cadaster of Leipzig
- Settlement area

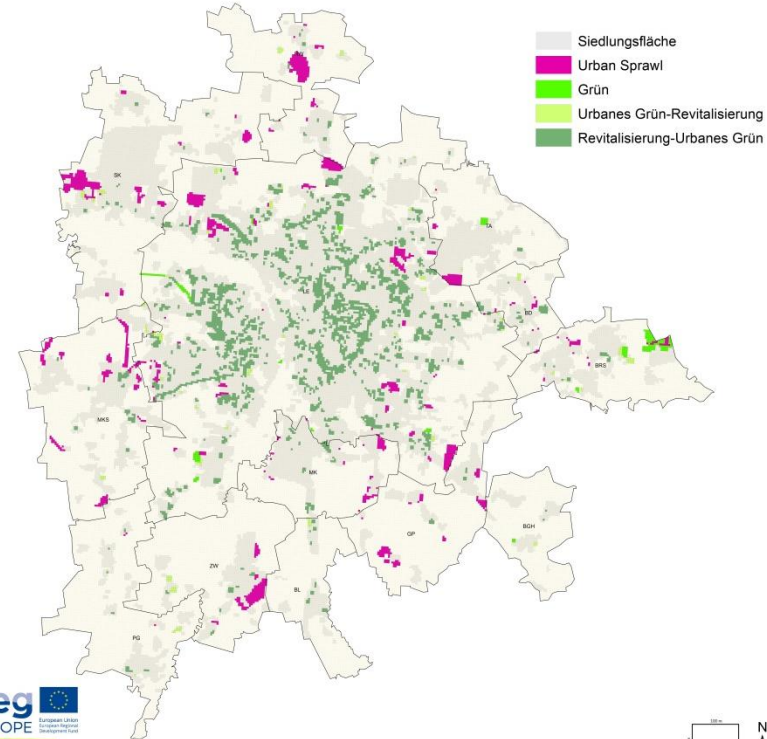
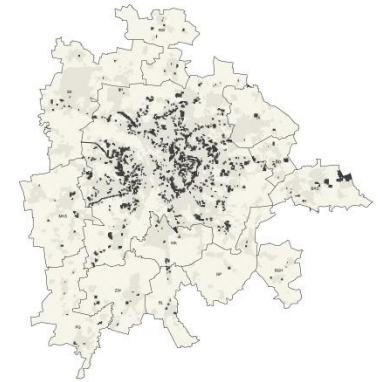
Result:

- Initial evaluations for Brownfields according to location and resource
 - Revitalization
 - Urban Green
 - Green

Siedlungsflächen und Bebauungspläne außerhalb dieser



Brachflächen



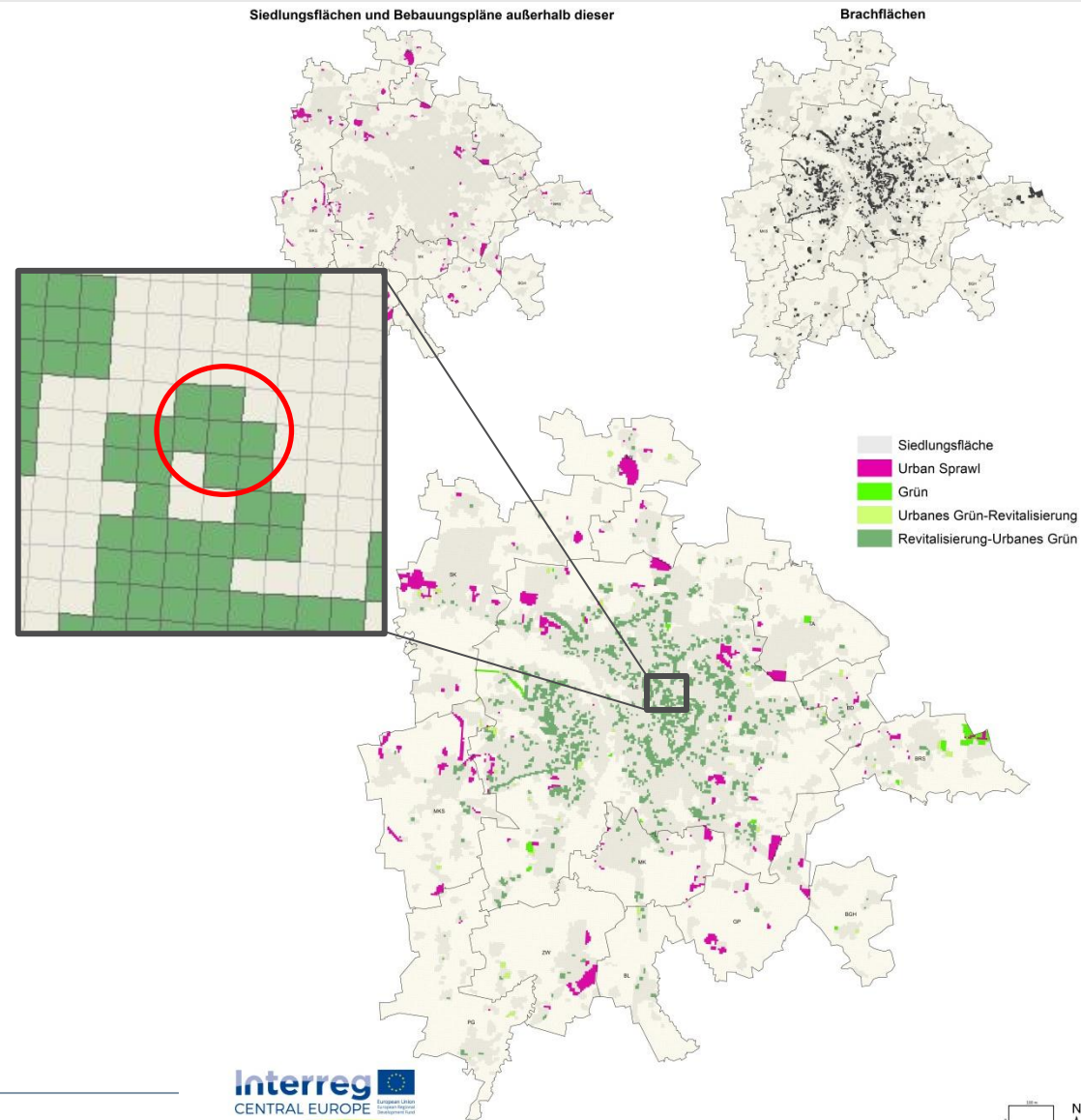
DSS 1: SUSTAINABLE LAND USE ON BROWNFIELDS

Example Site A:

- 7 ha grid cells for a brownfield site
- 41,700 m² sealed land
 - ...of that, 23,400 m² sealed brownfield

Result:

2.3 ha site potential for - cooling, recreation, biodiversity, water retention etc. through REVITALIZATION!



CALCULATION OF EXAMPLE SITE A

CellCode	Brownfield Polygon m ²	Sealing % Per Cell	m ² Brownfield sealed
100mN31407E44880	7,276	0.83	6,039
100mN31407E44881	331	0.24	79
100mN31408E44879	6,321	0.78	4,930
100mN31408E44880	9,981	0.91	9,082
100mN31408E44881	3,010	0.40	1,204
100mN31409E44879	1,489	0.53	789
100mN31409E44880	2,954	0.45	1,325
SUM			23,448



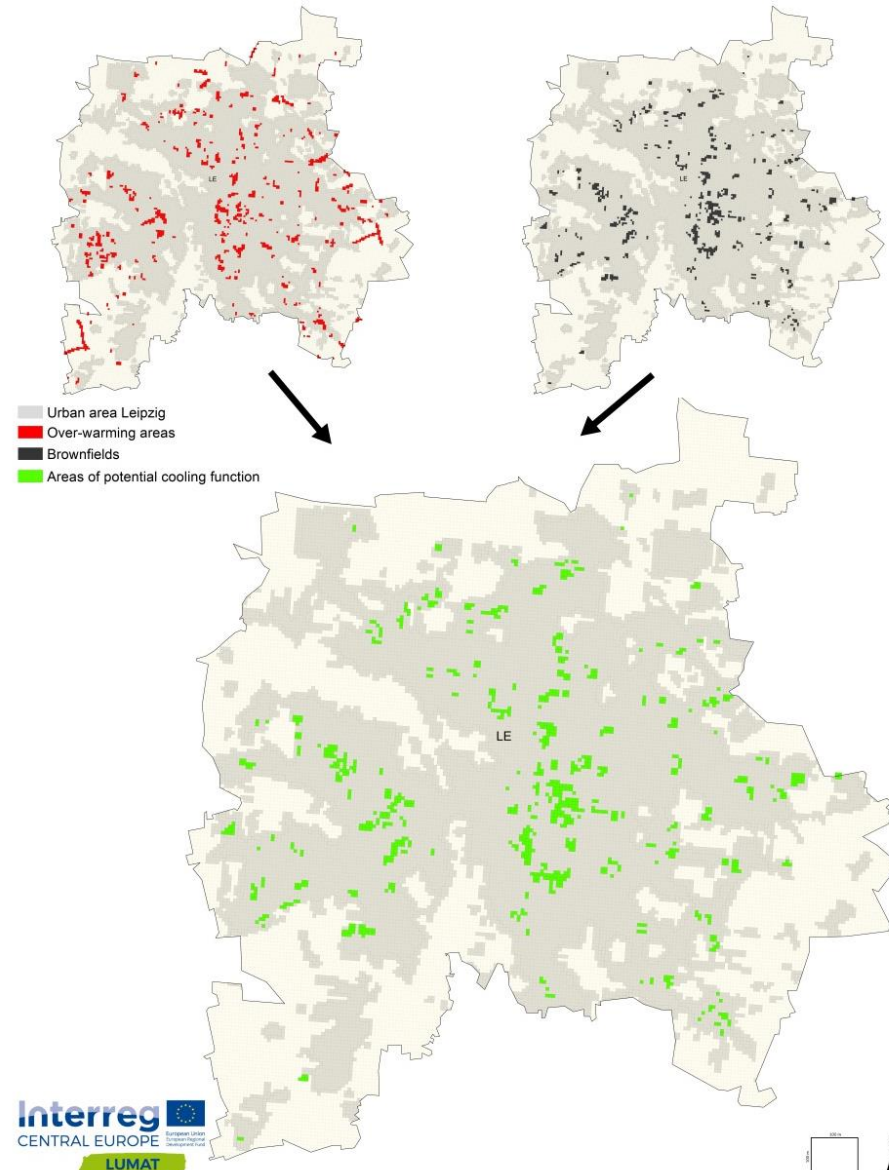
DSS 2: POTENTIAL SITES FOR COOLING FUNCTION

Input Data:

- Climate analysis from the City of Leipzig
- Brownfield cadaster from the City of Leipzig

Result:

- Recommendations for brownfields within 100 meter proximity to areas with the potential to overheat in the summertime for CLIMATE ADAPTION!



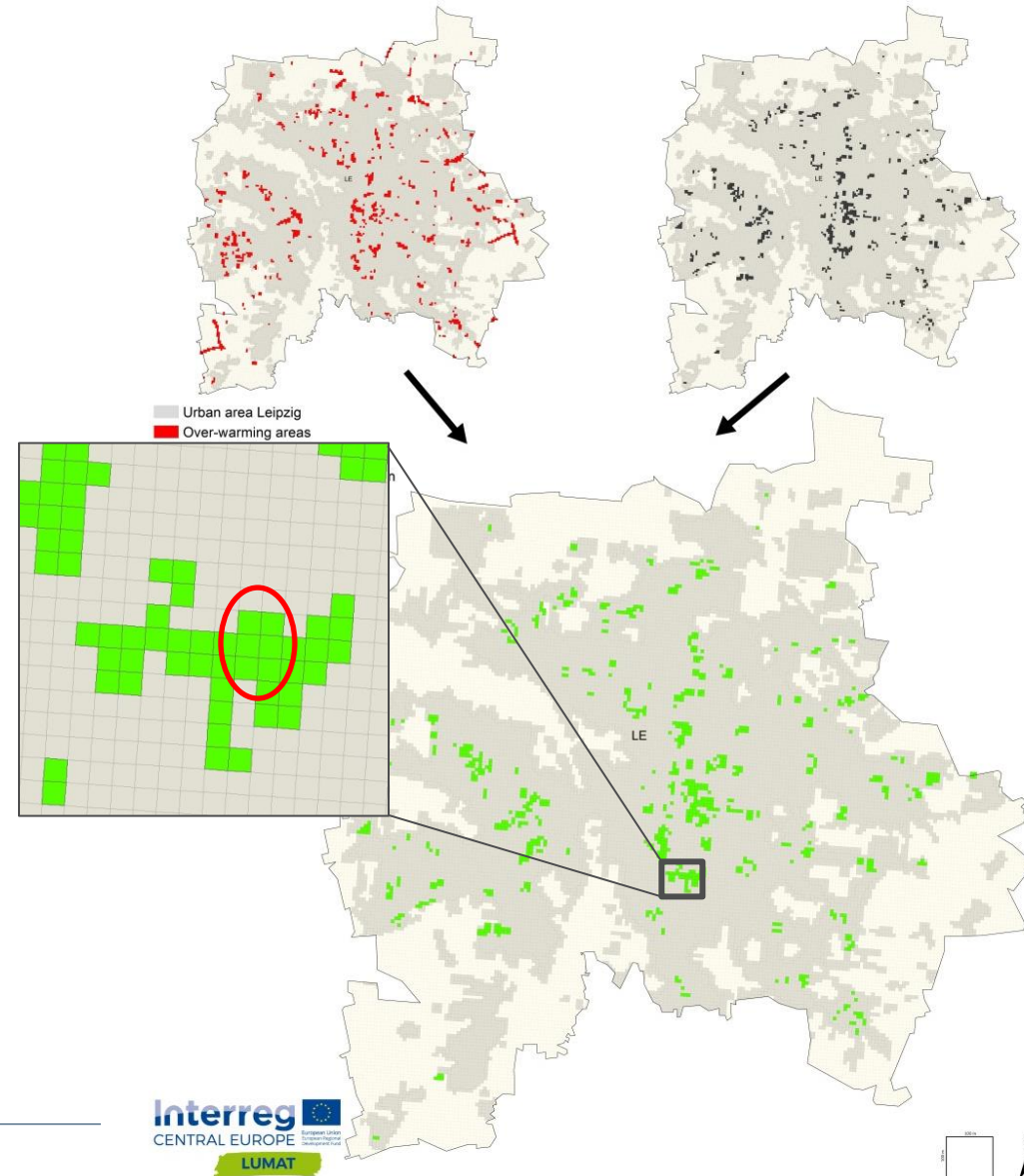
DSS 2: POTENTIAL SITES FOR COOLING FUNCTION

Example Site B:

- 6 ha Grid cells for a brownfield
- 34,100 m² sealed land
 - ...of that 19,500 m² sealed brownfield

Result:

1.95 ha for climate adaption in the proximity of extreme overwarming sites through URBAN GREEN!



- (KUTTLER 1998 und 2010) - size dependent cooling function of green sites
- (MATHEY et al. 2012) - sites under 10.000 m² in size have a measurable difference
- (AGL 2012) - measurable air circulation at sites of 50.000m²
- (KUTTLER 1998) Study of the reach of climate effects:
 - The Berliner Tiergartens (212 ha) - in wind direction 1500m, against the wind up to 200 m.
 - Stadtpark Steglitz (ca. 18 ha) - in wind direction up to 280m and against the wind up to 140 m

Source: Jutta Böhm, Christa Böhme, Arno Bunzel, Christina Kühnau, Detlef Landua und Markus Reinke. (2016). Urbanes Grün in der doppelten Innenentwicklung. BfN (Page 209)



DSS 3: POTENTIALS FOR WATER RETENTION

Input Data:

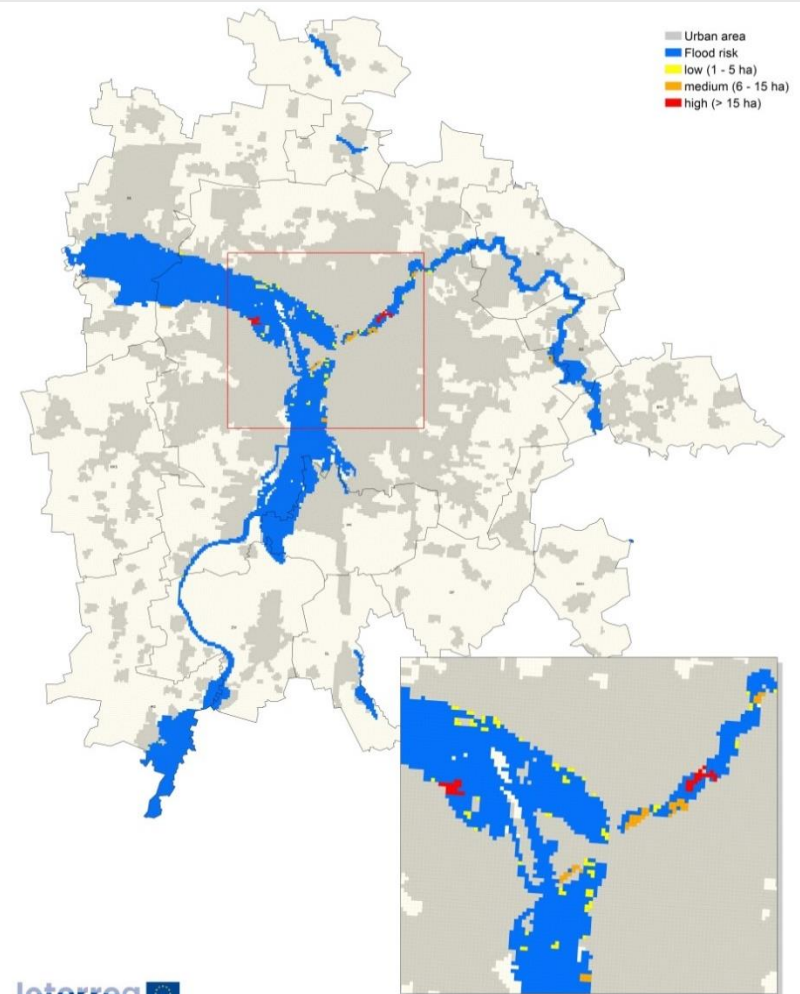
- Flooding Zones (HQ100)
- Brownfields (LfULG & City of Leipzig)

Result:

- Potentials for more water retention on land!

Goal:

- Achieve more water retention!



DSS 4: SITES OF RISK FOR SOIL AND GROUNDWATER PROTECTION

Input Data:

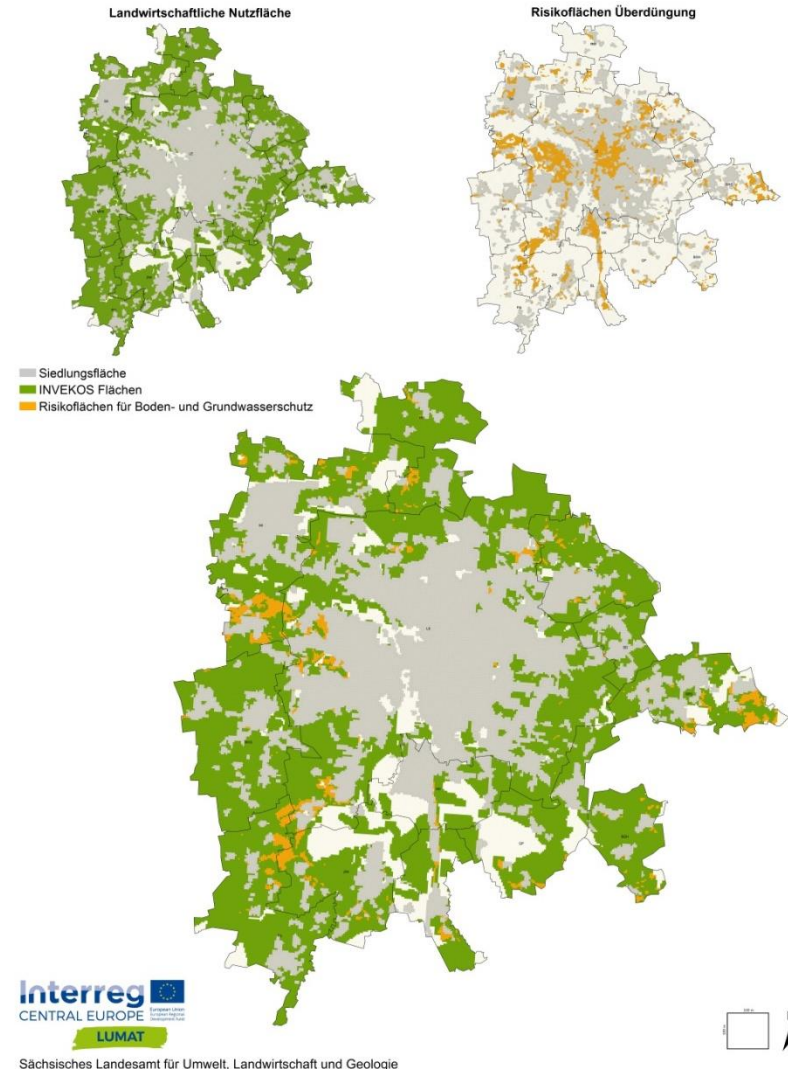
- Integrated Administration and Control System (IACS - Saxony)
- Evaluation of soil filtration for the protection of groundwater

Results:

- Identification of the agriculturally used sites with low level groundwater protection
(Evaluation = reduce the use of pesticides/fertilizers)

Goal:

- Soil and groundwater protection



DSS 5: COMPENSATION IN PROTECTED AREAS

Input Data:

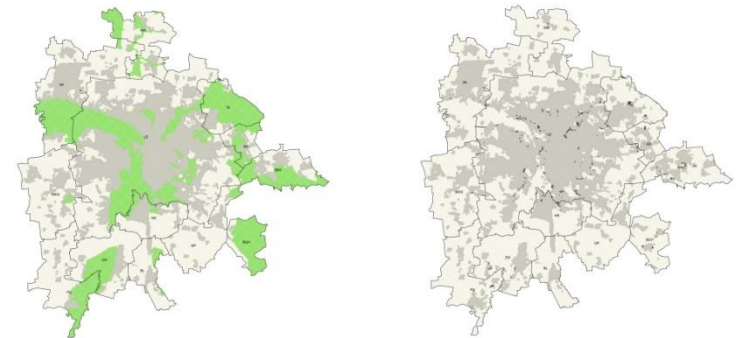
- Nature, Landscape, Water
- Brownfields (LfULG & City of Leipzig)

Results:

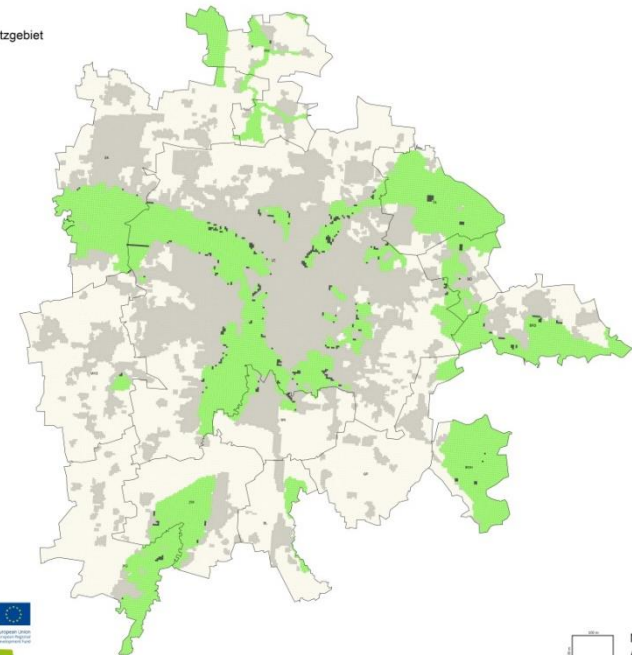
- Potentials for the revitalization of brownfields for improvement of natural capital

Goal:

- Improvement of nature protection zones



■ Siedlungsfläche
■ Schutzgebiete
■ Brachfläche im Schutzgebiet



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Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie



DSS 6: PRIORITIZATION

Input Data:

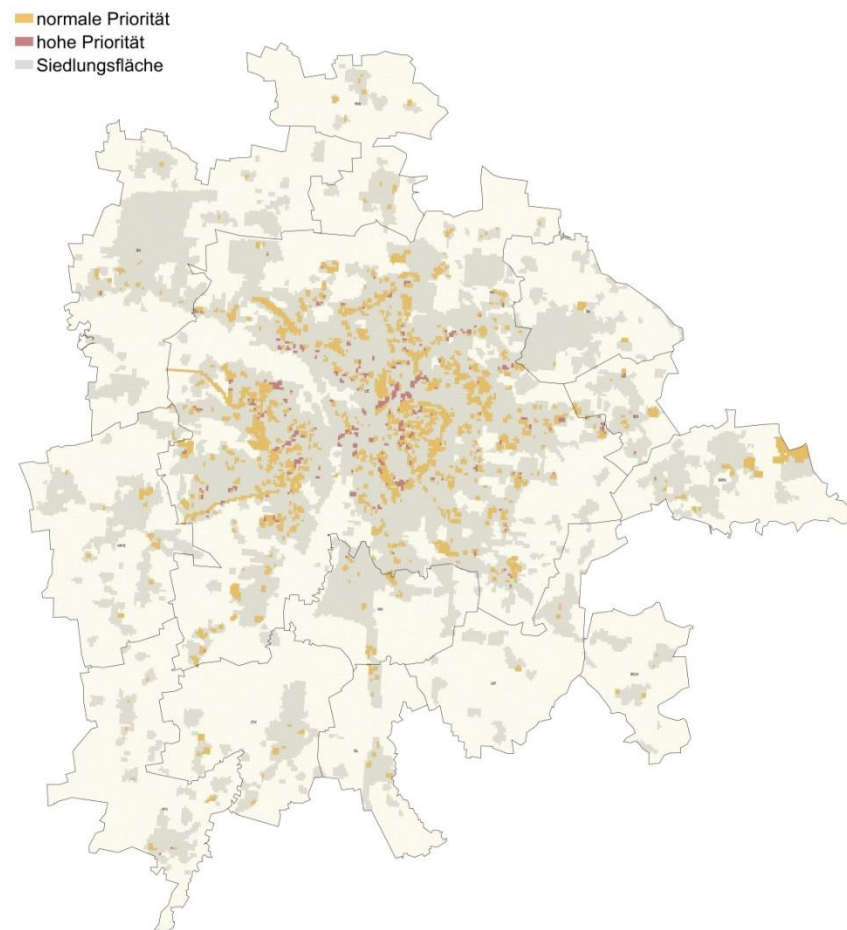
- Brownfields (+1)
- Location
 - Settlement area (+2)
 - Hinterland (+1)
- Flooding Zones (+1)
- Overwarming areas (+1)
- ... (...)

Result:

- Range from 1 - 4 Points

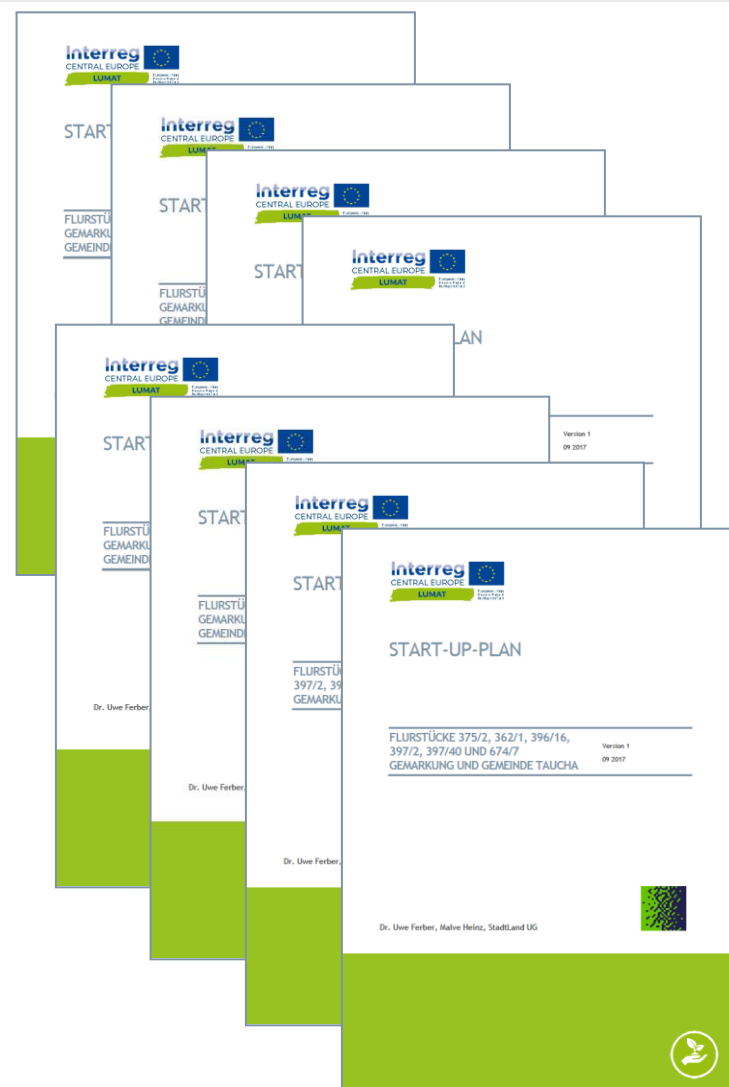
Goal:

- Prioritization of brownfields in entire GRL territory



Products for the Green Ring of Leipzig

- 6 DSS Maps for Decision Support Systems
- Shapefile with all the gathered information
- Mapping of the brownfields in rural communities
- Handbook LUMATO
- Action Plan up to 5-10 years
- Integrated Start-Up-Plans for 8 sites in FUA Leipzig



**Thank you very much for your
attention!!**

