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**ACTION PLAN FOR INTEGRATED  
ENVIRONMENTAL MANAGEMENT FOR  
SAXONY FUA**

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# 1. BACKGROUND

## 1.1. Introduction and Area of Intervention - the Green Ring of Leipzig (GRL)

The Saxonian Office for Environment, Agriculture and Geology is carrying out the LUMAT project within the German pilot area for the INTERREG CENTRAL EUROPE program. For this project, concepts on soil and land protection in functional urban areas are to be developed through cross border cooperation. The action plan for the pilot functional urban area (FUA) of Leipzig was developed in connection to the pilot region of the existing Green Ring Leipzig.

The Green Ring of Leipzig (GRL) entails of a portion of the FUA Leipzig as defined by the OECD, and is centered around the city of Leipzig. There are 13 municipalities and 2 counties who are members of the GRL<sup>1</sup>. Working and subsidiary working groups, including groups on the topic of land management, define the thematic and project work being undertaken by the inter-municipal cooperation. The legal foundation for the activities of the organization is the agreement for “specified purposes” according to §71 and §72 of the Saxonian Law for municipal cooperation<sup>2</sup>.

The GRL was chosen because it is dedicated to the explicit desire of renovating, maintaining and shaping the cultural landscape of the region through a voluntary and equitable working group as to ensure that the quality of life for citizens and residents in the area remains high. With the establishment of the GRL as an inter-municipal point of cooperation, the region has created a location advantage as compared to other regions. Cooperation is to be further expanded upon through LUMAT. Urban land management and environmental aspects in the hinterland will play a central role.

## 1.2. Sectoral and Spatial Context

The settlement structure in the core and hinterland regions of the Leipzig FUA has changed dramatically from the fast economic and social structural transformation which has occurred since the beginning of the 1990s. Shopping centers, industrial areas and settlement on greenfields were once signs of a new beginning after the reunification of Germany. However it took city cores a while to be able to adapt to these peripheral changes. The consumption of land which occurred through this process has greatly impacted the surrounding region of Leipzig because these developments lead to the complete loss of valuable soils and soil functions, the rising of flooding risk due to soil sealing and the loss of agricultural land resources. To deal with these types of impacts, various levels of planning look to steer development in a sustainable manner.

### 1.2.1. State level planning

The “Landesentwicklungsplan Sachsen 2013” (LEP, English: State Development Plan Saxony 2013) describes the main goals for sustainable development on the state level. In it, clear goals are established for reducing land consumption as well as addressing the presence of brownfields. To reduce the consumption of land and enable economically efficient land use in the state, the Saxonian State Government has decided that by the year 2020 no more than <2 hectares of land should be consumed on average per day.

The LEP states that the reduction of land consumption is “an important task of the further development of the Free State of Saxony” (p. 18). Reduction is to be achieved through:

- active land protection and compact building

<sup>1</sup> The municipalities of the GRL are: Belgershain, Boehlen, Borsdorf, Grossposna, Markkleeberg, Markranstädt, Leipzig, Rackwitz, Schkeuditz, Taucha, Pegau and Zwenkau

<sup>2</sup> <https://www.revosax.sachsen.de/vorschrift/2649-SaechsKomZG#x88>



- mobilization of gaps in the urban fabric for development and the de-sealing of existing settlement structures
- revitalization of brownfields as well as urban renovation

It is however mentioned that an overarching rejection of new land consumption is not able to be realized due to economic competition (new settlement required for the expansion of industrial and commercial infrastructure). The stated goal for reduced land consumption is in this manner partially thwarted through the same development plan. This is especially relevant for the fast growing city of Leipzig, where according to the goals of the LEP, a coordination of existing land use demands and efficient land use are to both guarantee the sustainable capabilities of the economy and infrastructure. The efficient use of land includes steering development to existing urban areas and transportation axes. Further, continuous open spaces are to be created within close proximity to existing settlement areas through regional green axes and green spaces.

### 1.2.2. Regional planning

The Regional Plan for Western Saxony states that the “quality of life in the regions, especially the quality of the environment and the attractiveness for living as well as tourism and recreational activities are to be improved”. The importance of the environment is mentioned in that “the protection of the environment as the foundation for life also for future generations as well as the maintenance of the manifold intellectual and cultural traditions and the unique cultural landscape qualities of the region are to be secured” throughout West Saxony (RPV Leipzig-Westsachsen, 2008, p.13).

As with the LEP, land efficient development is also mentioned in the regional plan. The municipal level shall also be compatible with regional level land management goals (LEP Chapters 2.2.1, see 2.2.1.4). This requires the analysis of building plots and existing settlement structures which are currently out of use (brownfields, gaps in the urban fabric and buildings without current use) and their potential reuse. This can make possible the comparison of existing building site potentials with the existing demand of new building sites (LEP Chapters 2.2.1 see 2.2.1.3).

Currently the regional plan is under revision and needs to integrate the new background of a fast growing economy and population. This brings with it a high amount of pressure on land in peri-urban locations, specifically in the northern part of the green belt.

### 1.2.3. Municipal planning

Projects and actions related to the aims and duties of the GRL are undertaken with the involvement and agreement of the member municipalities. This secures a coherence of goals for local building, landscape and green space planning measures as well as further sectoral planning and spatial development concepts.

A regional framework is given for the region by the GRL, the “Handlungskonzept 2015” (Action Concept 2015). This document has many priorities which are of importance for the LUMAT project, such as ideas and concrete actions which are planned for:

- brownfield regeneration,
- adaption of the city to warmer temperatures, as well as
- agricultural aspects.

These are closely related to the thematic topics identified in LUMAT for the Leipzig FUA region.



### 1.3. Strategic Development Plan

The Action Concept 2015 formulated the following strategic framework, “in and around Leipzig a landscape with a high quality of living, environment and recreation will be established”. The duties related to nature protection and the upkeep of the landscape, of environmentally friendly agriculture and forestry as well as the requirements of recreation and relaxation are all to be holistically managed and thematically connected to each other. The landscape which follows as a result of these actions will be maintained and developed sustainably. The connection of waterways between the city and the surrounding hinterland has a very important meaning for local recreation and the experience offered by the landscape. Natural cycles and infrastructure of public works are to be made tangible for the residents and connected throughout the area.

In summary it's possible to establish that:

- The GRL strengthens the natural foundations for life and supports the region in dealing with the many challenges of the future.
- It creates a favourable quality of life in the region.
- Action will focus on the regional identity by creating alliances beyond the existing municipal boundaries. In doing so the GRL focuses on both existing and future topics, strengthens nature as a foundation for flourishing ecosystems and prepares the region for the multiple challenges of the future.

The respective fields of action are as follows:

- Strong landscapes / stable ecosystems,
- A landscape to be experienced,
- Edible landscape, and
- Innovative landscape.

### 1.4. Land Management Strategy for the Implementation of Existing Strategic Development Plan

The GRL wants to implement the development plan through effective land management with inter-municipal cooperation. The actions which are required to do this are to be coordinated in a dedicated working group. The overarching goals are the reduction of consumption of agricultural land and the making possible of various construction activity types through the inter-municipal delegation of sustainable compensation measures. Existing tools for this include the web based cadaster map, the inter-municipal brownfield register IKOBRA and the inter-municipal land compensation tool IKOMAN. This tool is to be further supported by the LUMAT project activities in the region.

Land management includes:

- creation of urban green spaces for an improved quality of air and increasing the areas for recreation in the existing urban structures,
- revitalization of brownfields through deconstruction, renovation or de-sealing and reuse (brownfield management) and
- preparation and development of compensation sites on the inter-municipal level for the optimal implementation of actions that are justified in their impacts and are environmentally friendly while also dealing with challenges in the region (inter-municipal compensation land management).



The application of brownfield management within the territory of the GRL aims for the agreed and coordinated revitalization of brownfields. The revitalization shall take place through deconstruction, renovation or de-sealing and reuse. The process of revitalization can either be applied to green as well as urban type of spaces.

In green spaces, the revitalization process should serve the facilities present and the expansion of the total amount of green spaces in the existing settlement area. This is important, for example, because green spaces in the existing settlement structure can support the urban micro-climate in that they provide a cooling function to areas which may be prone to overwarming from a high degree of soil sealing. Also, the expansion of open spaces in the existing urban structure and in outer areas support the creation of habitat spaces and thus biodiversity can be enhanced as well as the qualities of agricultural sites. Also sites may be reforested or be used for activities such as urban gardening.

The urban reuse of brownfields supports the goal of minimizing the consumption of greenfields. Construction activities (commercial, residential) as well as compensation measures should both be redirected towards brownfield sites. Further aspects of climate protection should also increasingly be taken into consideration by the reuse of inner city brownfields. Actions such as the creation of micro-climate cooling islands (islands for the minimizing of urban heat island phenomena) could be of great use.

Inter-municipal compensation site management has the goal of preparing and developing compensation sites for the optimal implementation of measures with as small of a negative impact as possible and which are environmentally friendly within the GRL. Strived for is the steering of compensation actions for nature improvement/de-sealing and the greening of brownfield sites in the territory of the GRL and the prioritization of actions funded under compensation measures based on the ecosystem certificate system.

Since construction and infrastructure measures are often connected with large scale sealing which also mostly take place on agriculturally suitable land, the related compensation measures to these large projects should be steered away from these valuable soils and instead towards the existing brownfields.

The objectives of the inter-municipal development concept are included in the new 2017 development concept of the city of Leipzig<sup>3</sup>.

## 1.5. Scientific Input - Ecosystem Services and Threats for Land And Soil

An important goal of the LUMAT Action Plan for the GRL is to communicate and integrate the experience of stakeholders and the current status of the evaluated threats to land and soil into an integrated environmental management strategy. A concept of ecosystem services is to be achieved through a process of stakeholder involvement, which will aim for a more sustainable approach to land and soil in the region.

There are currently 5 identified threats which will be displayed in a newly developed tool for the pilot area in the German FUA region. The threats identified and their definitions in the LUMAT project include:

1. **Brownfields** - using the methodology developed in the CENTRAL EUROPE CircUse project.
2. **New soil sealing** - the consumption of natural land resources, this includes planned settlement expansions.
3. **Over-fertilisation risks** - sites which are especially sensitive to agricultural land use due to the low filtration function of the soil.
4. **Overwarming risks** - sites of excessive sealing grades which, due to their location or agglomeration, cause for excessive heating in urban environments as compared to natural and green land uses.

<sup>3</sup> <https://www.leipzig.de/bauen-und-wohnen/stadtentwicklung/stadtentwicklungskonzept-insek/> (German)



5. **Flooding hazard risks** - sites which are threatened to be under water given the data available for the HQ 100 flood (flooding event occurrence = ca. every one hundred years).

In order to properly evaluate these threats in the territorial context in which they are found, a plethora of supporting information can be referenced to. Within the scope of the LUMAT project, further supporting information will be gained from looking at:

- Land use plan
- Building plans
- Soil function evaluation
- OECD FUA categorization

These other existing types of information will help stakeholders to understand the context as well as urgency to mitigate the threats which exist in the FUA community.

## 2. ACTION PLAN FUA LEIPZIG

### 2.1. Vision/Mission Description

Sustainable soil and land management will be strengthened in the Green Ring of Leipzig (GRL) by the planned activities of LUMAT and will become anchored into existing administrative structures. A new tool (LUMATO 1.0) will enable decision makers to manage land resources for a more balanced settlement structure and support the goals of the Regional Action Concept (RHK) to develop an attractive “Green Ring” of Leipzig. Actions on brownfield revitalisation will be implemented and serve as pilot projects to show positive examples of what can be achieved with the LUMATO 1.0 Tool and through land management.

### 2.2. Objectives and Priorities

Goals of the Action Plan Saxony:

- The direct living environment of the citizens in the GRL will be improved through the protection, development of urban and peri-urban green spaces in FUAs.
- Brownfields are to be revitalized through demolition/de-sealing and the carrying out of compensation measures on these sites. This will further develop the quality and interconnection of the green infrastructure, help reduce land consumption and optimize local ecological services.
- To direct the demand for new urban land uses onto inner city brownfields or in other cases onto suitable brownfields in outer city areas (should the demand for this exist) through land recycling.
- To improve the water retention of soil through the de-sealing of brownfield sites.

The objectives for the action plan in the Saxonian pilot region of the GRL are as follows:

- Restrict the consumption of land in the region of the city of Leipzig through the use of the existing inner development potentials
- Targeted de-sealing actions on brownfields in outer areas
- Development of the green infrastructure and the strengthening of the amount of green land present in the city and region



- Effective land management and brownfield regeneration management structures through inter-municipal cooperation.

## 2.3. Definition of Areas

As a result of the participation process with the stakeholders of the GRL, the area of intervention is to be extended to include all of the municipalities of the Green Ring. This will help create a holistic range for searching compensation sites in the tool and be used as a support for inter-municipal cooperation. The municipalities of the cooperation currently are:

1. Belgershain
2. Boehlen
3. Borsdorf
4. Brandis
5. Grosspoessna
6. Leipzig
7. Markleeberg
8. Markranstaedt
9. Pegau
10. Rackwitz
11. Schkeuditz
12. Taucha
13. Zwenkau

## 2.4. Actions

### Action 1.1: Revision and update of the brownfield register in the Green Ring of Leipzig

Steps:

- Complete on-site analysis of the brownfields in the Green Ring of Leipzig area
- Data analysis and dialog process with the members of the Green Ring of Leipzig, further stakeholders
- Transfer information into the existing IKOBRA database of the city administration

### Action 1.2: Development and publishing of the LUMATO 1.0 Tool

Steps:

- Identification of threats for soil and land uses (until 10/2017)
- Analysis of threats (until 12/2017)
- Development of technical solutions (until 6/2018)



- Development of an evaluation system (until 10/2018)
- Delivery to the FUA stakeholders (municipalities, regional authorities, etc.) (3/2019).

### **Action 1.3: Support inter-municipal land management through the LUMATO 1.0 Tool in the Green Ring of Leipzig**

Steps:

- Analysis of all inner development potentials (until 07/2017)
- Evaluation of threatened sites within the LUMATO 1.0 Tool (until 06/2018)
- Selection of pilot actions with stakeholders (starting 06/2018)

### **Action 1.4: Pilot projects**

- Identification of sites and Start-Up Plans
- Develop partnership with the Central Land Management Agency of Saxony (Zentrales Flächenmanagement Agentur Sachsen)
- Project development (planning, funding. For more information see following section “pilot projects”).

## **2.5. Time and Financial Planning, Organisation**

Relevant stakeholders for determining time, financial planning and general organization are:

- The municipalities as the holders of planning policing powers and spatial policies
- Property owners of all types of land sites, including public owners, such as the “Central Land Management Agency of Saxony”
- The Free State of Saxony with its regulative powers and funding strategies.

## **2.6. Financing Programs**

The financing of the activities mentioned in the action plan is to follow via a combination of various financing mechanisms:

- **Management:** the inter-municipal activities are to be generated through an appointment mechanism gathered from municipal contributions. Beyond this, the further development of the use of national and European funding programs (for example the BMBF on the German national level, HORIZON 2020 on the European level) are to be pursued.
- **Pilot actions:** three streams of funding are possible for the carrying out of pilot actions
  - Municipal finances as well as the possible expansion of available funds from the Central Land Management Agency
  - Financing dedicated to environmental compensation measures
  - Financing from the Saxonian state program for brownfield revitalization.

### 3. PILOT PROJECT DESCRIPTION

There are currently three feasibility studies which have been carried out in the Leipzig pilot region to describe pilot projects in the area. These pilot projects have been chosen and developed with the involvement of stakeholders. Further coordination and communication work is expected to take place, as well as gathering the input from the stakeholders regarding the proposed after uses of the sites. The pilot projects are as follows:

#### Leipzig

The unused buildings and sealed areas on the site are to be deconstructed. The size of the site is 21,260 m<sup>2</sup>. After the deconstruction of the building and sealed spaces, a greening of the site in the frame of compensation actions is foreseen.

- Responsible stakeholder: The City of Leipzig
- Result: 2,1 hectares of ecological compensation
- Costs (Start-Up plan) 600,000.00 €
- Monitoring: to take place during the upkeep of the property.

#### Großsteinberg

The former pig sty is located within an area characterized by agricultural uses and which is broken up in character by the neighboring forest and trees along the train tracks. The ruinous building and the lack of safeguarding for the property create a visually unpleasant and planning non-compliance situation. These are to be addressed first. With consideration given to the landscape, the agriculturally used part of the property can continue to be used. The construction for the former pig sty is to be deconstructed. Through this deconstruction land will become available that can be used as a free open space as well as a site for compensation measures or as an alternative for solar panels.



Figure 1. Use concept for the property in Großsteinberg

- Responsible stakeholder: Central Land Management Agency of Saxony in agreement with the Municipality of Naunhof
- Result: Roughly 1 hectare of ecological compensation land
- Costs: (Startup plan) 140,000.00 €

- Monitoring: to take place during the upkeep of the property.

### Naunhof/Fuchshain

The site is not possible to be used for a constructional use and for this reason should instead be used as a compensation site. This can enrich the surrounding agricultural landscape and strengthen the ecological function of the surrounding green axes of the Threne. A design which improves the landscape can be done as a type of compensation action according to section 15 of the federal nature protection law (BNatschG). After an initial evaluation of the site, the surrounding areas of land which are not sealed can be left to the succession of nature and the central sealed areas can be partially de-sealed and ecologically improved.



Figure 2. Site plan for the property in Naunhof/Fuchshain (in red are the existing sealed areas, in blue are the surrounding areas)

- Responsible stakeholder: Central Land Management Agency of Saxony in agreement with the Municipality of Naunhof
- Result: Roughly 0.6 hectares of ecological compensation land
- Costs: Start-Up plan - to be determined
- Monitoring: to take place during the upkeep of the property.

## 4. LUMAT TOOLS

The actions in the LUMAT FUA region of Leipzig will be gathered and evaluated in the LUMATO 1.0 tool for integrated sustainable land management and stakeholder interactions. This tool will support action plan development and pilot project activities. An overview and integration of the threatened areas will be given to the stakeholders with the tool for further evaluation. This will allow for them to identify the most useful areas that can be addressed by compensation measures and to also direct their next future actions for site revitalization. An initial prioritization of measures to be carried out will be developed as a guide.

## 5. CAPACITY BUILDING AND INSTITUTIONAL APPROACHES

The action plan requires an institutional implementation into the existing organisational structures of the stakeholders present in the FUA. This is to ensure the activities of the project for sustainable land



management for eco-system services are integrated and used directly in the routine duties of the stakeholders beyond the timeframe of the LUMAT project. The goal is to install long-term land management approaches for sustainable ecosystem services in the growing region of the Green Ring Leipzig. This is to be done with the cooperation of the Green Ring of Leipzig working group and the management structure it presents. The activities of inter-municipal cooperation for the revitalisation of threatened areas and making the places more livable (as currently being undertaken by the GRL organization) are to be further supported.

In the growing region of Leipzig, the planning framework is constantly changing. These changes will be integrated into LUMAT information and will continue to be recognized by the existing management structure for sustainable development. The information from LUMAT will remain sustainable and relevant beyond the project timeline in this manner. Relevant and necessary priority projects are to be actively developed.

The existing working group will be trained for sustainable land management. The required capacity for these tasks will be intensified. Based on the feasibility studies and using the LUMATO 1.0 tool, stakeholders are involved in project preparation, fundraising and compliance with existing licensing procedures.