

D.T2.3.1 - REQUIREMENTS AND CHECKLIST FOR AN INTEGRATED ENVIRONMENTAL MANAGEMENT STRUCTURE

Report on requirements and Checklist for an
Integrated environmental management
structure responsible for land and soil
resources management in the FUA

Version 1
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Target of this checklist: Checklist for sustainable development and action on land and soil in FUAs

This is a checklist for undertaking integrated environmental management in Functional Urban Areas (FUAs). This checklist has the goal of identifying threats on land and soil and minimizing the damage done on land resources. The overarching goal is to achieve more livable places in FUAs through realizing sustainable land use via integrated environmental management.

Sustainable land use requires the protection of land and soil and takes into consideration the information regarding threats and the harmful impacts upon land. Information from expert planning processes along with any further supporting information should be adequately integrated. Through a direct integration of various types of information, the threats on land and soil are to be minimized and the amount of environmental damage which may occur is to be reduced. The direct result is making more livable places for nature and humans through undertaking strategic and guided sustainable actions.

EU Directives for the Protection of Land and Soil

The European directive 2011/92/EU declares land as an item for special protection. The special status given to land in the directive is the first time that land has been listed as an item for protection on the same level as other protected items. Further, the directive 2014/52/EU, which updates the previously mentioned directive, states that “public and private projects should therefore consider and limit their **impact on land**, particularly as regards land take, and on soil, including as regards organic matter, erosion, compaction and sealing; appropriate land use plans and policies at national, regional and local level are also relevant in this regard.” (Directive 2014/52/EU of the European Parliament from the 16.04.2014 (paragraph 9)). The 2014 directive specifically underlines the importance of soil and is to find its reflection in the national laws and regulatory processes of Central European countries. For example in Germany the Strategische Umweltprüfung Gesetz (SUP) - which can be translated as the “Environmental Impact Assessment law” - also states the importance of protecting land and soils. The actual laws in the other partner countries of the LUMAT project are wide ranging.¹

Stakeholders are to take a look at the various aspects (threats, implementation, etc.) and to see what conditions exist in their area of action for undertaking integrated environmental management of land through existing organizational structures in the FUA. Where an aspect of the checklist is identified to be missing or lacking in content, it is recommended that the user of the checklist coordinate with stakeholders in the FUA to achieve the mentioned step.

This checklist is organized in such a way as to serve the overarching goals of LUMAT; sustainable integrated environmental management of land and soil in FUAs. Regional specificities are to be considered.

¹ After translation of the checklist please insert a link to your own adaptation of the European Directive 2014/52/EU.



The 7 parts of this checklist are:

1. CITIZEN INVOLVEMENT²

Strive for getting a **commit** from the public.

Create a platform for working together and undertaking effective communication (the earlier this can be established the better it will be for gaining trust from the public).

Adapt the input gathered from citizen involvement for integrated environmental management.

Configure and use technical solutions for citizen participation.

2. FACTS ON FUA IDENTITY: SPECIAL ASPECTS OF FRAMEWORK

Where are the borders of the FUA? Where are the borders of the core and hinterland areas? What are the interactions between the core and hinterland areas?

What are the main spatial, social and environmental characteristics of the FUA area (with emphasize on those aspects important for sustainable land use management)?

i.e. is the area more “rural” in character, or a metropolitan area, a mix of various use types, growing or shrinking population, etc.

Are stakeholders in the FUA (or other parts in the FUA) already undertaking sustainable development and urban action?

3. FACTS ON STAKEHOLDER INVOLVEMENT

Who is responsible in the area of action / points of contact for sustainable land management?

What are their administrative structures and responsibilities?

What are the interests of the involved stakeholders and how can these be managed for the purposes of sustainable land management in the FUA?

Are there already systems/processes in place for stakeholder management and the analysis of threats (interdepartmental/inter-municipal communication, integrated environmental assessment, etc.)?

If yes, do they adequately correspond to sustainable land management goals?

If no, how can the ideas of sustainable development be used to achieve improved land management?

² The involvement of citizens should be understood as a process that is to be heavily considered at every step of project definition and implementation (what information can citizens provide which is relevant?)

4. THREATS IN THE FUA - WHAT, WHERE AND WHO

Soil sealing on land - takes place through construction activities which destroy the quality of natural soil through impermeable and artificial surfaces/soils.

If YES, the threat is present, then...

Identify the de-sealing options of soil sealing intentions

- Identify where sprawl is planned (map)
- Determine the amount of land consumption (hectares)
- Identify who is responsible for controlling the sprawl process (multiple stakeholders involved!)

If NO, the threat is not present, then skip



Brownfield sites - brownfield sites are previously used sites which are currently not in use (see CircoUse Project definition)

If YES, the threat is present, then...

Identify the de-sealing options on brownfields for more green sites

- Identify the brownfields in a cadaster (map information)
- Identify the potentials for the revitalization of selected brownfields (according to the need of stakeholders)
- Identify who is responsible for the individual brownfields of interests / identify who is able to take action

If NO, the threat is not present, then skip



High water / flood hazard on land - flooding hazard exists in areas which may become inundated after certain weather events.

If YES, the threat is present, then...

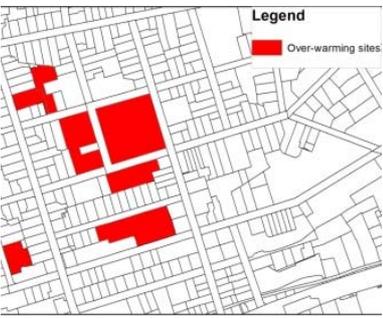
Identify the options for de-sealing actions for more water retention

- Identify information on the areas which are threatened by flooding (map information)
- Identify areas of unnecessary soil sealing (brownfields) in these areas with lowered water retention characteristics
- Identify who is able to take action on the identified sites

If NO, the threat is not present, then skip





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| <p>Contamination sites - <i>sites with existing contamination</i></p> | |
| <p>If YES, the threat is present, then...</p> <p><u>Identify the sites that are in need of remediation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify sites where contamination concerns exist (map information) <input type="checkbox"/> Identify and collaborate with existing agencies which deal with the issue of contamination site identification and remediation (expert planning) <p><i>If NO, the threat is <u>not</u> present, then skip</i></p> |  |
| <p>Over-fertilization on sensitive land - <i>land where the characteristics of the soil and agricultural land use may lead to potential conflicts in eco-system service provision</i></p> | |
| <p>If YES, the threat is present, then...</p> <p><u>Identify how the harmful discharge of pollutants can be minimized</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the soil areas which are sensitive to external influences (i.e. low protection level for the groundwater) (map information) <input type="checkbox"/> Identify the sites where fertilization and the application of harmful elements may be expected to take place <input type="checkbox"/> Identify who is able to take action on the identified sites <p><i>If NO, the threat is <u>not</u> present, then skip</i></p> |  |
| <p>Overwarming sites - <i>sealed soils and impermeable surfaces cause for surfaces to overheat and for water (which may function as a cooling element) not to be retained on site, which may lead to local imbalances in the micro-climate</i></p> | |
| <p>If YES, the threat is present, then...</p> <p><u>Identify how cooling action can be realized (urban green on brownfields)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify areas for overwarming potential i.e. areas with a high degree of soil sealing (FUA relevant) (map information) <input type="checkbox"/> Identify actions for micro-climate regulation and air purification <input type="checkbox"/> Identify who is able to take action on the identified sites <p><i>If NO, the threat is <u>not</u> present, then skip</i></p> |  |



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| <p>Soil erosion land - areas at risk of losing their topsoil to natural weathering (i.e. water and/or wind)</p> | |
| <p>If YES, the threat is present, then...</p> <p><u>Identify what can be done to cover erosion places by vegetation</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the areas with risks for erosion and existing erosion sites (map information) <input type="checkbox"/> Identify who is able to take action on the identified sites <p>If NO, the threat is <u>not</u> present, then skip</p> |  |
| <p>Air pollution - sustainable land management also includes the consideration that natural green spaces can support air purification through eco-system service provision</p> | |
| <p>If YES, the threat is present, then...</p> <p><u>Identify how brownfields can be revitalized to contribute to the purification of air through eco-system services</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the threatened areas that are harmed by air pollution (map information) <input type="checkbox"/> Identify sites which could be revitalized into green spaces for eco-system provision and the benefits they may be able to contribute (quantify) <input type="checkbox"/> Identify who is able to take action on the identified sites <p>If NO, the threat is <u>not</u> present, then skip</p> |  |
| <p>Loss of soil biodiversity</p> | |
| <p>If YES, the threat is present, then...</p> <p><u>Identify how more soil biodiversity on erosion threatened land can be achieved</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify who is able to undertake action on the identified sites <input type="checkbox"/> Identify location of erosion gullies or channels on agricultural land <input type="checkbox"/> Identify where there is high soil compaction on farmer land <input type="checkbox"/> Identify potentials for alternative land uses on intensively used agricultural land <p>If NO, the threat is <u>not</u> present, then skip</p> |  |



5. MANAGEMENT AND ACTION ON THREATS - INTEGRATED STRUCTURE

Check in FUA: actions undertaken for the identified threats

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| Soil sealing on land - avoid and minimize | |
| Have sites been identified and presented to stakeholders to steer development towards previously built land (potential building sites on brownfields)? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Have inner development potential sites been identified and carefully considered against greenfield developments? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Have appropriate, sustainable compensation measures been identified which do not further harm natural land resources? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Brownfield sites - feasibility studies and databases | |
| Have potentials for de-sealing and revitalization been identified? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Are there funding sources available for actions on brownfields? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Have the necessary stakeholders been identified and consulted to make action happen? (who is responsible) | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Are there existing technical solutions for a brownfield database with all the relevant information for stakeholders to take action? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Overwarming sites - urban green spaces provision | |
| Have sites been identified which can be used for increasing urban green areas in the settlement area? (cooling function!) | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Over-fertilization on sensitive land - minimize harmful effects | |
| Have sites which are sensitive to external inputs been identified | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Have the stakeholders been contacted to change the harmful application of external materials and products? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Contamination sites - remediation | |
| Are there existing approaches for site de-contamination? Are the sites known and are they being addressed? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Are there funding sources available for site decontamination? | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| High water / flood hazard on land - water retention | |
| Are sites able to be addressed which can be used for improving the water retention in the FUA area? (de-sealing!) | <input type="checkbox"/> YES <input type="checkbox"/> NO |



| | |
|--|---|
| <p>Air pollution - purification</p> <p>Can sites which are able to provide an improved eco-system service provision be identified?</p> <p>Are these identified sites able to be revitalized with the cooperation of the involved stakeholders?</p> | <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> |
| <p>Soil erosion land - mapping and stabilization</p> <p>Have the threatened sites been identified?</p> <p>Are these identified sites able to be revitalized with the cooperation of the involved stakeholders?</p> | <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> |
| <p>Loss of soil biodiversity - support the improvement</p> <p>Have the threatened sites been identified?</p> <p>Are these identified sites able to be revitalized with the cooperation of the involved stakeholders?</p> | <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> |
| <p>6. IMPLEMENTATION OF INTEGRATED ENVIRONMENTAL MANAGEMENT</p> | |
| <p>Check in FUA: improve integrated environmental structure</p> | |
| <p>Have all of the FUA relevant threats been mapped together? Have the relevant plans and strategies on the various political levels (EU, national, regional, local, etc.) been considered?</p> <p>Is the integrated analysis of environmental threats and the negative effects they may have on various types of elements possible? Is such an approach encouraged? (please see Table 1 presented at the end of the checklist for example of the effects of threats on various natural media)</p> <p>Have the stakeholders who are responsible for information on threats on the one hand and the stakeholders responsible for carrying out actions able to coordinate with each other? (stakeholder management between different departments or municipalities, the general public, etc.)</p> <p>Are citizens properly and proactively encouraged to become involved?</p> <p>Are the goals of making more livable places (and improving the eco-system services) in the FUA region commonly pursued together?</p> <p>Technical - is type of relevant information which is required to start projects on threatened land available (e.g. brownfields - geo-coordinate data, property sizes, type of owners, etc.)</p> <p>Technical structure - are the responsible personnel identified who could be responsible for carrying out integrated analysis on the environmental management of land and soil?</p> | <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> |



7. EVALUATION: WHAT IS TO BECOME BETTER?

Develop a scheme/method for the evaluation of threats and the improvement of ecological system services in the FUA

Include the work of integrated evaluation between different sectoral fields and aim for the integration of as much information as possible

Create priorities for addressing threatened areas which reflect the needs of stakeholders and the anticipated positive effect expected to be on ecosystem services

Explain! This is to help motivate stakeholders

What exactly will become better?

How will sustainable land use become a reality?

Where can improvements be made in the city? What exact sites?

Why are more livable places desirable? How will more livable places look like? Explain how it could be like to live in an area with less threatened land!

Table 1: Threats and the harmful effects they have upon various medium, with emphasis given to the component of land/soil

| Are the following THREATS harmful for... | LAND/ SOIL | WATER | AGRICULTURE | HUMANS | NATURE |
|--|------------|-------|-------------|--------|--------|
| Soil Sealing on Land | YES | YES | YES | YES | YES |
| Brownfield Sites | YES | YES | YES | YES | |
| Overwarming Sites | YES | | | YES | |
| Over-fertilization Land | YES | YES | | YES | YES |
| Contamination Sites | YES | YES | YES | YES | |
| High Water / Flood Hazard on Land | YES | YES | YES | YES | YES |
| Air pollution | YES | | | YES | |
| Soil Erosion Land | YES | YES | YES | YES | YES |
| Loss of Soil Biodiversity | YES | | YES | YES | YES |

Note: all photos used in the document are property of the LfULG organisation (2018)