

## Land use and rehabilitation options for the former landfill of the City of Greifswald

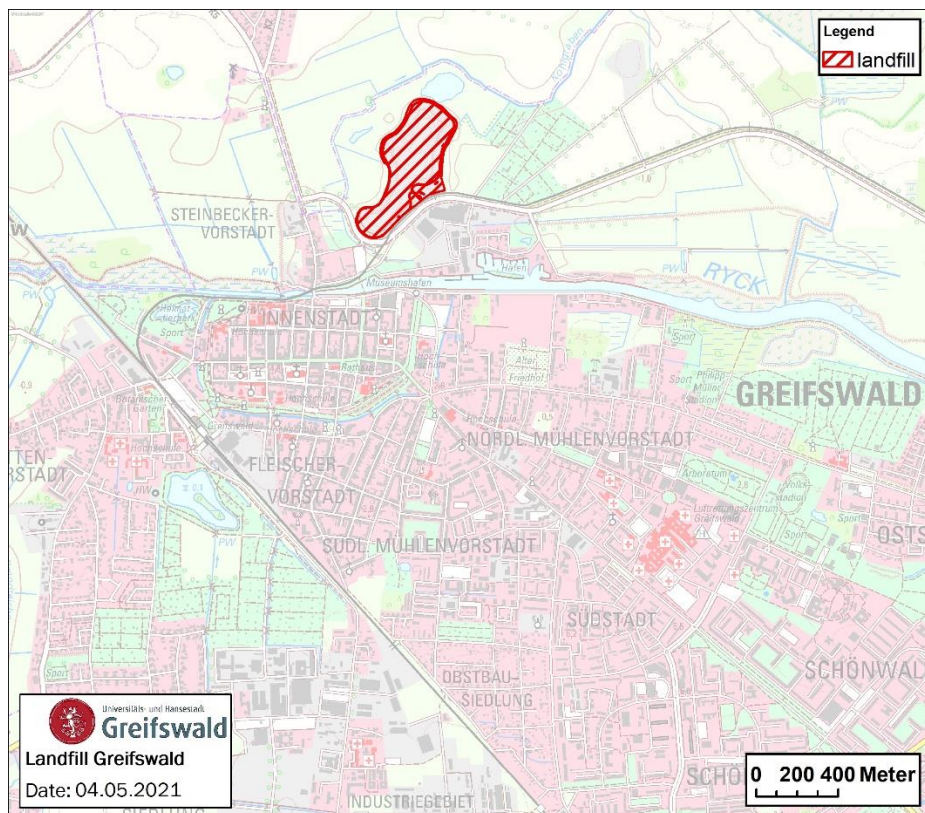
### A Policy Learning Platform peer review

1 – 2 July 2021

### Final Report

#### 1. Brief presentation of the beneficiary and its motivation to host a peer review

The Hanseatic City of Greifswald deals with the use of its landfill in the vicinity of the city centre (Fig. 1). Situated approximately 650 m away from the inner city, the landfill was piled up in the last decades of the GDR and closed in the mid-1990s (Fig. 2). It was professionally locked and technically processed following the state of the art. With a maximum height of 22 m it is now one of the highest elevations around Greifswald. The former household waste dump will be sufficiently degassed and sacked in a few years to be available for more active use in the sense of urban development.



**Fig. 1:** Map section of the Greifswald city map showing the location of the landfill 'Salinenstraße' north of the district Steinbeckervorstadt and Greifswald city centre (map by A. Mehnert)

The site has a great potential within the overall urban development and for integration into the urban area as a vibrant part of city life. At the same time, the development of the closed landfill should be considered in the synthesis of environmental sciences, urban planning/urban renewal or urban economics. In this context, the City of Greifswald sought input from experts from other EU regions on their own experiences with landfill rehabilitation, ideally in a situation comparable to Greifswald (location close to the city centre and desire to reintegrate the site into the functional urban area).



**Fig. 2:** View from the active landfill to the inner city of Greifswald before 1998 (left photo) and landfill today, seen in a 180-degree view (right photo) (Photo source: Department of Environment and Nature Conservation, city administration of Greifswald)

A peer review of the Interreg Europe Policy Learning Platform provided an ideal opportunity to get best-practice examples and advice for urban and strategic planning, stakeholder participation, risk management, project planning and management as well as funding and project implementation at the international level of knowledge. In addition, the European network of the Interreg Europe Policy Learning Platform facilitates contact with other European municipalities and institutions active in the field of landfill rehabilitation to enable further cooperation.

## **2. Specification of the policy challenge encountered**

The area between inner city, harbour area and landfill is more and more becoming subject to high planning and development pressure. It is therefore of particular importance to explore the development potential of the extremely valuable and attractive location at an early stage. Although, more than 20 years ago urban planning in Greifswald has started to develop different scenarios and ideas how to reuse this part of the city, there is now a need of more detailed implementation-orientated planning-results. In 2020, a development plan for the Steinbeckervorstadt area (see location in Fig. 1) was drawn up (Masterplan Steinbeckervorstadt). The reuse of the landfill plays an important role in the development plan, so that the topic is put to the planning and local political agenda. In the next steps, more technically oriented and binding planning results need to be developed.

The challenging planning-target should be:

- to change the spatial pattern from peripherisation to functional inclusion
- to include the former rubbish dump in the vital urban space

## **Policy Learning Platform peer review**

### **- Land use and rehabilitation options for the former landfill of the City of Greifswald -**

- to transform the area into valuable functional parts of integrated urban land-use with the main focus on creating new opportunities for public space
- to foster urban inner-development to avoid further suburbanisation-processes

These planning framework conditions formed the basis and prerequisite for all considerations in the peer review. Case studies on the state of the art in landfill rehabilitation, either on the renaturation of landfills and their conversion into recreational areas or on the deconstruction and rehabilitation of landfills, should be presented during the peer review or should address the following questions:

- a. What are the new functions of the old landfill area?
- b. How has it been included in or linked to the surrounding urban and peri-urban areas?
- c. How has the environmental risk been managed? What long-term monitoring is in place?
- d. Which rehabilitation alternatives had been discussed and why was the final solution chosen over the alternatives?
- e. Which costs were incurred and what financing sources were used? Was any revenue derived from the conversion?
- f. What were the concrete planning steps? How long did the planning process last - from the first ideas to the final concept and the beginning of the restructuring?
- g. Which institution or planning department managed the planning process? What was the workload for the responsible staff involved in the planning process?
- h. How could stakeholders and citizens be involved in the planning process (consultation, idea & design competition)?
- i. How to build public support for the solution chosen and how to educate the general public about waste management and remediation?

### **3. Participants**

The University and Hanseatic City of Greifswald successfully applied for a peer review of the Interreg Europe Policy Learning Platform with the topic of landfill rehabilitation in spring 2021. Based on the background paper and the call for peers by the Interreg Europe Policy Learning Platform, four experts from Belgium, France, Malta and Spain were selected.

The environmental and urban planning departments of the Greifswald municipality asked stakeholders relevant to the topic to participate in the peer review and to express their views, ideas or reservations about landfill development. Furthermore, experts from the waste management department of the University of Rostock and colleagues from the urban planning and urban ecology (BUGA) departments of the city administration of the Hanseatic and University City of Rostock were invited to the peer review. As the landfills in Rostock and in Greifswald have similar conditions and framework conditions, the participants from Rostock were also invited to the peer review as stakeholders.

**List of participants**

<b><i>Interreg Europe team</i></b>
<ul style="list-style-type: none"><li>▪ Astrid Severin – Thematic Expert, Environment and resource efficiency</li><li>▪ Elena Ferrario – Thematic Manager</li><li>▪ Eugénie Supplisson – Event Manager</li><li>▪ Katharina Krell – Thematic Expert, Low Carbon Economy</li><li>▪ Dr. Marco Citelli – Thematic Expert, Environment and resource efficiency / Low Carbon Economy</li><li>▪ Luka Messner – Interreg Europe Policy Officer</li><li>▪ Marie Guitton – Interreg Europe Policy Officer</li></ul>
<b><i>Peers</i></b>
<ul style="list-style-type: none"><li>▪ Dr. Clyde Falzon Bouvett – WasteServ Malta Limited, Malta</li><li>▪ Eddy Wille – Governmental agency of Flanders (OVAM, VLAIO), Belgium</li><li>▪ German Coca – Ministry of Agriculture, Livestock, Fishing and Sustainable Development - Andalusia - Spain</li><li>▪ Prof. Michel Chalot – Université de Bourgogne Franche-Comté, France</li></ul>
<b><i>Local stakeholders</i></b>
<ul style="list-style-type: none"><li>▪ Ulrike Pietz – Head of Department Plant authorisation according to the Federal Immission Control Act, waste disposal plants, municipal waste management, State Office for Agriculture and the Environment Western Pomerania, Hanseatic City of Stralsund</li><li>▪ Dörte Wolfgramm-Stühmeyer – Agricultural farm Wolfgramm, Levenhagen, close to Greifswald</li><li>▪ Michael Steiger – Citizens' initiative Steinbeckervorstadt, City of Greifswald</li><li>▪ Jörn Kasbohm – Geologist, Representative of the Committee for Climate Protection, Environment, Mobility and Sustainability and Member of the citizenship, City of Greifswald</li><li>▪ Henriette Runge – Urban ecology, BUGA Department, Rostock</li><li>▪ Dr. Andreas Schubert – Office for Urban Development, City Planning &amp; Economics, City of Rostock</li></ul>
<b><i>Members of the beneficiary organisation</i></b>
<ul style="list-style-type: none"><li>▪ Dr. Stefan Fassbinder – Lord Mayor</li><li>▪ Jeannette von Busse – First Deputy Mayor and Head of Section 2 - Building, Environment, Citizen Services and Fire Protection, City of Greifswald</li><li>▪ Anke Krüger – Head of the Environment and Nature Conservation Department, City of Greifswald</li><li>▪ Erik Wilde – Head of the Urban Development Department, City of Greifswald</li><li>▪ Falko Ahlswede – Departmental Control Officer of Section 2, City of Greifswald</li><li>▪ Jafar Akrami – Development Planning Officer, City of Greifswald</li><li>▪ Dr. Juliane Brust-Möbius – Climate Protection Manager, City of Greifswald</li><li>▪ Georg Döll – Development Planning Officer, City of Greifswald</li><li>▪ Yana Efremova – Development Planning Officer, City of Greifswald</li><li>▪ Michael Haufe – Environmental Prevention/Climate Protection Officer, City of Greifswald</li><li>▪ Dr. Michael Heinz – Urban Development Planning Officer, City of Greifswald</li><li>▪ Dr. Angela Mehnert – Soil Protection/Legacy Pollutants/Waste Water Officer, City of Greifswald</li></ul>
<b><i>Invited Guests</i></b>
<ul style="list-style-type: none"><li>▪ Oliver Köppen – Urban development and Land Use Planning Officer, Hanseatic and University City of Rostock</li><li>▪ Jens Will – Urban Land Use Planning Officer, Hanseatic and University City of Rostock</li><li>▪ Dr. Abdallah Nassour – Research Associate Waste and Material Flow Management, University of Rostock</li><li>▪ Prof. Gert Morscheck – Waste Management, University of Rostock</li><li>▪ Gunnar Platz – Project Manager and Managing Partner at PLANCO Consulting GmbH, Essen</li></ul>

#### 4. Policy Recommendations

During the peer review, the four peers addressed the issues of the University and Hanseatic City of Greifswald. Examples were used to show how the process of landfill rehabilitation can take place and which aspects need to be considered. The summary contains the most important key points that should be taken into account in the remediation process. These are:

1. General Considerations
2. Main drivers and high-level objectives
3. Stakeholder involvement
4. Risk assessment
5. Potential rehabilitation concepts
6. Funding sources and budget
7. Ex post Communication

The timetable for the implementation of the peers' recommendations by the University and the Hanseatic City of Greifswald is indicated by short-, medium- and long-term schedules (short-term: 1-2 years, medium-term: up to 5 years, long-term: 5-10 years). These represent initial non-binding and conditional planning.

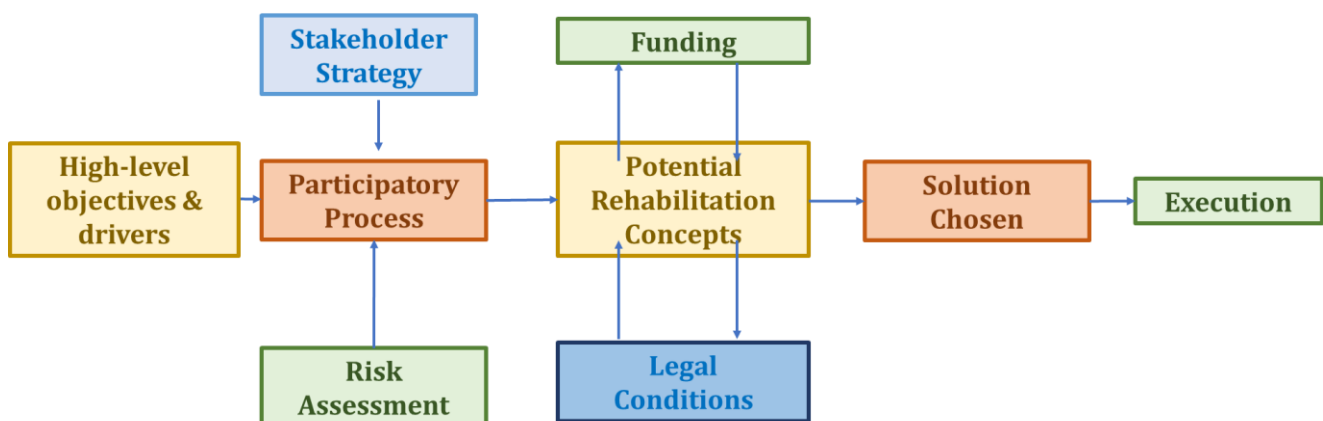
The time steps given are based on the consensus for the future of the landfill until 35 years from now - the landfill remains a mountain.

##### 4.1. *General Considerations*

###### Recommendation of the peers

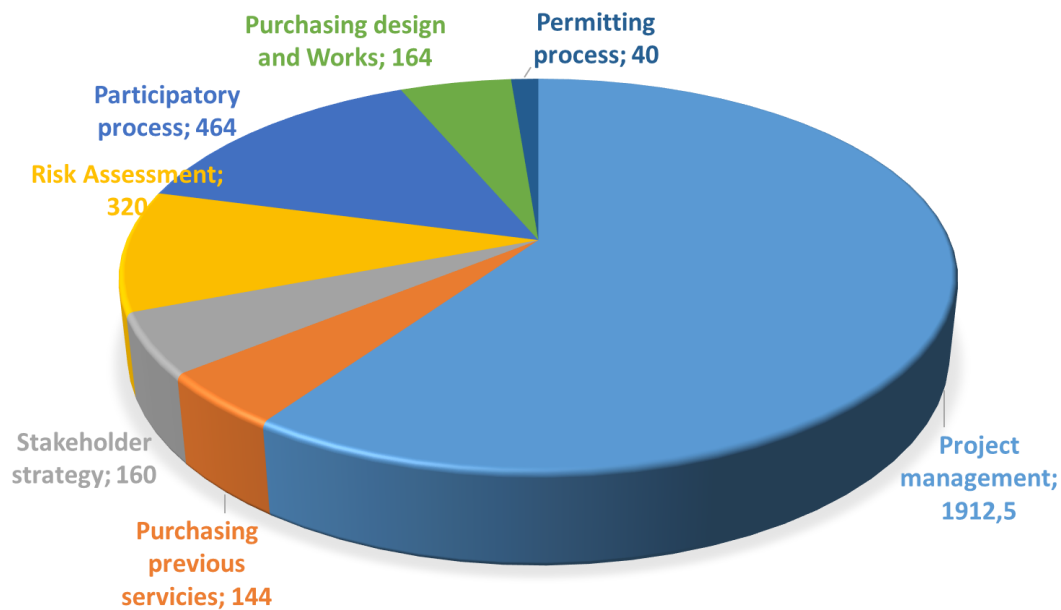
The peers presented general process and planning steps (Fig. 3) as well as the time and effort (Fig. 4) required for the redesign of the landfill. It was also recommended to follow a complex adaptive system approach.

Aspects to be considered are: landfill as part of broader systems, impacts on the surrounding area, demands, needs or interfering planning processes.



**Fig. 3:** Possible workflow for developing an after-use option for the former landfill (Figure redrawn from the sketch from the peers' final presentation)

Two examples of project timeframes mentioned during the peer review are 1) the Ochsenfeld site with 10 years (4 years planning and implementation, 6 years monitoring) and 2) the "Living-Lab" with 4 years planning phase.



**Fig. 4:** Estimated work-load in hours for process and planning steps (Figure redrawn from the sketch from the peers' final presentation, modified)

#### Implementation by the University and Hanseatic City of Greifswald

The peers gave a very good insight into the upcoming planning practice, which was documented with specific practical examples. Especially the information on workload and estimation of personnel months are very important for the next steps and further developments. It is important to note that additional work tasks and staffing requirements that become necessary for the further development of the landfill site have financial implications and are therefore relevant for municipal budget planning. Most of the working time will be spent on management activities during the process of developing an after-use option for the former landfill site. Greifswald is aware that the management process, already started with the peer review, will be expanded and intensified in the near future.

#### **4.2. Main drivers and high-level objectives**

##### Recommendation of the peers

The peers summarized the main (positive) drivers for rehabilitation:

- To look at the landfill as an opportunity and not as a problem.
- The old landfill will be almost degassed in less than 5 years and the land can be reintroduced into the urban space again.

And they proposed exemplary high-level objectives as

- To transform the former 'technical' area into a sustainable urban space accessible to the public
- To offer space for recreational and creative activities
- To restore biodiversity
- To educate and carry out research
- To produce biomass and solar energy
- To provide a link to the city centre
- To enjoy the view at the Baltic Sea ...

Implementation by the University and Hanseatic City of Greifswald

The landfill complex in the north of the city is easily accessible both by foot and by transport and therefore offers promising development opportunities for residents and visitors. All recommendations made by the experts fully comply with the planning framework conditions of the city of Greifswald, which are:

1. Keep the ‚mountain‘ as a ‚mountain‘!
2. Tell a positive story about it!
3. Open it to the public and for recreation, non-commercial activities!
4. Open it for environmental education!
5. Keep it simple!
6. Keep it flexible, planning in different steps!
7. Put it in an urban and regional context!
8. Comeback for a great, coherent area!

In addition, aspects such as the integration of subject-specific topics in future projects could be elaborated during the peer review, as topics of waste management, nature conservation, peatlands, geology, economy, history or urban development.

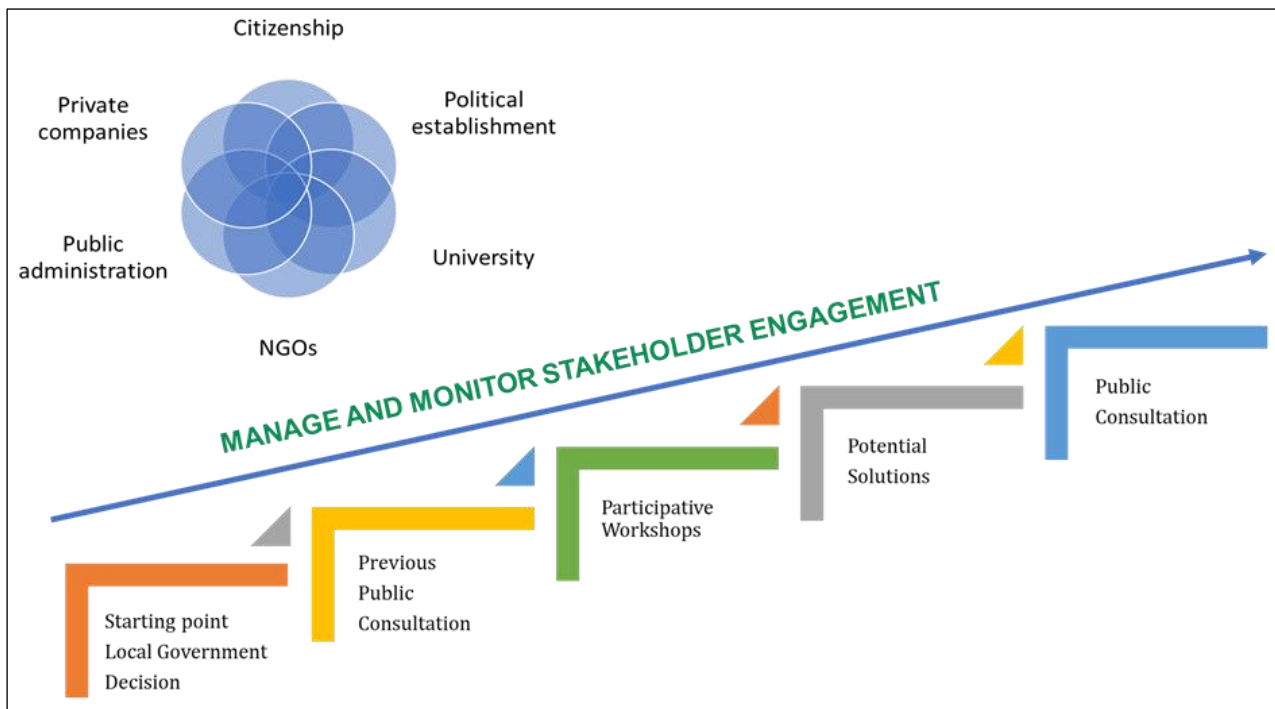
Timeline: short-term (shaping the idea of a possible after-use solution), medium- and long-term (project development, management and implementation).

**4.3. Stakeholder involvement**

Recommendation of the peers

The peers recommended to define a Stakeholder strategy (Fig. 5) according to functions and roles of stakeholders in the planning and project development process, including the following points:

- Stakeholder analysis and identification,
- Involve the quadruple helix approach (public, private, academia, civil society),
- Participatory process.



**Fig 5:** Potential Stakeholders and process of the Stakeholder strategy (sketch from the peers' final presentation, modified)

Implementation by the University and Hanseatic City of Greifswald

The recommendation to develop a stakeholder strategy will be taken up by the City of Greifswald, taking into account the peers' advice to "keep it simple". The stakeholder analysis will also serve to identify stakeholders who have not yet been involved, e.g. the University of Greifswald or the Succow Foundation, who are both relevant to aspects of nature conservation and environmental education (keywords Living Lab, moorland protection). Depending on the state of planning and project development, changes in stakeholder assembly and involvement (e.g. planning offices, engineering offices at an advanced stage of the process) will be taken into account.

Timeline: short-, medium- and long-term (seen as an accompanying process)

**4.4. Risk assessment**

Recommendation of the peers

The main advice of the peers is

1. to gather data and information about the landfill to make a proper risk assessment:

- Collect all available data and site information (historical and current data)
- Identify knowledge gaps
- Conduct additional analysis / inspection to fill knowledge gaps (non-invasive Geophysical exploration allows inspection without bore holes, Tab. 1) additional to ongoing monitoring.

2. to select a risk assessment & management concept that

- is future-proofed (towards more extreme weather events, strong torrential rains, long dry periods, trends in flooding - flood protection system Greifswald ....)
- meets requirements of the national legal framework and of the funding body
- includes a management plan for e.g. soil analysis and potential impacts on human health.

**Tab. 1:** Required parameters for risk assessment and its analysis methods

Parameters	Methods
Slopes Stability	Electrical Resistivity Tomography (ERT)
Settlement	Distributed Temperature Sensing (DTS)
Landfill Gas	Tracer Experiments
Leachate	Electromagnetic Sounding
Sealing Layer	Slope Stability Study

Recommended support:

- local permitting body
- Decision support tool based on risk assessment & management, such as flooding risk from the RAWFILL project (free of charge & open source), such as DST 1 and DST 2
  - <https://www.rawfill-elearning.eu/en>
  - <https://www.ovamenglish.be/rawfill-in-a-nutshell>

Implementation by the University and Hanseatic City of Greifswald

One of the upcoming work steps in the context of future landfill reuse will be the initial collection of historical and current data, as well as data analysis in an overall interdisciplinary context. In the context of risk assessment, Greifswald will apply the online information/tools presented by the peers, also for later monitoring.

Stakeholders should be informed about the results of the data analysis and risk assessment in an easily accessible way.



As a result of the risk assessment and in the context of the overall planning (long-term goals beyond 35), the question should be asked whether landfill removal can be considered as a future option at some point. This option should be considered in the context of local policies, urban development objectives and stakeholder needs.

Timing: short-term (collection of historical and current data); medium- to long-term (further investigations, filling knowledge gaps), long-term (monitoring)

#### **4.5. Potential rehabilitation concepts**

##### Recommendation of the peers

Best practice examples for landfill after-use in the sense of urban development as well as ideas of education and awareness raising were presented by the peers (Tab. 2).

**Tab. 2:** Selected examples of rehabilitation concepts presented by the peers (Table redrawn from the sketch from the peers' final presentation)

Type of initiative	Cases studies assessed
Nature conservation	Aalst conservation project (BE)
Park	Marsaskala Family Park (MT)
Landscape observation point	Wied Fulija Landfill Rehabilitation (MT)
Renatured site	Phytomanagement at the Ochsenfeld site (DE)
User-centered, interactive, open-research site	'Living-Lab' in an urban setting (FR)

Other examples of remediation projects, mainly dealing with the deconstruction of the landfill body, have been shown:

- a. Residential area (containment, processing landfilled waste);
- b. Industrial area (removal, processing, re-landfilling);
- c. Landfill mining project (mono waste disposal site)
- d. Creating void space for storm water basin (processing, reshaping)
- e. Nature conservation project (removal)
- f. Interim use (recreation, nature redevelopment, solar panel park)

##### Implementation by the University and Hanseatic City of Greifswald

From the arguments and the examples presented by the peers, it is clear that a political and planning consensus is first required for the city of Greifswald. This consensus "The 'mountain' should remain a 'mountain!", possibly limited in time to 30 to 35 years, must be anchored in a political decision. It should be noted that the solutions at the landfill ("The 'mountain' shall remain a 'mountain!") can be also seen as an interim solution that applies to the current generation. Interim solutions or partial solutions, for certain areas of the landfill site, which were presented during the peer review, are also conceivable for the Greifswald landfill site. In particular, ideas and proposals of measures at the landfill for education and awareness raising in the environmental field are of interest for Greifswald, e.g. with the development of a "Living Lab" at the landfill area (for this: further stakeholder participation is necessary, including the University of Greifswald). The solutions proposed here are in line with

the development goals set by the city of Greifswald for the landfill (see also 4.2 Main drivers and high-level objectives).

Timetable: medium- to long-term (project development and management, implementation).

#### **4.6. Funding sources and budget**

##### Recommendation of the peers

Following funding instruments were presented:

1. EU funding instruments serving European Green deal objectives:
  - NextGenerationEU
  - EU Urban & regional development policy
  - Cohesion policy
  - ERDF, LIFE, Horizon Europe...
2. National funds (e.g. national research programmes)
3. Local and regional funds

And a co-funding approach for projects to strengthen biodiversity, green infrastructures in the urban environment and reduce pollution were recommended (e.g. together with the university).

##### Implementation by the University and Hanseatic City of Greifswald

The peers gave examples of financial support for project development and implementation at European, national and local level. These possibilities are transferable to Greifswald for the topic of landfill after-use. In particular, EU funding was recommended. The possibility of using EU funding will be examined in the course of the further process. Obtaining funding will essentially depend on the following factors:

- The need for funding instruments for different phases of the development process
- The stage of development of the decision-making process for a landfill solution
- Status of project development
- municipal budget planning
- Financing of concrete measures for project implementation

To identify suitable funding instruments, the usual funding portals at EU, federal and state level are used and personal contacts are maintained. The EU network, the contact to Interreg Europe and especially to the peers promise to be supportive.

Timing: medium- to long-term, if available and feasible also short-term (depending on needs and status of planning/project development, by task)

#### **4.7. Ex post Communication**

##### Recommendation of the peers

Main message concerning the 'communication strategy' is: Do it at first. Do it during the entire process.

Do it after completion of the project. Presented communication tools:

- **Public relations and media campaign** to inform the public (*newspapers, TV, radio, social media, Billboard*)
- **Use the rehabilitated site to educate and raise awareness** on environmental issues (e.g on soil pollution, waste management).

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- Resort to **creative agencies** (through tendering) to design entertaining visitor center/ communication campaign.
- **Workshops, conferences, publications in scientific journals** to disseminate information and knowledge about the rehabilitated site and the rehabilitation concept ultimately chosen.

Best-practice examples mentioned by the peers were the Marsaskala Family Park, the 'Living-Lab', the communication lessons from the COCOON project or the :metabolon learning location.

Implementation by the University and Hanseatic City of Greifswald

The Peers gave good examples for Communication strategies that are also applicable for the City of Greifswald.

For Greifswald the communication flow should be as follows:

- Information of the local politics and the citizenship
- Internal information (municipality)
- Information of different stakeholders
- Communication strategy developed as part of the of the stakeholder strategy.

Suitable communication tools that are likely to be used in Greifswald are: PR (newspapers, social media), education (is already establish to a certain extent), workshops, conferences or publications.

Timeline: short-, medium- and long-term (seen as accompanying the process)

**1. Possible calendar of implementation and next steps**

Based on the recommendations of the peers for the planning steps for the development of after-use options for the landfill in Greifswald and on the basis of the issues considered in the peer review, a first draft of the time frame for the upcoming activities can be developed (Fig. 6). This time frame should act as an informal and non-binding basis for the next planning steps.

[1] Recommendations	1yr	2yr	3yr	4yr	5yr	6yr	7yr	8yr	9yr	10yr
<b>Stakeholder involvement</b>										
<b>Risk assessment</b>										
Monitoring										
Data collection										
<b>Potential rehabilitation concepts</b>										
Developing the idea										
Implementaion										
Living Lab										
<b>Funding sources and budget</b>										
Search for funding										
Application for funding										
<b>Ex post Communication</b>										
Accompanying communication										

[1] **Applicability of the recommendations** – to what extent the proposed measures and given recommendations are seen as applicable by the beneficiary organisation.

- Very likely to be applied
- Depends on specific political decisions/conditions
- Rather seen as not applicable at the moment

Time frame - landfill will be degassed

**Disclaimer:** This document is elaborated as part of the final report of the Peer Review, organised by Policy Learning Platform, and aims at supporting the uptake of recommendations by the host region. First and foremost, the table above is designed to serve as an internal management and monitoring tool for the follow-up process. Consequently, the applicability of the recommendations and the foreseen timelines can remain indicative.

**Fig.6:** Gantt chart with possible timing of activities for the next 10 years seen on an annual basis



So what happens next after the peer review process? - A first outlook:

In order to continue the planning process and to be able to discuss and sharpen the many important impulses from the peer review process not only in the responsible departments and with the stakeholders, the recommendations of the peers will be presented in the first step to the responsible political committee (Committee for Construction, Climate Protection, Environment, Mobility and Sustainability) on 28 September 2021.

Under the preamble "Opening as a participation process", the intended integration of the landfill into the urban space is prepared step by step. In the third quarter of 2021, a simple participation model will be developed (keep it simple!) in order to raise awareness of this potential new urban space through guided tours and inspections of the landfill site for different target groups (children and young people, tourists and guests, older people, students, families, recreational athletes, etc.) and to take up topics and concrete planning ideas from the different target groups. In addition to the target group-specific tours, specialist tours are also to be carried out on the topics of moorland, nature conservation, geology, waste avoidance and sustainable management/ building as well as urban history. - The results of this first participation from potential user and expert perspectives are part of the data collection in the first planning phase. The first "Landfill Ideas Tour" is scheduled for the 4th quarter of 2021. - Let the story begin...

## **2. Conclusions**

The peer review of the Interreg Europe Policy Learning Platform, especially the contributions of the four peers from Belgium, France, Malta and Spain on the topic of landfill after-use is a great support for the further development of the Greifswald landfill after degassing. The University and Hanseatic City of Greifswald takes away important applicable information and recommendations for the upcoming urban planning steps, project development and implementation. All in all, it was possible to sharpen the view of the landfill rehabilitation process.

In addition, exemplary implementation options presented by the peers (Marsascale Family Park, Living Lab, other examples from the EU network such as the example from Odense, Denmark, or from the COCOON project) can be considered as possible solutions for the Greifswald landfill.

It is also worth mentioning the kind invitation of the peers for on-site meetings, as well as the offer of Interreg Europe to support the follow-up meetings.

Greifswald will benefit from this network after the meeting and hopes for a further exchange of knowledge and the development of projects together with EU partners.

Greifswald is looking forward to further cooperation and would like to thank the peers and the Interreg Europe team who enabled the peer review.

*Greifswald, September 2021*

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