

SYNOPSIS OF SELECTED TOOLS FROM EXPLOITED PROJECTS

Work package T1	Exploitation: concept of CE tools integration
Activity T1.1	Creation of common understanding and project conceptual framework
Deliverable T1.1.1	Synopsis of selected Interreg CE, DTP, H2020, Life and Copernicus project tools and interlinkages

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Version V-01

Date last release 03.08.2020





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Acknowledgements

This document contains a comprehensive synopsis of relevant tools from exploited projects. Information about these tools was gathered by the TEACHER-CE consortium. We would like to thank all project partners and other contributing institutions for their support.

Our project is funded by the Interreg CENTRAL EUROPE Programme that encourages cooperation on shared challenges in Central Europe and is supported under the European Regional Development Fund.



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1. Introduction: synopsis of selected project tools and interlinkages

1.1. Project context

Climate change (CC) has various effects on water management and related sectors. Risks for heavy rain events and flooding increase, at the same time the risk for extreme dry spells increases, from which the groundwater level and quality are affected, is rising. Often the events coincide, as for example a drought is often interrupted by extreme thunderstorms which entail heavy rain. The combination of extremes causes problems for all kinds of land-use, such as green spaces and water management, drinking water protection and security, urban water management (sewage systems) as well as agriculture and forestry.

The interdependences of the single effects have to be considered in both, scientific analysis and practical action of all stakeholders as regional and local authorities have to deal with the challenges. Still there is little know-how at hand to manage the combined risks in an integrated water management approach that is adapted to climate change.

The aim of the Interreg project “TEACHER-CE” is to develop an integrated Toolbox focusing on a climate-proof management of water related issues. This innovative Toolbox is based on the integration of several tools developed within different previously funded EU projects. The purpose of these tools ranges from guidance documents to intraoperative applications (decision support tools). All relevant tools enable the identification and implementation of measures to make municipalities and regions in CE more resilient to extreme weather events (including CC) and avoid negative impacts on ecosystems and land use.

A key challenge in the development of the toolbox is the harmonization of the provided tools of exploited projects: the creation of a common understanding and project conceptual framework. Therefore, as a first step a comprehensive synopsis of relevant tools from exploited projects with regard to their thematic focus and target groups has been made and functional and spatial interlinkages of projects outputs have been identified. Additionally, a vision of the toolbox has been drafted. The result of this synopsis is a common understanding for the further toolbox development process which is reported in this report.

1.2. Approach and structure

Different projects developed (transferable) tools for municipalities as well as regional and national authorities to better manage the impacts of climate change and weather extremes like heavy rain, droughts and floods and to make different kinds of land use more sustainable. These projects used different approaches for integration and implementation of their outputs and provided best-practice solutions for different geographical and regional settings. The aim of the TEACHER-CE project is to connect the results of these projects and find synergies among the approaches. By interlinking the tools, new and improved capitalisation opportunities are to be created.

As a basis for the whole project process, a common understanding of synergies of the exploited projects and an analysis of the interlinkages is essential. The TEACHER-CE partnership follows a 3-step approach in order to get there, which is shown in figure 1.

Step 1: Evaluation of tools

- Preparation of evaluation sheet for tools that will be capitalised in TEACHER-CE
- Evaluation of tools in 9 categories using the evaluation sheet

Step 2: Discussion of key questions

- Presentation of all exploited tools by project partners at the Kick-off-meeting
- Discussion of key questions for toolbox development

Step 3: Review of evaluation of tools

- Review of evaluation sheets by project partners
- Analysis of exploited tools and identification of synergies

Step 4: Analysis of results

- Summary of all evaluation sheets in one matrix, assessment of results and discussion (*results of step 1 & 3, see chapter 3.1*)
- Analysis and discussion of key questions (*results of step 2, see chapter 3.2*)
- Creation of a common understanding for the toolbox concept (*conclusions, see chapter 3.3*)

Figure 1: Approach for creating the synopsis of selected project tools and interlinkages



1.3. Overview of exploited projects and tools - direct

The basis for the activities in WP T1 are especially the tools developed in the four CE projects (FRAMWAT, PROLINE-CE, RAINMAN and SUSTREE) that are capitalised in TEACHER-CE. Table 1 gives an overview of the names of the tools and projects as well as the involved project partners. For a common understanding a description of the tool and its objective is given.

Table 1: Overview and summary of the four selected Central Europe projects - DIRECT EXPLOITATION OF RESULTS

Tool (project; involved PPs)	Short description and objective of the tool
<p>RAINMAN-Toolbox (RAINMAN - Integrated Heavy Rain Risks; PP2, PP3, PP9, PP11)</p>	<p>The RAINMAN-Toolbox aims at reducing the risks of heavy rain events by capacity-building for local public administration on integrated heavy rain risk management. Therefore, the toolbox includes innovative methods and tools for the integrated management of heavy rain risks by public authorities.</p> <p>An online knowledge platform offers good practice examples and guidance on (1) assessment and mapping, (2) a catalogue of risk reduction measures with additional detailed information on retention, prevention, spatial planning, early warning and emergency response and (3) risk communication.</p>
<p>DSS - Decision Support System (FRAMWAT; PP1, PP4, PP8, PP9)</p>	<p>The application is intended for people involved in the planning of water retention measures to mitigate the effects of drought, flooding and surface contamination by biogenes.</p> <p>The aim of the application is to familiarise the user with the Catalogue of Natural (small-scale) Water Retention Measures (N(S)WRM) and the planning process. An additional function is to help the user to decide on the location and type of measure and to produce a report on the basis of which the user can develop the concept and prepare the necessary permits for implementation. An available collection of data, tools, guidelines and procedures (methodologies) allows the assessment of costs and efficiency of different combinations of N(S)WRM on the catchment scale.</p>
<p>GOWARE Transnational Guide Towards an Optimal WAtER REgime (PROLINE-CE; PP1, PP5, PP6, PP8)</p>	<p>The tool represents a Decision Support Tool (DST) developed for supporting the implementation of innovative Best Management Practices (BMPs) for drinking water protection, also with regard to floods and droughts.</p> <p>GOWARE-DST was developed to support the decision-making processes of individual users or user groups. The tool contains a catalogue of BMPs for different land uses. The user can individually evaluate the importance of different criteria and thus obtain a selection of BMPs for his specific requirements (Multicriteria Analysis (MCA) Analytic Hierarchy Process). In addition, users can obtain further information on the individual BMPs, for example on the relevant European regulations, on past or current projects/experiences and scientific work dealing with the implementation or design of these BMPs.</p>
<p>SUSselect (SUSTREE; PP7, PP12)</p>	<p>The tool aims to assess the vulnerability of forests to climate change and identify adapted seed sources. SUSselect is a mobile mapping application that displays the current and future vulnerability of 7 European tree species and suggests locations for seed selection. The tool ensures that the genetic material best suited to climate change is used in the forests of a particular region.</p>



Other selected EU projects complete the basis for the development of a toolbox in the TEACHER-CE project. Table 2 gives an overview about the names of the tools and projects as well as the involved project partners. For a common understanding a description of the tools and their objectives is given.

Table 2: Overview and summary of other selected EU projects - DIRECT EXPLOITATION OF RESULTS

Tool (project; involved PPs)	Short description and objective of the tool
LUMATO (LUMAT; PP2)	The tool is designed for the management of urban-peri-urban relationships and their sustainable development to make such places more liveable. LUMATO carries out an integrated environmental analysis for these Functional Urban Areas (FUAs) by identifying and evaluating soil threats and the potentials for revitalization. A decision support system (DSS) guides stakeholders towards recommended actions on threatened sites.
Public relations and knowledge transfer (Life Local Adapt (LLA) - Integration of climate change adaptation into the work of local authorities; PP2)	The project focusses on the needs of small and middle-sized municipalities, districts and counties up to 100,000 inhabitants and points out suitable and diversified methods of risk communication, esp. for local stakeholders of administration and citizens in municipalities. The project does not result in a design of a tool but the activities and experiences of the work package “communication” can add value to the TEACHER-CE project with regard to public relations and knowledge transfer.
Collection of data (LIFE+ KAMPINOS; PP4)	In the course of the project, numerous data regarding small water retention measures were collected. The project does not result in a tool but the data collection and experiences in this regard can add value to the TEACHER-CE project.
ANCA (H2020 Fairway, PP1)	ANCA (Annual Nutrient Cycling Assessment) is a management tool to help farmers improve their farm management and mineral efficiency. The tool also aims to reduce diffuse pollution of sensitive drinking water resources and to take measures to protect groundwater which could be an interesting aspect for the development of the TEACHER-CE tool.
Drought Watch (DriDanube - Drought Risk in the Danube Region, PP8)	The developed tool contributes to improving the management of drought risk. Drought monitoring, forecasting, assessment and response will be improved by an innovative operational service, both in terms of time (faster analysis of data) and accuracy (spatial resolution of state-of-the-art satellites).
Flood risk prevention (JOINTISZA - Strengthening cooperation between river basin management planning and flood risk prevention to enhance the status of waters of the Tisza River Basin; PP8, PP9)	In the project an update of the 1st Integrated Tisza River Basin Management Plan (ITRBMP) is developed based on shared knowledges, experiences, scientific evidence, in order to strengthen transnational water management and flood risk prevention. One focus of the project is the handling of varying water quantity as a consequence of climate change. The project does not result in a design of a tool but the activities and experiences can add value to the TEACHER-CE project.
C3S Demo Case “Soil Erosion” (Copernicus Climate Change Service (C3S), PP5)	The tool aims to assess the current conditions and future variations of soil loss caused by water erosion in Italy. In addition, “what if” analyses at local level show the expected variations in soil losses due to changes in land use or management practices.
C3S Sectoral Information System to Support Disaster Risk Reduction (Copernicus Climate Change Service (C3S), PP5)	The aim is to exploit datasets included in the Climate Data Store (CDS) of the Copernicus Climate Change Service (C3S) to provide tailored datasets, information and applications to support disaster risk reduction. Furthermore, a special focus is devoted to urban pluvial flooding.



2. Evaluation of tools and discussion of synergies (step 1 and step 3)

The evaluation of the projects and tools that will be directly exploited in the TEACHER-CE project (see chapter 1.3) was done in 9 categories. Each category distinguishes different aspects. The selection of the categories and the aspects was worked out jointly by the project partners. The evaluation sheets for each of the tools are available in the annex I.

For each tool that is directly integrated in the TEACHER-CE project, evaluation sheets were used to indicate whether the respective aspect of a category is considered in the tool (corresponds to the specification "X") or is considered in a limited way (corresponds to the specification "O"). These evaluations were summarised and analysed in an evaluation matrix. The evaluation takes into account the frequency with which an aspect is considered in the exploited tools. The more synergies are identified with regard to a specific aspect, i.e. the more projects and tools focus on one specific aspect, the higher is the relevance of this tool for this aspect regarding the design of the advanced toolbox in TEACHER-CE. Higher relevance, however, does not mean that such an aspect is of highest importance for adaptation needs in water management. But the focus of the concept development (and of the adaptation study in deliverable D.T1.1.3) should be set on those aspects that are of high relevance in the exploited tools. Other aspects are not excluded from the further development in TEACHER CE, but should be considered in the TEACHER toolbox with lower priority.

The evaluation was done on the one hand for the four tools from the selected four INTERREG-CE projects, which are in the focus of the TEACHER-CE project (see table 1), and on the other hand for further tools (see table 2). In the following chapters the results for the 9 categories are presented.

2.1. Content and focus of the tools

The description of the tools and their objectives (see chapter 1.3) was completed by a systemic evaluation of the content and focus of the tools.

Assessment of the category “impacts of climate change addressed (risks of extreme events, climate change impacts on different sectors)”

Aspects	4 selected CE projects	other selected EU projects	Legend
River floods / fluvial	0*X / 2*O	1*X / 2*O	just O
Heavy rain / pluvial	1*X / 2*O	2*X / 2*O	= 1 or 2 X
Droughts	1*X / 2*O	2*X / 2*O	= 3 X
Wind / Storms	0*X / 0*O	0*X / 0*O	> 3 X
CC-impacts on water supply	0*X / 3*O	1*X / 2*O	
CC-impacts on agriculture	0*X / 3*O	2*X / 3*O	
CC-impacts on forests	1*X / 2*O	0*X / 1*O	
CC-impacts on soil	0*X / 2*O	2*X / 0*O	

Legend
just O
= 1 or 2 X
= 3 X
> 3 X

X = focus of project

O = minor aspect of project

The analysis of the tools used in the four selected Central Europe projects shows that their focus is particularly on the aspects of heavy rain and droughts. The other selected EU projects also support an alignment of the TEACHER-CE Toolbox according to these aspects.



In addition, the effects of climate change on different land use forms in the tools were considered. Looking at all exploited tools (left and right column in the table), no clear focus can be derived. Accordingly, all aspects should be further considered and a focus should be defined during the further development of the toolbox.

Assessment of the category “focus of the tools”

Aspects	4 selected CE projects	other selected EU projects	Legend
Hazard & Risk assessment	1*X / 1*O	4*X / 1*O	just O
Impact assessment	1*X / 2*O	2*X / 0*O	= 1 or 2 X
Vulnerability assessment	1*X / 1*O	2*X / 0*O	= 3 X
Climate change impacts	1*X / 1*O	5*X / 0*O	> 3 X
Climate proofing of measures	0*X / 0*O	1*X / 1*O	
Monitoring progress	0*X / 0*O	2*X / 0*O	
Risk mitigation measures	2*X / 2*O	2*X / 2*O	
(Risk) communication	1*X / 0*O	2*X / 0*O	
Prioritisation / decision support	3*X / 1*O	4*X / 1*O	

X = focus of project
 O = minor aspect of project

The compilation of the results for the category “Focus of the tool” shows a wide variety of aspects that are in the focus of the single projects. Overlapping is limited when asking for key aspects. However, when looking at the evaluation matrix (see annex II) it can be seen that all four selected Central Europe projects consider or partly consider the aspects “Risk Mitigation Measures” and “Prioritisation / decision support” (answer “yes limited”). In this respect, the greatest synergies of the tool focus can clearly be identified in these two aspects. In addition, the integration of further project approaches into the TEACHER toolbox could raise the quality of content regarding hazard & risk assessment and the integration of climate change impact assessments into the identification of risk mitigation strategies and measures.



2.2. Target groups, targeted sectors and spatial level

In addition to the existing links between the contents of the tools, synergies of the target groups and spatial level are essential for the alignment of the toolbox, since the addressee and the level addressed have a decisive influence on the conception of the tools.

Assessment of the category “targeted sectors”

Aspects	4 selected CE projects	other selected EU projects	Legend
Water management	3*X / 0*O	4*X / 2*O	just O
Spatial planning (general)	1*X / 2*O	2*X / 1*O	= 1 or 2 X
Urban development / planning	0*X / 1*O	4*X / 0*O	= 3 X
Forestry	2*X / 2*O	1*X / 2*O	> 3 X
Land-use management	2*X / 2*O	5*X / 1*O	
Agriculture	1*X / 2*O	4*X / 2*O	
Economy, infrastructure companies	0*X / 0*O	1*X / 2*O	X = focus of project
Drinking water supply	1*X / 0*O	3*X / 2*O	O = minor aspect of project
Environmental planning	0*X / 1*O	3*X / 1*O	
Emergency management/response	0*X / 1*O	2*X / 0*O	
Meteorology / Atmospheric sciences	1*X / 0*O	3*X / 1*O	
Early warning	0*X / 1*O	2*X / 1*O	

Three of the four selected Central Europe projects address the sector "Water Management". Accordingly, this aspect was defined as key sector of the capitalisation project. The sectors "Spatial Planning", "Forestry", "Land-use management" and "Agriculture" can be identified as secondary target groups. Here the links, synergies and potential conflicts in adaptation strategies between those and regarding water management play a major role. These sectors have been considered by at least two of the selected Central Europe projects (see left column). These sectors were also considered by many of the "further projects" (see right column) so valuable input of these projects can be expected. All other sectors were considered by only one of these projects and therefore are not to be treated as priorities in the toolbox development process.

Assessment of the category “target group levels and expert level”

Aspects	4 selected CE projects	other selected EU projects	Legend
Municipality / local actors	2*X / 2*O	6*X / 0*O	just O
Regional administration/actors	2*X / 1*O	4*X / 2*O	= 1 or 2 X
Experts / research	1*X / 2*O	3*X / 2*O	= 3 X
Politicians / decision makers	3*X / 0*O	2*X / 4*O	> 3 X
Private persons / public	0*X / 3*O	4*X / 1*O	
Students / education	1*X / 2*O	1*X / 0*O	

X = focus of project
O = minor aspect of project

The local and regional levels in particular are the target groups of the tools under consideration. A look at the evaluation matrix (annex II) shows that two of the four selected Central Europe projects consider these target groups, and for one project it was stated that these target groups are considered to a limited degree. In addition, a focus of the “other selected EU projects” is clearly on these target groups. A third target group often addressed is "politicians / decision makers" who is



considered in three of the four selected Central Europe projects. This result reflects the focus of the tools (see above) because guidance towards the selection of appropriate risk mitigation measures, prioritisation of those and decision support are primarily focussing on these target group levels. A spatial level has not yet been queried for the latter group, but it could be helpful to evaluate it for the concept of the TEACHER-CE Toolbox. Other target groups were in the focus of only one of the four tools considered and should therefore be considered subordinate.

Assessment of the category “spatial application area, characteristics”

Aspects	4 selected CE projects	other selected EU projects	Legend
Urban / built environment	1*X / 2*O	3*X / 1*O	just O
Rural / agricultural areas	1*X / 2*O	4*X / 0*O	= 1 or 2 X
Rural / forest areas	2*X / 2*O	2*X / 0*O	= 3 X
Rural / natural environment	1*X / 2*O	3*X / 0*O	> 3 X
Water environment	1*X / 0*O	1*X / 0*O	
Not spatially fixed (like social)	1*X / 0*O	1*X / 0*O	X = focus of project
Low land, river valleys	3*X / 1*O	1*X / 2*O	O = minor aspect of project
Mountainous areas	3*X / 1*O	1*X / 1*O	

The spatial orientation of the different tools covers many different geographical settings and natural environments. The same should apply to the TEACHER-CE Toolbox. The projects seem to deliver input from their tools for many different spatial conditions. That means, both "low land, river valleys" and "mountainous areas" as well as "urban/built environment" as well as rural environment" should be considered. With regard to the natural environment there is no clear picture, so that certain characteristics do not have to be excluded from the outset from the evaluations point of view. However, in the concept phase of the TEACHER-CE toolbox it might be necessary to focus on one situation more than others. This is the subject of the upcoming working steps.

Assessment of the category “spatial scope”

Aspects	4 selected CE projects	other selected EU projects	Legend
Building / object level	0*X / 1*O	1*X / 0*O	just O
Quarter / community level	1*X / 1*O	0*X / 1*O	= 1 or 2 X
Local / municipal level	2*X / 1*O	4*X / 1*O	= 3 X
Regional level	3*X / 1*O	3*X / 0*O	> 3 X
Supra-regional level	1*X / 1*O	3*X / 0*O	
River basin level	3*X / 0*O	2*X / 1*O	X = focus of project
			O = minor aspect of project

The “spatial scope” of the evaluated tools is mainly set on "local / municipal level", "regional level" and "river basin level". This could be summarised as focus on scales from community to below national levels. The TEACHER-CE Toolbox should therefore also be tailored to these levels. A special characteristic was identified in the SUSTREE project. The focus of this tool is given by the available resolution (1km raster grid), which needs to be considered in the assessment of the tool’s "spatial scope" when it comes to integrate SUSTREE-features in the TEACHER toolbox.



2.3. Technical realisation and implementation of the tools

Assessment of the category “technical outline/aspects of the tool”

Aspects	4 selected CE projects	other selected EU projects	Legend
It is a web-application / online-info	3*X / 0*O	6*X / 0*O	just O
It is/is includes a guidebook/-line	0*X / 2*O	4*X / 1*O	= 1 or 2 X
It is a checklist	0*X / 0*O	0*X / 0*O	= 3 X
It is a decision support tool	3*X / 1*O	3*X / 1*O	> 3 X
It produces maps	2*X / 1*O	5*X / 0*O	
It includes hydraulic modelling	0*X / 1*O	1*X / 0*O	X = focus of project
It includes hydrologic modelling	0*X / 1*O	1*X / 1*O	O = minor aspect of project
It includes climate modelling	1*X / 1*O	3*X / 0*O	
It includes games	0*X / 1*O	0*X / 0*O	

The tools of the selected Central Europe projects and a large proportion of the other selected EU projects make their results available as web-applications or online-information. This should be the starting point for the TEACHER-CE Toolbox concept. Furthermore, many of the projects provide a tool for decision support (see also the evaluation of the category “focus of the tool”). This synergy should also be used in the further development process of the toolbox. Although only few CE projects provide features to produce maps and to include climate change modelling within the toolboxes, these aspects may be of interest for the TEACHER-CE toolbox if valuable input from further evaluated projects can be integrated. Map production and climate modelling are in the focus of 5 respective 3 other selected EU participating projects. More details on if and how to build up on these features in TEACHER-CE need to be followed up in the conception phase.

2.4. Involvement of stakeholders and links to legislation

Assessment of the category “stakeholder interaction”

Aspects	4 selected CE projects	other selected EU projects	Legend
Information of stakeholders	3*X / 0*O	6*X / 0*O	just O
Exchange	2*X / 0*O	4*X / 1*O	= 1 or 2 X
Participation	1*X / 1*O	3*X / 0*O	= 3 X
Cooperation / coop. planning	1*X / 1*O	3*X / 0*O	> 3 X
Training / capacity building	3*X / 1*O	2*X / 1*O	X = focus of project
			O = minor aspect of project

The category “stakeholder interaction” provides information on the knowledge that the project partners have gained in terms of stakeholder engagement in the creation of their tools. In most projects, stakeholders were informed about the activities. In addition, one focus of the 4 previous Central Europe Projects was on “Training/capacity building”. In TEACHER-CE this kind of stakeholder involvement is also planned through the pilot actions. So, the project partners can provide further information on the involvement of stakeholders and the experiences made in this regard. The aspect of using the tools as exchange platform with stakeholders also plays a role in the evaluated approaches and tools. This is closely linked with information and serves as interim step between



information and (formal) participation (e.g. participation in decision making and design). The use of these tools as exchange platform would be worth to consider as feature of a TEACHER toolbox.

Assessment of the category “link to EU Legislation”

Aspects	4 selected CE projects	other selected EU projects
WFD	2*X / 0*O	3*X / 1*O
Floods Directive	2*X / 1*O	2*X / 1*O
Drinking Water Directive	2*X / 1*O	0*X / 1*O
Nitrate Directive	0*X / 1*O	2*X / 0*O
Bathing Water Directive	0*X / 0*O	0*X / 0*O
Urban Waste Water Directive	0*X / 0*O	0*X / 0*O

Legend
just O
= 1 or 2 X
= 3 X
> 3 X

X = focus of project

O = minor aspect of project

Most of the projects have established a direct link with EU legislation. These links should continue to be adopted and, if necessary, expanded for the Water Framework Directive, the Floods Directive and the Drinking Water Directive.



3. Analysis and discussion of key questions

The partnerships additionally discussed some of the key questions for the toolbox development. The results are summarised for (1) vision of the toolbox, (2) target groups of the toolbox, (3) climate proofing and (4) technical outline of the toolbox.

3.1. Vision of the toolbox

The majority of the project partners agrees with the picture of an “umbrella Tool” (a “landing page”) with a good navigation rather than a completely new tool which is not reasonable within the given time and budget of the project.

- Much input is already available from the existing tools so that the linking and combining of these is favoured by the PPs.
- A clear and readable structure is important that allows understanding for which purpose and for which user the different tool and subtools are helpful.
- The original tools as developed in the different projects should be available under the umbrella, but they shall not be completely rearranged or restructured.
- It should be on a high technical level, but on the other hand easy to handle for stakeholders.
- Entry points:
 - Users shall be guided from problems to solutions (the guided solutions should base on a common database that is created from the knowledge and the achievements of the related projects and their “input-tools”).
 - The “tool” could be seen as a webpage that guides to the different tools and solutions for specific problems and specific users.
- Purpose of the toolbox:
 - Provide practical (step by step), short and clear guidelines: How/What/When to do
 - Planning procedures (not on daily work), more on strategic level; risk assessment; environmental impact assessment

3.2. Target groups of the toolbox

The PPs agreed that the TEACHER output will focus on target groups on a practical level.

- Targeted sectors are especially: water management, spatial planning and land-use management, environmental planning. There were discussions about the definition of the planning sectors because the specification of planning depends much on the legal background in the different countries (this will also be subject of the stakeholder survey activities).
- Infrastructure providers (in this context especially drinking water suppliers) should also be included because three of the associated partners is representing this sector and the sector was focused on in PROLINE CE.
- It is not agreed if the sector emergency response should also be a target group of the tool: in RAINMAN emergency response has an important role but on the other hand the respective



organisations have a specific operation structure so that one combined tool will hardly cover these differences. The question should also be discussed based on the stakeholder survey.

- Target groups and expert levels are especially: municipalities/local actors, regional/national (depending on the organisational structure of the country) administration and actors

3.3. Climate proofing

All participants agree that climate proofing could be integrated (or is already integrated) in the tools of the CE-projects. For the “input-projects” it is stated that climate proofing already is an integral part of the tools.

Two interpretations of the term “climate proof” were discussed so far and need to be further developed in the project implementation phase:

- (1) Climate proofing means to check if solutions / tools are still valid in case of changing climate conditions;
- (2) Climate proofing means to check if solutions / tools are still valid for different extreme events (mitigation measures that are relevant for floods but do not negatively influence risk management strategies for droughts).

This content will be further discussed in deliverable D.T1.1.2.

3.4. Technical outline of the toolbox

The partnership aims at starting the creation of the tool at a low technical level. It can be developed to a higher technical level from there. It needs to be considered that the users of the tool are probably “laymen”. So the use of the tool should be easy. However the “backend” will have to be on a high level due to the fact that the necessary data and information are not at all simple so that some sophisticated features are necessary to set up a well working tool.

- The output / tool should be simple and easy to use. Nevertheless, it could be on a technical high level.
- The new tool should build on good working elements of the tools of the four CE-projects. It is important that the PPs bring in only the strong and technically working elements.
- The tool should bring some extra knowledge to the users and not be only a database. It should increase the capability for adaptation (capacity development).



4. Creation of a common understanding for the toolbox concept

Table 3 summarises the results of the analysis. Comments and open questions complete the assessment of synergies and discussion results. These findings form the basis for the toolbox development.

Table 3: Analysis of results - starting point for the creation of the toolbox concept (D.T1.2.1)

Factsheet for TEACHER-CE Toolbox development		
Category	Aspects	Further comments and open questions
Vision	Umbrella Tool (a "landing page")	The original tools as developed in the different projects should be available under the umbrella, but they shall not be completely rearranged or restructured.
	Readable structure	
	Good navigation	
Impacts of climate change addressed	Heavy rain/pluvial	-
	Droughts	
	CC-impacts on water supply	
	CC-impacts on agriculture	
	CC-impacts on forests	
	CC-impacts on soil	
Targeted sectors	Water management	It is not agreed if the sector emergency response should also be a target group of the tool. The question should also be discussed based on the stakeholder survey. Specification of planning depends much on the legal background in the different countries (this will also be subject of the stakeholder survey activities).
	Spatial planning (general)	
	Environmental planning	
	Urban development / planning	
	Forestry	
	Land-use management	
	Agriculture	
	Infrastructure providers	
Target group levels and expert level	Municipality / local actors	Target groups and expert also depend on the organisational structure of the country. The PPs agreed to focus on target groups on a practical level.
	Regional administration/actors	
	Politicians / decision makers	
Focus of the tool	Hazard & risk assessment	Climate proofing could be integrated (or is already integrated) in the tools of the CE-projects. The definition of "climate proof" was not agreed on. Climate projections for specific locations should be done. Climate proofing of catalogues of measures should be done by comparison.
	Risk mitigation measures	
	CC impacts / climate proofing	
	Prioritisation / decision support	
	Practical (step by step) guidelines	



Factsheet for TEACHER-CE Toolbox development		
Category	Aspects	Further comments and open questions
Spatial application area, characteristics	Urban / built environment	No clear focus - certain characteristics should be considered in the development phase.
	Rural / agricultural areas	
	Rural / forest areas	
	Rural / natural environment	
	Water environment	
	not spatially fixed (e.g. social	
	Low land, river valleys	
	Mountainous areas	
Spatial scope	Local / municipal level	-
	Regional level	
	River basin level	
Technical outline/ aspects of the tool	It is a web-application / online-info	The output / tool should be simple and easy to use. Nevertheless, it could be on a technical high level.
	It is a decision support tool	
	It produces maps.	
	It includes climate modelling.	
Stakeholder interaction	Information of stakeholders	see deliverable D.T1.2.2
	Exchange	
	Training / capacity building	
Link to EU Legislation	WFD	-
	Floods Directive	
	Drinking Water Directive	



5. Conclusion and outlook

The great challenge for the first project phase is to develop a common idea of the planned tools by evaluating and understanding each tool and by understanding and developing the vision of the TEACHER-CE tool. At the same time the toolbox concept needs to be kept simple enough (regarding the available time and budget but also regarding the targeted users). This deliverable created a starting point for the conception and implementation phase by creating a common overview of project tools and their interlinkages. Moreover, this activity and the documentation in the report provides an interpretation of the evaluation results by identifying aspects for the further tool development that should be in the focus or that should be considered with higher priority in the subsequent process.

The assessment and discussion results of this deliverable will be considered in the TEACHER-CE toolbox concept. That does not necessarily set preconditions for further concept development if one or the other aspect more or less needs to be integrated for other conceptual reasons. Then of course, it has to be made sure from which source additional input comes or which feature of input the tools will not be reflected in the TEACHER-CE tool. However, this is subject of the toolbox concept.

The next activities of the TEACHER-CE project will build on the gained knowledge. In detail the following next steps are planned:

D.T1.1.2: A key challenge in the development of the toolbox is verifying the robustness of the provided tools of exploited projects and the potential interaction of different climate change impacts. It will address how uncertainties regarding CC-scenarios can be considered when working with the tools. This question is especially important for practitioners, stakeholders and decision makers. The provision of answers will significantly raise the acceptance and improve the local use of the tools (down-stream).

D.T1.1.3: Climate change impacts on water management have been addressed in existing studies and projects. A compilation of this knowledge in the participating countries will add additional value to the understanding of stakeholder needs. The activity will examine the effects of climate change on water management and conflicts of interest with other sectors.

D.T1.1.5: In addition to the evaluation of exploited tools (discussed in this report), synergies with projects which will not directly be exploited in the TEACHER-CE project will be identified to add further value to the TEACHER-CE toolbox and the capitalization of the projects.

D.T1.2.2-D.T1.2.4: The toolbox concept takes advantage of users' feedbacks gathered during national stakeholder workshops.

D.T1.2.1: The main outcome of T1 is a concept for the integration of exploited tools that activates synergies between different tools and meets the needs of users in the context of climate change. Thus, the goal of the further activities in T1 is to define adaptation needs of the tools and decisions driven by these tools and to connect relevant tools in order to deal with different CC-impacts.



Annex I - Evaluation sheets of tools

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	CMCC Foundation- University of Ljubjana
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Project	INTERREG-CE PROLINE	
Category	Aspects	Explanations
Name of the tool	GOWARE Transnational Guide Towards an Optimal WATER REgime	
Web-links to the tool	http://proline-ce.fgg.uni-lj.si/goware/	
General description of the tool	- objectives	The tool represents a Decision Support Tool (DST) developed for supporting the implementation of innovative Best Management Practices (BMPs) for drinking water protection and flood/drought risk mitigation.
	- general scope	GOWARE-DST has been developed for support of the decision-making processes of single users or groups of users. The tool provides a catalogue of 92 BMPs to handle water related issues in different land use contexts. The selection of practices suitable for addressing the specific user's requirements is supported by the Multicriteria Analysis (MCA) - Analytic Hierarchy Process, a method that allows filtering a subset of BMPs by accounting for the relative importance that the user assigns to each criterion. Several details associated to the different BMPs provide to the Users key information about European Regulations concerning them, past or ongoing projects/experiences, scientific papers dealing with the implementation or the design of these BMPs.
	- what for / purpose	The selected BMPs cover different areas of applications (agriculture, forestry, grasslands, governance, urban environment, wetlands). The potential users are primarily practitioners and decision makers working on these aspects during the development of different levels of RBMPs. Two different versions are available: web-tool and an "offline" Excel sheet. Framework and functionalities are identical. Nevertheless, the Excel-based version is intended to be used also for group of Users involved in selection of agreed and reliable BMPs. Following the general framework of the MCA the tool is qualitative, considering all limits and advantages of qualitative tool.

Project	INTERREG-CE PROLINE	
Category	Aspects	Explanations
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	o Several BMPs are aimed at coping with such issue preserving, at the same time, quantity and quality of drinking water resources.
	Heavy rain / pluvial	o Several BMPs are aimed at coping with such issue preserving, at the same time, quantity and quality of drinking water resources. Topic not addressed by the tool, but analysed in the pilot actions with climate change scenarios and analysis of their effects including modelling (i.e. 2D hydraulic model of complex semi-urban watershed).
	Droughts	o Several BMPs are aimed at coping with such issue preserving the availability of drinking water resources.
	Wind / Storms	Not addressed by the tool
	CC-impacts on water supply	o In the current version, sectoral experts rank BMPs also according to their resilience or capability to cope with not expected/foreseeable external actions; among these ones, CC has a prominent role; nonetheless, BMPs are not expressly reviewed in terms of adaptation measures.
	CC-impacts on agriculture	o Addressed indirectly, several BMPs are related to mitigation of water extremes (drought/floods) not only affecting drinking water but also the resource availability to meet crop water requirements (droughts) or the water-related processes damaging cultivated fields (floods).
	CC-impacts on forests	
	CC-impacts on soil	o Addressed indirectly, several BMPs are related to mitigation of water extremes (drought/floods) to preserve the soil ability to regulate the water cycle (infiltration/runoff partitioning, thus regulating groundwater recharge and erosion).
Targeted sectors	Water management	X Governance sector is identified among the prominent ones and then a set of BMPs is aimed at addressing issues related to water quality, quantity and flood/drought risk reduction by identifying effective general management actions. River basins (river districts) are the reference administrative levels of interest. Furthermore, regional authorities are also involved in water management.

Project	INTERREG-CE PROLINE	
Category	Aspects	Explanations
	Spatial planning (general)	o The measures and the tool could be used in the spatial planning process identifying different views in different measures and to measure related effects. Somehow, BMPs can support the spatial planning identifying land cover and management practices more suitable to cope with water related criticalities in the area
	Urban development / planning	
	Forestry	X Forestry sector is identified among the prominent land use in DST GOWARE and then a set of BMPs is aimed at addressing issues related to water quality, quantity and flood risk reduction by identifying proper management actions in forested areas.
	Land-use management	X By looking at possible co-benefits of the BMPs, cross-sectoral and integrated land use management gains importance at a wider level, considering in interactions among land uses in the landscape.
	Agriculture	X Agriculture sector is identified among the prominent land use in DST GOWARE and then a set of BMPs is aimed at addressing issues related to water quality, quantity and flood risk reduction by identifying proper management actions in cultivated areas.
	Economy, infrastructure comp.	
	Drinking water supply	X All BMPs in the GOWARE catalogue are primarily devoted to preserve (surface and subsurface) drinking water resources.
	Environmental planning	
	Emergency managem./response	
	Meteorology/Atmopsheric sciences	Partially addressed by the project (not specifically by the tool)
	Early warning	
Target group levels and expert level	Municipality / local actors	o Awareness rising, education of municipalities on possible BMPs.
	Regional administration/actors	X DST is intended to support the identification and prioritization of effective operational and strategic options (measures) to preserve drinking water resources
	Experts / research	Experts are usually aware of the BMPs, they are not part of the core decision making process.
	Politicians / decision makers	X DST is intended to support the identification of effective operational and strategic options to preserve drinking water resources
	Private persons / public	o Awareness rising, education of public on possible BMPs

Project	INTERREG-CE PROLINE		
Category	Aspects	Explanations	
	Students / education		
Focus of the tool	Hazard & Risk assessment		
	Impact assessment		
	Vulnerability assessment		
	Climate change impacts		
	Climate proofing of measures		
	Monitoring progress		
	Risk mitigation measures	o	
	(Risk) communication		
	Prioritisation / decision support	X	The two stages included in GOWARE framework (prefiltering and analytic Hierarchy Process) permit ranking BMPs accounting for experts' judgments and specific tailored requirements. The ranking of the BMPs is carried out in two stages. In the first one, sectorial experts have judged BMPs using a 1-5 scale according the five criteria. After, AHP provide the weights following specific requirements of the stakeholders.
Spatial application area, characteristics	Urban / built environment	o	
	Rural / agricultural areas	o	
	Rural / forest areas	o	
	Rural / natural environment	o	
	Water environment		
	Not spatially fixed (like social)		
	Low land, River valleys	o	
	Mountainous areas	o	
Spatial scope	Building / object level		
	Quarter / community level		
	Local / municipal level		
	Regional level	X	Spatial detail of BMPs included in GOWARE is primarily devoted to address issues at basin/regional spatial scale level; for example for Water Budget Plans managed at Regional Level
	Supra-regional level		
	River basin level	X	For example, for support to RBMPs
	Technical outline/aspects of the tool	It is a web-application/online-info	X
It is / includes a guidebook/-line			
It is a checklist			
It is a decision support tool		X	

Project	INTERREG-CE PROLINE	
Category	Aspects	Explanations
	It produces maps	
	It includes hydraulic modelling	
	It includes hydrologic modelling	
	It includes climate modelling	o
	It includes games	
Stakeholder interaction	Information of stakeholders	X A deep testing phase has been carried out after the release of GOWARE web tool; views, insights and further requirements have been collected from stakeholders working in different fields and countries. The findings are included in a specific Deliverable released within PROLINE-CE Project and freely available for the scopes of TEACHER-CE Project
	Exchange	X Sectorial experts by their judgments to BMPs have been involved and their contribution has been key for GOWARE development; furthermore, in the final part, testing allowed us to identify the main improvements to be included and act as a robust “second-stage” requirement analysis
	Participation	
	Cooperation / coop. planning	
	Training / capacity building	o Training sessions about the tool have been carried out after the release of GOWARE web tool
Link to EU Legislation	WFD	X The link with KTMs is expressly mentioned as “Additional Information” for each BMP
	Floods Directive	o As reported, several measures are aimed at supporting flood risk mitigation; in general, they concern fluvial flooding (the only one expressly addressed by FD)
	Drinking Water Directive	X The tool is strictly related to “drinking water protection “issue
	Nitrate Directive	
	Bathing Water Directive	
	Urban Waste Water Treatment Directive	
Pilot implementation	Pilot 1 (Country, location)	
	Pilot 2 (Country, location)	
	Pilot 3 (Country, location)	
	Pilot 4 (Country, location)	
	Pilot 5 (Country, location)	

Project	INTERREG-CE PROLINE	
Category	Aspects	Explanations
	Pilot 6 (Country, location)	
Current status of the tool / availability	Status of development	Released (June 2019)
	completion of test version (date)	
	completion of final version (date)	
Examples for the use of the tool (please describe a practical application)?	<p>GOWARE is intended supporting stakeholders in the selection of BMPs taking into account experts' judgments and specific tailored requirements. A first to-do list of actions permitting to improve the tool is already defined after the testing phase carried out within PROLINE-CE Project. Nonetheless, to improve the interactions among the tools included in TEACHER-CE suite, further sectors could be explicitly taken into account, for example, integrating risk/hazard mapping provided by other tools with BMPs permitting to cope with such issues (e.g. soil erosion, pluvial flooding). Several insights about how to increase the number of BMPs have been also collected. A clearer and explicit characterization of BMPs in terms of adaptation actions (e.g. no-regret, win-win measures) is also required. Minor revisions concerning bugs, user interface and outputs, arisen in these months, will be also fixed.</p>	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	PP4 (SGGW – WULS)
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Project	FRAMWAT	
Category	Aspects	Explanations
Name of the tool	DSS (Decision Support System)	
Web-links to the tool	http://planning.waterRetention.sggw.pl	
General description of the tool	- objectives	The application is created for people involved in planning water retention measures to mitigate the effects of drought, floods and surface contamination by biogenes. The goal of the application is to familiarize the user with the Catalogue of Natural (Small) Water Retention Measures (N(S)WRM) and the planning process as well as to survey his preferences for his area of interest. An additional function is to help the user in making a decision about the location and type of measure and to develop a report, based on which the user will be able to develop the concept and prepare the necessary permits for their implementation. An available set of data, tools, guidelines and procedures (methods) enables the assessment of cost and efficiency of different combinations of N(S)WRM at the catchment scale.
	- general scope	The web application consists of the start page and three groups of tabs: Education, Catalogue of measures and Tools. The tools tabs contain links to next applications: FroGIS, N(S)WRM planner, StaticTools, AHP tools
	- what for / purpose	Supporting decisions in the field of choosing the type of N(S)WRM and its location, collecting data necessary to develop the concept and permits necessary in the process of implementing measures.
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	<input type="radio"/> Indirectly, yes - because it planning locations N(S)WRM for flood reduction
	Heavy rain / pluvial	<input type="radio"/> Idirect, yes - because it planning locations N(S)WRM for reduction short intensive rain
	Droughts	<input type="radio"/> Indirectly, yes - because it planning locations of N(S)WRM for reduction of effects of drought
	Wind / Storms	-

Project	FRAMWAT	
Category	Aspects	Explanations
	CC-impacts on water supply	o Indirectly, yes - because most of the N(S)WRMs have an impact on the increase of groundwater and surface water levels and the improvement of their quality
	CC-impacts on agriculture	o Indirectly, yes - because N(S)WRM reduce the sensitivity of agricultural land for water deficits
	CC-impacts on forests	o Indirectly, yes- For forest sectors because N(S)WRM reduce sensitivity to water deficits
	CC-impacts on soil	o Indirectly, yes- For soil sectors because N(S)WRM reduce water and wind erosion
Targeted sectors	Water management	X Because it is dedicated for water managements to support drought and flood management plans and to reduce sediment
	Spatial planning (general)	X Because it is dedicated to N(S)WRM planning, taking into account environmental and acropopogenic factors
	Urban development / planning	
	Forestry	o Because a large group of N(S)WRM concerns forests
	Land-use management	o Because a large group N(S)WRM relates to land use change
	Agriculture	o Because a large group of N(S)WRM concerns agriculture
	Economy, infrastructure comp.	
	Drinking water supply	
	Environmental planning	o Because a large group of N(S)WRM is used in protected areas
	Emergency managem./response	
	Meteorology/Atmopsheric sciences	
	Early warning	
Target group levels and expert level	Municipality / local actors	o In the field of education, planning (submitting N(S)WRM), legal procedures for implementing
	Regional administration/actors	X In the scope of: publishing maps supporting the planning process, collecting N(S)WRM applications, choosing the most advantageous measure variant
	Experts / research	o In the field of development of static method of assessing the effectiveness
	Politicians / decision makers	-
	Private persons / public	o In the field of education, planning (submitting N(S)WRM), legal procedures for implementing
	Students / education	o In the field of: education and planning teaching and evaluation of the effectiveness of activities
Focus of the tool	Hazard & Risk assessment	

Project	FRAMWAT	
Category	Aspects	Explanations
	Impact assessment	o Dynamic (slightly worse Static) methods assessment of impact of N(S)WRM on high and low flow, sediment load, soil moisture
	Vulnerability assessment	
	Climate change impacts	o Dynamic methods (this is not tools but the way to use the models like SWAT) assessment of impact of CC on hydrology, water quality and how same N(S)WRM mitigate these changes ?
	Climate proofing of measures	?
	Monitoring progress	
	Risk mitigation measures	o Catalogue of measures and AHP methods help helps in choosing the right risk mitigation measures
	(Risk) communication	
	Prioritisation / decision support	X Enables prioritization of lists of applied measures according to quantitative and qualitative efficiency and cost plans and location on the valorisation map from FroGIS
Spatial application area, characteristics	Urban / built environment	o The FroGIS, N(S)WRP Planner, StaticTools and Dynamic method is dedicated to the entire catchment
	Rural / agricultural areas	X As above
	Rural / forest areas	X As above
	Rural / natural environment	X As above
	Water environment	X As above
	Not spatially fixed (like social)	X Catalogue of Measure, AHP method, education and Legislation procedure have no special aspect
	Low land, River valleys	X The FroGIS, N(S)WRP Planner, StaticTools and Dynamic method is dedicated to the entire catchment
Mountainous areas	X As above	
Spatial scope	Building / object level	
	Quarter / community level	o Input data can be accurate but results are given in spatial units larger than a single building such as Hydrological Response Units, Subbasin
	Local / municipal level	o As above
	Regional level	o As above
	Supra-regional level	o As above
	River basin level	X Due to the assessment of quantitative efficiency, the DSS tools work on a catchment scale
Technical outline/aspects of	It is a web-application/online-info	X Yes, but some tools like StaticTools and Dynamic methods not

Project	FRAMWAT	
Category	Aspects	Explanations
the tool	It is / includes a guidebook/-line	o DSS has a manual for all components and tools. This is a link to it: https://docs.google.com/document/d/1rxrQtArCDYmr1BZf_o6RdF5MiQkjlqW3vGgQ-Ym0gnA/edit?usp=sharing
	It is a checklist	
	It is a decision support tool	X DSS for education and creation of concept plan for catchment, community, municipality or region
	It produces maps	X FroGIS , N(S)WRM planner produces maps
	It includes hydraulic modelling	o DSS according to Dynamic methods proposes to use the following model: HEC-RAS, FLOW2D
	It includes hydrologic modelling	o DSS according to Dynamic methods proposes to use the following model: SWAT, HEC-HMS
	It includes climate modelling	
	It includes games	
Stakeholder interaction	Information of stakeholders	X In November 2019, presentation at six national meetings in Poland, Slovenia, Slovakia, Hungary, Austria, Croatia
	Exchange	
	Participation	X Stakeholder was use the DSS tools on computer workshop and made comments.
	Cooperation / coop. planning	o . They only made comments
	Training / capacity building	X In November 2019 there were national meetings at which one could learn about the tools
Link to EU Legislation	WFD	X Some of N(S)WRM are conducive to improving the ecological status of ground and surface waters body's. Like stream bed re-naturalization, re-meandering, riverbed material renaturalization, elimination of riverbank protection, removal of dams and other longitudinal barriers
	Floods Directive	X Each Flood Risk Management Plans should have a set of natural activities like N(S)WRM. Measures should have variants and should have an assessment of effectiveness (Dynamic methods and Static tools can do this)
	Drinking Water Directive	o Some of the measures encourage the infiltration of rainwater into the ground or proposes to increase surface retention which is part of this directorate.
	Nitrate Directive	o The agriculture N(S)WRM part overlaps with the BMPs used in the Nitrate Directive. Most of them reduce the speed of nitrogen transport to surface waters.
	Bathing Water Directive	-

Project	FRAMWAT	
Category	Aspects	Explanations
	Urban Waste Water Treatment Directive	-
Pilot implementation	Pilot 1 (Country, location)	Poland - Kamienna Basin (all tools was implemented)
	Pilot 2 (Country, location)	Slovenia - Kamniska Bistrica Basin (they not tested only legal procedures)
	Pilot 3 (Country, location)	Slovakia - Slaná Basin (they not tested only legal procedures and costa analysis)
	Pilot 4 (Country, location)	Hungary - Nagykunsági Basin (they not tested only legal procedures)
	Pilot 5 (Country, location)	Austria – Aist Basin (they not tested only legal procedures, costs and N (S) WRM Planner)
	Pilot 6 (Country, location)	Croatia – Benja Basin (they not tested only legal procedures, costs and N (S) WRM Planner)
Current status of the tool / availability	Status of development	In last phase from developments. It is an open source tool and its further development depends on the online community, which takes place at https://gitlab.com/framwat/decision-support-system
	completion of test version (date)	04.2020
	completion of final version (date)	05.2020
Examples for the use of the tool (please describe a practical application)?	Practical work flow will be followed by: 1) create valorisation map in FroGIS 2) installing DSS on own server and public web map area of interest (Frogis maps, hydrography, orthofotomap, TWI, shadow DEM, parcels), 3) sending an invitation to submit N(S)WRM to a local stakeholder with an instruction and a link to DSS & Planner of N(S)WRM, 4) waiting for the moment when stakeholders put measure on the map using NSWRM planner 5) download all applied measures by server administrator, 6) supplementing missing action parameters by experts, 7) estimating effectiveness with the StaticTools tool or using dynamic model, 8) estimating investment risk and final prioritizing actions.	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	INFRASTRUKTUR & UMWELT Professor Böhm und Partner
Date:	02.03.2020
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Project	RAINMAN			
Category	Aspects	Explanations		
Name of the tool	RAINMAN-Toolbox			
Web-links to the tool	http://rainman-toolbox.eu/			
General description of the tool	- objectives	<ul style="list-style-type: none"> Knowledge platform to reduce the risks of heavy rain events, especially for public administration Capacity-building for local public administration on integrated heavy rain risk management 		
	- general scope	<ul style="list-style-type: none"> Good practice examples and guidance on: <ul style="list-style-type: none"> Assessment and mapping of heavy rain risks Catalogue of heavy rain risk reduction measures, more detailed information on retention, prevention, spatial planning, early warning, emergency response Heavy rain risk communication 		
	- what for / purpose	<ul style="list-style-type: none"> Supports municipalities to reduce risks of heavy rain Supports integrated risk management 		
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	<input type="checkbox"/>	The RAINMAN project builds on the assumption that heavy rain events will increase in the future	
	Heavy rain / pluvial	X		
	Droughts	<input type="checkbox"/>		
	Wind / Storms	<input type="checkbox"/>		
	CC-impacts on water supply	<input type="checkbox"/>		
	CC-impacts on agriculture	o		With regard to heavy rain
	CC-impacts on forests	o		With regard to heavy rain
CC-impacts on soil	<input type="checkbox"/>			
Targeted sectors	Water management	X	Main targeted sector	
	Spatial planning (general)	o	One of the (sub-)tools in the toolbox aims to reduce heavy rain risks by spatial planning approaches.	

Project	RAINMAN	
Category	Aspects	Explanations
	Urban development / planning	o One of the (sub-)tools in the toolbox aims to reduce heavy rain risks by prevention measures in developing areas and existing structures .
	Forestry	o One of the tools in the toolbox contains the catalogue of 100 risk reduction measures ; these measures also address forests as one field of action
	Land-use management	o One of the (sub-)tools in the toolbox aims to reduce heavy rain risks by retention measures .
	Agriculture	o One of the tools in the toolbox is the catalogue of 100 risk reduction measures ; these measures also address farmland as one field of action
	Economy, infrastructure comp.	
	Drinking water supply	
	Environmental planning	
	Emergency managem./response	o One of the (sub-)tools in the toolbox aims to reduce heavy rain risks by emergency response .
	Meteorology/Atmopsheric sciences	
	Early warning	o One of the (sub-)tools in the toolbox aims to reduce heavy rain risks by early warning .
Target group levels and expert level	Municipality / local actors	X Aims to give guidance to public authorities on a local level to adapt heavy rain risks.
	Regional administration/actors	X Aims to give guidance to public authorities on a regional level to adapt heavy rain risks.
	Experts / research	o More detailed information are compiled in expert corners for some of the tools (esp. assessment and mapping)
	Politicians / decision makers	
	Private persons / public	o Prevention measures in development areas and existing structures
	Students / education	o Risk communication is important to reduce heavy rain risks. One focus of the activities in risk communication lay on education (mainly schools, secondary level).
Focus of the tool	Hazard & Risk assessment	o One of the tools in the toolbox is " assessment and mapping " (it gives guidance on heavy rain risk assessment and the mapping of heavy rain risks)
	Impact assessment	o Is partly tackled in the tool "assessment and mapping"

Project	RAINMAN	
Category	Aspects	Explanations
	Vulnerability assessment	o Is partly tackled in the tool “assessment and mapping” plus the subtool emergency response contains a toolkit which provides guidance on vulnerability assessment for heavy rain risk mapping
	Climate change impacts	
	Climate proofing of measures	
	Monitoring progress	
	Risk mitigation measures	X One of the tools in the toolbox is the catalogue of 100 risk reduction measures
	(Risk) communication	X One of the tools in the toolbox is risk communication / raising awareness.
	Prioritisation / decision support	o Filter options for risk reduction measures help to find suitable action fields; recommendations give guidance
Spatial application area, characteristics	Urban / built environment	X The toolbox is built for different geographical backgrounds and tested in pilot actions.
	Rural / agricultural areas	o The toolbox is built for different geographical backgrounds and tested in pilot actions. Rural areas are not further differentiated.
	Rural / forest areas	o The toolbox is built for different geographical backgrounds and tested in pilot actions. Rural areas are not further differentiated.
	Rural / natural environment	o The toolbox is built for different geographical backgrounds and tested in pilot actions. Rural areas are not further differentiated.
	Water environment	
	Not spatially fixed (like social)	
	Low land, River valleys	X The toolbox is built for different geographical backgrounds and tested in pilot actions.
	Mountainous areas	X The toolbox is built for different geographical backgrounds and tested in pilot actions.
Spatial scope	Building / object level	o Prevention measures in development areas and existing structures
	Quarter / community level	
	Local / municipal level	X Heavy rain is a local/regional risk and therefore the toolbox addresses especially these levels.
	Regional level	X Heavy rain is a local/regional risk and therefore the toolbox addresses especially these levels.
	Supra-regional level	
	River basin level	Some pilot activities investigated also very small river catchments
Technical	It is a web-application/online-info	X Website

Project	RAINMAN	
Category	Aspects	Explanations
outline/aspects of the tool	It is / includes a guidebook/-line	o The objective of the toolbox is to give guidance. Its contents are created as guiding information and for some specific topic further guiding documents can be downloaded.
	It is a checklist	
	It is a decision support tool	o Filter option for risk reduction measures help to find suitable action fields
	It produces maps	o During the project exemplary hazard (and risk) maps were produced that serve as best practice examples. But the tool itself does not create any maps.
	It includes hydraulic modelling	Only guidance on
	It includes hydrologic modelling	Only guidance on
	It includes climate modelling	
	It includes games	o Game for risk communication with school children
Stakeholder interaction	Information of stakeholders	X Information meetings
	Exchange	X Tool trainings in pilot areas and implementation of their feedback in the revision of the toolbox
	Participation	o Ex-ante and ex post online survey on the demands for the toolbox
	Cooperation / coop. planning	
	Training / capacity building	X 26 trainings offered to local, regional and international level
Link to EU Legislation	WFD	
	Floods Directive	X Experiences and conclusions regarding the integration of pluvial flood risk management in flood risk management plans according the EU Floods Directive are summarized in a paper. The goal is to provide the experiences to policy maker and decision maker in this field. It covers two general aspects: administrative / process-oriented aspects of the integration of pluvial & fluvial FRM; technical aspects of heavy rain risk assessment and mapping.
	Drinking Water Directive	
	Nitrate Directive	
	Bathing Water Directive	
	Urban Waste Water Treatment Directive	
Pilot implementation	Pilot 1 (Country, location)	Germany, Saxony (Oderwitz, Meißen, Görlitz and Leutersdorf)
	Pilot 2 (Country, location)	Austria, City of Graz
	Pilot 3 (Country, location)	Poland, Lower Silesia

Project	RAINMAN	
Category	Aspects	Explanations
	Pilot 4 (Country, location)	Czech Republic, South Bohemia
	Pilot 5 (Country, location)	Hungary, Tiszakecske & Kunhegyes
	Pilot 6 (Country, location)	Croatia, Zagreb and Istria
	Pilot 7 (Country, location)	Austria, Upper Austria
Current status of the tool / availability	Status of development	Under development
	completion of test version (date)	May 2020
	completion of final version (date)	June 2020
Examples for the use of the tool (please describe a practical application)?	<ul style="list-style-type: none"> - Municipality is planning to contract a company to assess and map heavy rain hazards and risks. The toolbox gives information which different types of assessment and mapping are available and creates a good basis for the municipality to understand which type of assessment and mapping is needed. - Toolbox gives ideas for measures of risk communication. When a municipality is searching for measures to inform citizens about heavy rain risks it also gets inspiration from good practice examples. - A municipality can browse 100 risk reduction measures or search for specific action fields. 	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	Austrian Research Centre for Forests (BFW)
Date:	2/3/2020
Editor / filled in by	Debojyoti Chakraborty
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Project	SUSTREE	
Category	Aspects	Explanations
Name of the tool	SusSelect	
Web-links to the tool	https://play.google.com/store/apps/details?id=com.topolynx.susselect&hl=en	
General description of the tool	- objectives	Assessment of Vulnerability of Forests to climate change and identification of adapted seed sources
	- general scope	Forest management, Forest conservation, Climate change adaptation
	- what for / purpose	Adapting forests to climate change
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	
	Heavy rain / pluvial	
	Droughts	X The tool predicts spatially explicit sensitivity of forests to drought.
	Wind / Storms	
	CC-impacts on water supply	o
	CC-impacts on agriculture	
	CC-impacts on forests	X The tool predicts spatially explicit vulnerability of forests in climate change scenarios.
Targeted sectors	CC-impacts on soil	
	Water management	
	Spatial planning (general)	
	Urban development / planning	
	Forestry	X Forestry sector such as forest managers, forest nurseries and conservation managers can use it
	Land-use management	X Land-use managers can use the tool to identify and designate suitable land-use such as conservation, urban forestry and to identify adapted planting materials for future.
	Agriculture	
Economy, infrastructure comp.		
Drinking water supply		

Project	SUSTREE		
Category	Aspects		Explanations
	Environmental planning		
	Emergency managem./response		
	Meteorology/Atmpospheric sciences	X	The tool is useful for meteorologists since it uses high resolution climate data. This can be used to validate such data for forestry purposes
	Early warning		
Target group levels and expert level	Municipality / local actors	X	Municipality forestry office can use the tool to assess vulnerability of municipal forests
	Regional administration/actors		
	Experts / research	X	Researchers and scientists working on adaptation and forestry can use this tool to identify adapted planting materials
	Politicians / decision makers	X	Policy makers can use this tool to understand the impact of adaptation policies such as assisted migration
	Private persons / public		
	Students / education	X	The tool can be used for education purpose for bachelors and masters level students
Focus of the tool	Hazard &Risk assessment	X	
	Impact assessment	X	
	Vulnerability assessment	X	The tool estimates the vulnerability of 7 tree species to climate change
	Climate change impacts	X	The tool shows the potential distribution of tree species under current and future climate
	Climate proofing of measures		
	Monitoring progress		
	Risk mitigation measures	X	The tool can be used to mitigate risk of maladaptation of forest tree species in climate change by selecting source of adapted planting materials
	(Risk) communication		
	Prioritisation / decision support	X	The Tool focuses on providing decision support to forests and conservation managers as well as forest nurseries in the form of a easy to use Smartphone ap "SusSelect" and a web GIS
Spatial application area, characteristics	Urban / built environment		
	Rural / agricultural areas		
	Rural / forest areas	X	
	Rural / natural environment		
	Water environment		
	Not spatially fixed (like social)		
	Low land, River valleys	X	
	Mountainous areas	X	

Project	SUSTREE		
Category	Aspects	Explanations	
Spatial scope	Building / object level		Spatial resolution of SusSelect is 1km grid-cell throughout Europe
	Quarter / community level	X	Spatial resolution of SusSelect is 1km x1km-
	Local / municipal level	X	Spatial resolution of SusSelect is 1km x1km
	Regional level	X	Spatial resolution of SusSelect is 1km x1km
	Supra-regional level	X	Spatial resolution of SusSelect is 1km x1km
	River basinlevel	X	Spatial resolution of SusSelect is 1km x1km
Technical outline/aspects of the tool	It is a web-application/online-info		
	It is / includes a guidebook/-line		
	It is a checklist		
	It is a decision support tool	X	
	It produces maps	X	
	It includes hydraulic modelling		
	It includes hydrologic modelling		
	It includes climate modelling	X	Universal response function models (URFs)
Stakeholder interaction	Information of stakeholders		
	Exchange		
	Participation		
	Cooperation / coop. planning	X	The tool has been used in pilot action for Austrian Federal Forests, a large Forest Enterprise to calculate their risks of current forest management practises in climate change
	Training / capacity building	X	The tool has been used for capacity building training workshops for Czech Conservation managers in Thayatal National Park
Link to EU Legislation	WFD		
	Floods Directive		
	Drinking Water Directive	X	The tool can indirectly support DWD,by securing watershed areas where forests play an important role in drinking water supply
	Nitrate Directive		
	Bathing Water Directive		
	Urban Waste Water Treatment Directive		
Pilot implementation	Pilot 1 (Country, location)		
	Pilot 2 (Country, location)		
	Pilot 3 (Country, location)		
	Pilot 4 (Country, location)		
	Pilot 5 (Country, location)		

Project	SUSTREE	
Category	Aspects	Explanations
	Pilot 6 (Country, location)	Austria, Vienna Water drinking water sources, Assessment of Forest vulnerability in climate change
	Pilot 7 (Country, location)	Austria, Waidhofen/Ybbs drinking water sources, Assessment of Forest vulnerability in climate change
	Pilot Action 9	Czechia, Dyjriver basin , Assessment of Forest vulnerability in climate change
Current status of the tool / availability	Status of development	Finalized, subject to fine tuning
	completion of test version (date)	November 19, 2019
	completion of final version (date)	
Examples for the use of the tool (please describe a practical application)?	<ol style="list-style-type: none"> 1. User defines area of interest by GPS 2. SusSelect estimates vulnerability (potential distribution of 7 tree species of Europe) at a resolution of 1km under current and future climate scenarios 3. User selects the tree species based on future vulnerability 4. User obtains final recommendation of the geographic location and availability of adapted seed sources and planting material. 	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	Global WaterPartnership CEE
Date:	4.3.2020
Editor / filled in by	Sabina Bokal
E-Mail address	sabina.bokal@jwpcce.org

Project	DriDanube – Drought Risk in the Danube Region	
Category	Aspects	Explanations
Name of the tool	Drought Watch	
Web-links to the tool	https://droughtwatch.eu/ Video – explaining Drought Watch: https://www.youtube.com/watch?v=85tsBl6-8yM&feature=youtu.be Video tutorial: https://www.youtube.com/watch?v=2MC5goO17H8&feature=youtu.be Project final video: https://www.youtube.com/watch?v=ASYMEKEeVN0&t=	
General description of the tool	- objectives	Improvement of drought monitoring by operational innovative service. National authorities will use new drought monitoring services for surveillance, emergency response and disaster relief in order to be able to detect impacts during drought development phase sooner. The operational and strategic capacity to monitor, forecast, evaluate and respond during drought development will be improved both in time (faster analysis of the data) and accuracy (spatial resolution of the state-of-art satellites). It will contribute to improvement of management of drought risk.
	- general scope	Drought Watch includes a set of Earth Observation data from a range of operational remote sensing satellites, data from meteorological stations and drought impact reports processed into ready-to-use drought information available to general public with a web interface. The Drought Watch entry data from satellites and ground meteorological stations is further validated and complemented by on-field reporters who prepare weekly report on drought impacts in their own district. The on-field reporters - farmers, fruit-growers, winegrowers or foresters – provide a regular feedback on vegetation status and moisture of soil. The inputs from reporters is collected, evaluated and transformed by the system into drought status and forecast maps based on which stakeholders are able to take appropriate actions.

Project	DriDanube – Drought Risk in the Danube Region	
Category	Aspects	Explanations
	- <i>what for / purpose</i>	Drought Watch is an innovative and interactive tool which enables more accurate and efficient drought monitoring and early warning for the entire Danube region. This tool serves the need of understanding the stage of drought and will help to improve operational day-to-day work of wide range of end users in all phases of drought. It can be a great tool not only for the drought experts, meteorologists, water managers or farmers but also for the decision makers to monitor and detect droughts on transboundary level to be able to make appropriate decisions leading to application of mitigation measures. To avoid bigger losses and impacts of drought, timely and proactive steps are crucial that can be done based on Drought Watch data.
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	
	Heavy rain / pluvial	
	Droughts	X The Drought Watch entry data from satellites and ground meteorological stations further validated and complemented by on-field reporters who weekly report on drought impacts in their own district. The on-field reporters - farmers, fruit-growers, winegrowers or foresters – are providing a regular feedback on vegetation status and moisture of soil. The inputs from reporters are collected, evaluated and transformed by the system into drought status and forecast maps based on which stakeholders are able to take appropriate actions. Read more here: http://www.interreg-danube.eu/news-and-events/project-news/2191
	Wind / Storms	
	CC-impacts on water supply	

Project		DriDanube – Drought Risk in the Danube Region	
Category	Aspects		Explanations
	CC-impacts on agriculture	X	<p>National reporting networks (explained above) are reporting observations from the field/forest/vineyard etc. through an online questionnaire (weekly). This way they provide a regular feedback on vegetation status and moisture of soil in their area.</p> <p>Benefit for reporters: Apart from benefitting from information on current status of drought and drought forecasts needed for reporters' own operations and strategies within the season, from a regional point of view the system may provide a reliable mechanism for farmers in selection of appropriate price negotiation strategy or building fodder stocks.</p> <p>Additionally, in return for provided data, reporters are offered a tool that is showing how serious the problem in their area is in order to negotiate with respective offices for payments of the subsidies.</p> <p>Reporters are providing valuable entry data but additionally, information from the reporters can raise awareness of public institutions and general public as well about severity of drought in a specific time and region. These reports are hence essential for timely responses not only from water-dependent/related businesses but also from the state administration.</p>
	CC-impacts on forests		Reporters are collecting also impacts of drought on forest – please see above.
	CC-impacts on soil		Reporters are regularly reporting about the status of the soil – see above.
Targeted sectors	Water management	X	
	Spatial planning (general)		
	Urban development / planning		
	Forestry		
	Land-use management		
	Agriculture	X	
	Economy, infrastructure comp.		
	Drinking water supply	o	
	Environmental planning		
	Emergency managem./response	X	
	Meteorology/Atmopsheric sciences	X	
Early warning	X		
Target group levels and expert	Municipality / local actors	X	
	Regional administration/actors	X	

Project	DriDanube – Drought Risk in the Danube Region	
Category	Aspects	Explanations
level	Experts / research	X
	Politicians / decision makers	X
	Private persons / public	
	Students / education	X
Focus of the tool	Hazard & Risk assessment	X
	Impact assessment	X
	Vulnerability assessment	X
	Climate change impacts	X
	Climate proofing of measures	
	Monitoring progress	
	Risk mitigation measures	
	(Risk) communication	X
Prioritisation / decision support	X	
Spatial application area, characteristics	Urban / built environment	o
	Rural / agricultural areas	X
	Rural / forest areas	X
	Rural / natural environment	X
	Water environment	X
	Not spatially fixed (like social)	
	Low land, River valleys	
	Mountainous areas	
Spatial scope	Building / object level	
	Quarter / community level	o
	Local / municipal level	X
	Regional level	X
	Supra-regional level	X
	River basin level	X
Technical outline/aspects of the tool	It is a web-application/online-info	X
	It is / includes a guidebook/-line	X
	It is a checklist	
	It is a decision support tool	
	It produces maps	X
	It includes hydraulic modelling	
	It includes hydrologic modelling	
	It includes climate modelling	
It includes games		
Stakeholder	Information of stakeholders	X

Project	DriDanube – Drought Risk in the Danube Region	
Category	Aspects	Explanations
interaction	Exchange	X There are National drought reporters (over 300 around Danube) reporting weekly about the drought impacts on the ground – for comparison with information from the tool.
	Participation	X National drought reporters
	Cooperation / coop. planning	
	Training / capacity building	o Trainings were part of the Tool development
Link to EU Legislation	WFD	The most important policy instrument for drought management in Europe is WFD. Therefore the development of the Drought Watch and the Danube Drought Strategy was focusing on WFD requirements and European Commission Communication (COM (2007) 414)18, which recommended that water scarcity and drought are addressed in context of water policy.
	Floods Directive	
	Drinking Water Directive	
	Nitrate Directive	
	Bathing Water Directive	
	Urban Waste Water Treatment Directive	
Pilot implementation	Pilot 1 (Country, location)	Romania
	Pilot 2 (Country, location)	Croatia
	Pilot 3 (Country, location)	Czech Republic
	Pilot 4 (Country, location)	Montenegro
	Pilot 5 (Country, location)	Slovenia
	Pilot 6 (Country, location)	For all: The Drought Watch products that were under testing in 5 pilot countries were mostly Soil Water Index (SWI) anomalies, Normalized Difference Vegetation Index (NDVI) anomalies, and reporters' data on status of soil and vegetation obtained from national reporting networks. They were compared to the ground data available, which varied in each of the 5 pilot countries. Examples of ground data used in testing the Drought Watch: thermal (such as heat intensity for the summer season), precipitation (monthly and crop specific interval of the rainfall regime), soil moisture reserve on different depths for different crops (winter wheat and maize), modelled surface water balance, modelled soil saturation. You can read more about the 5 pilot actions here .
Current status of the tool / availability	Status of development	Tool is being updated with country specific data/information regularly.
	completion of test version (date)	July 2018

Project	DriDanube – Drought Risk in the Danube Region	
Category	Aspects	Explanations
	completion of final version (date)	September 2019 but is being regularly updated/upgraded
Examples for the use of the tool (please describe a practical application)?		

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	General Directorate of Water Management - MiddleTisza District Water Directorate – Global Water Partnership CEE
Date:	04.03.2020
Editor / filled in by	Melinda Váci, Dávid Béla Vizi
E-Mail address	tiszaoffice@kotivizig.hu

Project	JOINTISZA – Strengthening cooperation between river basin management planning and flood risk prevention to enhance the status of waters of the Tisza River Basin	
Category	Aspects	Explanations
Name of the tool	JOINTISZA outputs: Update of the 1st Integrated Tisza River Basin Management Plan, Pilot on climate change induced specific water quantity issues (at Nagykunság subcatchment) and Pilot on Urban Hydrology	
Web-links to the tool	Project website: http://www.interreg-danube.eu/approved-projects/jointisza	
General description of the tool	- objectives	Develop an update of the 1st Integrated Tisza River Basin Management Plan (ITRBMP) based on shared knowledges, experiences, scientific evidence, in order to strengthen transnational water management and flood risk prevention and enhance the long-term status of the waters of the Tisza River Basin (TRB): <ul style="list-style-type: none"> – identified solutions to common challenges identified across the Tisza River Basin – built momentum to address the international dimension of these issues in a coordinated way at transboundary level – improved integration of water management and flood risk prevention planning and actions for the next river basin management planning cycle, in line with the relevant EU legislation
	- general scope	The JOINTISZA project ensured that flood risk management planning becomes more deeply embedded in the RBM planning process, and also facilitated the involvement of interested stakeholders and relevant sectors (e.g. flood risk-, water resource-, urban hydrology- and drought management).

Project	JOINTISZA – Strengthening cooperation between river basin management planning and flood risk prevention to enhance the status of waters of the Tisza River Basin		
Category	Aspects	Explanations	
	- <i>what for / purpose</i>	<p>Update of the 1st Integrated Tisza River Basin Management Plan and the Joint Programme of Measures with a basin-wide relevance; supports integrated water management approach:</p> <ul style="list-style-type: none"> – Improved Geographic Information System (GIS) database – Development of the JoinTisza Survey Manual – Guidelines on best management of urban hydrology – a process oriented spatial decision support tool for urban water management pilot on two areas – Training of best management on urban hydrology – Dyke failure simulation with transboundary effects on Crasna River – Guidance paper on climate change-induced water quantity issues– Shared Vision Planning (SVP) concept testing to strengthen cooperation of RBM and flood risk Management sectors – Enhanced stakeholder involvement, Public Involvement and Participation Strategy (PIPS). Covered the aspects of communication, information access and public participation related to the development of the updated ITRBMP – Final draft of the updated ITRBMP, including the Joint Programme of Measures (61 win-win potential measures, which reduce flood risks and support the implementation of the WFD) 	
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	X	
	Heavy rain / pluvial	X	
	Droughts	X	
	Wind / Storms		
	CC-impacts on water supply	X	
	CC-impacts on agriculture	o	
	CC-impacts on forests		Not part of the project
	CC-impacts on soil		Not part of the project
Targeted sectors	Water management	X	Main targeted sector
	Spatial planning (general)	X	
	Urban development / planning	X	
	Forestry	X	
	Land-use management	X	
	Agriculture	X	
	Economy, infrastructure comp.	X	
	Drinking water supply	X	
	Environmental planning	X	
	Emergency managem./response	X	
	Meteorology/Atmpoheric sciences	o	Only Meteorology was a targeted sector
	Early warning	X	

Project			
JOINTISZA – Strengthening cooperation between river basin management planning and flood risk prevention to enhance the status of waters of the Tisza River Basin			
Category	Aspects	Explanations	
Target group levels and expert level	Municipality / local actors	X	
	Regional administration/actors	X	
	Experts / research	X	Environment and Water related
	Politicians / decision makers	X	
	Private persons / public	X	
	Students / education		It was a project for professionals
Focus of the tool	Hazard & Risk assessment	X	
	Impact assessment	X	
	Vulnerability assessment	X	
	Climate change impacts	X	The Joint Programme of Measures includes risk mitigation measures are significant at the whole TRB as well.
	Climate proofing of measures	X	
	Monitoring progress	X	
	Risk mitigation measures	X	A Catalogue of measures was compiled in flood risk aspect relevant in the whole TRB. The Joint Programme of Measures includes risk mitigation measures are significant at the whole TRB as well.
	(Risk) communication		
Prioritisation / decision support	X		
Spatial application area, characteristics	Urban / built environment		The update of the 1 st ITRBMP is relevant for the whole Tisza River Basin, so regarding to the geographically circumstances all of the types of area are included. It can be more specified in the aspect of the 3 Pilot actions.
	Rural / agricultural areas		The same as above
	Rural / forest areas		The same as above
	Rural / natural environment		The same as above
	Water environment		The same as above
	Not spatially fixed (like social)		The same as above
	Low land, River valleys		The same as above
	Mountainous areas		The same as above
Spatial scope	Building / object level		
	Quarter / community level		
	Local / municipal level		
	Regional level		
	Supra-regional level		

Project	JOINTISZA – Strengthening cooperation between river basin management planning and flood risk prevention to enhance the status of waters of the Tisza River Basin	
Category	Aspects	Explanations
	River basin level	X The update of the 1 st ITRBMP is relevant for the whole Tisza River Basin
Technical outline/aspects of the tool	It is a web-application/online-info	X Project website: http://www.interreg-danube.eu/approved-projects/jointisza
	It is / includes a guidebook/-line	X Guidance paper on climate change induced specific water quantity issues to overcome challenges;
	It is a checklist	
	It is a decision support tool	X The Guidance paper aims to provide a practical document for stakeholders who are going to be involved in the next term river basin management planning in a significantly climate change influenced river basin.
	It produces maps	X ICPDR prepared the maps based on the templates, it's uploaded to Danube GIS
	It includes hydraulic modelling	X HEC-RAS 5.0.4 modelling was applied in Nagyunság subcatchments Pilot and in Simulation of dikefailure on Crasna River
	It includes hydrologic modelling	X Was used in Urban Hydrology's pilot
	It includes climate modelling	X The results of Joint research Center was used (LISFLOOD 2.0) as boundary conditions (discharge data) for the hydraulic models
It includes games		
Stakeholder interaction	Information of stakeholders	X
	Exchange	X
	Participation	X
	Cooperation / coop. planning	X Shared Vision Planning Training
	Training / capacity building	X Train the planners training; Shared Vision Planning Training
Link to EU Legislation	WFD	X Regarding to WFD criterias measures were impeneted.
	Floods Directive	X Regarding to FD criterias measures were impeneted.
	Drinking Water Directive	
	Nitrate Directive	
	Bathing Water Directive	
	Urban Waste Water Treatment Directive	

Project	JOINTISZA – Strengthening cooperation between river basin management planning and flood risk prevention to enhance the status of waters of the Tisza River Basin	
Category	Aspects	Explanations
Pilot implementation	Pilot 1 (Country, location)	<p><u>Pilot on climate change induced specific water quantity issues: Hungary, Tisza River – Nagykunság subcatchment</u></p> <p>The pilot activity investigated the climate change induced drought and flood related issues focusing on smaller region within Tisza River Basin (TRB). The task was elaborated by testing the method of Shared Vision Planning (SVP) in a smaller scale of the basin focusing on the Middle Tisza (Nagykunság subcatchment)</p>
	Pilot 2 (Country, location)	<p><u>Urban Hidrology Management: Hungary – Debrecen, Romania – Oradea</u></p> <p>Urban Hydrology Management – Best management on urban water management in Debrecen and Oradea. This activity resulted in the development of a transnationally utilizable, process oriented spatial decision support tool to provide a framework for sustainable urban water management strategy which can be utilized not only by hydrologists, but also by stakeholders, urban management, local government and disaster recovery organizations.</p>
	Pilot 3 (Country, location)	<p><u>Simulation of dike failure with transboundary effects on Crasna River (at Romanian - Hungarian border)</u></p> <p>The analysis was focusing on the international effects of dike failure simulation, which included the development of the 1D HEC-RAS hydraulic model and the 2D model for flood investigation, as well as simulation of the polder inundation in the submitted sections by the Hungarian-Romanian parties.</p>
	Pilot 4 (Country, location)	
	Pilot 5 (Country, location)	
	Pilot 6 (Country, location)	
Current status of the tool / availability	Status of development	Finished
	completion of test version (date)	30.06.2019
	completion of final version (date)	
Examples for the use of the tool (please describe a practical application)?		

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	LfULG (PP2)
Date:	03.03.2020
Editor / filled in by	Anika Albrecht
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Project	LUMAT	
Category	Aspects	Explanations
Name of the tool	LUMATO	
Web-links to the tool	https://www.interreg-central.eu/Content.Node/LUMAT/LUMATO-tool-manual.pdf	
General description of the tool	- objectives	Tool for the management of urban-peri-urban relationships for sustainable development to make places more liveable.
	- general scope	LUMATO carries out integrated environmental analysis for Functional Urban Areas (FUAs) by identifying and evaluating soil threats and the potentials for revitalization.
	- what for / purpose	The tool has been made to cater to the needs of city administrations based upon the example given by the municipalities of the Green Ring of Leipzig. LUMATO was developed to improve the ecosystem services of land and soil in FUA (core and hinterland areas). A Decision Support System will help to guide stakeholders towards recommended actions on threatened sites. The tool is designed to be also applied in other regions in Central Europe.
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	<input type="radio"/> Contains information if a location is prone to flood hazards.
	Heavy rain / pluvial	<input type="radio"/>
	Droughts	<input type="radio"/> Contains information if a location is prone to over-warming (esp. cities) due to high sealing.
	Wind / Storms	<input type="radio"/>
	CC-impacts on water supply	<input type="radio"/>
	CC-impacts on agriculture	<input type="radio"/> Contains information if a location is prone to over-fertilization.
	CC-impacts on forests	<input type="radio"/>
CC-impacts on soil	<input checked="" type="radio"/> Contains information about threats to soil by brownfields, urban sprawl (soil sealing), over-warming, over-fertilization and contaminated areas.	

Project	LUMAT		
Category	Aspects	Explanations	
Targeted sectors	Water management	o	
	Spatial planning (general)	o	Increases significance of ecosystem services provided by natural soils in the process of planning and implementation of sustainable city development and raises awareness of stakeholders.
	Urban development / planning	X	See above; takes into account the relations between central city areas and rural surrounding communities
	Forestry		
	Land-use management	X	Aims for sustainable land use management.
	Agriculture	o	Sustainable use of agricultural areas is also considered.
	Economy, infrastructure comp.		
	Drinking water supply		
	Environmental planning	X	see above
	Emergency managem./response		
	Meteorology/Atmopsheric sciences		
Early warning			
Target group levels and expert level	Municipality / local actors	X	Those who are actually working with the tool.
	Regional administration/actors	o	see above
	Experts / research		
	Politicians / decision makers	o	Might receive results of decision-making process by municipalities.
	Private persons / public		
	Students / education		
Focus of the tool	Hazard & Risk assessment	o	Missing data about brownfields, soil, water were acquired by on-site mapping and data transfer.
	Impact assessment		
	Vulnerability assessment		
	Climate change impacts	X	Contributes to better land-use management to improve adaptation to climate change impacts
	Climate proofing of measures		
	Monitoring progress		
	Risk mitigation measures	X	DSS provides mitigation measures on brownfields, focussing on revitalization, cooling through urban green, raising water retention, reducing harmful substances and compensation sites
	(Risk) communication		
	Prioritisation / decision support	X	There are 5 DSS layers (see risk mitigation measures for layers)

Project	LUMAT		
Category	Aspects	Explanations	
Spatial application area, characteristics	Urban / built environment	X	Acts on the Functional Urban Area (FUA) scale
	Rural / agricultural areas	X	...and its rural environment
	Rural / forest areas		
	Rural / natural environment	X	...and its rural environment
	Water environment		
	Not spatially fixed (like social)		
	Low land, River valleys	o	Not specified, applicable in several locations.
	Mountainous areas	o	Not specified, applicable in several locations.
Spatial scope	Building / object level		
	Quarter / community level		
	Local / municipal level	X	Inter-municipal level (here: City of Leipzig + 12 surrounding municipalities)
	Regional level		
	Supra-regional level		
	River basin level		
Technical outline/aspects of the tool	It is a web-application/online-info	X	Georeferenced, visual file format, e.g. shape file for GIS applications
	It is / includes a guidebook/-line	X	see link to tool manual
	It is a checklist		
	It is a decision support tool	X	
	It produces maps	X	Can be integrated as a new layer, according to INSPIRE requirements for EU wide standards and further used in GIS applications.
	It includes hydraulic modelling		
	It includes hydrologic modelling		
	It includes climate modelling		
	It includes games		
Stakeholder interaction	Information of stakeholders	X	Information meetings
	Exchange	X	Dialogues and discussions with stakeholders to identify existing conditions of IT-environment, result: LUMATO must integrate into existing GIS systems.
	Participation		
	Cooperation / coop. planning	X	See above
	Training / capacity building		
Link to EU Legislation	WFD	X	See below
	Floods Directive	X	One of the DSS layers aims to remove unused and sealed brownfields in flood zones to increase water retention
	Drinking Water Directive		

Project	LUMAT	
Category	Aspects	Explanations
	Nitrate Directive	X One of the DSS layers aims to reduce the input of pesticides and fertilizers from agricultural lands to avoid contamination of water resources.
	Bathing Water Directive	
	Urban Waste Water Treatment Directive	
Pilot implementation	Pilot 1 (Country, location)	Germany, Leipzig (the whole tool: missing data acquisition, layer creating, testing)
	Pilot 2 (Country, location)	
	Pilot 3 (Country, location)	
	Pilot 4 (Country, location)	
	Pilot 5 (Country, location)	
	Pilot 6 (Country, location)	
Current status of the tool / availability	Status of development	finished
	completion of test version (date)	
	completion of final version (date)	
Examples for the use of the tool (please describe a practical application)?	<ul style="list-style-type: none"> - The tool has been made to cater to the needs of city administrations. - Along with important threats of city planning such as brownfields, soil sealing and urban sprawl, also risks of land use are identified and evaluated, e.g. the risk of over-fertilization on agricultural land plots or the risk of over-warming on sealed surfaces in urban areas. - Recommendations for the revitalization of threatened land are given, e.g. urban greening. 	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	University of Ljubljana
Date:	4. March 2020
Editor / filled in by	Miha Curk, Rozalija Cvejic, Matjaz Glavan
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Project	Fairway	
Category	Aspects	Explanations
Name of the tool	ANCA	
Web-links to the tool	https://www.wur.nl/en/article/Annual-Nutrient-Cycling-Assessment.htm	
General description of the tool	- objectives	To optimize dairy farms production in terms of nutrient use efficiency
	- general scope	Assessment of nutrient cycling on dairy farm scale
	- what for / purpose	To optimize nutrient cycle and support decisions for production processes improvement
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	
	Heavy rain / pluvial	
	Droughts	
	Wind / Storms	
	CC-impacts on water supply	
	CC-impacts on agriculture	o Not specifically meant to deal with impacts of CC
	CC-impacts on forests	/
Targeted sectors	CC-impacts on soil	/
	Water management	X Lower impacts of agriculture (N leaching) on surface water and groundwater
	Spatial planning (general)	
	Urban development / planning	
	Forestry	
	Land-use management	o With obtained data is possible to regulate land use of certain areas in cases of higher leaching of nutrients (arable -> grassland)
Agriculture	X Sustainable management of nutrients on farm gate. Lower costs and better efficiency nutrients.	
Economy, infrastructure comp.	o Stabilisation of agro and socio-economics at farm level.	

Project	Fairway	
Category	Aspects	Explanations
	Drinking water supply	X Agricultural practices for safeguarding drinking water quality
	Environmental planning	o Reduce loses of nutrient
	Emergency managem./response	
	Meteorology/Atmpospheric sciences	
	Early warning	
Target group levels and expert level	Municipality / local actors	
	Regional administration/actors	
	Experts / research	o Agriculture extension service - advisers
	Politicians / decision makers	
	Private persons / public	X Individual farmers use it on their farm scale
	Students / education	
Focus of the tool	Hazard & Risk assessment	
	Impact assessment	
	Vulnerability assessment	
	Climate change impacts	
	Climate proofing of measures	
	Monitoring progress	X Sustainable agriculture production
	Risk mitigation measures	o Programme serves as warning system to farmers where they lose nutrient form the system.
	(Risk) communication	
	Prioritisation / decision support	X Improve management of on-farm resources
Spatial application area, characteristics	Urban / built environment	
	Rural / agricultural areas	X (farm gate analysis)
	Rural / forest areas	
	Rural / natural environment	
	Water environment	
	Not spatially fixed (like social)	
	Low land, River valleys	o
	Mountainous areas	
Spatial scope	Building / object level	X Farm scale (land+manure storage+animal)
	Quarter / community level	
	Local / municipal level	
	Regional level	
	Supra-regional level	
	River basin level	
Technical	It is a web-application/online-info	

Project	Fairway	
Category	Aspects	Explanations
outline/aspects of the tool	It is / includes a guidebook/-line	o Guidelines lead user through the process of establishing ANCA.
	It is a checklist	
	It is a decision support tool	X As stand-alone programme (ANCA, Wageningen University)
	It produces maps	
	It includes hydraulic modelling	
	It includes hydrologic modelling	
	It includes climate modelling	
	It includes games	
Stakeholder interaction	Information of stakeholders	
	Exchange	o Farmers can see how their performance compares to other farms
	Participation	
	Cooperation / coop. planning	
	Training / capacity building	
	<i>Stakeholders (farmer, extension service, government) must interact to reach the goal of sustain bale agriculture production with optimal nutrient management on farm</i>	
Link to EU Legislation	WFD	Direct link improvement of quality state of all types of water sources in connection with Nitrate Directive.
	Floods Directive	
	Drinking Water Directive	
	Nitrate Directive	In NL it is used to quantify nutrient losses and provide guidance towards improvements of processes on a farm-scale. Farmer are obligated to use it and reach optimal values. If they do not company to standards, dairy factories refuse their milk.
	Bathing Water Directive	
	Urban Waste Water Treatment Directive	
Pilot implementation	Pilot 1 (Country, location)	Netherlands, dairy farms all across
	Pilot 2 (Country, location)	Slovenia, Dravsko polje – implementation of agricultural best practices and DST (see explanation in an example below)
	Pilot 3 (Country, location)	
	Pilot 4 (Country, location)	
	Pilot 5 (Country, location)	
	Pilot 6 (Country, location)	
Current status of	Status of development	Fully operational in NL, just tested in SLO

Project	Fairway	
Category	Aspects	Explanations
the tool / availability	completion of test version (date)	
	completion of final version (date)	
Examples for the use of the tool (please describe a practical application)?	A farmer can input data about farm management, its nutrient cycle, soil conditions etc and then the tool identifies nutrient losses and potential for improvements. The tool is obligatory for use in the NL dairy sector and was developed outside of the Fairway project. In Fairway project this tool was selected as potentially suitable as a DST for Slovenian farms, and was tested in Dravsko polje on 5 farms. It proved to be interesting, but in order for it to be fully operational, there is a need for some adjustments and calibration for Slovenian conditions.	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	CMCC Foundation PP5
Date:	14/4/2020
Editor / filled in by	Guido Rianna
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Project	Copernicus Climate Change Service (C3S)	
Category	Aspects	Explanations
Name of the tool	C3S Disaster Risk Reduction	
Web-links to the tool	https://climate.copernicus.eu/pluvial-flood-risk-assessment-urban-areas (landing page, not tool)	
General description of the tool	- objectives	The aim is that of exploiting datasets included in Climate Data Store (CDS) of Copernicus Climate Change Service (C3S) to provide tailored datasets, information and application to support Disaster Risk Reduction. Furthermore, a special focus is devoted to urban pluvial flooding.
	- general scope	Three datasets will be delivered exploiting datasets already present in CDS (reanalysis ERA5, gridded observation by E-OBS) and high-resolution datasets performed on 20 cities at 2km downscaling ERA5 datasets. The three resolution include: <ul style="list-style-type: none"> - characterization of extreme precipitation events by climate indicators about precipitation (e.g. ETCCDI) - statistical characterization of past heavy rainfall events in terms of exceedance of 95 and 99 percentiles - expected flooded areas in urban contexts and water heights under fixed return time periods (5-10-20-50-100 years) where the data are provided by hi-res models at 2 km over the last 30 years. Such datasets are available as gridded datasets for experts while, for non-experts, applications built within C3S make available in simple way the findings. For the catalogue, the Application permits having information also about impacted areas and induced damages as provided by risk evaluation datasets (e.g. EM-DAT). Data at 2 km will be available for five cities within CE domain: Milano, Rimini, Prague, Budapest, Vienna
	- what for / purpose	Insurance companies (actuaries' societies), land use planners, civil protection authorities, risk modellers

Project	Copernicus Climate Change Service (C3S)	
Category	Aspects	Explanations
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	o In terms of characterization of past heavy rainfall events inducing the events and associated damages (in the Catalogue). All the results aim at characterizing ongoing and future variations
	Heavy rain / pluvial	X In terms of characterization of rainfall inducing the events, associated damages; moreover, thanks to hi-res data, flooded areas and water height will be made available for 20 cities in Europe (5 in CE). All the results aim at characterizing ongoing and future variations
	Droughts	
	Wind / Storms	
	CC-impacts on water supply	
	CC-impacts on agriculture	
	CC-impacts on forests	
	CC-impacts on soil	
Targeted sectors	Water management	
	Spatial planning (general)	
	Urban development / planning	X The datasets and Application permit identifying the most vulnerable areas at large scale and over 20 cities at very high resolution
	Forestry	
	Land-use management	X The datasets and Application permit identifying the most vulnerable areas at large scale and over 20 cities at very high resolution
	Agriculture	
	Economy, infrastructure comp.	
	Drinking water supply	
	Environmental planning	
	Emergency managem./response	
	Meteorology/Atmopsheric sciences	X
Early warning	o In terms of characterization of the most vulnerable areas for setting proper management actions (preparedness)	
Target group levels and expert level	Municipality / local actors	X For preparedness and restore risk management phases
	Regional administration/actors	X For preparedness and restore risk management phases
	Experts / research	o
	Politicians / decision makers	o
	Private persons / public	X Insurance companies
	Students / education	

Project	Copernicus Climate Change Service (C3S)		
Category	Aspects	Explanations	
Focus of the tool	Hazard & Risk assessment	X	The datasets provide tools for characterization of past events, most vulnerable areas, induced damages
	Impact assessment		
	Vulnerability assessment		
	Climate change impacts	X	In terms of ongoing variations given by the time windows over which the different datasets included in CDS are available (ERA5 since 70s' but, in next months, data up to 50s should be included)
	Climate proofing of measures		
	Monitoring progress		
	Risk mitigation measures		
	(Risk) communication		
	Prioritisation / decision support		
Spatial application area, characteristics	Urban / built environment	X	
	Rural / agricultural areas		
	Rural / forest areas		
	Rural / natural environment		
	Water environment		
	Not spatially fixed (like social)		
	Low land, River valleys		
	Mountainous areas		
Spatial scope	Building / object level		
	Quarter / community level		
	Local / municipal level	X	Data for 20 cities (5 in CE) in terms of expected flooded areas and water heights
	Regional level		
	Supra-regional level	X	Characterization of extreme rainfall events and catalogue of past events (and induced damages)
	River basin level		
Technical outline/aspects of the tool	It is a web-application/online-info	X	
	It is / includes a guidebook/-line		
	It is a checklist		
	It is a decision support tool		
	It produces maps	X	The datasets provide gridded datasets
	It includes hydraulic modelling		
	It includes hydrologic modelling		
	It includes climate modelling	X	The datasets and application are built using reanalysis and gridded observation datasets

Project	Copernicus Climate Change Service (C3S)		
Category	Aspects	Explanations	
	It includes games		
Link to EU Legislation	Information of stakeholders	X	
	Exchange		
	Participation		
	Cooperation / coop. planning		
	Training / capacity building		
Link to EU Legislation	WFD		
	Floods Directive	X	In terms of characterization inducing the events; nevertheless, urban pluvial flooding at the moment are not included in FD
	Drinking Water Directive		
	Nitrate Directive		
	Bathing Water Directive		
	Urban Waste Water Treatment Directive		
Pilot implementation	Pilot 1 (Country, location)	5 cities in CE (Milano, Rimini, Budapest, Prague, Vienna)	
	Pilot 2 (Country, location)		
	Pilot 3 (Country, location)		
	Pilot 4 (Country, location)		
	Pilot 5 (Country, location)		
	Pilot 6 (Country, location)		
Current status of the tool / availability	Status of development	Data and architecture design	
	completion of test version (date)	2021 March	
	completion of final version (date)	2021 June	
Examples for the use of the tool (please describe a practical application)?	The Users can consult data (datasets and maps) about how change rainfall indicators (e.g. 1 day maximum precipitation, percentiles, expected precipitation under fixed return periods). After, they can consult data in the catalogue of past extreme precipitation events where data are provided at NUTS0,1,2,3 scale		

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	CMCC Foundation
Date:	4/3/2020
Editor / filled in by	Guido Rianna, Monia Santini, Sergio Noce
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Project	Copernicus Climate Change Service (C3S) “Soil Erosion”	
Category	Aspects	Explanations
Name of the tool	C3S Demo Case “Soil Erosion”	
Web-links to the tool	not yet available (from July 2020)	
General description of the tool	- objectives	The tool aims at assessing current conditions and future variations of soil losses induced by water erosion over Italy as returned by exploiting RUSLE approach (Revised Universal Soil Loss Equation; Renard et al., 1997 ¹); furthermore, it enables “what-if” analysis at local level providing expected variations in soil losses due to the changes in land use or management practices.
	- general scope	The tool represents the main output of a Contract funded by C3S through ECMWF to showcase the potentialities of datasets included in Climate Data Store (CDS) and Toolbox in C3S. As test case, at the moment, Italy has been selected resulting the most impacted European Country.
	- what for / purpose	The tool has been developing within the C3S as embedded “Application”; nevertheless, the codes in Python language and the datasets (related to rainfall erosivity and soil losses in current and future time spans) will be freely available and easily replicable on other areas (e.g. CE domain). In this regard, several types of Users could be interested to the findings: primarily, experts in agriculture, forestry, hydrology fields, decision makers (e.g. supporting CAP-derived policies) and land use planners.
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial	
	Heavy rain / pluvial	o RUSLE equation accounts for the rainfall erosivity; strictly, rainfall dataset with time resolution of, at least, 30 minutes are needed. However, several approaches have been proposed in the literature exploiting rainfall values on longer time spans. They have been selected for the development of the application.
	Droughts	
	Wind / Storms	

Project	Copernicus Climate Change Service (C3S) "Soil Erosion"	
Category	Aspects	Explanations
	CC-impacts on water supply	o Indirectly. RUSLE equation does not provide details about transport and deposition areas; however, soil sediments can highly affect water quality.
	CC-impacts on agriculture	X On the one hand, land use and management practices play a relevant role in soil loss management and then the tool can support assessments in terms of expected impacts (e.g. decreases in soil fertility) or best management practices (link with other tools developed within TEACHER-CE, e.g. GOWARE)
	CC-impacts on forests	o The amount of soil loss in forested areas is usually low due to forest protection role, but however significant over steep slopes, can have cascading consequences on the soil structure and its water retention capacity, thus influencing tree transpiration dynamics and resilience to droughts.
	CC-impacts on soil	X Soil loss and thus reduction of its thickness is the main consequence of erosion, thus influencing soil fertility, biodiversity and support to water cycle.
Targeted sectors	Water management	o In terms of sudden changes in water quality
	Spatial planning (general)	
	Urban development / planning	
	Forestry	o Highlighting the importance of good forestry practices in reducing the soil loss induced by water erosion
	Land-use management	X In terms of mapping of more vulnerable areas
	Agriculture	X In terms of the effects of different cover and management practices
	Economy, infrastructure comp.	o In terms of areas potentially interested by deposition
	Drinking water supply	o In terms of potential worsening of water quality due to the soil sediments
	Environmental planning	
	Emergency managem./response	
Target group levels and expert level	Municipality / local actors	X Mainly for problems due to damages to infrastructures (e.g. roads, railways, drainage systems) and/or cultivated fields
	Regional administration/actors	o For integrated landscape management considering cascading dynamics of soil erosion (upstream/downstream relationships)

Project		Copernicus Climate Change Service (C3S) "Soil Erosion"	
Category	Aspects		Explanations
	Experts / research	X	For improved and appropriate exploitation of Copernicus and similar data
	Politicians / decision makers	o	To properly guide, promote and support (also economically) choices of land managers toward soil resource protection
	Private persons / public	o	Interest on multi-faceted aspects of climate change
	Students / education		
Focus of the tool	Hazard & Risk assessment	X	Tools and dataset return information about current status of potential soil losses
	Impact assessment		
	Vulnerability assessment		
	Climate change impacts	X	Tools and dataset return information about future projections of potential soil losses
	Climate proofing of measures	o	"what-if analysis" support the understanding about local options in terms of land use/cover and management practices also accounting for climate changes
	Monitoring progress		
	Risk mitigation measures	o	"what-if analysis" support the understanding about local options in terms of land use/cover and management practices
	(Risk) communication		
	Prioritisation / decision support	o	Soil erosion hazard mapping permits a clearer knowledge about the most vulnerable areas; "what-if analysis" acts as an actual DSS
Spatial application area, characteristics	Urban / built environment	X	The Application can represent, up to NUTS4 area, the effect of land management on water erosion processes and then the impact of built environment (also in terms of land use planning), especially in the context of upstream/downstream dynamics.
	Rural / agricultural areas	X	The Application explicitly accounts for land cover and soil management and erosion reduction practices, then, how rural areas can be impacted by water erosion; furthermore, "what-if" analysis enable the scenario assessment of intensifying protection measures or improving practices.
	Rural / forest areas	X	The Application explicitly accounts for land cover and management practices, then, how rural areas can be impacted by water erosion and the protective role of well managed forests.

Project	Copernicus Climate Change Service (C3S) "Soil Erosion"	
Category	Aspects	Explanations
	Rural / natural environment	X The Application explicitly accounts for land cover and management practices, then, how rural areas can be impacted by water erosion or can become a source of eroded soil if not well managed.
	Water environment	
	Not spatially fixed (like social)	
	Low land, River valleys	X
	Mountainous areas	X The Application explicitly accounts for land cover and management practices; furthermore, geomorphological features (slope steepness and length and soil grain size features) are considered; moreover, such dynamics affect in more remarkable way mountain areas
Spatial scope	Building / object level	
	Quarter / community level	
	Local / municipal level	o The data resolution must be considered
	Regional level	X Governed by hydrographic basin discretization
	Supra-regional level	X Governed by hydrographic basin discretization
	River basin level	o Currently, data are returned on Administrative levels (e.g. NUTS); nevertheless, they could be provided also at such scale paying attention to their size and the consistency with data resolution.
Technical outline/aspects of the tool	It is a web-application/online-info	X It is included in C3S platform, but codes and datasets are available, and the approaches can be used also for extending the investigation over CE
	It is / includes a guidebook/-line	
	It is a checklist	
	It is a decision support tool	o In terms of "what-if" analysis
	It produces maps	X Spatially explicit approach taking into account surface hydrological dynamics
	It includes hydraulic modelling	
	It includes hydrologic modelling	o by adopting RUSLE approach
	It includes climate modelling	X By exploiting for R-factor calculations the ensemble of climate projections currently included in CDS part of the EURO-CORDEX ensemble (www.euro-cordex.org)
It includes games		

Project			Copernicus Climate Change Service (C3S) "Soil Erosion"		
Category	Aspects		Explanations		
Stakeholder interaction	Information of stakeholders	X	During the Design Phase of the Application, several stakeholders (and potential Users) have been involved in the development. Their insights, requirements and wishes have been considered to build the final framework under development. Project Deliverable about such phase can be shared.		
	Exchange				
	Participation				
	Cooperation / coop. planning				
	Training / capacity building				
Link to EU Legislation	WFD	o	It can support water quality assessments (in terms of presence of sediments also if not directly returned by RUSLE) (KTM17) and in terms of adaptation to climate changes (KTM 24); furthermore, reduction in soil fertility by water erosion could require an higher utilisation of nutrients (KTM 2)		
	Floods Directive	o	Considering the fate of eroded soil after transportation and sedimentation, the filling of reservoirs and/or channels can favour inundation dynamics.		
	Drinking Water Directive	o	It can support water quality assessments (in terms of presence of sediments also if not directly returned by RUSLE)		
	Nitrate Directive				
	Bathing Water Directive				
	Urban Waste Water Treatment Directive				
Pilot implementation	Pilot 1 (Country, location)		Italy, the data for current and future time spans will be made available in June; furthermore, the Application will be hosted on C3S platform by using the Toolbox.		
	Pilot 2 (Country, location)				
	Pilot 3 (Country, location)				
	Pilot 4 (Country, location)				
	Pilot 5 (Country, location)				
	Pilot 6 (Country, location)				
Current status of the tool / availability	Status of development		under development		
	completion of test version (date)		June 2020		
	completion of final version (date)		July 2020		

Project	Copernicus Climate Change Service (C3S) “Soil Erosion”	
Category	Aspects	Explanations
Examples for the use of the tool (please describe a practical application)?	Within TEACHER-CE project, C3S “Soil Erosion” properly extended over the entire Central Europe Region can support a proper assessment of current status and future trends of soil erosion; then, its findings could act as input or support also for other tools included in TEACHER-CE suite of tools (e.g. GOWARE). Furthermore, it really exploits datasets and tools made available by C3S. The wide use of such tools is highly appreciated and promoted by European Commission then it should be extended to all the tools included in TEACHER-CE if applicable.	

TEACHER – CE (WPT1) Pre-evaluation of tools

Please give input to the evaluation:

a) mark in green boxes: X = Yes (o = yes, limited)

b) fill in yellow boxes

c) give explanations / additional comments / examples in blue boxes

Partner-Organisation	LfULG, PP2
Date:	04.03.2020
Editor / filled in by	Anika Albrecht
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Project	Life Local Adapt (LLA) - Integration of climate change adaptation into the work of local authorities		
Category	Aspects	Explanations	
Name of the tool	Public relations and knowledge transfer		
Web-links to the tool	https://www.life-local-adapt.eu/de		
General description of the tool	- <i>objectives</i>	There's no tool as such, the content derives from the work package "communication" and is designed to enrich TEACHER by most successful communication strategies experienced in LLA.	
	- <i>general scope</i>	The communication package focusses on the needs of small and middle-sized municipalities, districts and counties up to 100.000 inhabitants.	
	- <i>what for / purpose</i>	It shall point out suitable and diversified methods of risk communication, esp. for local stakeholders of administration and citizens in municipalities mentioned above.	
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)	River floods / fluvial		
	Heavy rain / pluvial	o	LLA focusses on management of heavy rain and its consequences, e.g. erosion and overload of sewage systems
	Droughts	o	LLA focusses on management of heat stress, esp. for vulnerable population groups
	Wind / Storms		
	CC-impacts on water supply	o	LLA focusses on management of heat stress, and a lack of water supply
	CC-impacts on agriculture		
	CC-impacts on forests		
	CC-impacts on soil		
Targeted sectors	Water management	X	
	Spatial planning (general)	X	
	Urban development / planning	X	
	Forestry	o	
	Land-use management	X	

Project		Life Local Adapt (LLA) - Integration of climate change adaptation into the work of local authorities	
Category	Aspects		Explanations
	Agriculture	o	
	Economy, infrastructure comp.		
	Drinking water supply	X	
	Environmental planning	X	
	Emergency managem./response		
	Meteorology/Atmopsheric sciences		
	Early warning		
Target group levels and expert level	Municipality / local actors	X	Focusses on small and middle-sized municipalities up to 100.000 inhabitants
	Regional administration/actors	X	Focusses on small and middle-sized municipalities up to 100.000 inhabitants
	Experts / research		
	Politicians / decision makers	o	In 2021, a guideline for decision makers will be published
	Private persons / public	X	Workshops/surveys with private persons were carried out
	Students / education		
Focus of the tool	Hazard & Risk assessment		
	Impact assessment		
	Vulnerability assessment		
	Climate change impacts		
	Climate proofing of measures		
	Monitoring progress		
	Risk mitigation measures		
	(Risk) communication	X	Experiences with fruitful information materials and dialogue formats, workshops etc. on how to address several target groups appropriately and on how to motivate them for taking action will be brought into TEACHER
Prioritisation / decision support			
Spatial application area, characteristics	Urban / built environment		
	Rural / agricultural areas		
	Rural / forest areas		
	Rural / natural environment		
	Water environment		
	Not spatially fixed (like social)	X	
	Low land, River valleys		
	Mountainous areas		
Spatial scope	Building / object level		

Project	Life Local Adapt (LLA) - Integration of climate change adaptation into the work of local authorities		
Category	Aspects	Explanations	
	Quarter / community level		
	Local / municipal level	X	Focuses on small and middle-sized municipalities up to 100.000 inhabitants
	Regional level	X	Focuses also on districts and counties up to 100.000 inhabitants
	Supra-regional level		
	River basin level		
Technical outline/aspects of the tool	It is a web-application/online-info	X	Some information materials might be available online
	It is / includes a guidebook/-line	X	Includes Information materials for press work, a communication concept paper, a transfer concept, a model workshop, surveys, instructions for a contest
	It is a checklist		
	It is a decision support tool		
	It produces maps		
	It includes hydraulic modelling		
	It includes hydrologic modelling		
	It includes climate modelling		
Stakeholder interaction	Information of stakeholders	X	Publication of information materials, conduction of workshops
	Exchange	X	Conduction of workshops, networking events
	Participation	X	Contest "Adaptation to climate change in Saxon municipalities", conduction of surveys
	Cooperation / coop. planning	X	Establishment of climate coaches
	Training / capacity building	X	Conduction of workshops and trainings
Link to EU Legislation	WFD		
	Floods Directive		
	Drinking Water Directive		
	Nitrate Directive		
	Bathing Water Directive		
	Urban Waste Water Treatment Directive		
Pilot implementation	Pilot 1 (Country, location)		Styria, Austria (testing of model workshop)
	Pilot 2 (Country, location)		Germany, Dresden (workshop for local stakeholders about heat and health)
	Pilot 3 (Country, location)		Germany, Lauta (workshop for citizens on how to integrate climate change adaptation into administrative actions)

Project	Life Local Adapt (LLA) - Integration of climate change adaptation into the work of local authorities	
Category	Aspects	Explanations
	Pilot 4 (Country, location)	Germany, district Mittelsachsen (event about climate change impacts on groundwater balance)
	Pilot 5 (Country, location)	
	Pilot 6 (Country, location)	
Current status of the tool / availability	Status of development	Partially finished, partially unfinished: Model workshop, surveys, information materials finished and available, contest finished Guideline for decision makers will be written and completed in 2021 (ca. 20 pages, project summary)
	completion of test version (date)	
	completion of final version (date)	Transfer concept will be completed in June 2020
Examples for the use of the tool (please describe a practical application)?	<ul style="list-style-type: none"> - A model workshop on how to organise and conduct a workshop for stakeholders of municipalities was created by the Styrian PP - Several other workshops for municipalities and their citizens were conducted to inform about climate change challenges and to identify their need for taking action - Surveys about the state of knowledge in municipalities were conducted (for municipality administrations and citizens) - Contest “Adaptation to climate change in Saxon municipalities”: municipalities were called to submit innovative ideas to adapt to climate change in their municipalities, 6 municipalities were priced and received 150.000 Euro to implement their measures in sum. - Establishment of Climate Coaches: central advisory service for municipalities to inform about climate change impacts, adaptation measures, funding programmes and network options to experts and other municipalities 	



Annex II - Evaluation matrix - assessment of results

Evaluation of tools

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	FramWat	PROLINE-CE	SUSTREE	RAINMAN	DriDanube – Drought Risk in the Danube Region	LUMAT	H2020 Fairway	C3S Disaster Risk Reduction Sectoral Information System	C3S Soil Erosion Demo Case	LIFE+ KAMPINOS	LIFE Local Adapt (LLA)	JOINTISZA
Aspects												
Name of tool	DSS	GOWARE	SusSelect	RAINMAN-Toolbox	Drought Watch	LUMATO	ANCA	C3S Disaster Risk Reduction	C3S Demo Case "Soil Erosion"		Public relations and knowledge transfer	<small>1st Integrated Taza River Basin Management Plan: Pilot on climate change induced specific water quality issues (at high-level sub-basement) and Pilot on Urban Hydrology</small>
Impacts of climate change addressed (Risks of extreme events, CC-impacts on different sectors)												
River floods / fluvial	o	o				o		o				x
Heavy rain / pluvial	o	o		x				x	o		o	x
Droughts	o	o	x		x	o					o	x
Wind / Storms												
CC-impacts on water supply	o	o	o						o		o	x
CC-impacts on agriculture	o	o		o	x	o	o		x			o
CC-impacts on forests	o		x	o					o			
CC-impacts on soil	o	o				x			x			
Targeted sectors												
Water management	x	x		x	x	o	x		o		x	x
Spatial planning (general)	x	o		o		o					x	x
Urban development / planning				o		x		x			x	x
Forestry	o	x	x	o					o		o	x
Land-use management	o	x	x	o		x	o	x	x		x	x
Agriculture	o	x		o	x	o	x		x		o	x
Economy, infrastructure comp.							o		o			x
Drinking water supply		x			o		x		o		x	x
Environmental planning	o					x	o				x	x
Emergency managem./response				o	x							x
Meteorology / Atmospheric sc.			x		x			x	x			o
Early warning				o	x			o				x
Target group levels and expert level												
Municipality / local actors	o	o	x	x	x	x		x	x		x	x
Regional administration/actors	x	x		o	x	o		x	o		x	x
Experts / research	o		x	o	x		o	o	x			x
Politicians / decision makers	x	x	x		x	o		o	o		o	x
Private persons / public	o	o		o			x	x	o		x	x
Students / education	o		x	o	x							
Focus of the tool												
Hazard & Risk assessment			x	o	x	o		x	x			x
Impact assessment	o		x	o	x							x
Vulnerability assessment			x	o	x							x
Climate change impacts	o		x		x	x		x	x			x
Climate proofing of measures									o			x
Monitoring progress							x					x
Risk mitigation measures	o	o	x	x		x	o		o			x
(Risk) communication				x	x						x	
Prioritisation / decision support	x	x	x	o	x	x	x		o			x
Spatial application area, characteristics												
Urban / built environment	o	o		x	o	x		x	x			
Rural / agricultural areas	x	o		o	x	x	x		x			
Rural / forest areas	x	o	x	o	x				x			
Rural / natural environment	x	o		o	x	x			x			
Water environment	x				x							
Not spatially fixed (like social)	x										x	
Low land, river valleys	x	o	x	x		o	o		x			
Mountainous areas	x	o	x	x		o			x			
Spatial scope												
Building / object level				o			x					
Quarter / community level	o		x		o							
Local / municipal level	o		x	x	x	x		x	o		x	
Regional level	o	x	x	x	x				x		x	
Supra-regional level	o		x		x			x	x			
River basin level	x	x	x		x				o			x
Technical outline/aspects of the tool												
It is a web-application/online-info	x	x		x	x	x		x	x		x	x
It is / includes a guidebook/-line	o			o	x	x	o				x	x
It is a checklist												
It is a decision support tool	x	x	x	o		x	x		o			x
It produces maps	x		x	o	x	x		x	x			x
It includes hydraulic modelling	o											x
It includes hydrologic modelling	o								o			x
It includes climate modelling		o	x					x	x			x
It includes games				o								
Stakeholder interaction												
Information of stakeholders	x	x		x	x	x		x	x		x	x
Exchange		x		x	x	x	o				x	x
Participation	x			o	x						x	x
Cooperation / coop. planning	o		x			x					x	x
Training / capacity building	x	o	x	x	o						x	x
Link to EU Legislation												
WFD	x	x			x	x	x		o			
Floods Directive	x	o		x		x		x	o			
Drinking Water Directive	o	x	x						o			
Nitrate Directive	o					x	x					
Bathing Water Directive												
Urban Waste Water Directive												
Pilot implementation (y = yes, n = no)	y	n	y	y	y	y	y	y	y		y	y
Status of development (✓=Testversion completed, ⌚=under development)	⌚	✓	✓	⌚	✓	✓	⌚	⌚	⌚		⌚	✓

Legend			
just 0	= 1 or 2 X	= 3 X	> 3 X

x = focus of project o = minor aspect of project