



# SWOT report on strategy for curricula development on water and climate change



<b>Project info</b>	
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<b>Document control sheet</b>	
Work package	WP1 – Analysis of assets, needs and best practices
Ref. no and title of task	T1.5.1 SWOT workshop "Water and Climate Change"
Title of deliverable	D1.5.1 SWOT report on strategy for curricula development on water and climate change
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## 1 Summary of executive actions

The main objective of the Erasmus+ CCwater project is to strengthen water-related higher education to increase the resilience against climate change in 8 partner countries of the collaborative project. The project will modernize water-related higher education with climate change issues to strengthen the climate resilience through new knowledge in water management and climate change and internationalize higher education institutions. New postgraduate courses will be developed, staff and students are trained with the expertise of collaborating international partners and laboratories related to water related education are upgraded for water education. New knowledge will be disseminated to the industry.

The SWOT workshop was organised online on 15 September 2021 and concluded several “weakness” and “threats” of the current curricula as well as “strength” and “opportunity”. For instance, Water management problems such as stormwater management and floods, droughts in Northern China, land degradation and erosions, surface water pollution, ground water depletion et.al. are critical problems directly or indirectly caused by climate change, which are strongly suggested to be considered and colonize a higher proportion in the curricula for water education.

Therefore, Joint efforts are needed to carry out curricula development which fit climate change issues into water treatment and water management. The executive actions based on the inputs of Work Package 1 as well as the final SWOT workshop are summarized as below.

### 1.1 Action 1. Course development

The responding actions to curricula review and coping with the “strength” of “willingness to update curricula with climate change”, the “weakness” of “too little and not enough joint inter-disciplinary projects”, as well as the “Threat” of “courses are not regularly updated following the external challenges”.

- a) Involve teachers with other disciplinary (e.g. social economy, policy making) to the project before developing the course by course responsible teachers.
- b) Make a plan to update the curricula within 1 month by course responsible teachers.
- c) Create a module covering the general technical and social-economical aspects adapting climate change issues into water management within 6 months by leading teachers.
- d) Develop video sessions (clips, movies) as course contents for water-climate demonstration within 6 months by leading teachers.
- e) Develop project works of development action plan for adaption to a real-life climate change impact issue in water sector within 6 months by leading teachers.
- f) Make a plan for regular updating of course contents based on the dynamic requirements of the society before the end of the project by each of the consortiums.

### 1.2 Action 2. Executing of teaching

The responding actions to the project objective “modernize water-related higher education with climate changes issues” and coping with the “weakness” of “inadequate staff capacity specialized in climate change – water management”, the “opportunity” of “involve practitioner/industrial partners in teaching, and the “weakness” of “QA system needs improvement”.

- a) Conduct webinar by external professionals and shared inside the consortiums for both the students and teaching staffs. This should be invited during the teaching by course responsible teachers.
- b) Conduct academic staff skill audits in the consortiums and formulate inter-disciplinary teams for teaching within 6 months by CCWater group.



## 1 Summary of executive actions

### 1.3 Action 3. Internship and University-Enterprise collaboration

- c) Develop electronic tools and explore other more effective tools for teaching and exams months before course start by leading teachers.
- d) Identify and invite visiting lecturers from industry and policy makers two weeks before course start by course responsible teachers.
- e) Invite internationally reputed persons to elaborate case studies within one year by the CCWater team.
- f) Provide case studies about real-life climate change adaptations in water management within three months by partners have connection with industry.
- g) Create a more transparent QA system with feedback mechanism which should be adopted all year along by the consortiums.

### 1.3 Action 3. Internship and University-Enterprise collaboration

The survey and summary report of cross review shows that the priority of university-enterprise collaboration is at low level, but the analytical results also indicated high necessity of improving the connection with non-academic partners. The action summarized from SWOT workshop is as below:

- a) Involve leading practitioners in course delivery through online practices.

### 1.4 Action 4. Research and knowledge dissemination

The responding actions to the project objective “disseminate new knowledge” and coping with the “opportunity” of “Initiate research proposal based on CCWater consortium”.

- a) Specify research topics on CCWater in the incoming work package by all participants.
- b) Initiate a discussion to formulate a research idea and a proposal at any time by the consortiums.
- c) Deliver a research cooperation workshop for identification of research topic and partners, roadmap for project development, and nominate a working group immediately after research idea discussion and kick-off by the coordinator.
- d) Looking for bilateral or multilateral research call and create internal communication channel for the call for proposals at any time by all participants.
- e) Create inter-disciplinary research proposals related to climate change at any time by consortiums.

### 1.5 Action 5. Outlook

The responding actions to the “opportunity” of “Establish joint programs / dual-degree programs / research co-supervision”.

- a) Establish bilateral dual-degree programs at any time between universities.



## 2 Summary

Partners used the workshop to conclude WP1 by reviewing presentations based on deliverables from T1.1.1, 1.2.4, 1.3.2, 1.4.2. The groupwork session in the workshop was based on the SWOT methodology (Strengths, Weaknesses, Opportunities, Threats). The SWOT results was further converted into priority of actions.

This report will present a jointly developed strategy for curricula development on water and climate change based on factors of internal and external environments through the identification and analysis of the strengths and weaknesses of the partner institutions, and the opportunities and threats to which they are exposed.

## 3 Methodology

### 3.1 Workshop goals

- We want to better understand at university, country, region levels:
- Internal and external factors impacting the curricula development on water and climate change, now and in the future
- Which internal strengths or weaknesses is in our current curricula?
- Which external opportunities and threats is affecting our curricula development?
- Capitalize on strengths, rectify weaknesses, take advantage of opportunities, and minimize threats
- Outcomes of this workshop will help to shape the strategy for:
- Curricula development on water and climate change

### 3.2 Workshop objective

What can we improve in our curricula to educate graduates for Climate Change adapted water management? Based on our knowledge of the challenges and innovative practices.

Focus	Break-out rooms
1 T1.1.1: Workshop Report - Prioritization of needs at institutional, national and regional levels, T1.2.4 Summary of cross-reviews	<b>Strength &amp; Weaknesses</b>
2 T1.3.2: Summary of best practices inside and outside the consortium	<b>Opportunities</b>
3 T1.4.1: Climate-water policy and actions in Partner Countries and Asia, T1.4.2: Water-climate policy and actions in Program Countries and EU	<b>Threats</b>
4 Prioritization of ideas by voting, according to the impact on development of curricula	
5 Create actions and assign responsibility for the top voted ideas	<b>Brainstorming of actions</b>
6 Conclusions and summary	





### 3.3 Workshop structure

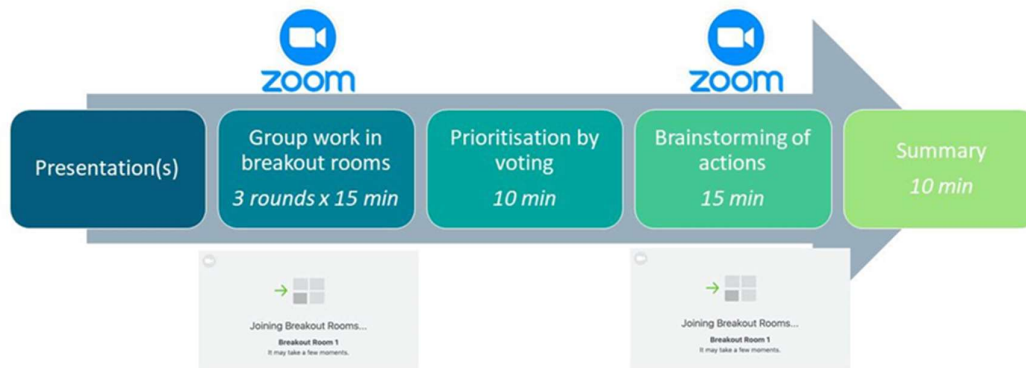


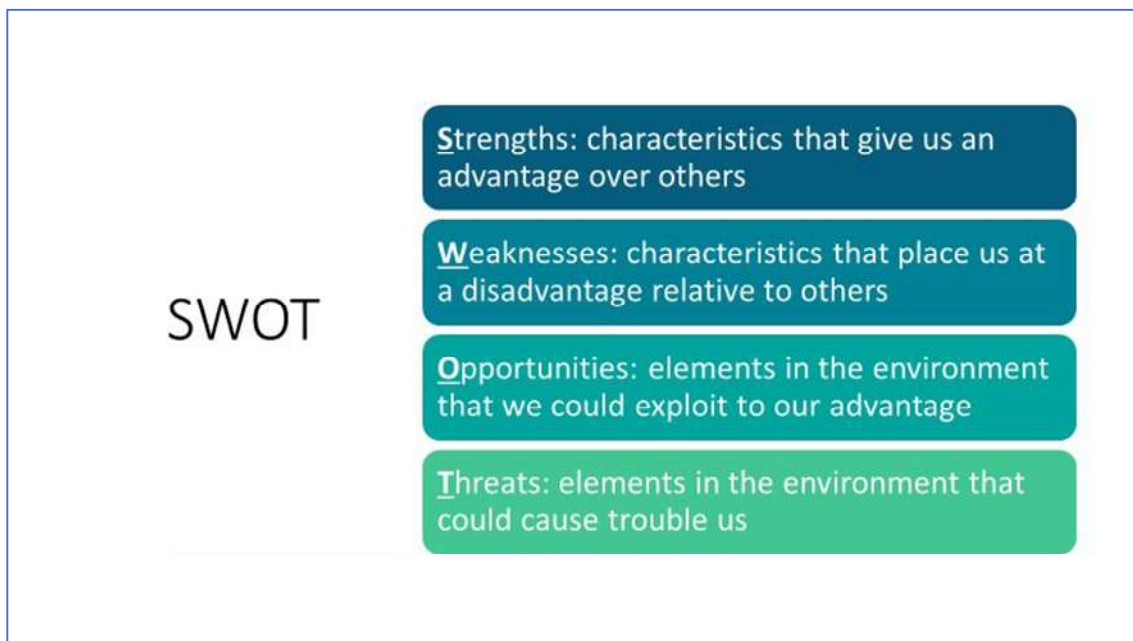
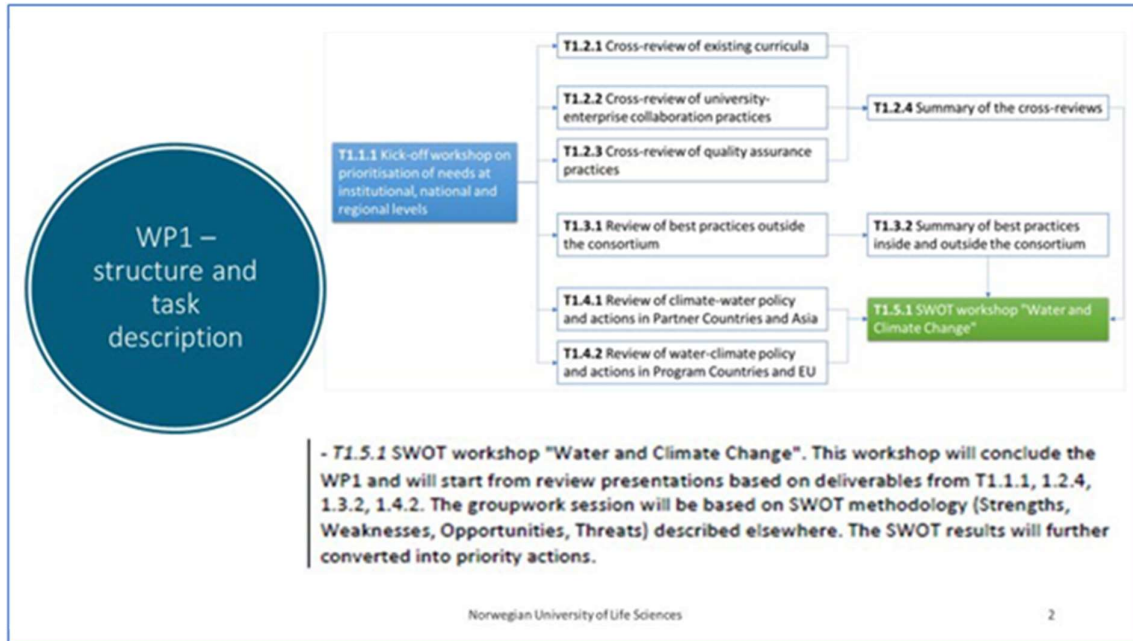
Figure 1: Structure for workshops

### 3.4 Introductory notes

Workshop objective

What can we improve in our curricula  
to educate graduates for **Climate Change adapted**  
water management?

based on our knowledge of the challenges and innovative practices



3Methodology  
3.4Introductory notes

Strengths :	Weaknesses :
Relevant programs and access to CC databases ✓	QA system needs improvement ✓
Willingness to update curricula with CC ✓	Poor relationship between data owners and universities (No data sharing policy) ✓
economics and resources in current curricula ✓	Differences in the credits systems between partners and inadequate staff capacity ✓
Students with different backgrounds, individual student research ✓	
Opportunities :	Threats :
Use this project to align research with industrial needs ✓	Lack of expertise in political and economical issues - not covered in the curricula ✓
Establish internship programs based on experience from the consortium ✓	
joint webinars for students within the project ✓	Courses are not regularly updated following the external challenges ✓
Harmonise curricula within the consortium ✓	Funding ✓
	Potential of cooperation with institutes

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## 4 Results

Strengths	Weaknesses
Flexibility of graduate courses <span style="float: right;">8</span>	QA system needs improvement <span style="float: right;">3</span>
Relevant programs and access to CC databases <span style="float: right;">5</span>	Poor relationship between data owners and universities (No data sharing policy) <span style="float: right;">8</span>
Willingness to update curricula with CC <span style="float: right;">12</span>	Differences in the credits systems between partners and inadequate staff capacity <span style="float: right;">2</span>
economics and resources in current curricula <span style="float: right;">1</span>	Gaps in the partners curricula, both in terms of structure and the content <span style="float: right;">9</span>
Students with different backgrounds, individual student research <span style="float: right;">4</span>	To little and not enough joint inter-disciplinary projects <span style="float: right;">12</span>
Opportunities	Threats
Develop and integrate continuous professional development (CPD) programs <span style="float: right;">9</span>	Lack of expertise in political and economical issues - not covered in the curricula <span style="float: right;">8</span>
Jointly develop a program of field trips for better understanding of climate impacts on water management <span style="float: right;">7</span>	Courses are not regularly updated following the external challenges <span style="float: right;">6</span>
Use the project to facilitate contact with authorities to access data <span style="float: right;">3</span>	Potential conflicts with policies <span style="float: right;">2</span>
Involve industrial partners in teaching <span style="float: right;">12</span>	Low interest to the subject from the industry <span style="float: right;">2</span>
Initiate research proposal based on CCWater consortium <span style="float: right;">10</span>	Low availability of data <span style="float: right;">7</span>
Establish joint programmes / dual-degree programmes / research co-supervision <span style="float: right;">11</span>	Limited flexibility of the existing study programs to accommodate new courses <span style="float: right;">2</span>
Use the project to engage with international networks like IWA, IAHS <span style="float: right;">8</span>	Pandemics (COVID-19) <span style="float: right;">3</span>
Use this project to align research with industrial needs <span style="float: right;">5</span>	Access to online courses <span style="float: right;">5</span>
Establish internship programs based on experience from the consortium <span style="float: right;">4</span>	Low support from politicians <span style="float: right;">1</span>
Joint webinars for students within the project <span style="float: right;">1</span>	The variable Credit system <span style="float: right;">1</span>
Harmonise curricula within the consortium <span style="float: right;">4</span>	language barrier - lack of resources in English <span style="float: right;">1</span>
	Funding <span style="float: right;">4</span>

To little and not enough joint inter-disciplinary projects	Weaknesses	interdisciplinary projects are not very common in the education at the moment • Cooperation with other parties in terms of inter-disciplinary	<p>identification of potential partners and design the project</p> <ul style="list-style-type: none"> <li>• &gt;months before course start</li> <li>• course responsible teacher</li> </ul> <p>add teacher with other disciplinary into project</p> <ul style="list-style-type: none"> <li>• before developing the course</li> <li>• Course responsible teachers</li> </ul> <p>Some one on one interview between partners to identify the leverage and interests of each other</p> <ul style="list-style-type: none"> <li>• 3 months</li> <li>• Research coordinator</li> </ul> <p>Co-supervision of research by staff from partners with different specialities</p> <ul style="list-style-type: none"> <li>• &lt;6 months</li> <li>• CC Water group staff</li> </ul> <p>Conduct academic staff skill audits in the consortium institutions and formulate inter-disciplinary teams for</p> <ul style="list-style-type: none"> <li>• 6 months</li> <li>• CC Water group</li> </ul>
Involve industrial partners in teaching	Opportunities	Involvement of leading practitioners in course delivery through online practices	<p>identification of partners from industry and agreement</p> <ul style="list-style-type: none"> <li>• 2 weeks before course</li> <li>• course responsible teacher</li> </ul> <p>add case study about CC adaptation</p> <ul style="list-style-type: none"> <li>• &gt;3 months</li> <li>• partner has connection with industry</li> </ul> <p>Webinar by the external professionals could be shared inside the consortium of CC water, both for the students and staffs</p> <ul style="list-style-type: none"> <li>• All year long</li> <li>• Any partner</li> </ul> <p>Internationally reputed persons to elaborate case studies</p> <ul style="list-style-type: none"> <li>• within one year</li> <li>• CC Water group</li> </ul>



## 4Results

### 3.4Introductory notes

<p>Initiate research proposal based on CCWater consortium</p>	<p><b>Opportunities</b></p>	<p>There are many possibility to get fund for the project related to water and climate change if there is possibility to develop some project in the course</p>	<p>Initiate a discussion to formulate a research idea and a proposal  <ul style="list-style-type: none"> <li>Anytime</li> <li>Consortium researchcoo</li> </ul> <p>Workshop for identification of research topic and partners, roadmap for project development  <ul style="list-style-type: none"> <li>immediate</li> <li>kick-off by coordinator</li> </ul> <p>Nominate a working group  <ul style="list-style-type: none"> <li>Projectcoordinators</li> </ul> <p>Find Bilateral or Multilateral research call  <ul style="list-style-type: none"> <li>anytime</li> <li>allparticipates</li> </ul> <p>Internal communication channel for the call for proposals all along the year  <ul style="list-style-type: none"> <li>1 months</li> <li>One researchcoordinator</li> </ul> <p>specify research topics on CCwater  <ul style="list-style-type: none"> <li>in coming work package</li> <li>allparticipates</li> </ul> <p>createinterdisciplinaryresearchproposals related toCC  <ul style="list-style-type: none"> <li>any time</li> <li>Partnercountries</li> </ul> </p></p></p></p></p></p></p>
<p>Establish joint programmes / dual-degree programmes / research co-supervision</p>	<p><b>Opportunities</b></p>	<p>Exchange of course experiences • Variable strengthen and weakness would enable cross-learning for updating • Well developed graduate programs, modules, and contents are availableoutsidetheconsortiumaswell</p>	<p>digital platform for exchange with "outsiders"  <ul style="list-style-type: none"> <li>university</li> </ul> <p>Sharing case studies of real life applications  <ul style="list-style-type: none"> <li>during course planning</li> <li>teachers</li> </ul> <p>dual degree programmes  <ul style="list-style-type: none"> <li>Anytime</li> <li>Coursedirector/University</li> </ul> <p>research co-supervision  <ul style="list-style-type: none"> <li>starting from now</li> <li>teachers</li> </ul> </p></p></p></p>
<p>Willingness to update curricula with CC</p>	<p><b>Strengths</b></p>	<p>willingness of adaptation of climate aspects of all participants • willingness to update curricula with CC • •            Course contents in the programmes are revised regularly • Climate change related contents in the curricula • Climate change related modules in the graduate programs</p>	<p>Plan the updates  <ul style="list-style-type: none"> <li>1 month</li> <li>Course responsibleteachers</li> </ul> <p>Firstly create a module covering the general technical and socio-economical aspects  <ul style="list-style-type: none"> <li>6 months</li> <li>Leadingteachers</li> </ul> </p></p>



## 5 Participants

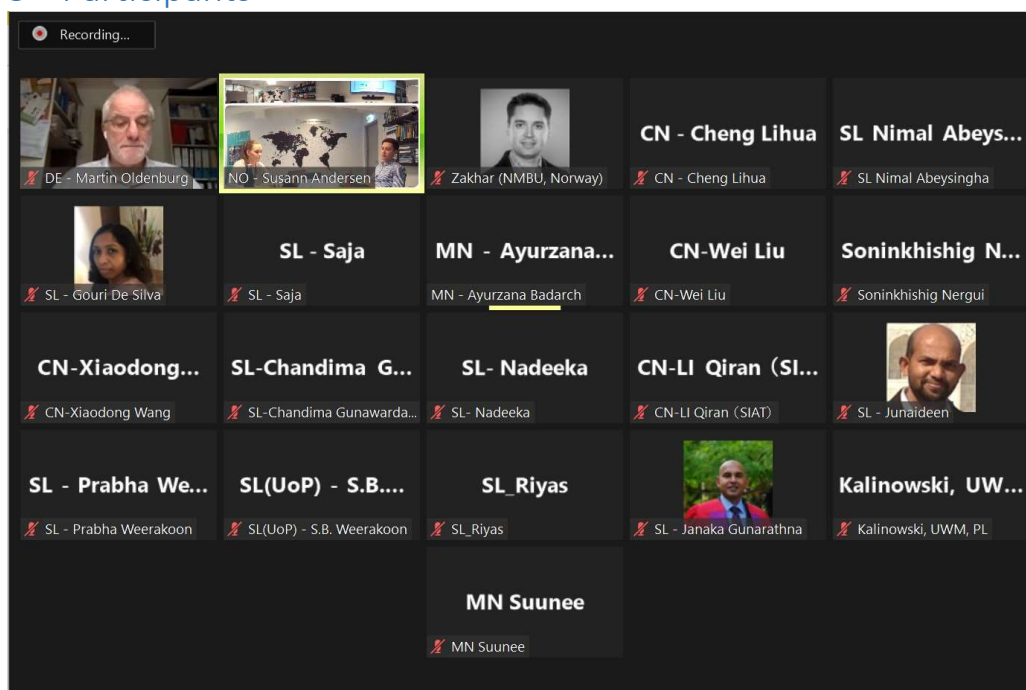


Table 1: List of participants

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## 6 Agenda

Table 2: Agenda of the meeting

Timing	Activity
10 min	Introduction to the workshop – rename yourself
40 min	<b>Session 1. Strengths &amp; Weaknesses</b>
5 min	1.1 Prioritisation of needs – Harsha
10 min	1.2 Summary of the cross-reviews – Wei
15 min	1.3 Group work – S&W
10 min	Debriefing
5 min	<b>Break</b>
35 min	<b>Session 2. Opportunities</b>
10 min	2.1 Summary of best practices – Weerakoon
15 min	2.2 Group work – O
10 min	Debriefing
45 min	<b>Session 3. Threats</b>
10 min	3.1 Climate-water policy and actions in Partner Countries and Asia – Gantigmaa
10 min	3.2 Water-climate policy and actions in Program Countries and EU – Kalinowski



