

# Exchange of experience Guidelines for interdisciplinary assessment of coastal system in the Cooperation Area

Final Version of 22/February/2021

Deliverable Number D.3.6.2.



<b>Project Acronym</b>	CHANGE WE CARE
<b>Project ID Number</b>	10043385
<b>Project Title</b>	Climate cHallenges on coAstal and traNSitional chanGing arEas: WEaving a Cross-Adriatic REsponse
<b>Priority Axis</b>	2
<b>Specific objective</b>	2.1
<b>Work Package Number</b>	3
<b>Work Package Title</b>	Knowledge base improvement: status and recent trends of coastal and transitional system processes
<b>Activity Number</b>	3.6
<b>Activity Title</b>	Integrated observational and modelling strategies for filling identified knowledge gaps
<b>Partner in Charge</b>	PP6
<b>Partners involved</b>	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8, PP9, PP10
<b>Status</b>	Final
<b>Distribution</b>	Public

## 1 Summary

2	Foreword.....	3
3	Abstract/Executive Summary.....	3
4	Introduction .....	3
5	Proposed methods for filling knowledge gaps .....	4
6	Implementation of the selected method for filling knowledge gaps .....	4
7	Results of implemented method .....	14
8	Conclusions .....	15

## 2 Foreword

This document has been produced in the framework of the INTERREG Italy – Croatia CHANGE WE CARE Project. CHANGE WE CARE fosters concerted and coordinated climate adaptation actions at transboundary level, tested in specific and representative pilot sites, exploring climate risks faced by coastal and transitional areas contributing to a better understanding of the impact of climate variability and change on water regimes, salt intrusion, tourism, biodiversity and agroecosystems affecting the cooperation area. The main goal of the Project is to deliver integrated, ecosystem-based and shared planning options for different problems related to climate change (CC), together with adaptation measures for vulnerable areas, to decision makers and coastal communities. Additional information and updates on the CHANGE WE CARE can be found at <https://www.italy-croatia.eu/web/changewecare>.

## 3 Abstract/Executive Summary

This document follows the 3.6.1 Deliverable: “Minutes of the exchange of experience meetings” and will resume the main results of the interactions on data management and acquisition strategies.

Starting from knowledge gaps in the coastal systems analyzed by the Project and identified in 3.6.1 Deliverable, this document will describe the “exchange of experience” agreed upon method for data acquisition in the cooperation area.

## 4 Introduction

During the implementation of 3.1 to 3.4 activities, it was determined that, although certain information is pertinent to all pilot sites, that information is not available on all sites due to various reasons

- proprietary data not made available to CWC partners
- fragmented data
- data lacking proper metadata – making it difficult to conduct comparative spatial analysis
- data lacking continuity – either because there were no follow up data collections, or collections were too far apart for practical use or conducting proper analysis
- a complete absence of data due to either insufficient resources or organizational and/or research strategy shortages of a specific area)

The most common conclusions drawn from activities 3.1-3.4 were:

1. Overall, the data set provides a sufficiently complete overview on the existing cartographic and numerical data, which describe all the proposed topics at different scales, starting from the North Adriatic to the site pilot level. In general, the historical data that can be used to analyze the evolutionary trend covers a quite short and reduced temporal period

2. The data that potentially can converge into a GIS are even more limited: the identified temporal period ranges from the beginning of the century, with the first orthophotos, to current days, with the recurrent satellite imageries
3. The amount of the material available on the Croatian area appears to be narrower than what is available for the Italian region

This resulted in the following general project conclusions:

1. The most prevalent knowledge gap stems from lack of in situ data, predominantly bathymetric and hydrography related data (primarily on the Croatian side), but also other spatial information data (either maps, sampling data or remote sensing data; LiDAR, Photogrammetry, and other high resolution data) that, when available, was often found to be either fragmented, spatially uncorrelated (resolution, scale, georeferencing etc.), lacking adequate metadata or time continuity to provide sufficient information for analysis and decision making
2. The analysis of collected data set has revealed that information regarding the analysis of sediments, with focus on the measurements involving solid transport and sediment stocks, are quite scarce. In this case, dedicated monitoring systems are necessary
3. Amount and availability of sediment/ water flux and quality data showed significant differences between Pilot sites. In general, collected data compiled within WP 3 gave an insight into overall picture of sediment and water fluxes within each Pilot site, however, further data should be collected and analyzed for ecological state assessment

## 5 Proposed methods for filling knowledge gaps

Based on the conclusions given and taking into consideration the major challenge the project was faced with during its implementation, in the form of a global scale epidemic, the joint coordinated actions for filling knowledge gaps were limited and two methods were proposed for filling knowledge gaps:

1. introduction of new and emerging remote sensing data (SAR satellite data, LiDAR data etc.) for gaining additional data and insights needed to fill knowledge gaps
2. a questionnaire to be distributed to stakeholders designed in a form that is easily distributed and focusing on the most common data needed for filling knowledge gaps but also on pilot site specific data needed

## 6 Implemented method for filling knowledge gaps

The first proposed method was implemented by some of the partners who were able to identify available data that could have its use in filling Project identified knowledge gaps. The results and usability of the remote sensing data will be described in the reports of subsequent deliverables so it will not be presented in detail in this deliverable.

The second method was implemented as follows:

- A google form questionnaire was drafted for pilot site and stakeholder specific questionnaires to be derived from
- Questionnaires were distributed and responses collected

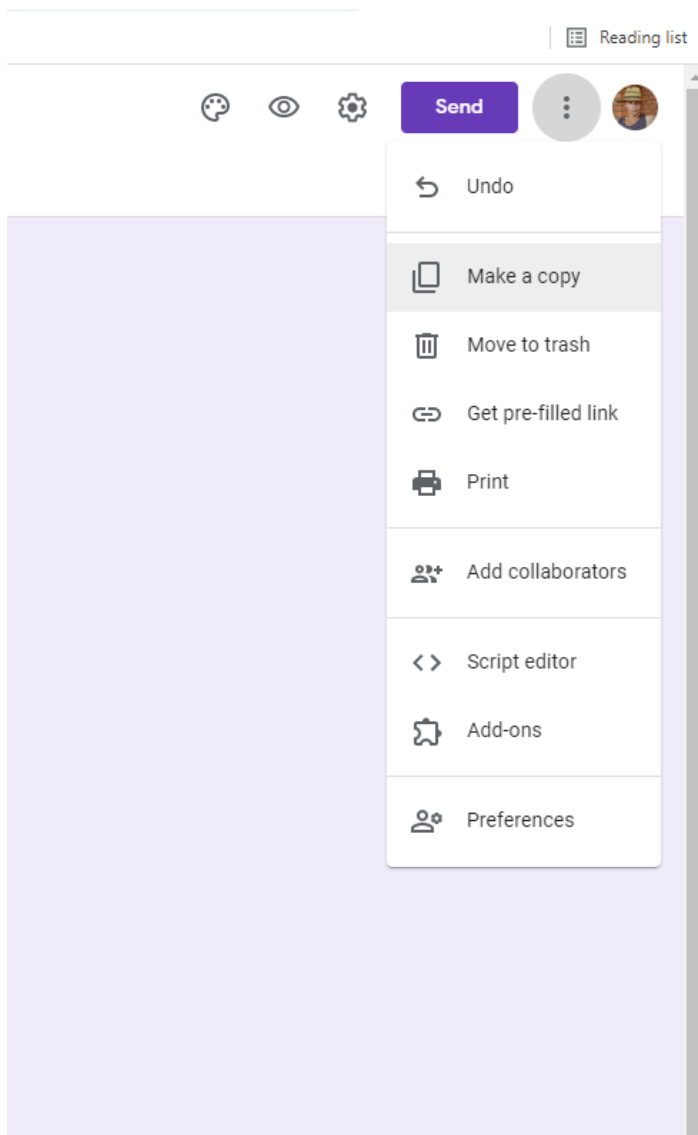
Google form was selected here as it was the most common and open tool for designing questionnaires that could be easily used by all Project partners. To enable and facilitate its use, following instructions were made:

## Instructions

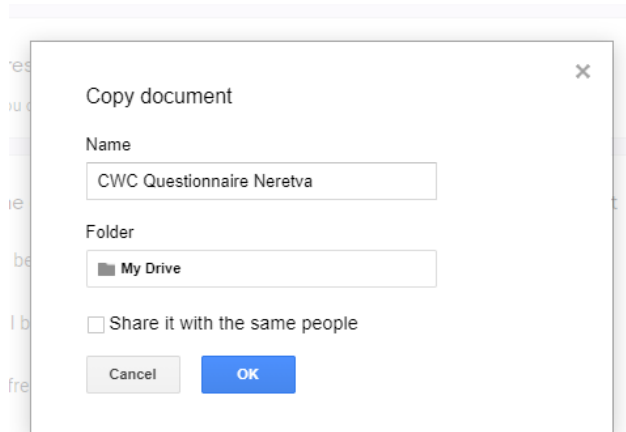
Step 1:

Make a copy of the draft questionnaire.

In the upper right corner click on three dots and choose “Make a copy”



Choose a name for the copy



Copy document

Name  
CWC Questionnaire Neretva

Folder  
My Drive

Share it with the same people

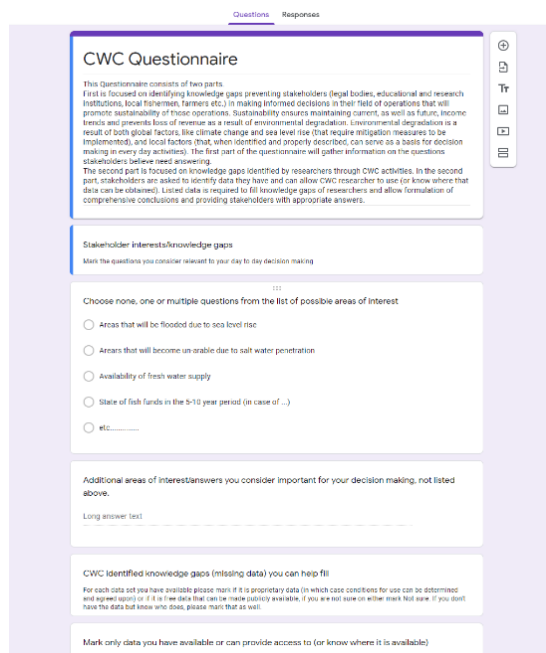
Cancel OK

inds in the 5-10 year period (in case of ...)

Step 2:

Edit the questionnaire to create a custom questionnaire relevant to the pilot site and/or intended recipients. Items that can be edited:

1. Description of the intended purpose of the questionnaire and other descriptions



Questions Responses

CWC Questionnaire

This Questionnaire consists of two parts.  
First is focused on identifying knowledge gaps preventing stakeholders (legal bodies, educational and research institutions, local fishermen, farmers etc.) in making informed decisions in their field of operations that will promote sustainability of those operations. Sustainability ensures maintaining current, as well as future, income levels and prevents loss of revenue as a result of environmental degradation. Environmental degradation is a result of both global factors (like climate change and sea level rise that require mitigation measures to be implemented), and local factors that, when identified and properly described, can serve as a basis for decision making in every day activities). The first part of the questionnaire will gather information on the questions stakeholders believe need answering.  
The second part is focused on knowledge gaps identified by researchers through CWC activities. In the second part stakeholders are asked to identify data they have and can allow CWC researcher to use (or know where that data can be obtained). Listed data is required to fill knowledge gaps of researchers and allow formulation of comprehensive conclusions and providing stakeholders with appropriate answers.

Stakeholder interests/knowledge gaps  
Mark the questions you consider relevant to your day to day decision making

...

Choose none, one or multiple questions from the list of possible areas of interest

Areas that will be flooded due to sea level rise

Areas that will become unusable due to salt water penetration

Availability of fresh water supply

State of fish funds in the 5-10 year period (in case of ...)

etc.....

Additional areas of interest/answers you consider important for your decision making, not listed above.

Long answer text

CWC identified knowledge gaps (missing data) you can help fill

For each data set you have available please mark if it is proprietary data (in which case conditions for use can be determined and agreed upon) or if it is free data that can be made publicly available. If you are not sure on either mark 'not sure' if you don't have the data but know who does, please mark that as well.

Mark only data you have available or can provide access to (or know where it is available)



2. Items on the lists
  - a. Change items on a list

Questions Responses

### CWC Questionnaire

This Questionnaire consists of two parts.  
 First is focused on identifying knowledge gaps preventing stakeholders (legal bodies, educational and research institutions, local fishermen, farmers etc.) in making informed decisions in their field of operations that will promote sustainability of those operations. Sustainability ensures maintaining current, as well as future, income trends and prevents loss of revenue as a result of environmental degradation. Environmental degradation is a result of both global factors, like climate change and sea level rise (that require mitigation measures to be implemented), and local factors (that, when identified and properly described, can serve as a basis for decision making in every day activities). The first part of the questionnaire will gather information on the questions stakeholders believe need answering.  
 The second part is focused on knowledge gaps identified by researchers through CWC activities. In the second part, stakeholders are asked to identify data they have and can allow CWC researcher to use (or know where that data can be obtained). Listed data is required to fill knowledge gaps of researchers and allow formulation of comprehensive conclusions and providing stakeholders with appropriate answers.

**Stakeholder interests/knowledge gaps**  
 Mark the questions you consider relevant to your day to day decision making

...

Choose none, one or multiple questions from the list of possible areas of interest

Multiple choice

- Areas that will be flooded due to sea level rise ✕
- Areas that will become un-arable due to salt water penetration ✕
- Availability of fresh water supply ✕
- State of fish funds in the 5-10 year period (in case of ...) ✕
- etc..... ✕
- Add option or [add "Other"](#)

Required

**Additional areas of interest/answers you consider important for your decision making, not listed above.**

Long answer text

---

**CWC Identified knowledge gaps (missing data) you can help fill**

b. Remove elements from a list

Questions Responses

### CWC Questionnaire

This Questionnaire consists of two parts.  
First is focused on identifying knowledge gaps preventing stakeholders (legal bodies, educational and research institutions, local fishermen, farmers etc.) in making informed decisions in their field of operations that will promote sustainability of those operations. Sustainability ensures maintaining current, as well as future, income trends and prevents loss of revenue as a result of environmental degradation. Environmental degradation is a result of both global factors, like climate change and sea level rise (that require mitigation measures to be implemented), and local factors (that, when identified and properly described, can serve as a basis for decision making in every day activities). The first part of the questionnaire will gather information on the questions stakeholders believe need answering.  
The second part is focused on knowledge gaps identified by researchers through CWC activities. In the second part, stakeholders are asked to identify data they have and can allow CWC researcher to use (or know where that data can be obtained). Listed data is required to fill knowledge gaps of researchers and allow formulation of comprehensive conclusions and providing stakeholders with appropriate answers.

**Stakeholder interests/knowledge gaps**  
Mark the questions you consider relevant to your day to day decision making

Choose none, one or multiple questions from the list of possible areas of interest

Multiple choice

- Areas that will be flooded due to sea level rise
- Areas that will become un-arable due to salt water penetration
- Availability of fresh water supply
- State of fish funds in the 5-10 year period (in case of ...)
- etc.....
- Add option or add "Other"

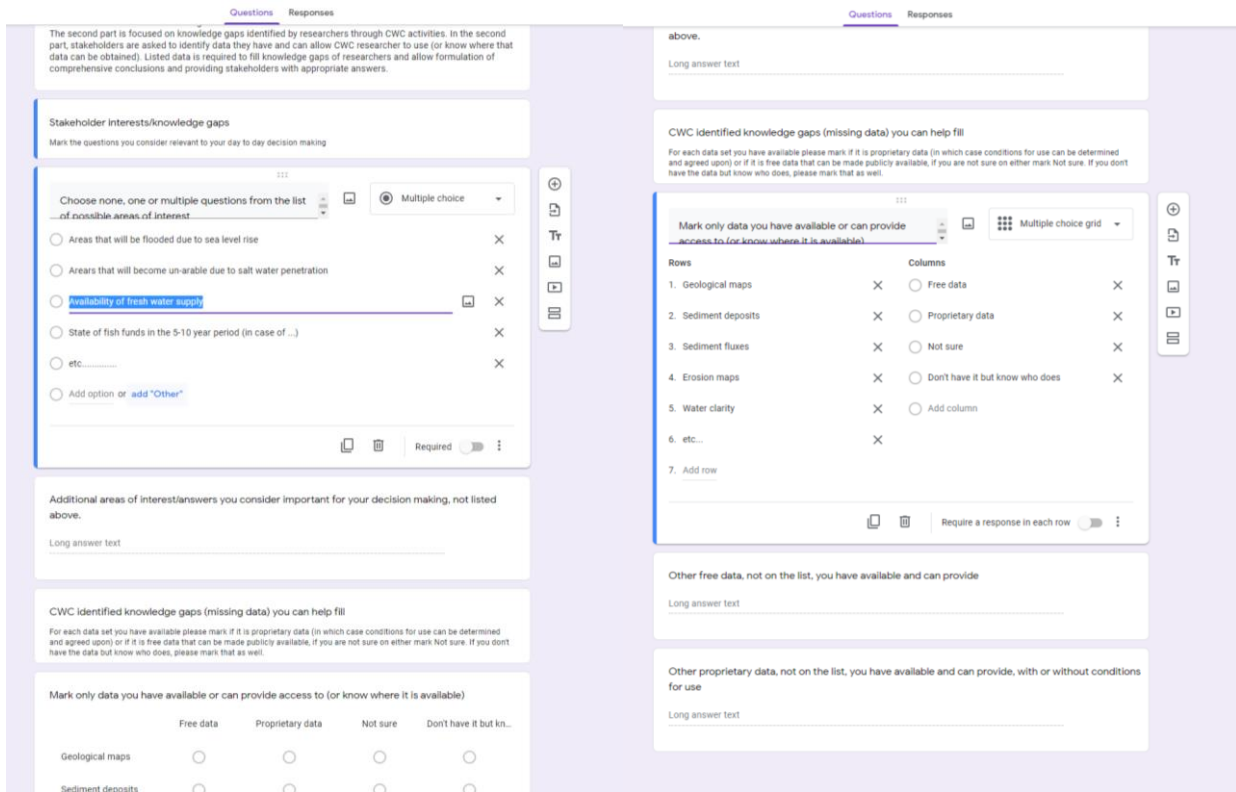
Required

Additional areas of interest/answers you consider important for your decision making, not listed above.

Long answer text

CWC identified knowledge gaps (missing data) you can help fill

c. Add new elements to a list



The screenshot displays two side-by-side panels of a survey interface. The left panel is titled 'Stakeholder interests/knowledge gaps' and contains a 'Multiple choice' question with a list of options: 'Areas that will be flooded due to sea level rise', 'Areas that will become un-arable due to salt water penetration', 'Availability of fresh water supply', 'State of fish funds in the 5-10 year period (in case of ...)', 'etc...', and 'Add option or add "Other"'. The right panel is titled 'CWC identified knowledge gaps (missing data) you can help fill' and features a 'Multiple choice grid' question. The grid lists seven rows of knowledge gaps and four columns of data availability options: 'Free data', 'Proprietary data', 'Not sure', and 'Don't have it but know who does'. The grid is partially filled with 'X' marks.

..etc.

d. Add title for a new list

Questions
Responses

above.

Long answer text

CWC identified knowledge gaps (missing data) you can help fill

For each data set you have available please mark if it is proprietary data (in which case conditions for use can be determined and agreed upon) or if it is free data that can be made publicly available, if you are not sure on either mark Not sure. If you don't have the data but know who does, please mark that as well.

Mark only data you have available or can provide access to (or know where it is available)

	Free data	Proprietary data	Not sure	Don't have it but kn...
Geological maps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sediment deposits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sediment fluxes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Erosion maps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water clarity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
etc...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other free data, not on the list, you have available and can provide

Long answer text

Other proprietary data, not on the list, you have available and can provide, with or without conditions for use

Long answer text

Required 
⋮

Add title and description

e. Add new list of questions

[Questions](#)   [Responses](#)

## CWC Questionnaire

This Questionnaire consists of two parts.  
 First is focused on identifying knowledge gaps preventing stakeholders (legal bodies, educational and research institutions, local fishermen, farmers etc.) in making informed decisions in their field of operations that will promote sustainability of those operations. Sustainability ensures maintaining current, as well as future, income trends and prevents loss of revenue as a result of environmental degradation. Environmental degradation is a result of both global factors, like climate change and sea level rise (that require mitigation measures to be implemented), and local factors (that, when identified and properly described, can serve as a basis for decision making in every day activities). The first part of the questionnaire will gather information on the questions stakeholders believe need answering.  
 The second part is focused on knowledge gaps identified by researchers through CWC activities. In the second part, stakeholders are asked to identify data they have and can allow CWC researcher to use (or know where that data can be obtained). Listed data is required to fill knowledge gaps of researchers and allow formulation of comprehensive conclusions and providing stakeholders with appropriate answers.

---

**Stakeholder interests/knowledge gaps**  
 Mark the questions you consider relevant to your day to day decision making

Choose none, one or multiple questions from the list of possible areas of interest

Multiple choice

- Areas that will be flooded due to sea level rise
- Areas that will become un-arable due to salt water penetration
- Availability of fresh water supply
- State of fish funds in the 5-10 year period (in case of ...)
- etc.....
- Add option or add "Other"

Required

Additional areas of interest/answers you consider important for your decision making, not listed above.

Long answer text

---

CWC identified knowledge gaps (missing data) you can help fill

f. Change type of list

Questions Responses

above.

Long answer text

CWC identified knowledge gaps (missing data) you can help fill

For each data set you have available please mark if it is proprietary data (in which case you must agree on terms and conditions and agreed upon) or if it is free data that can be made publicly available, if you are not sure please mark that as well.

Mark only data you have available or can provide access to (or know where it is available)

Rows	Columns
1. Geological maps	<input checked="" type="checkbox"/> Free data
2. Sediment deposits	<input checked="" type="checkbox"/> Proprietary data
3. Sediment fluxes	<input checked="" type="checkbox"/> Not sure
4. Erosion maps	<input checked="" type="checkbox"/> Don't have it but know who does
5. Water clarity	<input checked="" type="checkbox"/> Add column
6. etc...	<input checked="" type="checkbox"/>
7. Add row	

Require a response in each row

Other free data, not on the list, you have available and can provide

Long answer text

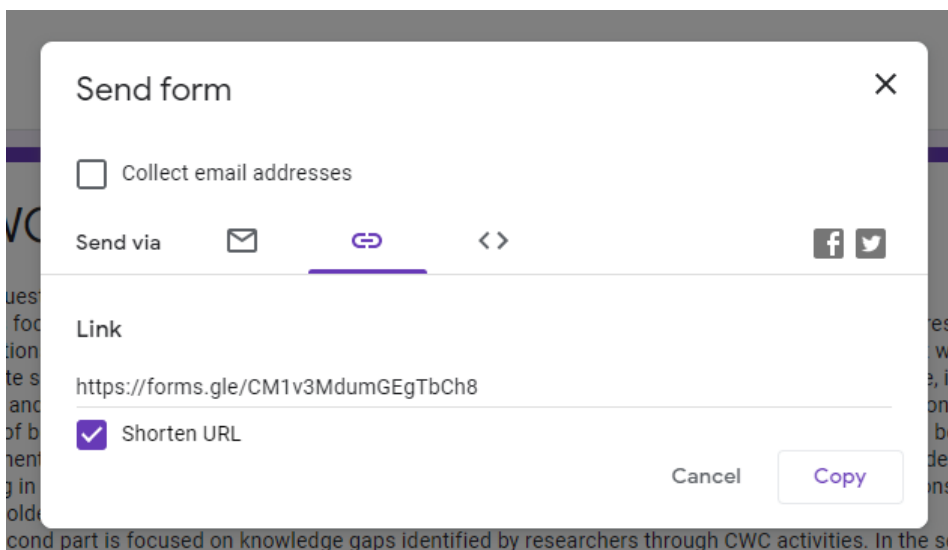
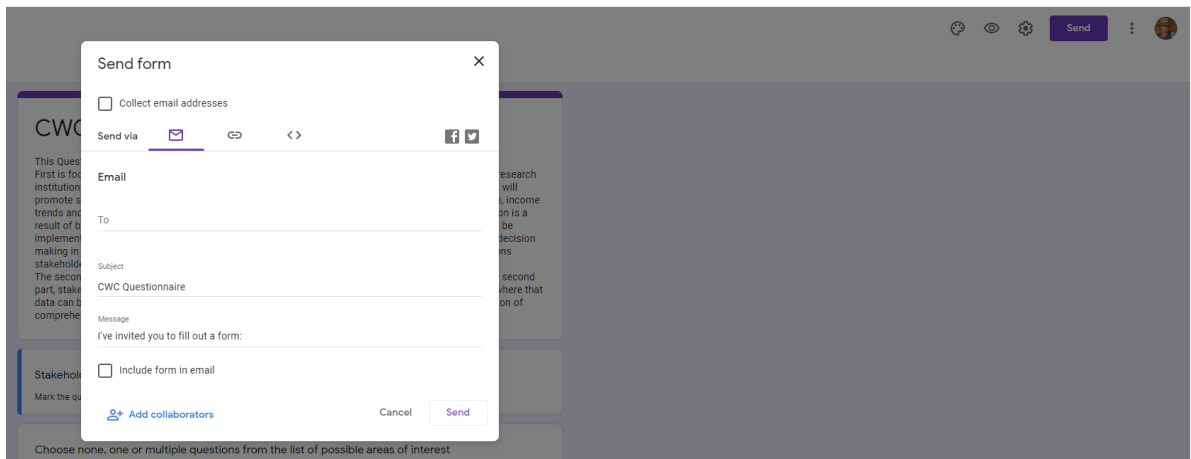
Other proprietary data, not on the list, you have available and can provide, with or without conditions for use

Long answer text

- Short answer
- Paragraph
- Multiple choice
- Checkboxes
- Dropdown
- File upload
- Linear scale
- Multiple choice grid
- Checkbox grid
- Date
- Time

Step 3:

Send the questionnaire to stakeholders in email or link form.



## 7 Results of implemented method

The feedback from the distributed questionnaires varied among the Project partners but also their dependance and need for the use of questionnaires. To demonstrate the differences and variations, responses from three partners are summarized here:

- **Neretva River:** sent out the questionnaire and obtained some useful information on the missing data for filling knowledge gaps
- **Nature Park Vransko Jezero:** familiar/knowledgeable of all the existing data and are able to obtain all existing data needed for dealing with identification of processes considered in the CWC project so the only thing that would help them resolve knowledge gaps would be new in-situ data acquisitions aimed at filling those knowledge gaps
- **PO River delta:** collected all the required data prior to this questionnaire distribution, but they also used questionnaires (distributed to the stakeholders) during their data and information gathering, proving this methodology useful in the context of filling knowledge gaps

## 8 Conclusions

Questionnaires should be regularly used in information gathering prior and during data collection. Google form or other IT/WEB based questionnaire tool allows for a wider outreach, but standard (paper based) questionnaires should also be distributed when in person distribution is possible. The case of Nature Park Vransko Jezero shows that having an agency or state body responsible for gathering all environmentally relevant data, and providing access to data, coupled with a “closed” system provides great benefits to researchers and environmentalist responsible for a certain area in identifying relevant processes and decision making. Where that is not the case, questionnaires provide a viable option for focused information and data gathering.

Orientation towards remote sensing technologies for data collection and filling knowledge gaps in climate change research must be increased. But, the use of remote sensing data without in-situ data collection and verification of remote sensing data does not provide reliable results. Thus, strategic planning and searching out for funding and/or collaboration opportunities allowing utilization of mobile and/or permanent monitoring stations (through acquisition, loan etc.) for collecting data (that cannot be gathered using other methods), needs to be implemented into a common business practice.