

DESCRIPTION OF SPECIFIC NEEDS FOR GUIDANCE

Results of the questionnaire for local and regional
administrations on perceptions of climate change
impacts and on adaptation experiences

Work Package 4

Activity 4.1

Output 1

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BACKGROUND AND OBJECTIVES

The questionnaire implemented within the ADRIADAPT project aimed to assess the perceptions and the needs of the local and regional authorities related to climate change impacts in the project area, i.e. Adriatic local authorities of Italy and Croatia. It can be viewed as a screening of the existing knowledge on climate change and the level of preparation to tackle its impacts by the local and regional authorities of the project area.



Interreg Italy Croatia programme area

ADRIADAPT is an INTERREG Italy-Croatia Project, financed by European Regional Development Fund (ERDF) and coordinated by Euro-Mediterranean Centre on Climate Change (CMCC) with several partners from Croatia and Italy. One of the partners, Priority Actions Programme/Regional Activity Centre (PAP/RAC), was in charge of implementing the questionnaire as a part of the Work Package (WP) 4 of the Project – “Tools and strategies for a Climate resilience knowledge base in the Adriatic”. This WP aims to provide selected, user-friendly information for the Adriatic cities and other interested stakeholders, in form of best practice examples, guidance documents, legal frameworks as well as specific climate and vulnerability studies for the area, supporting diagnosis and policy solutions for local resilience.

The main purpose of the questionnaire was to define the state, attitudes, and needs of Adriatic local authorities in Italy and Croatia regarding development of local climate adaptation plans and strategies, in order to successfully develop tools to help them in preparing climate adaptation and

resilience plans. More concretely, their answers to the questionnaire aim to serve as guidance in developing the content of the knowledge platform adaptation to climate change, one of the project's outputs. This future platform aims to serve primarily local and regional authorities, to assist them in climate change adaptation. The overall idea of integrated approach will result with an integrated approach to adaptation and mitigation – therefore for climate action.

At the European and global level, there is already a plenty of knowledge, information and experiences on building resilience to climate change impacts. However, at the level of Adriatic cities and local authorities there is not much information, particularly the information is not visible. In addition, most of the local policies and initiatives are presented only in the local language. In order to connect better the two sides of Adriatic, to exchange knowledge and jointly build resilience it is necessary to secure more information exchange, using all languages, including Italian and Croatian. Due to the large number of small local authorities in both countries, often weak in using materials in English particular value will represent provision of materials in local languages. Finally, in order to build resilience, the first step is to enhance awareness on the threats that climate change brings. Questionnaire was prepared with the aim to contribute to the awareness of the climate impacts in the region.

METHODOLOGY

The questionnaire was prepared by PAP/RAC in Croatian language and translated in English and in Italian. Once translated, it was circulated among all project partners, and 7 out of 11 provided suggestions and comments. Colleagues from the EIB/HBOR project in Croatia also provided comments on the questionnaire. The questionnaire consisted of 45 questions and focused on the experiences with the impacts of climate change and the adaptation to these impacts. Majority of questions were of multi-answer or yes/no type with just several “open” questions. It consisted of the overview of the climate change impacts observed in the domains of water, sea, land, biota, air, health, tourism and energy; followed with the a series of questions related to strategic and planning responses and experiences, screening of existing measures and instruments, finding obstacles for responses and defining best options to secure assistance to overcome identified obstacles and improve adaptation at the local and regional level. PAP/RAC also prepared the accompanying letter explaining the project, but also referring to current initiatives, such is the EIB project in Croatia as well as the global children climate strike. Society for Sustainable Development Design (cro. DOOR) prepared an on-line version of the questionnaire and assisted with its dissemination by sending the questionnaire and the accompanying letter to the Croatian Network of the cities and towns which forwarded the letter and the invitation to all cities and towns of the Croatian part of the project area. The announcement on the questionnaire was distributed via project partners.

In Croatia, PAP/RAC used its contact list and invited its partners to disseminate the questionnaire. Furthermore, PAP/RAC sent the direct mails to 13 cities and towns in Croatia inviting mayors, with carbon copies to spatial planning/municipal affairs/environment protection/EU projects departments, to fill in the questionnaire. In addition, using the opportunity of PAP/RAC being featured in Split's newspaper and on Split radio station, cities and towns were also invited to fill in the questionnaire. Šibenik- Knin County used the network of Counties to invite all Counties from the project area (8) and all towns and cities from their County to fill-in the questionnaire.

In Italy, CMCC translated questionnaire in Italian and DOOR prepared the on-line Italian version. The invitation to compile the questionnaire was published on the CMCC website and CMCC researchers used their own contact list for disseminating the invitations. In this way, 14 invitations were sent out targeting specifically technicians in local authorities (8 out of 13) metropolitan areas (2) consultants and researchers (4).

The invitation to fill-in the questionnaire was also published in the first Adriadapt newsletter. Partners from another INTERREG Italy-Croatia project ASTERIS were also invited to fill-in the questionnaire.

In November 2019 another round of direct invitations was sent by the PAP/RAC intern directly to 150 e-mail addresses in the coastal cities/municipalities in Croatia, and to more than 200 addresses in the major Adriatic coastal cities and regions of Italy. The questionnaire was sent to majors, and copied to deputy mayors, directors of environmental protection, urban planning, safety and EU funds departments.

RESULTS

There were 34 respondents in total from 30 local authorities: 24 respondents from 20 local authorities in Croatia and 12 respondents from 10 local authorities in Italy. In Croatia 18 out of 20 cities/municipalities/provinces considered themselves as being coastal, while in Italy it was 5 out of 10. Majority of respondents were persons responsible for environment and senior technical officers in the environmental department. For some smaller cities in both countries' major or deputy mayor filled in the questionnaire, while in some cases persons responsible for European funds and projects or senior officials from this department replied.

The perception of the respondents on whether their local authority has encountered certain impact of climate change was observed and grouped according the different topics (see Annex I for more detailed results). First of all, it needs to be said that a relatively low share of invited local authorities responded to the questionnaire and hence, the possibility on drawing firm conclusions was rather limited. However, the number of answers was still sufficient to have a "first glance" in views of

local authorities on both side of Adriatic on climate change issues. Despite some differences in perception between Italian and Croatian authorities (a part of which can also be attributed to the fact that in Croatia there was higher percentage of local authorities that considered themselves as being coastal), some viewpoints proved to be unambiguous. For example, overall Adriatic local authorities observe floods caused by heavy rainwater, change in precipitation regime and damages by extreme weather events as most significant threats. These are closely followed by increase in air temperature and heatwaves, flooded houses and tourism facilities, marine floods, wildfires etc. In following text we will further examine the responses according to each topic.

Within the **Water** topic, most respondents, both in Italy and Croatia, considered floods caused by heavy rainfall (runoff) and change in precipitation regime (increase in the number and intensity of storm events) as major impacts encountered. This impact was recognized by the highest overall number of respondents of all impacts in Italy (12), while in Croatia it is the second highest (19). It is interesting to observe that while half of the respondents in Croatia considered insufficient supply of drinking water in summer as a problem, in Italy a third of respondents did so.

Regarding the **Sea** topic most respondents, both in Italy and Croatia, considered marine flooding, i.e. flooded coasts due to (extreme) weather events as the major impact. While marine floods were to some extent less observed than floods by heavy rainfall, but this could be due to the fact that not all local authorities are coastal and hence, not experiencing marine floods. This can be well seen on the example of Italian respondents, where all respondents observed floods caused by heavy rainfall, but only a half of respondents observed marine floods (which corresponds with the half of local authorities being coastal).

Within the **Land** topic, responses show a bit more complex picture: in both Croatia and Italy major impacts considered were damages caused by extreme weather events (21 respondents from Croatia/9 in Italy), with damaged roads, roofs, broken trees and damaged waterfronts seen as major problem in both countries (18 respondents in Croatia/9 in Italy). On the other hand, damaged vehicles were recognized among nearly all Italian respondents (9 out of 10) while in Croatia only by a third of all respondents. In both countries flooded houses and other facilities for housing and tourism were also considered as a grave problem (17 in Croatia and 8 in Italy). In Italy, half of the respondents believe observed changes in the morphology of the coastline due to erosion of beaches and coastline as a significant problem while in Croatia a third of respondents do so. This can be due to a fact that in Croatia majority of coastline is of hard substrate, unlike sandy beaches in Italy, so in Croatia erosion is not observed by the respondents as in the other side of the Adriatic. Finally, an increase of occurrence of **wildfires** is recognized in both countries (14 in Croatia and 5 in Italy).

As for **Biota**, three impacts were particularly observed by respondents in both countries: changes in the number of pests and unwanted species (16 respondents); changes in the life cycle of vegetation

(e.g. change in time leafing, flowering, ripening, harvest, drop-leaf growing season etc) (15 respondents); and increase damage to agriculture of extreme weather events (15 respondents); and).

As for **Air**, the increase in the number, intensity and duration of heat waves; and increase in mean air temperature, was observed by grave majority of respondents in both countries (26 respondents in total for both problems), followed by a decrease in frost days (20 respondents in total). In Croatia, in addition, the increase in odour in summer, due to the increase in temperature (sewage, waste disposal etc.), was observed by many respondents (15 out of 24), while in Italy it was observed by only one respondent. It is interesting that for increase in air pollution was the opposite: two thirds of respondents in Italy observed it, compared with only 4 out of 24 of respondents in Croatia.

Regarding **Health**, slightly more than a half of respondents in Croatia considered that there is an increasing number of people that need urgent medical assistance due to the extreme weather (e.g. heat or cold waves). On other hand, a lack of capacity to aid those seeking medical help during the tourist season was less observed in the questionnaire by the respondents in both countries, but this could be due to the fact that this is still an emerging issue.

Answers in the **Tourism** topic are particularly interesting since it seems that there are diverse opinions on questions on impacts of climate change tourism arrivals in both season and off-season: around half of the respondents in Croatia believe that there will be an impact on due to change in precipitation and temperature, and nearly half in Italy.

Regarding **Energy** sector, in both Italy and Croatia around third of the respondents observed decrease in electric voltage and power outages due to high electricity consumption, while less observed more common voltage drops and power cuts in summer.

In Croatia, 4 local authorities **prepared either strategy or a plan for adaptation to climate change**, and 6 more answered that they are in process of preparation. In Italy two cities prepared and adopted their adaptation plans, one of which prepared and adopted an adaptation strategy as well; one city answered that they have adopted the Action Plan for Sustainable Energy and Climate (SECAP), and one more city answered that they are planning to prepare the SECAP in the near future. One city mentioned a new line on resilience introduced in their strategic plan for the metropolitan area and several EU projects dealing with the topic.

In Croatia 11 respondents answered that their local authority **has taken some measures / actions to reduce the climate-related impacts**, and 12 responded that they are planning to. The measures undertaken by local authorities, recognized as contribution to adapting to climate change by the respondents, are mainly related to energy efficiency (solar systems for water heating, thermal

insulation of households etc.); “greening” (extension of green surfaces); infrastructure improvements (improvement of cycling infrastructure, extension of sewage network; harbour pier and the rehabilitation of the sea wall; flood protection measures etc.); education (education on energy efficiency, education of people working in tourism sector etc.); and measures related to the data collection, monitoring, early warning and scientific research. In Italy 5 local authorities answered that they have taken some measures / actions to minimize the consequences of some of climate-related impacts, while 6 were without answer. Four local authorities reported some green infrastructure measures, mostly related to urban parks, one related to provincial ecological network and one to an innovative public-private partnership for the urban forests (project GAIA).

In Croatia 11 respondents answered that their local authority took some **steps to ensure the coastal setback**, all of them were ensured through spatial plan. Eighteen of them believe that coastal setback could be ensured via spatial plan (18), construction ban on low shores (15), land policy instruments, such as land pooling (12) and land acquisition (9). In Italy, there was only one positive answer and it was through the ban on construction on the low shores. This can be attributed to the fact that much lower share of Italian responding local authorities in this questionnaire described themselves as “coastal” than in Croatia.

Four local authorities in Croatia, and three in Italy are taking some **steps to ban construction in other zones in the high risk of inundation**. Others, who are not taking any steps, believe that the reason for not taking such steps is mostly due to the lack of data on impacts and not enough knowledge on what to do. In Croatia the local authorities that responded positively on taking steps to secure no construction in other zones took these steps through spatial plan or through flood protection measures by Croatian Waters. Two of the Italian respondents said their local authority took some steps through spatial plan (one of them through highlighting the hazard areas within the spatial plan).

In Croatia, nine respondents answered that they know a city / municipality / county in Croatia that is **preparing and / or carrying out measures to adapt to climate change**. In Italy four respondents answered positively.

The highest number of respondents in both counties believe that setting directions for the future (20 in total) and defining the vision and goals (19 in total) and are of highest importance in **exchange of experiences with other Adriatic cities**. These are followed by the exchange on how to monitor plan’s implementation (18 in total) and information on how to get started; defining governance context; engaging stakeholders; and analysing vulnerability (all 17 votes in total). Only 6 respondents in total believe that there is a platform where such information are exchanged.

Great majority of respondents believe that an **internet platform in their national language** could facilitate the exchange of knowledge, experiences and best practices with Adriatic towns /

municipalities / counties (28 in total, with no negative answers). The highest number of respondents believe that the most important information on such platform would be: the expected impacts of climate change (19 respondents); guidelines for adapting to climate change (19); followed by measures taken by other towns /municipality / county (18), and possibilities of financing adaptation (18).

Seven of the responding cities in Croatia, and 8 in Italy, are **members of "Covenant of Mayors for Climate and Energy" and Mayors Adapt**, with 5 in Croatia and 4 in Italy **implemented Sustainable Energy Action Plan (SEAP) or Sustainable Energy and Climate Action Plan (SECAP)**.

Great majority of respondents (26 in total, with only 2 negative answers) believe that through adaptation to climate change they can create the conditions for a better quality of life for their fellow citizens.

CONCLUSIONS AND RECCOMENDATIONS

- Less than half of local authorities in Croatia and Italy who responded to questionnaire prepared, or are in process of preparing, either strategy or a plan for adaptation to climate change.
- Majority of respondents believe that exchange of experiences on climate change adaptation with other Adriatic cities would be of high importance, but for now they believe there is no framework where such information is exchanged.
- Great majority of respondents believe that an internet platform in their national language could facilitate the exchange of knowledge and experiences on climate change adaptation.
- The highest number of respondents believes that the most important information on such platform would be: the expected effects of climate change; guidelines for adaptation to climate change; measures taken by other local authorities; and possibilities of financing adaptation.
- Great majority of respondents believe that through adaptation to climate change they can create the conditions for a better quality of life for their fellow citizens.
- Low number of local authorities that responded to this questionnaire limited the possibility on drawing firm conclusions.
- Significant number of answers was with N/A, even for direct yes/no questions, which makes us reconsider putting such option in the future.

ANNEX 1 – More detailed results of the questionnaire on selected topics

According to your knowledge, has your city / municipality / county already faced the following climate change impacts:

WATER	YES	NO	N/A
1) Change in precipitation regime (increase in the number and intensity of storm events)	Croatia (19) Italy (12)	Croatia (3) Italy (0)	Croatia (2) Italy (0)
2) Floods caused by heavy rainwater (runoff)	Croatia (19) Italy (12)	Croatia (4) Italy (0)	Croatia (1) Italy (0)
3) Contamination of land caused by floods	Croatia (6) Italy (2)	Croatia (15) Italy (7)	Croatia (3) Italy (3)
4) Contamination of drinking water caused by floods	Croatia (7) Italy (1)	Croatia (16) Italy (9)	Croatia (1) Italy (2)
5) Insufficient drinking water supply during summer	Croatia (12) Italy (4)	Croatia (12) Italy (8)	Croatia (0) Italy (0)
6) Lack of water for irrigation of agricultural land	Croatia (11) Italy (6)	Croatia (9) Italy (5)	Croatia (4) Italy (1)
7) Deterioration of drinking water quality due to salinization	Croatia (3) Italy (1)	Croatia (19) Italy (9)	Croatia (2) Italy (2)
8) Deterioration of drinking water quality due to changes in microbiological and chemical composition	Croatia (5) Italy (1)	Croatia (18) Italy (8)	Croatia (1) Italy (3)
9) Changes in the composition of vegetation (in rivers and lakes)	Croatia (2) Italy (1)	Croatia (16) Italy (6)	Croatia (6) Italy (5)

10) Changes in the composition of fish population and other fauna (rivers and lakes)	Croatia (2) Italy (0)	Croatia (14) Italy (7)	Croatia (8) Italy (5)

SEA	YES	NO	N/A
1) Marine flooding: flooded coasts due to (extreme) weather events	Croatia (18) Italy (6)	Croatia (3) Italy (1)	Croatia (3) Italy (5)
2) Sea contamination due to floods	Croatia (7) Italy (1)	Croatia (13) Italy (6)	Croatia (4) Italy (5)
3) Deterioration of bathing water quality	Croatia (7) Italy (3)	Croatia (10) Italy (4)	Croatia (7) Italy (5)
4) Changes in the composition of fish population and other fauna	Croatia (9) Italy (2)	Croatia (8) Italy (3)	Croatia (7) Italy (7)
4.1) Increase in abundance of thermophilic fish and other species	Croatia (8) Italy (3)	Croatia (8) Italy (3)	Croatia (8) Italy (6)
4.2a) Emergence of new fish population and other fauna – invasive species	Croatia (11) Italy (2)	Croatia (7) Italy (2)	Croatia (6) Italy (8)
4.2a) Emergence of new fish population and other fauna – increase in jellyfish	Croatia (6) Italy (1)	Croatia (9) Italy (2)	Croatia (9) Italy (9)
4.3) Decline in catch of commercial	Croatia (10) Italy (1)	Croatia (4) Italy (2)	Croatia (10) Italy (9)

species			
5) Impact of sea temperature increase on fish farming	Croatia (2) Italy (1)	Croatia (8) Italy (3)	Croatia (14) Italy (8)
6) Impact of sea temperature increase on shellfish farming	Croatia (2) Italy (1)	Croatia (7) Italy (3)	Croatia (15) Italy (8)
7) Impact of bio-chemical changes in the sea on fish and shellfish farming	Croatia (3) Italy (0)	Croatia (5) Italy (3)	Croatia (16) Italy (9)

Land	YES	NO	N/A
1) Increase in the occurrence of wildfires	Croatia (14) Italy (5)	Croatia (8) Italy (6)	Croatia (2) Italy (1)
2) Changes in the rate of spread and intensity of the wildfires	Croatia (12) Italy (0)	Croatia (8) Italy (7)	Croatia (4) Italy (5)
3) Erosion of soil on burnt surfaces	Croatia (4) Italy (3)	Croatia (15) Italy (5)	Croatia (5) Italy (4)
4) Soil quality degradation due to salinization	Croatia (1) Italy (2)	Croatia (17) Italy (6)	Croatia (6) Italy (4)
5) Damage caused by extreme weather events	Croatia (21) Italy (9)	Croatia (2) Italy (1)	Croatia (1) Italy (2)
5a)damaged	Croatia (13)	Croatia (8)	Croatia (3)

waterfronts	Italy (2)	Italy (4)	Italy (6)
5b)increased coastal erosion (loss of sand from the beach)	Croatia (8) Italy (6)	Croatia (13) Italy (2)	Croatia (3) Italy (4)
5c)damaged roads, roofs, broken trees	Croatia (18) Italy (9)	Croatia (3) Italy (1)	Croatia (3) Italy (2)
5d)damaged vehicles	Croatia (8) Italy (9)	Croatia (12) Italy (1)	Croatia (4) Italy (2)
5e)sunken boats	Croatia (7) Italy (0)	Croatia (14) Italy (7)	Croatia (3) Italy (5)
5f)landslides	Croatia (2) Italy (5)	Croatia (18) Italy (3)	Croatia (4) Italy (4)
5g)something else	Croatia (2) Italy (?)	Croatia (18) Italy (?)	Croatia (4) Italy (?)
6)Increased deterioration of coastal infrastructure due to extreme weather events	Croatia (14) Italy (3)	Croatia (7) Italy (1)	Croatia (3) Italy (8)
7) Increased deterioration of other infrastructure due to extreme weather events	Croatia (11) Italy (3)	Croatia (10) Italy (3)	Croatia (3) Italy (6)
8)Flooded houses and other facilities for housing and tourism	Croatia (17) Italy (8)	Croatia (5) Italy (1)	Croatia (2) Italy (3)
9) Changes in the regime of sediment transport and deposition in coastal areas and river	Croatia (5) Italy (4)	Croatia (10) Italy (3)	Croatia (9) Italy (5)
10) Changes in coastal morphology due to	Croatia (8) Italy (4)	Croatia (9) Italy (3)	Croatia (7) Italy (5)

erosion of beaches and shores			
11) Increased landslides due to extreme precipitation and torrential rains	Croatia (8) Italy (6)	Croatia (10) Italy (3)	Croatia (6) Italy (3)
12) Fall of (agricultural) yield and soil quality deterioration due to droughts	Croatia (12) Italy (3)	Croatia (4) Italy (2)	Croatia (8) Italy (7)

BIOTA	YES	NO	N/A
1) Changes in the vegetation life cycle (i.e. changes in the time of leaf unfolding, flowering, fruit ripening, fruit harvesting, leaf falling, growing season, ...)	Croatia (12) Italy (3)	Croatia (6) Italy (3)	Croatia (6) Italy (6)
2) Changes in the composition of certain plant and animal species	Croatia (4) Italy (1)	Croatia (9) Italy (3)	Croatia (11) Italy (8)
3) Degradation of indigenous vegetation as a result of droughts	Croatia (7) Italy (3)	Croatia (12) Italy (3)	Croatia (5) Italy (6)
4) Increased degradation of trees	Croatia (6) Italy (4)	Croatia (13) Italy (2)	Croatia (5) Italy (6)
5) Degradation of parks and forests	Croatia (4) Italy (2)	Croatia (14) Italy (3)	Croatia (6) Italy (7)
6) Changes in the	Croatia (8)	Croatia (7)	Croatia (9)

yield of local agricultural products	Italy (3)	Italy (3)	Italy (6)
7) Increasing damages in agriculture due to extreme weather	Croatia (12) Italy (3)	Croatia (4) Italy (2)	Croatia (8) Italy (7)
8) Changes in the number of pests and unwanted species	Croatia (11) Italy (5)	Croatia (4) Italy (2)	Croatia (9) Italy (5)
9) New plant species	Croatia (4) Italy (0)	Croatia (9) Italy (3)	Croatia (11) Italy (9)
10) New animal species (land)	Croatia (2) Italy (0)	Croatia (10) Italy (3)	Croatia (12) Italy (9)
11) New insect species(Mainland)	Croatia (8) Italy (3)	Croatia (5) Italy (2)	Croatia (11) Italy (7)
12) Mediterranean beetle (<i>Orthotomicus erosus</i> ; Mediterranean pine beetle)	Croatia (8) Italy (0)	Croatia (6) Italy (3)	Croatia (10) Italy (9)

AIR	YES	NO	N/A
1) The increase in the number, intensity and duration of heat waves	Croatia (16) Italy (10)	Croatia (3) Italy (0)	Croatia (5) Italy (2)
2) Increase in mean air temperature	Croatia (17) Italy (9)	Croatia (3) Italy (1)	Croatia (4) Italy (2)
3) Decrease of frost days (Tmin <0)	Croatia (14) Italy (6)	Croatia (3) Italy (2)	Croatia (7) Italy (4)
4) The increase in extremely cold	Croatia (4) Italy (2)	Croatia (11) Italy (5)	Croatia (9) Italy (5)
5) Changes in the wind regime	Croatia (7) Italy (0)	Croatia (8) Italy (6)	Croatia (9) Italy (6)
6) Growth of	Croatia (15)	Croatia (4)	Croatia (5)

unpleasant odour in the summer due to the rise of temperatures (coming from sewage, landfill, ...)	Italy (1)	Italy (7)	Italy (4)
7) Increase in air pollution (or air pollutants)	Croatia (4) Italy (8)	Croatia (12) Italy (3)	Croatia (8) Italy (1)

HEALTH	YES	NO	N/A
1) Increased number of people seeking urgent medical assistance due to the extreme weather (e.g. heat or cold waves)	Croatia (13) Italy (3)	Croatia (3) Italy (2)	Croatia (8) Italy (7)
2) Lack of capacity to aid those seeking medical help during the tourist season	Croatia (7) Italy (1)	Croatia (8) Italy (5)	Croatia (9) Italy (6)

TOURISM	YES	NO	N/A
1a) Do you think that the changes in the average air temperature and/or precipitation have an impact on tourist arrivals in peak season	Croatia (12) Italy (3)	Croatia (8) Italy (4)	Croatia (4) Italy (5)
1b) Do you think that the changes in the	Croatia (13) Italy (4)	Croatia (7) Italy (3)	Croatia (4) Italy (5)

average air temperature and/or precipitation have an impact on tourist arrivals in pre/post season			
3) Observed increase in casualties caused by extreme weather events (e.g. blood pressure issues, dehydration, heart attacks during heat waves, casualties during storms or wildfires, infections due to increased number of bacteria in the warmer sea water, burns caused by jellyfish ...)	Croatia (8) Italy (0)	Croatia (7) Italy (4)	Croatia (9) Italy (8)
4) Observed increase in damage on vessels due to extreme weather events	Croatia (10) Italy (0)	Croatia (10) Italy (1)	Croatia (4) Italy (11)

ENERGY	YES	NO	N/A
1) Are there electrical voltage drops and electricity shortages occurring due to the high electricity consumption?	Croatia (9) Italy (4)	Croatia (10) Italy (4)	Croatia (5) Italy (4)
2) Are electrical voltage drops and	Croatia (6) Italy (5)	Croatia (10) Italy (3)	Croatia (8) Italy (4)

electricity shortages more frequent during summer?			
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Are there any measures/activities already taken to reduce the above-mentioned impacts? Please pay attention that you may have undertaken some measures even not knowing that these measures are actually adaptation to climate change. We are particularly interested for the green infrastructure¹, soft measures² or structural measures³.

Respondents Answered	YES	NO	N/A
Croatia	11	9	4
Italy	5	1	6

Are there any measures/activities under preparation related to reduction of the above-mentioned impacts??

Respondents Answered	YES	NO	N/A
Croatia	12	8	4
Italy	2	1	9

Has your city/municipality/county taken any steps to secure setback, zone with no construction starting from the coastline??

Steps to secure setback	YES	NO	N/A

¹ Green infrastructure is a strategically planned network of natural and semi-natural areas, within settlements and around them, in which a wide range of ecosystem services, such as water purification, air quality, space for recreation and climate mitigation and adaptation, are delivered. Examples of green infrastructure are urban parks, alleys of trees, lawns and other pervious surfaces, watercourses and lakes, urban retentions, urban agriculture, gardens, green roofs, green facades, urban park forests and all other nature-based solutions that contribute to adaptation to climate change, particularly to extreme rainfall and heat waves. At the same time, green infrastructure can unburden traditional grey infrastructure systems, e.g. storm water drainage systems in the cases of extreme rainfall.

² Soft measures such as administrative, political, legal, technical, planning, awareness raising, collecting data, monitoring, early warning systems or scientific-research.

³ Structural measures traditionally utilize structural solutions, referred to as “hard protection,” “armouring,” or “grey infrastructure” such as dykes, sea walls, and other built objects.

Did the Municipality take some steps?	Croatia (11) Italy (1)	Croatia (8) Italy (3)	Croatia (5) Italy (8)
Spatial Plan	Croatia (18) Italy (2)	Croatia (0) Italy (6)	Croatia (6) Italy (4)
Land Acquisition	Croatia (9) Italy (0)	Croatia (5) Italy (8)	Croatia (10) Italy (4)
Ban on Construction on the Low Shores	Croatia (15) Italy (2)	Croatia (1) Italy (6)	Croatia (8) Italy (4)
Land Policy Instruments, such as land pooling	Croatia (12) Italy (1)	Croatia (1) Italy (8)	Croatia (11) Italy (3)
Something Else	Croatia (0) Italy (0)	Croatia (0) Italy (0)	Croatia (24) Italy (12)

Has your city/municipality/county taken any steps to secure no construction in other zones in the high risk of inundation??

Respondents Answered	YES	NO	N/A
Croatia	4	11	9
Italy	3	1	8

If none of the previous four questions there is no positive response, please indicate, in your opinion, why the same has not yet started:

Respondents Answered	YES	NO	N/A
We think we can manage without it	Croatia (1) Italy (0)	Croatia (22) Italy (8)	Croatia (1) Italy (4)
We didn't make it	Croatia (3) Italy (0)	Croatia (20) Italy (8)	Croatia (1) Italy (4)

We do not have enough data on the impacts	Croatia (5) Italy (1)	Croatia (18) Italy (7)	Croatia (1) Italy (4)
We do not have enough knowledge of what we should do	Croatia (4) Italy (2)	Croatia (19) Italy (6)	Croatia (1) Italy (4)
Something Else	Croatia (1) Italy (0)	Croatia (22) Italy (0)	Croatia (1) Italy (10)

Has your city/municipality/county participated in the preparation of a national climate change adaptation strategy? If so, in which way?

Respondents Answered	YES	NO	N/A
Croatia	5	13	6
Italy	0	3	9

Are you familiar with the [EU Climate Adapt](#) platform?

Respondents Answered	YES	NO	N/A
Croatia	9	11	4
Italy	3	4	5

Have you ever used it?

Respondents Answered	YES	NO	N/A
Croatia	5	4	15
Italy	2	4	6

Do you know any city/municipality/county/province in your country that is preparing and/or is already carrying out adaptation measures to climate change?

Respondents Answered	YES	NO	N/A

Croatia	9	10	5
Italy	4	0	8

How important do you consider sharing experiences with other Adriatic cities/municipalities/counties on this topic? Rate 1 to 5, with 5 being the rank of highest importance. Please rate overall, as well as the steps in the process.

Respondents Answered	1	2	3	4	5
1)Getting started	Croatia (1) Italy (0)	Croatia (0) Italy (0)	Croatia (1) Italy (4)	Croatia (5) Italy (1)	Croatia (14) Italy (3)
2)Choosing partners to be taken on board	Croatia (1) Italy (0)	Croatia (1) Italy (1)	Croatia (2) Italy (3)	Croatia (5) Italy (2)	Croatia (12) Italy (2)
3)Defining governance context	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (1) Italy (3)	Croatia (4) Italy (2)	Croatia (15) Italy (2)
4)Engaging stakeholders	Croatia (1) Italy (0)	Croatia (0) Italy (0)	Croatia (0) Italy (1)	Croatia (5) Italy (4)	Croatia (14) Italy (3)
5)Analysing vulnerability	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (1) Italy (2)	Croatia (6) Italy (1)	Croatia (13) Italy (4)
6)Defining the vision and goals	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (1) Italy (1)	Croatia (5) Italy (1)	Croatia (14) Italy (5)
7)Setting directions for future	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (0) Italy (0)	Croatia (5) Italy (2)	Croatia (15) Italy (5)
8)Designing the plan	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (2) Italy (3)	Croatia (9) Italy (2)	Croatia (8) Italy (2)
9)Establishing management structure	Croatia (1) Italy (0)	Croatia (0) Italy (0)	Croatia (2) Italy (1)	Croatia (7) Italy (4)	Croatia (11) Italy (3)
10)Monitoring its implementation	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (2) Italy (2)	Croatia (4) Italy (1)	Croatia (14) Italy (4)
11)Helping enforcement	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (2) Italy (3)	Croatia (4) Italy (2)	Croatia (14) Italy (2)

12)Evaluation and review	Croatia (1) Italy (0)	Croatia (0) Italy (0)	Croatia (1) Italy (3)	Croatia (5) Italy (3)	Croatia (14) Italy (2)
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Is there any platform for exchanging such information?

Respondents Answered	YES	NO	N/A
Croatia	4	9	11
Italy	2	4	6

Do you believe that an internet platform in your national language could facilitate building your knowledge on the subject, the exchange of experiences and good practices with the Adriatic cities/counties?

Respondents Answered	YES	NO	N/A
Croatia	21	0	3
Italy	7	0	5

Which information do you consider important for such a platform, rated on a scale from 1 to 5, with 5 being the rank of highest importance..

Respondents Answered	1	2	3	4	5
1) The expected impacts of climate change	Croatia (2) Italy (0)	Croatia (0) Italy (0)	Croatia (1) Italy (4)	Croatia (1) Italy (3)	Croatia (18) Italy (1)
2) Measures taken by other cities/ municipality / county	Croatia (1) Italy (1)	Croatia (1) Italy (0)	Croatia (1) Italy (0)	Croatia (5) Italy (3)	Croatia (14) Italy (4)
3) Guidelines for adapting to climate change	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (1) Italy (1)	Croatia (4) Italy (1)	Croatia (16) Italy (5)
4) Guide to the process of preparing the adaptation plan	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (4) Italy (4)	Croatia (4) Italy (1)	Croatia (13) Italy (2)
5) Possibilities of financing adaptation	Croatia (1) Italy (0)	Croatia (0) Italy (1)	Croatia (2) Italy (1)	Croatia (2) Italy (4)	Croatia (16) Italy (2)

6) Possibilities of mitigating greenhouse gas emissions	Croatia (1) Italy (0)	Croatia (1) Italy (0)	Croatia (3) Italy (2)	Croatia (3) Italy (4)	Croatia (13) Italy (1)
7) Possibility/way of organizing a management framework for successful adaptation to climate change	Croatia (1) Italy (0)	Croatia (1) Italy (0)	Croatia (2) Italy (2)	Croatia (3) Italy (3)	Croatia (14) Italy (3)
8) Something Else	Croatia*(0) Italy (0)	Croatia (0) Italy (0)	Croatia (0) Italy (0)	Croatia (0) Italy (0)	Croatia (0) Italy (0)

Is your city/municipality/county a member of „Covenant of Mayors for Climate and Energy“ [Covenant of Mayors](#) or Mayors Adapt?

Respondents Answered	YES	NO	N/A
Croatia	7	8	9
Italy	8	0	4

Are you implementing SEAP / SECAP? YES / NO / PARTLY

Respondents Answered	YES	NO	N/A
Croatia	5	2	17
Italy	4	1	7

If “NO“, why and do you consider that membership in such a dedicated network could help you initiate adaptation activities to climate change?

Respondents Answered	YES	NO	N/A
Croatia	4	1	19
Italy	0	0	12

Do you think that through adaptation to climate change you could create conditions for a better quality of life for your fellow citizens?

Respondents Answered	YES	NO	N/A
Croatia	19	2	3
Italy	7	0	5

