European Commission

February 2023

Analysis of information provided by the signatories of the charter of the Mission Adaptation to Climate Change

Climate Action

EXECUTIVE SUMMARY

- There are **301 signatory regions** of the EU Mission on Climate Change Adaptation Charter from regions / local authorities in **29 different countries:** in 25 EU Member States and in 17 regions and local authorities from 4 associated countries.
- Of the 301 signatories, the majority have:
  - completed a **risk assessment** (66%),
  - a **regional or local adaptation strategy** in place (80%),
  - a **dedicated team or person** in place responsible for climate change adaptation (70%), and
  - a **dedicated regional budget for adaptation measures** (66%).
- **Temperature increases and / or heatwaves** were the most reported significant **physical impact,** identified by 252 signatories (83%). This was followed by storms, extreme rainfall, windstorms, coastal storms etc. (228; 75%) and drought and water scarcity (205; 68%).
- **Damage to buildings and infrastructure** was the most resported significant **social and economic impact,** identified by 282 respondents (76%). This was followed by economic costs or losses in agriculture (267; 72%) and higher health costs (178; 48%).
- **Financial resources** was the biggest challenge cited, highlighted by **93%** of signatories. Respondents were also asked about familiarity and use of adaptation funding sources:
  - There is a relatively high level of familiarity with **national, regional, and local funds –** 70-80% either have used or intend to use these sources;
  - Similarly, 89% of signatories have used, intend to use or are familiar with **Cohesion funding** sources.
  - There appears to be a higher level of intention to use **Horizon Europe,** with 132 signatories (44%) stating they intend to access this funding.
  - There appear to be substantial knowledge gaps where it comes to both **EIB (European Investment Bank) funding** and **private / commercial bank funding.** Only a small subset of signatories have actually accessed funding from either of these sources in the past, 8 to 9% in both cases.
- **Scientific data, risk assessment** is an identified challenge among 51% of signatories and **knowledge** is cited as a specific need by 72%.
- **Financial advice** is a specific need identified by 61% of signatories, and by a greater proportion of urban regions (69%) than Mixed (61%) or Rural regions (56%).
- **Citizen support** was cited relatively frequently as a challenge by signatories (115; 38%) and this topic, along with Citizen engagement referenced relatively frequently in open text responses to the survey.

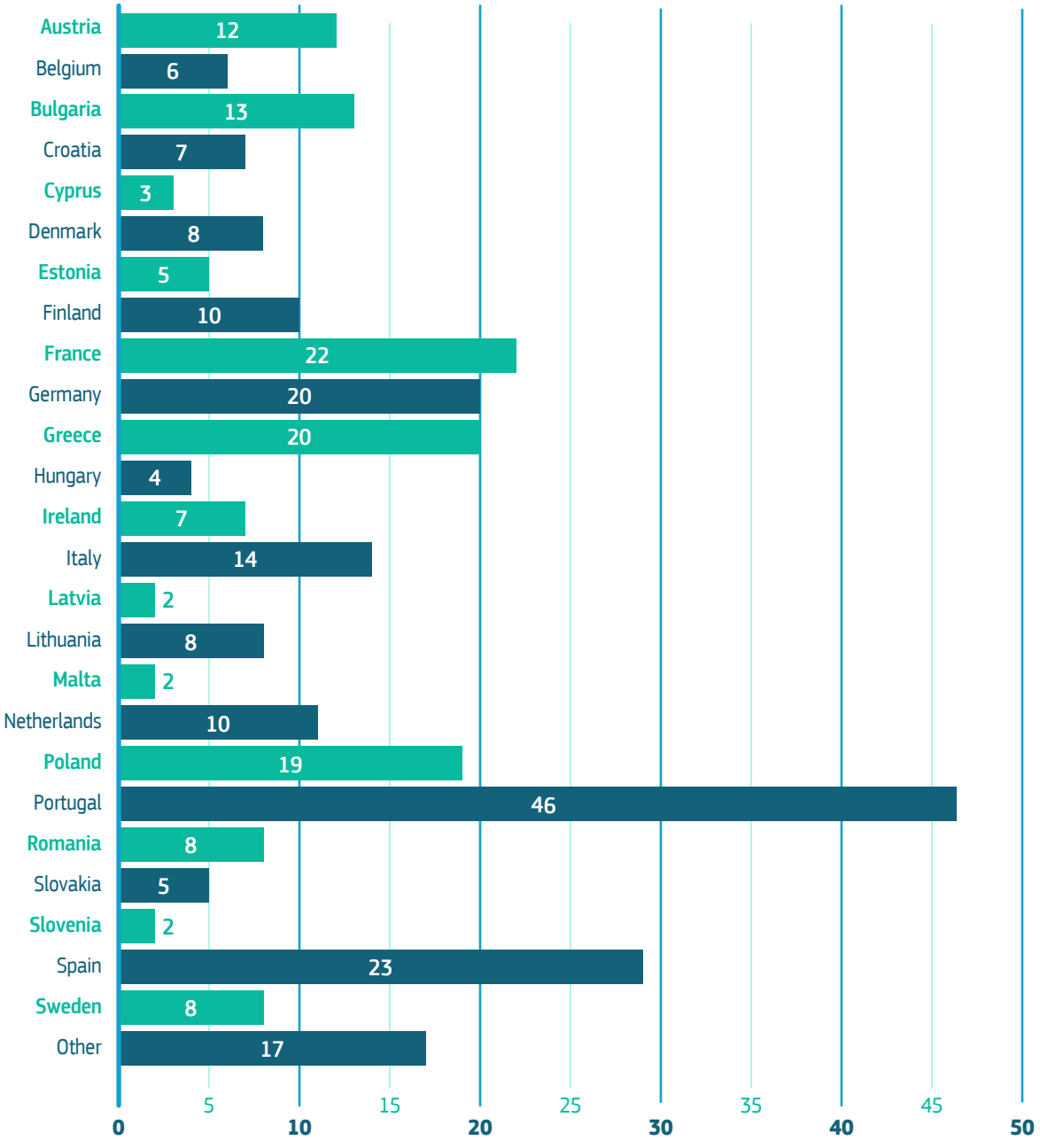
All information in this document is based on responses to the EU Survey “Mission Adaptation to Climate Change: challenges and opportunities for the regions and communities”. Information has been provided by regions and authorities themselves and is presented as received, in aggregate, without verification, and for illustrative purposes only. As such, the risks inherent in relying on self-reported data to draw conclusions should be considered in analysing all information herein.

1. PROFILE

Of the 581 total respondents to the survey, 373 applications were accepted as suitable, with the applicant region having outlined past and ongoing adaptation measures and detailed their ambitions regarding climate change adaptation. Potential signatories also indicated their willingness to sign the Mission Charter as a public expression of their intent and alignment with the Mission objectives regarding adaptation and resilience

Of this group, **301 regions and local authorities** have returned a signed Mission Charter. This group, referred to in this document as **'signatories',** represents regions and local authorities in 29 different countries: 25 EU Member States and 4 EFTA / candidate / potential candidate countries. Figure 1 shows the number of signatories in each country.

***Figure 1** - Signatories by Country, n=301*



2.

In addition to a broad spread across Europe, signatories also represent both a diverse range of geographical characteristics and population sizes, as shown in Figures 2 and 3 below.

Figure 2 - *Signatories by Type, n=301*

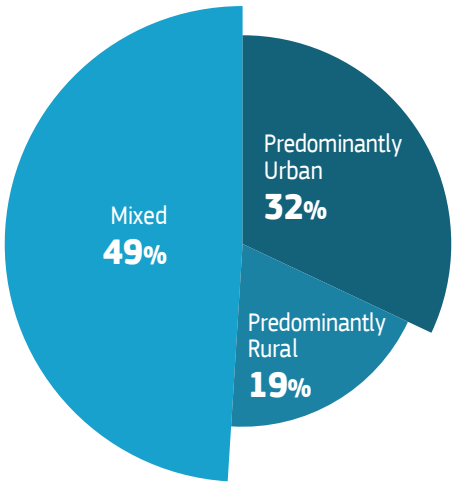
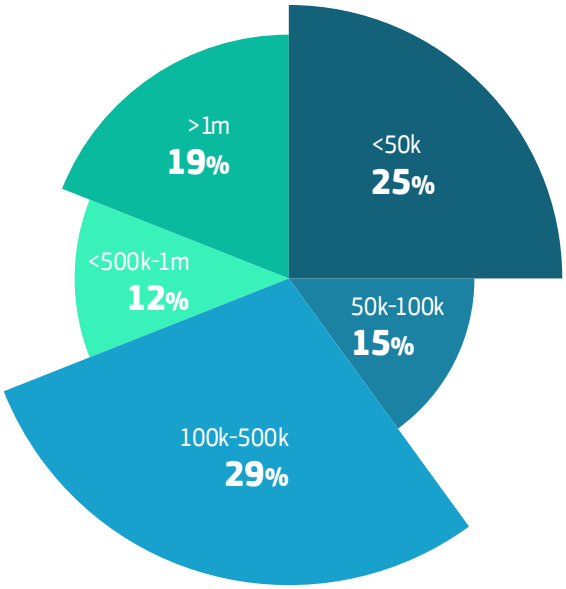


Figure 3 - *Signatories by Population size, n=301*



Signatories applying to the Charter reflected a broad range of administrative structures, from individual municipalities and town councils to inter-municipality and geographical groupings at sub-regional and regional levels. In each case, the region was required to be a legal entity that has responsibility for adaptation measures in a defined administrative area.

2. IMPACTS

In seeking to receive first-hand information on the climate change impacts being experienced by individual regions, as they perceive them, respondents were asked to identify the most significant physical, social, and economic impacts in their regions and local administrative areas. These results have been collated and are presented here in aggregate form.

Physical

Regions and local authorities were requested to identify the most significant physical impacts of climate change experienced in their regions and communities. Of the options presented, temperature increases and / or heat waves were the most reported significant physical impact, identified by 252 signatories (83%). This was followed by storms (including extreme rainfall, windstorms, coastal storms) (228; 75%) and drought and water scarcity (205; 68%). All other listed physical impacts were identified by at least 31% of the signatories and other unlisted physical impacts reported more than once included landslides, avalanches, and rising groundwater.

Table 1a - *Q. What are the most significant physical impacts of climate change experienced in your region or community? [multiple responses possible]*

Physical Impacts	% of Signatories
Wild fire	34%
Temperature increase, heat wave	83%
Storms, including extreme rainfall, wind storm, coastal storm	75%
River flooding	56%
Coastal erosion, sea level rise, coastal flooding	36%
Drought and water scarcity	68%
Changing ecosystems	59%
Changing season	41%
Other	1%

Table 1b - *Q. What are the most significant physical impacts of climate change experienced in your region or community? [multiple responses possible] – by Type*

Physical Impacts	Predominantly Rural	Predominantly Urban	Mixed	Total
Wild fire	44%	22%	37%	**34%**
Temperature increase, heat wave	77%	89%	82%	**83%**
Storms, including extreme rainfall, wind storm, coastal storm	65%	79%	78%	**75%**
River flooding	42%	54%	63%	**56%**
Coastal erosion, sea level rise, coastal flooding	30%	34%	40%	**36%**
Drought and water scarcity	68%	60%	73%	**68%**
Changing ecosystems	72%	52%	59%	**59%**
Changing season	54%	42%	35%	**41%**
I don't know	2%	0%	0%	**0%**
Other	12%	7%	9%	**9%**

A number of emerging trends are notable from responses. For instance, of the regions identifying wildfires (n=97), while the majority were in southern / Mediterranean countries, a not insignificant subset of regions (n=24) were further north, including in Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Sweden, and Norway, where wild fires may not traditionally be expected.

When regions are classified by self-identified type (Predominantly Urban / Predominantly Rural / Mixed), further variation by biogeographical type of region is notable:

- Drought / water scarcity was the joint most frequently reported impact by Predominantly Rural regions (73%) (with temperature increases / heatwaves) but was reported less by Predominantly Urban regions (60%).
- River flooding was a significant impact for 61% of Mixed regions but only 40% of Predominantly Rural regions and 51% of Predominantly Urban regions.

These reported figures may mask the fact that certain physical impacts will be of broad distribution across the EU while others will necessarily depend on the specific features particular to individual regions. For instance, coastal flooding / erosion and sea level rises were highlighted by only 36% of signatories, but of course many inland regions and local authorities have applied to the charter. Therefore, it should be noted that a proportionally low incidence of reported impacts does not necessarily entail an impact is of lessor importance.

Social and Economic

Respondents to the survey were also asked to identify the most significant social and economic impacts experienced in their regions and communities. Of the options presented, damage to buildings and infrastructure was the most widespread significant social and economic impact, identified by 282 respondents (76%). This was followed by economic costs or losses in agriculture (267; 72%) and higher health costs (178; 48%).

Other social and economic impacts not listed in the survey but reported by respondents more than once included: higher public service costs (emergency response, energy poverty, welfare, adaptation), damage and loss of forestry, damage and loss to agrifood / fisheries, water availability, and higher infrastructure management costs.

***Table 2a** - Q. What are the most significant social / economic impacts of climate change experienced in your region or community? [multiple responses possible]*

Social and Economic Impacts	% of Signatories
Population migration	12%
Higher health costs	48%
Higher costs for social services	33%
Damage to building and infrastructure	79%
Economic costs or losses in tourism	40%
Economic costs or losses in industry	26%
Economic costs or losses in agriculture	72%
Other	9%

***Table 2b** - Q. What are the most significant social / economic impacts of climate change experienced in your region or community? [multiple responses possible] – by Type*

Social / Economic Impacts	Predominantly Rural	Predominantly Urban	Mixed	Total
Population migration	19%	12%	9%	12%
Higher health costs	30%	64%	44%	48%
Higher costs for social services	32%	44%	26%	33%
Damage to building and infrastructure	65%	79%	85%	79%
Economic costs or losses in tourism	40%	37%	42%	40%
Economic costs or losses in industry	25%	23%	29%	26%
Economic costs or losses in agriculture	91%	37%	87%	72%
Other	9%	11%	7%	9%

Many of the emerging trends relating to social and economic impacts by type of region / community are somewhat intuitive, namely in that:

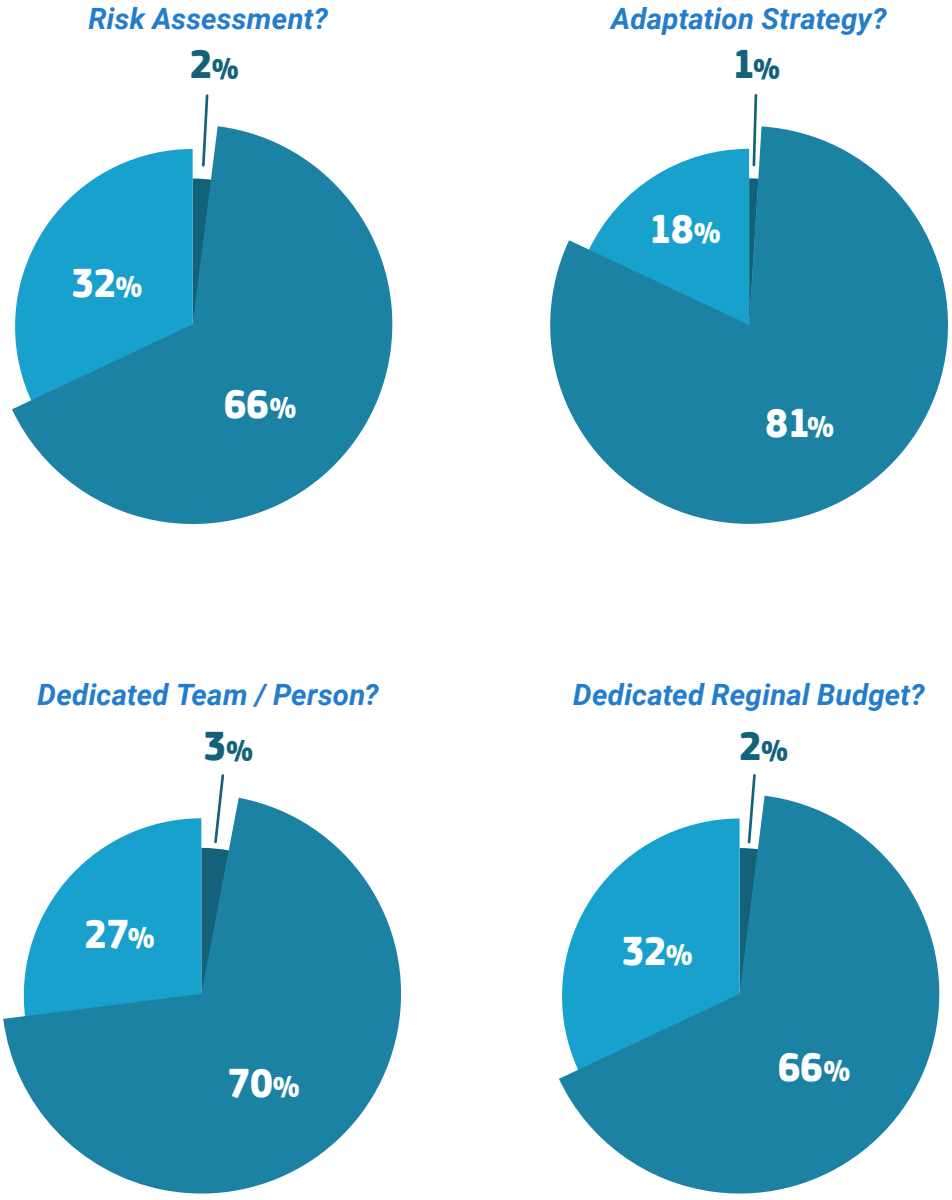
- Economic losses in agriculture were the second-most reported socioeconomic impact (72%) overall but was reported by 91% of all predominantly rural regions;
- Damage to buildings and infrastructure, while reported by 79% of all signatories, was reported as a significant impact by a higher proportion of Mixed regions (85%) than either Predominantly Urban (79%) or Predominantly Rural (65%) regions; and
- Higher health costs were reported as a significant impact by a far higher proportion of Predominantly Urban regions (64%) than either Mixed (44%) or Predominantly Rural (30%).

As above, it should be noted that higher or lower incidence of reported impacts may be more reflective of the location or geographical character of the signatory regions than of the relative importance of a stated impact.

3. ADAPTATION

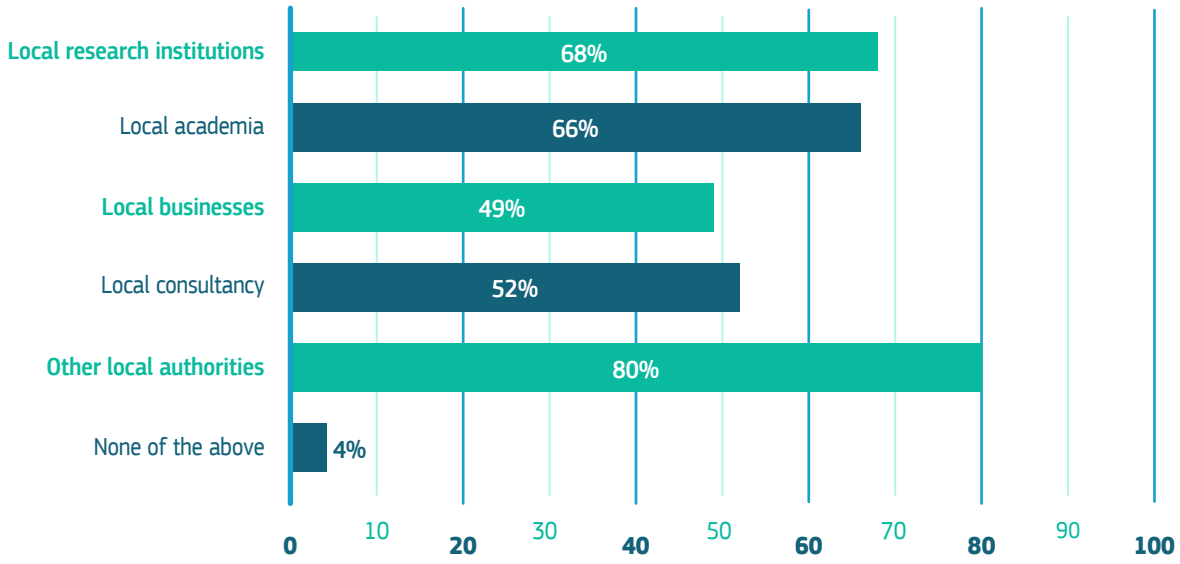
Respondents to the survey were asked a number of questions relating to their adaptation posture and the measures that have been implemented in their regions and communities. Of the 301 signatories, the majority had completed a climate risk assessment (66%), had a regional or local adaptation strategy in place (81%), had a dedicated team or person in place responsible for climate change adaptation measures (70%), and had a dedicated regional budget for implementation of adaptation measures (66%).

Figure 4 a-d – *Climate Change Adaptation Postures of Regions and Local Authorities*



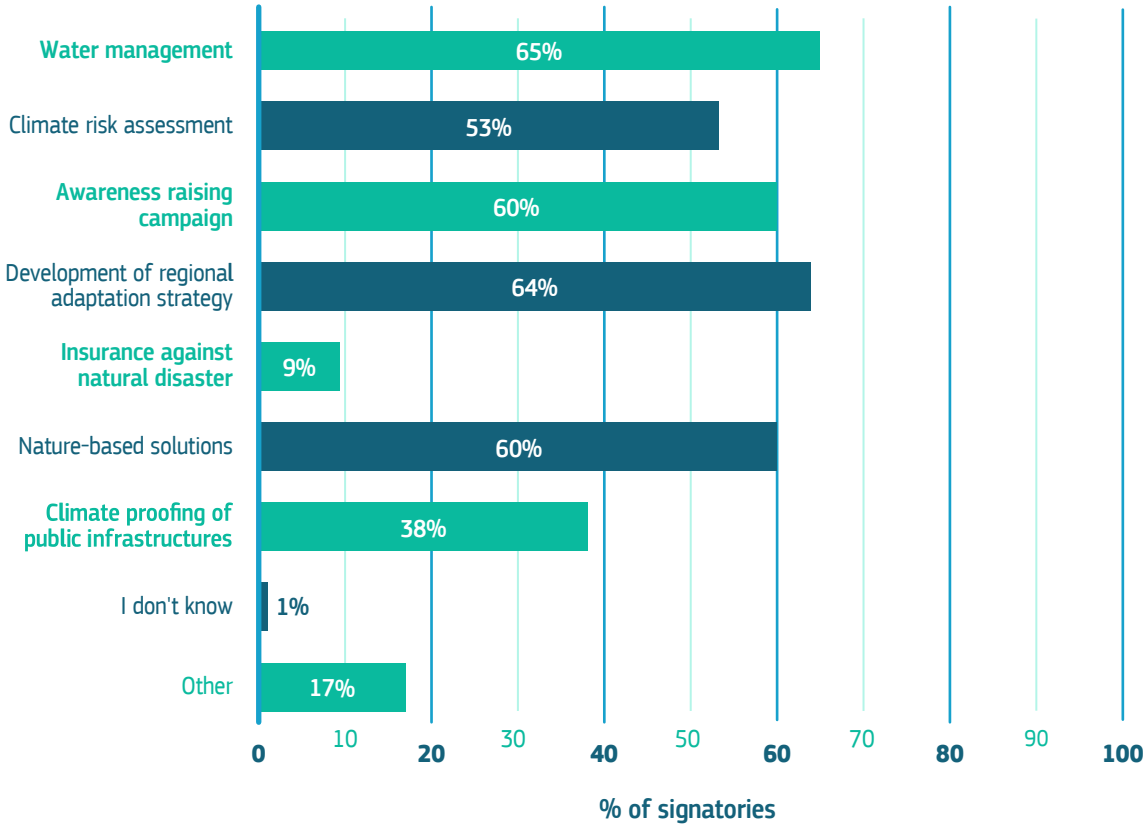
In addition to the status of various adaptation-related policies, strategies and resources being in place, respondents were asked to identify their collaboration partners in undertaking climate change adaptation measures, with 80% identifying that they collaborate with other local authorities, as shown in Figure 5 below. Research institutions and academia were also collaboration partners for the majority of signatories (68% and 66% respectively), and about ½ cited collaboration with either local consultancy and with local business. A very small minority (4%) stated that they do not collaborate with any local organisations or agencies.

Figure 5 - *Q. With which of the following do you collaborate on adaptation measures? [multiple responses possible]*



Respondents were also asked what types of adaptation measures they had implemented in their areas, with responses outlined in Figure 6 below. Among the signatories of the Charter, water management was the most reported and had been implemented by 65% of signatories, and insurance against national disasters was the least reported substantive measure, with 9% of signatories report having implemented this measure.

Figure 6 - *Q. Which adaptation measures have you implemented in your area? [multiple responses possible]*



51 signatories (7%) included detail on additional other specific measures they had implemented. While many of these refer to specific examples of measures covered by the larger categories outlined in the questionnaire, others include e-monitoring of nature-based solutions, land management, assisting municipalities with SECAP (Sustainable Energy and Climate Action Plan) planning, administrative solutions, and regional cooperation, establishing adaptive capacity of various sectors, and looking into synergies between adaptation and other projects, among others.

4. CHALLENGES AND SPECIFIC NEEDS

Challenges

Respondents were asked what the main challenges to implementation of climate change adaptation measures in their areas were. The overwhelming majority of respondent signatories (282; 93%) cited financial resources among the challenges they face. Only 20 signatories did not highlight this as a challenge. Of this 20, however, 7 identified financial advice as one of their specific needs (further on needs below). 155 signatories (51%) also cited scientific data and risk assessment challenges.

Table 3a - *What are the main challenges with implementing adaptation measures in your area?*

Challenges	% of Total Signatories
Political support	40%
Financial resources	93%
Scientific data, risk assessment	51%
Support of the regional / local community	41%
Citizens' support	38%
I don't know	1%
Other	12%

Citizen support was cited as a challenge by a similar number of signatories (115; 38%) as political support (122; 40%). However, only 56 signatories have cited both citizen and political support challenges in common, c. 50% of each cohort. The proportions of each type of region identifying each of the listed challenges are shown in the table below.

Table 3b - *Challenges identified - by type of region / community*

Challenges	Predominantly Urban	Predominantly Rural	Mixed
Political support	44%	32%	41%
Financial resources	95%	93%	93%
Scientific data, risk assessment	56%	47%	50%
Support of the regional / local community	31%	49%	44%
Citizens' support	42%	39%	35%
I don't know	0%	0%	1%
Other	13%	4%	15%

Needs

Respondents were asked to identify what their specific needs are in order to facilitate adaptation actions. Responses from signatories were mixed, with the largest single need identified being 'Knowledge', cited by 72% of signatories.

***Table 4a** - Specific needs identified - overview of responses*

Specific Needs	% of Total Signatories
Risk assessment	57%
Cross-border cooperation	50%
Financial advice	61%
Knowledge	72%
Research	57%
Private sector support	56%
Support at national level	64%
Other	8%

This need for knowledge is replicated across most countries, geographical locations and types of regions. However, there is a measure of disparity between types of regions as regards the other specific needs; 69% of urban regions require financial advice while only 61% of rural regions and 56% of mixed communities reported the same need.

Private sector support is cited as a need by more urban regions (61%) than mixed (54%) and rural regions (51%). Further needs identified by type are outlined below in Table 4b.

***Table 4b** - Specific needs identified - by type of region / community*

Specific Needs	Predominantly Urban	Predominantly Rural	Mixed
Risk assessment	57%	54%	57%
Cross-border cooperation	49%	51%	51%
Financial advice	69%	61%	56%
Knowledge	72%	67%	73%
Research	52%	60%	60%
Private sector support	61%	51%	54%
Support at national level	64%	65%	63%
Other	8%	7%	7%

Other needs not listed in the survey but identified by respondents include regulatory frameworks, access to citizen interaction and engagement tools, support at EU level, dedicated human resources and capacity building, and the need for national legislation, among others.

5. FUNDING AND SPECIFIC NEEDS

As stated above, 66% of the signatories have stated that there is a dedicated regional budget in their region for climate adaptation measures. However, the fact that 34% either don't know or don't have such a budget highlights both the need for the provision of funding at this level and / or the need to raise awareness of the funding sources which are currently available. On this latter point, survey respondents were also asked to identify the adaptation sources of funding they had used, had intended to use, or knew about. The responses to this question are outlined in Table 5 below.

Table 5 - *Q. Which sources of adaptation financing have you used, do you intend to use, do you know or don't you know?*

Sources of adaptation financing	I have used	I intend to use	I know	I don't know
Cohesion Policy Funds (ERDF, Interreg)	48%	26%	14%	11%
LIFE Programme	31%	31%	24%	14%
European Rural Development funds	22%	21%	30%	28%
Horizon Europe	25%	44%	20%	11%
Other EU funds	27%	26%	18%	29%
European Investment Bank financing	9%	12%	32%	47%
Private/commercial banking financing	8%	10%	31%	50%
National funds	62%	19%	11%	8%
Regional funds	52%	17%	12%	19%
Own local funds	56%	14%	10%	20%
Other	7%	12%	12%	69%

A number of patterns emerge from these responses:

- It's clear that there is a relatively high level of familiarity with national, regional and local funds – 70-80% either have used or intend to use these sources and a further 10-12% are familiar with these sources;
- Similarly, 89% of signatories have used, intend to use or are familiar with Cohesion funding sources. There is comparatively less use of LIFE and less familiarity with European Rural Development funding.
- While regions have used Horizon Europe funding at a comparable level to LIFE and other non-Cohesion EU funds there appears to be a higher level of intention to use (and familiarity with - as a necessary prerequisite of such an intention) Horizon Europe, with 132 signatories (44%) stating they intend to access this funding source.
- There appear to be substantial knowledge gaps where it comes to both EIB (European Investment Bank) funding and private / commercial bank funding. In each case, a set of c.50% of signatories have no knowledge of one of the two funding sources, and 37% of the 301 have no knowledge of either. It is also clear that only small subset of signatories have actually accessed funding from either of these sources in the past, (8-9%) in both cases.
- As stated above, of the 20 signatories who did not identify financial resources as a challenge, 7 nevertheless identified financial advice as one of their specific needs, so there appear to be only 13 signatories who state they either have no financial requirements when it comes to adaptation or the respondent states that they do not know that they do.

ANNEX 1 – IMPACTS, CHALLENGES AND NEEDS BY COUNTRY

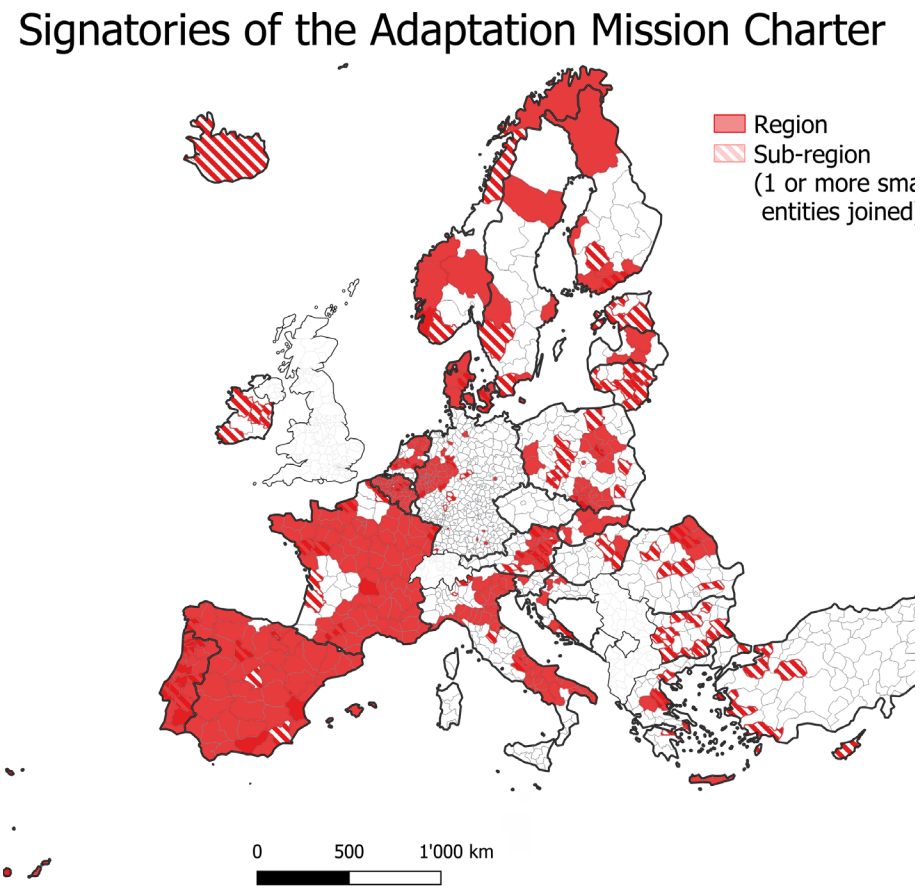
Physical Impacts	AU	BE	BG	HR	CY	DK	EE	FI	FR	DE	EL	HU	IE	IT	LV	LT	MT	NL	PL	PT	RO	SK	SI	ES	SE	Other	Total	% of Signatories
Wild fire	4	2	4	3	0	1	1	2	4	1	8	1	0	10	1	1	0	3	2	31	1	1	1	11	2	7	102	**34%**
Temperature increase, heat wave	11	5	10	7	2	3	4	8	21	19	20	4	3	13	0	7	1	11	17	41	6	5	2	17	5	10	252	**83%**
Storms, including extreme rainfall, wind storm, coastal storm	11	6	5	7	1	7	5	8	11	13	15	3	7	14	1	6	1	11	17	32	4	5	2	14	6	16	228	**75%**
River flooding	8	5	5	2	0	6	2	5	18	12	7	1	5	10	2	5	0	8	7	19	4	3	2	15	6	12	169	**56%**
Coastal erosion, sea level rise, coastal flooding	0	2	2	3	0	6	2	6	7	2	8	0	6	9	0	1	1	4	0	25	0	0	0	13	4	8	109	**36%**
Drought and water scarcity	6	5	7	4	3	3	2	4	21	19	13	3	3	12	0	0	1	11	15	33	5	5	1	19	1	9	205	**68%**
Changing ecosystems	11	5	9	5	2	5	3	8	16	9	8	3	4	9	1	4	0	6	4	26	6	5	0	14	4	12	179	**59%**
Changing season	8	1	8	6	3	3	1	7	7	8	11	3	2	4	1	5	1	4	6	9	4	2	1	8	2	9	124	**41%**
Other	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	**1%**

Social and Economic Impacts	AU	BE	BG	HR	CY	DK	EE	FI	FR	DE	EL	HU	IE	IT	LV	LT	MT	NL	PL	PT	RO	SK	SI	ES	SE	Other	Total	% of Signatories
Population migration	1	1	2	1	0	0	0	2	0	0	3	2	0	1	0	0	0	1	4	8	3	1	0	2	0	4	36	10%
Higher health costs	4	4	2	5	0	2	4	7	11	11	7	2	3	7	1	4	1	4	12	28	3	3	2	11	3	4	145	39%
Higher costs for social services	2	2	1	4	0	0	1	4	8	8	8	1	2	5	0	2	0	3	10	20	3	1	0	6	2	6	99	27%
Damage to building and infrastructure	11	6	8	6	3	7	5	8	19	14	16	3	7	12	2	6	0	9	12	33	3	3	2	20	8	16	239	64%
Economic costs or losses in tourism	6	2	4	6	1	2	1	2	11	1	11	1	4	9	0	3	0	3	4	27	4	2	1	8	0	8	121	33%
Economic costs or losses in industry	1	2	7	3	1	2	0	4	7	5	2	0	3	3	0	3	0	4	5	13	3	1	0	4	1	6	80	22%
Economic costs or losses in agriculture	12	5	8	5	2	4	3	6	20	14	9	4	4	12	2	4	0	8	10	37	5	5	2	19	3	13	216	58%
Other	0	0	0	0	1	0	0	2	0	0	2	0	0	3	0	1	1	2	1	5	1	1	0	4	0	2	26	7%

Challenges	AU	BE	BG	HR	CY	DK	EE	FI	FR	DE	EL	HU	IE	IT	LV	LT	MT	NL	PL	PT	RO	SK	SI	ES	SE	Other	Total	% of Total Signatories
Political support	4	3	0	2	2	3	2	3	9	11	7	1	4	11	1	2	1	5	8	14	3	3	1	7	5	10	122	40%
Financial resources	11	5	13	7	3	6	5	8	21	18	19	4	6	14	1	8	1	10	19	46	6	5	2	20	7	17	282	93%
Scientific data, risk assessment	4	4	5	5	2	2	3	7	10	5	11	2	3	11	2	5	0	5	9	24	4	3	1	15	2	11	155	51%
Support of the regional/local community	4	3	1	1	0	2	1	2	14	8	10	3	3	9	0	3	0	7	11	20	2	2	2	8	3	4	123	41%
Citizens' support	2	2	0	1	1	3	1	1	10	7	10	2	3	9	0	5	0	6	11	18	2	1	1	13	1	5	115	38%
I don't know	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1%
Other	0	0	0	1	0	3	0	4	1	5	0	0	1	2	1	1	0	3	1	6	0	0	0	2	2	4	37	12%

Specific Needs	AU	BE	BG	HR	CY	DK	EE	FI	FR	DE	EL	HU	IE	IT	LV	LT	MT	NL	PL	PT	RO	SK	SI	ES	SE	Other	Total	% of Total Signatories
Risk assessment	7	3	5	4	3	4	2	7	8	9	11	4	6	13	2	6	0	4	13	19	6	5	1	12	4	13	171	**57%**
Cross-border cooperation	7	4	4	4	0	4	2	7	12	7	7	1	3	8	2	4	0	8	10	24	5	2	2	9	5	11	152	**50%**
Financial advice	8	3	13	5	1	3	1	4	16	11	13	3	6	7	0	7	0	5	10	30	6	2	0	14	4	13	185	**61%**
Knowledge	9	3	3	7	3	5	5	9	16	14	13	3	6	10	2	7	0	11	15	30	4	4	2	15	5	15	216	**72%**
Research	8	4	9	4	2	5	5	9	8	7	11	3	5	9	0	4	1	6	11	18	6	1	2	13	5	17	173	**57%**
Private sector support	5	4	4	5	2	4	2	6	15	13	9	2	6	8	2	6	0	6	10	24	3	2	1	14	2	13	168	**56%**
Support at national level	5	1	11	6	3	5	4	7	12	12	12	2	7	11	2	6	0	8	15	26	4	3	2	10	5	13	192	**64%**
Other	0	0	0	0	0	2	0	0	4	3	0	0	0	1	0	1	0	1	2	2	0	0	0	4	2	1	23	**8%**

ANNEX 2 – MAP OF POTENTIAL SIGNATORIES



*This map is for illustration purposes only, is an approximation based on the best available public information, and has not been verified by applicant regions. Locations are approximate, refer to only those regions expressing an interest in signing the Charter, and may not conform to true municipal / administrative / regional boundaries.

PDF ISBN 978-92-68-00409-8 doi: 10.2834/397304 ML-04-23-196-EN-N