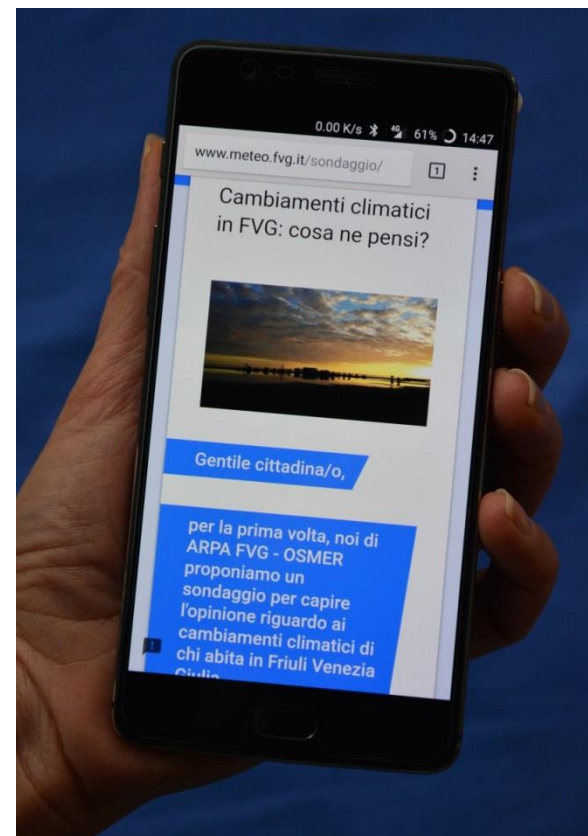# Surveying climate change knowledge and perception among the local population: a fruitful low cost experience carried out employing the assets and media of a local weather forecast service

Federica Flapp, Stefano Micheletti, Sergio Nordio
ARPA FVG – OSMER

Why this presentation

Institutional organizations
in charge of weather forecast and climate studies
are being increasingly involved in
communication and educational activities regarding climate change.

Local weather & climate centres, particularly, can act as a bridge,
connecting global climate change evidence and policies
to the local context, by capitalising on their own specific assets.

Understanding the views, concerns and attitudes of the local audience
about climate change is essential in this process:
hence the need and purpose of a tailored survey.

But professional surveys can be hardly affordable by local organizations.

Here is how we carried out an online survey involving > 3400 respondents,
employing only in-house resources and exploiting the assets which are
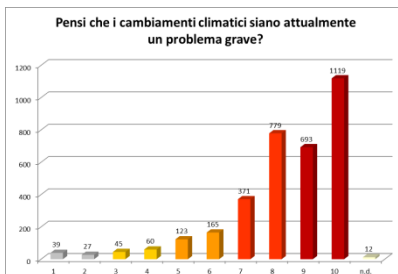typical of weather forecast services. And the results we got.

contents:

The local context

The survey: how

The survey: results

Local context

- geographical location and dimension
- institutional tasks/ activities
- assets and strengths
- role in tackling climate change
- communication and education activities

Friuli Venezia Giulia region

Friuli Venezia Giulia is a crossroads from several points of view:
Geographical - Climatological - Meteorological - Linguistic – Ethnical – Cultural

1.223.000 inhabitants, about 8.000 km²
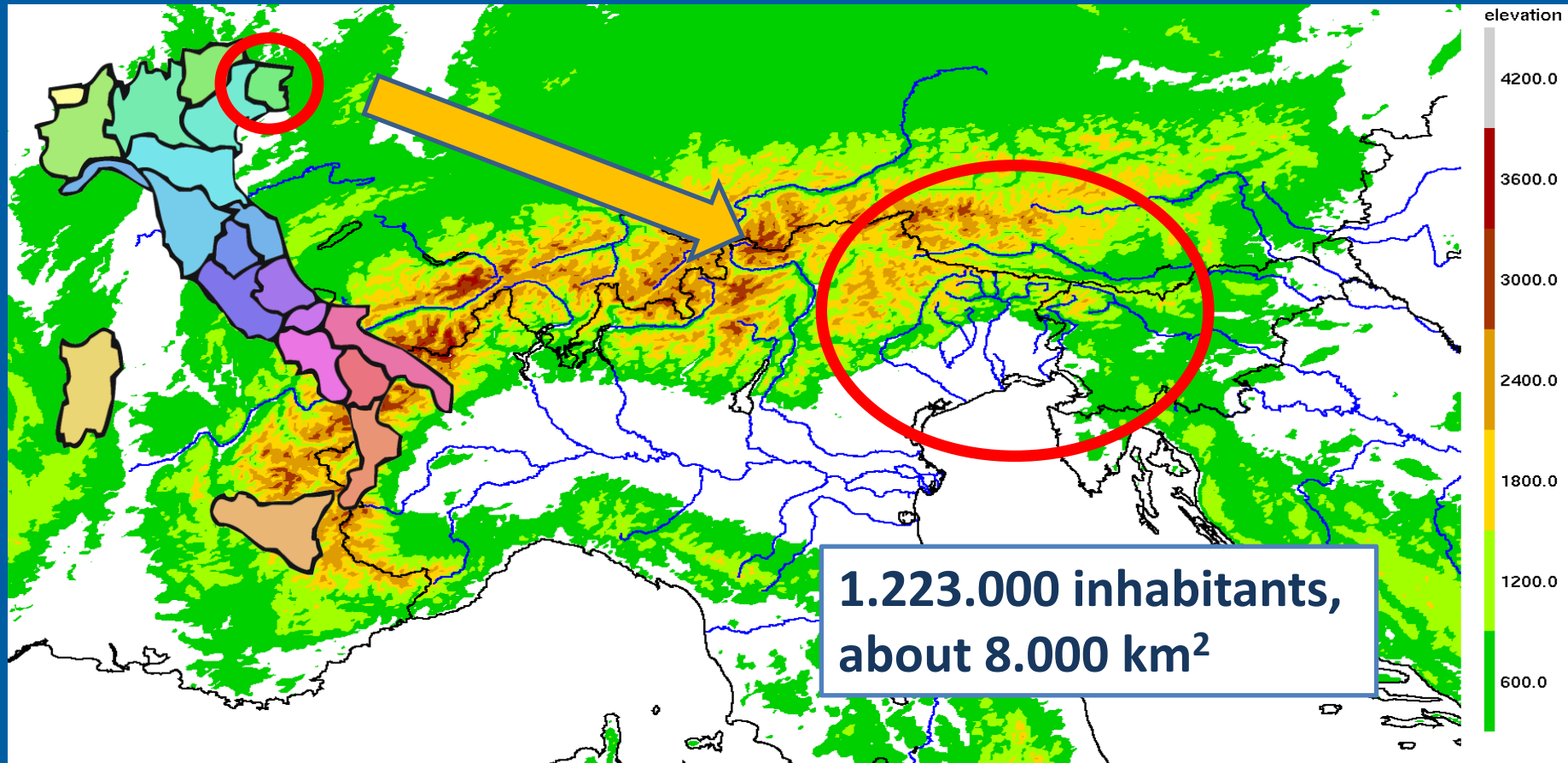
→ here **"region"/"regional"** refer to
the sub-national first-level administrative divisions of Italy

High diversity of climates, environments, landscapes, production activities…

Regional Environmental Protection Agency

OSMER - Regional Meteorological Observatory

ARPA FVG – OSMER
Regional Meteorological Observatory

an institutional local organization in charge of weather forecast and climate studies
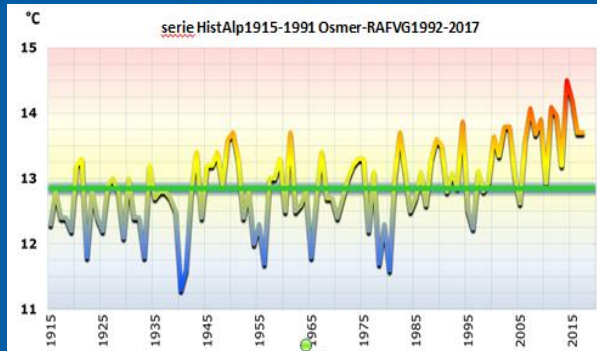
DATA

WEATHER FORECAST

CLIMATE

CLIMATE CHANGE

COMMUNICATION

Staff: 16 people, mostly committed to weather forecast & related activities
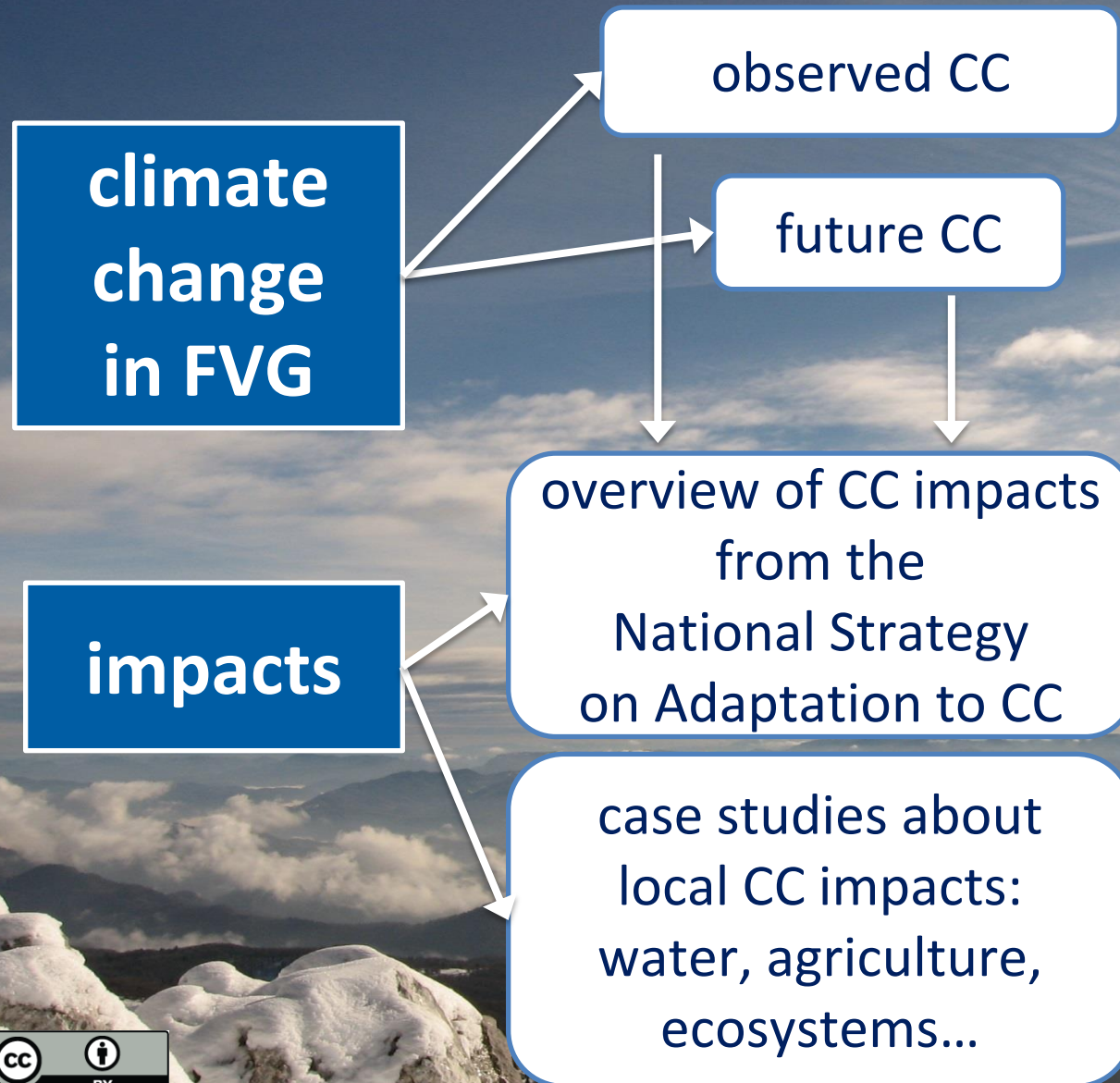
Assets and strengths

- datasets and statistics, producing locally relevant knowledge about climate and climate change

- being considered as a trusted messenger by the local audience

- reaching a (locally) relevant number of people through the Internet and the mass media
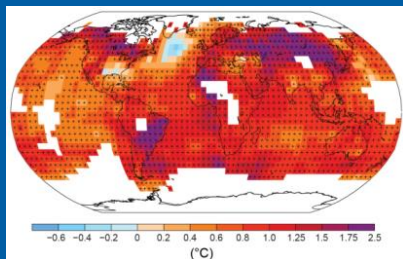+ educational activities

bridging the gap

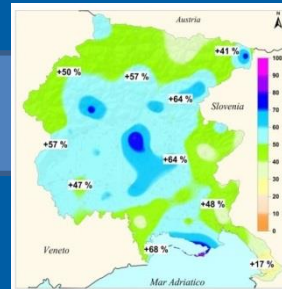connecting global climate change evidence and worldwide policies to the local context and population

LOCAL action

GLOBAL
climate_change
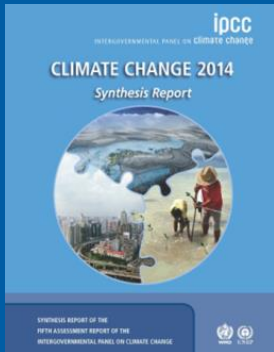
ARPA FVG – OSMER:
climate change in FVG
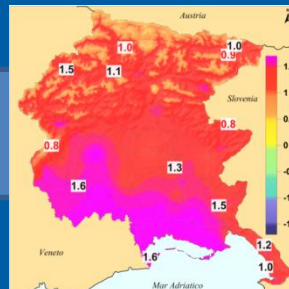
helping to overcome the «psychological distance» which often hinders climate change communication and outreach

Communication and education are at the core of the "bridging" process

In Friuli Venezia Giulia
ARPA - OSMER
has been carrying out communication and educational activities regarding weather science and climate since the early nineties.

These involve both
formal education and
informal education contexts

Formal education

Besides usual "lessons",
interactive educational experiences
(often involving peer-tutoring)
have been developed through
collaborations with local schools
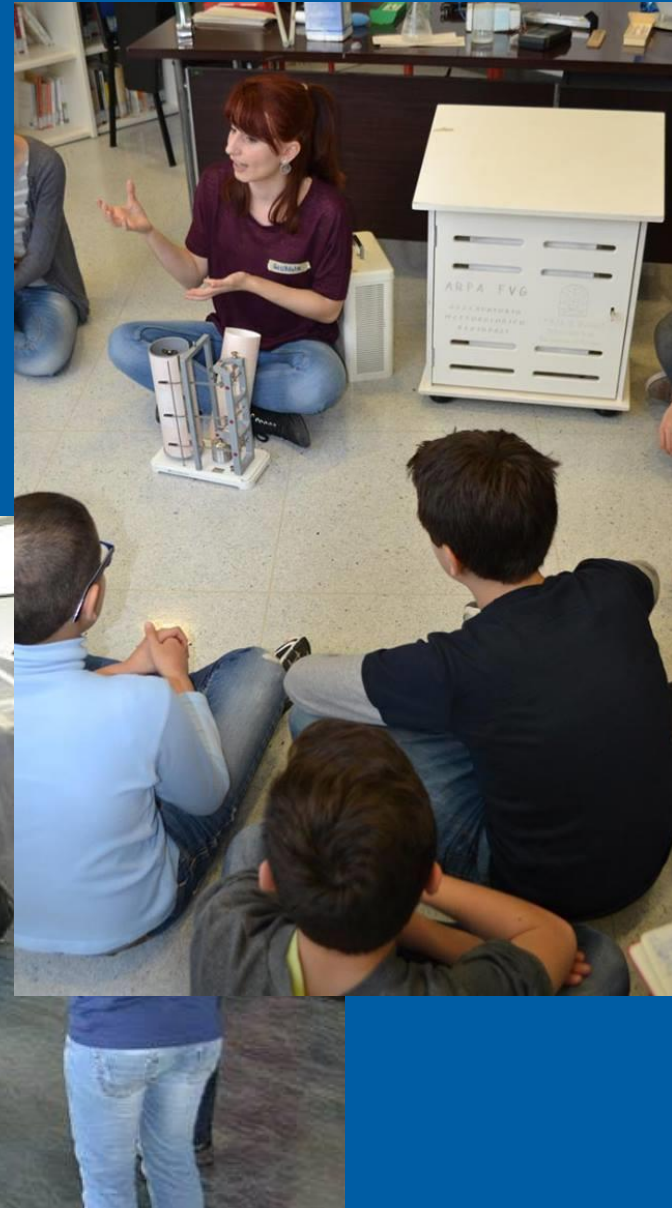
Addressing the general public

Communication activities addressing the general public include
organized events (e.g. conferences)
as well as initiatives in informal settings
(eg. food and wine events or sport events).

Climate change communication in informal education contexts

«Friuli Doc», popular event promoting local and typical food and wine in Udine (September): attendance 1.300.000, 150 exhibition stands, 100 shows, more than 500 artists…

Weather and climate dissemination in informal education contexts

«Barcolana» in Trieste: world's most crowded regatta (over 2072 boats and 25.00 sailors in 2017) and 300 related events in 10 days

Web and social media

ARPA FVG - OSMER reaches a relatively relevant number of people through its website (1.600.000 average monthly visits), social networks (about 1800 followers on Twitter and 10.000 on Facebook) and collaborations with the mass media.

«know your audience»

Understanding the views, concerns and attitudes
of the local audience about climate change
is essential for effective communication:

hence the need and purpose of a tailored survey

On the other hand, communication & education collaborations and
assets were involved and proved very useful in setting up the survey

The survey: how

- Drafting and testing the questionnaire
- Piloting and doing the on-line survey
- Promoting the survey

A do-it-yourself survey

No funding allocated

2 members of the staff involved
(fitting this task among their usual duties) + 1 trainee

Purpose: "taking the pulse", getting a first picture of what our audience know and think about climate change.
Not aiming at social or psychological analysis.

Drafting the questionnaire

The questionnaire was drafted by the ARPA-OSMER staff, according to general guidelines/handbooks about opinion polls/surveys and following the example of sound opinion polls (e.g. Eurobarometer):

- it was composed of **mostly close - ended questions** (including age, gender, residency questions);

- most of the questions were of a **multiresponse** type and had fields available for additional comments;

- **rating scales** were also employed in some questions.

In the first draft, some questions were put in two/three different ways, in order to test them and select the clearest phrasing and form.

Steps and key points

Two piloting phases (May-October 2017):
testing the questions with high school students;
testing the on-line questionnaire during public events.

Final version published on 8th November 2017
(launch at the same time as COP23). Promoted
exploiting weather centre's communication media.

Kept open until the public presentation of the
new regional study about climate changes
and their impacts in FVG (10th March 2018).

Questionnaire hosted on an interactive online
platform (Google forms), which provided some
automatic analysis of the answers.

At the end, data downloaded and processed in
Microsoft Excel (basic statistics).

Piloting the survey (1): involving high school students in testing the questionnaire

May 2017:

35 students
(17-18 year old)
of the European
High School
"Uccellis" (Udine)
filled in a
draft questionnaire,
including
different versions
of each question,
and they processed
their own answers.

To be tested!
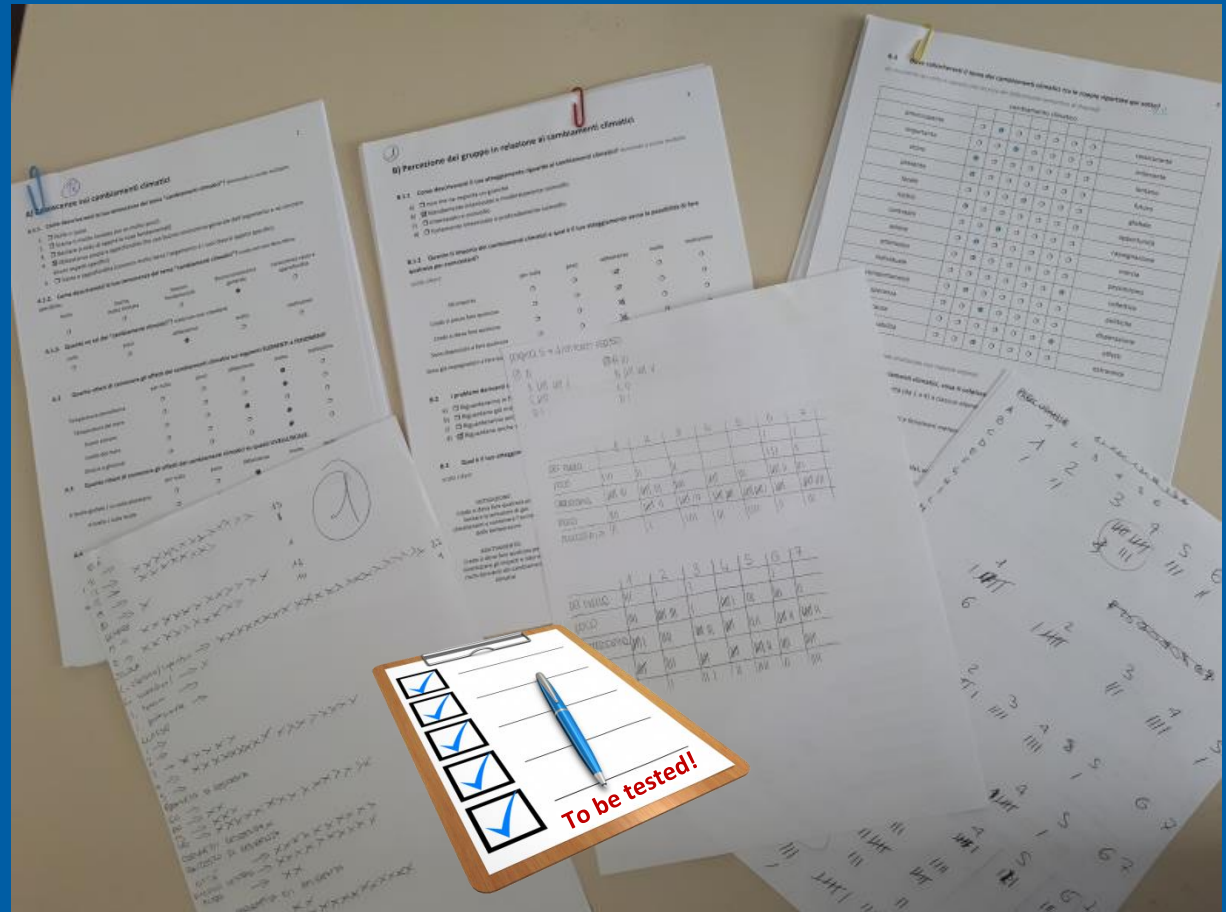
Their feedback about the survey approach was very useful to improve the questionnaire.

ARPA FVG meteo

Cambiamenti climatici in FVG: cosa ne pensi?

CAUSE

Secondo te, i cambiamenti climatici sono causat
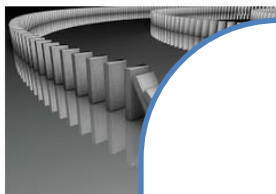
Cambiamenti climatici in FVG: cosa ne pensi?

IMPATTI

Cambiamenti climatici in FVG: cosa ne pensi?

STRATEGIE per affrontare i cambiamenti climatici

"MITIGAZIONE" = agire sulle cause

RIDURRE LE EMISSIONI di gas
temperature?

8 9 10
○ ○ ○   Importantissi
mo

Cambiamenti c
ne pensi?

FONTI DI INFORMAZIONE

Da quali fonti ricavi notizi
(puoi scegliere più risposte)

☐ scuola, università

☐ radio

☐ TV

TARSI ALLE NUOVE
e riducendo i rischi?

8 9 10
○ ○ ○ ○   Importantissi
mo

INDIETRO   AVANTI

15 **mostly close - ended questions**,
divided into 11 **short sections**

+ questions about age, gender, residency

+ introduction and final thanks

(and images, although they take up space)

all on a voluntary basis, no questions had to
be mandatorily compiled in order to proceed
in the questionnaire

Climate change in FVG:

what do you think about it?

The first on-line version was tested in informal education contexts:

- Friuli Doc, Udine, September 2017;
- Barcolana, Trieste, October 2017.

On the phone screen:

www.meteo.fvg.it/sondaggio/

Cambiamenti climatici in FVG: cosa ne pensi?

Gentile cittadina/o,

per la prima volta, noi di ARPA FVG - OSMER proponiamo un sondaggio per capire l'opinione riguardo ai cambiamenti climatici di chi abita in Friuli Venezia Giulia
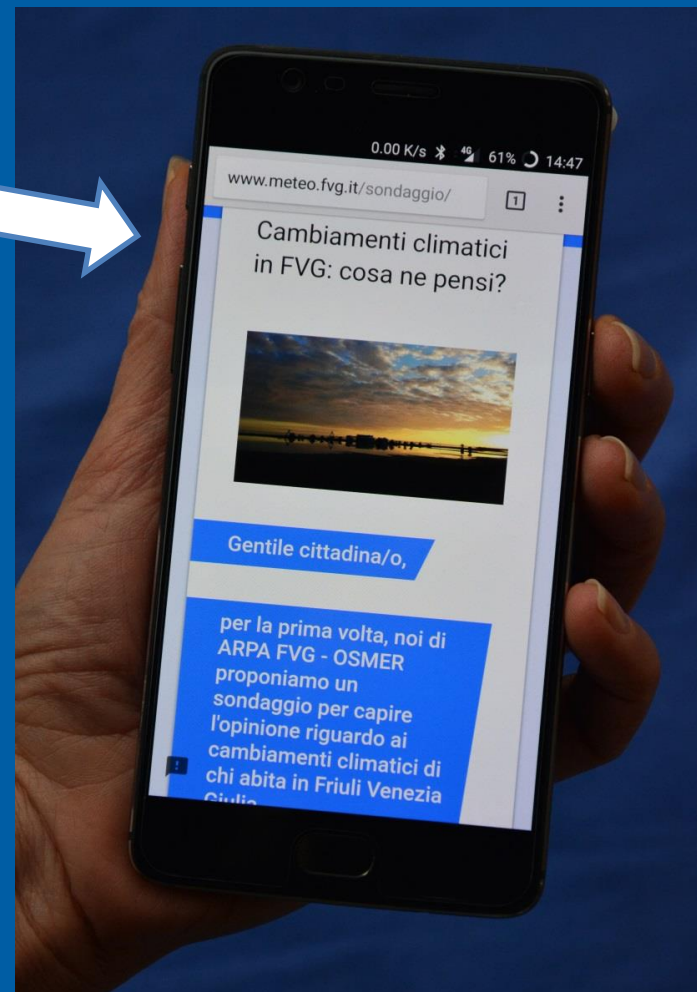
Piloting the survey (2): involving high school students as young pollsters in training

Students of the Science High School "Galilei" (Trieste) carried out the survey interviewing about 70 people during the Barcolana events in Trieste (September 2017).

Tablets were employed to let people fill in the on-line questionnaire

Promoting the survey

The survey was finally published on-line, with:

- a direct, **very simple** and **easy to remember URL** (sondaggio.clima.fvg.it)

- a link from ARPA FVG institutional web site and OSMER's **thematic web site devoted to the regional weather forecast** (www.meteo.fvg.it).

During the first twoo weeks it was also promoted twice through meteo.fvg **social media** and **local TV broadcasts**.

the weather website proved most effective

The survey: results

Pensi che i cambiamenti climatici siano attualmente un problema grave?
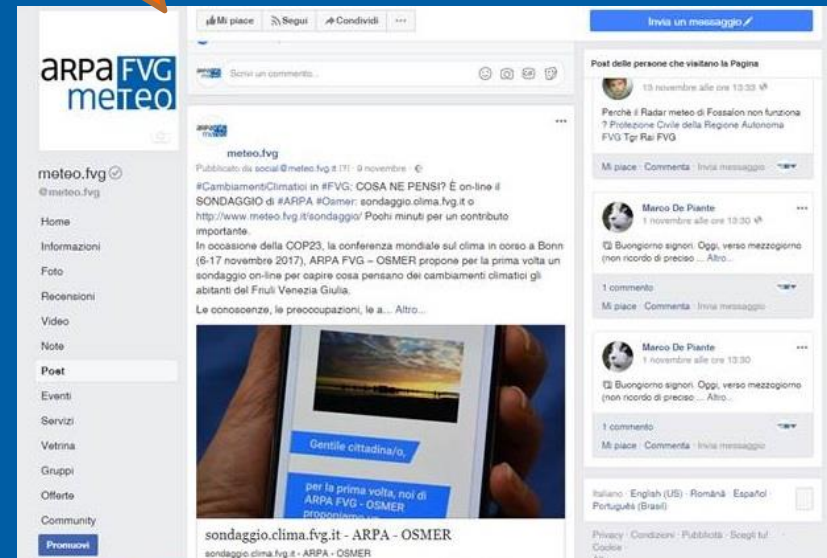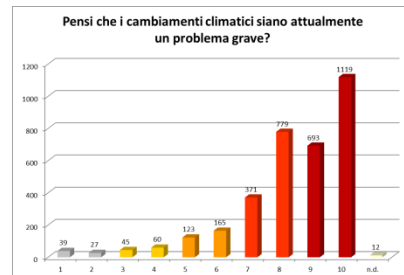
- The respondents and their answers' significance
- The survey's results

The respondents and their answers

More than **3400 respondents** (1000 during the first week):

- **not selected as a representative sample** (but anyway a large one)
- mostly **users of the weather forecast website**
- quite possibly many of them were **interested/sensitive** to climate change issue from the outset
- **some answers** are undoubtedly **biased** by that, but others are probably not so markedly influenced by the respondents' initial attitude
- overall, **the number of respondents itself** seems significant and indicative of a higher than expected interest in the issue

usually tweets and Facebook posts about climate change are far less successful than those about weather forecast & news

3433 respondents are not likely to be all environmental activists…

a large sample, compared to other, even national, surveys

Who answered the survey

Age

age of the respondents and of FVG inhabitants
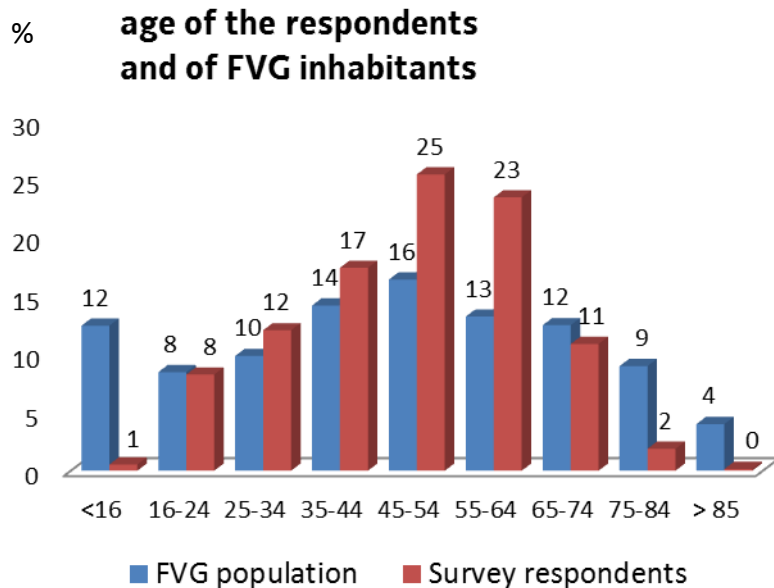
(3395 answers out of 3433 respondents)

Gender

respondents' gender
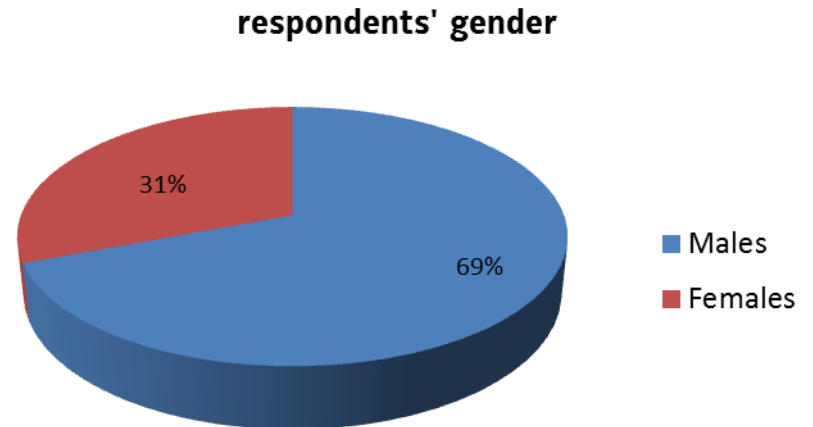
(3417 answers out of 3433 respondents)

% calculated taking into account only the valid responses, excluding the «doesn't answer» occurrences

Knowledge about the issue

How much do you know about "climate change"?
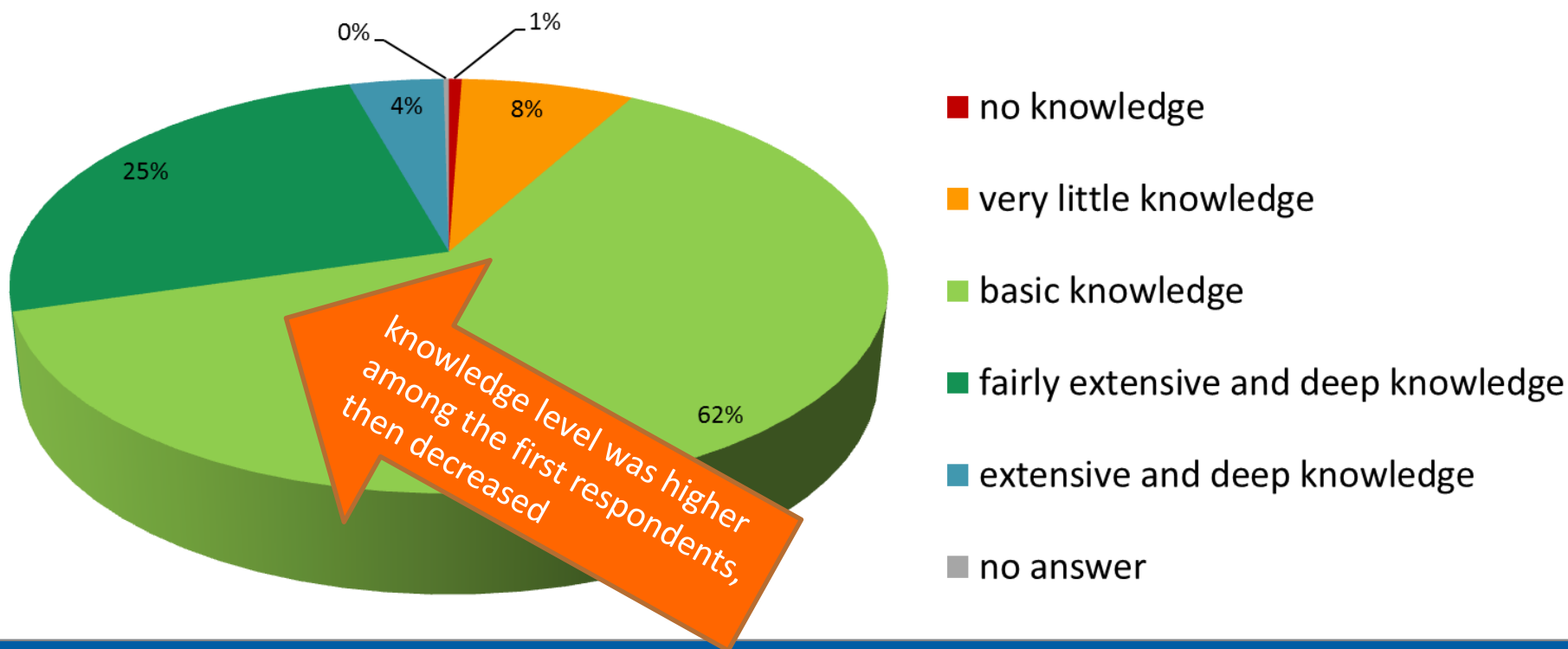
- 0%
- 1%
- 4%
- 8%
- 25%
- 62%

Legend:
- no knowledge
- very little knowledge
- basic knowledge
- fairly extensive and deep knowledge
- extensive and deep knowledge
- no answer

knowledge level was higher among the first respondents, then decreased

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

Seriousness of the problem

seriousness/severity
of the problem
on a 1 to 10 scale

1 = not at all
a serious problem

10 = an extremely
serious problem

results probably biased by the respondents' initial attitude

In your opinion, how serious a problem is now climate change?

Score	1	2	3	4	5	6	7	8	9	10	n.d.
n. of answers	39	27	45	60	123	165	371	779	693	1119	12

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

Causes of climate change

In your opinion, climate change is caused by

current
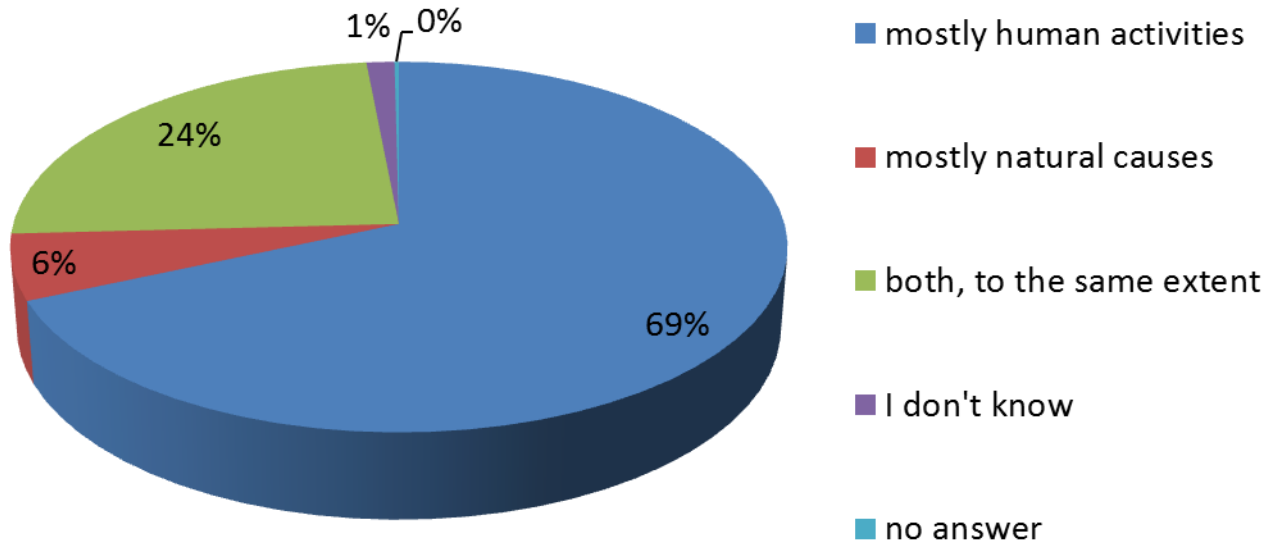
- mostly human activities
- mostly natural causes
- both, to the same extent
- I don't know
- no answer

1% — 0%

24%

6%

69%

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

Closeness of the issue

Do you think climate change is involving our region too?

- Yes, already
- Not yet, but it will in the future
- No: not now neither in the future
- I don't know
- no answer

1% · 2% · 0% · 6% · 91%

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

First hand evidence

What changes have you detected?

there was also an open ended question: >2500 responses waiting to be processed…

Have you personally detected any changes in the regional climate?
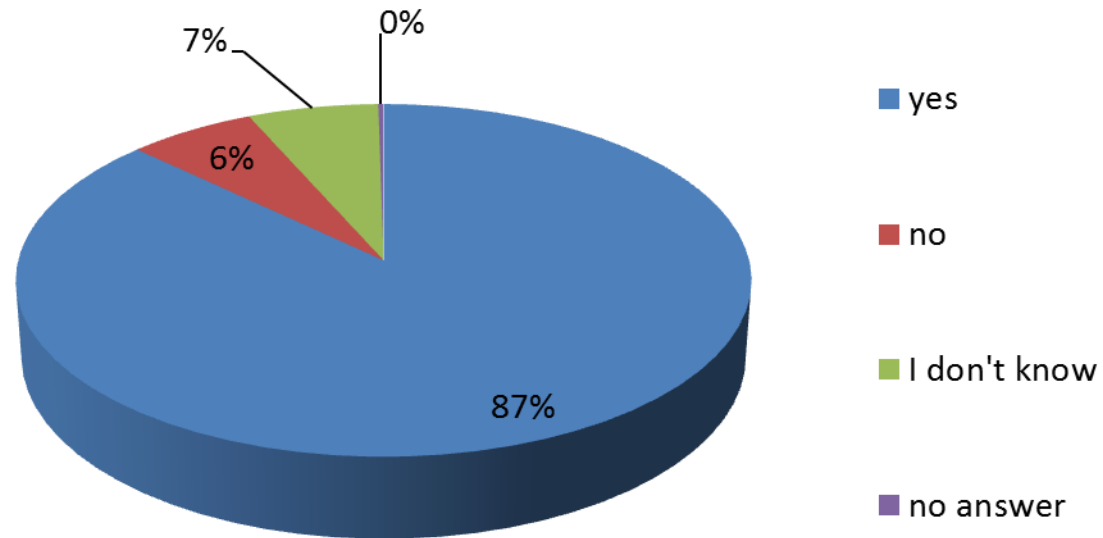
- yes
- no
- I don't know
- no answer

0%
7%
6%
87%

Results based on 3433 interviews = people who spontaneously answered the on-line survey
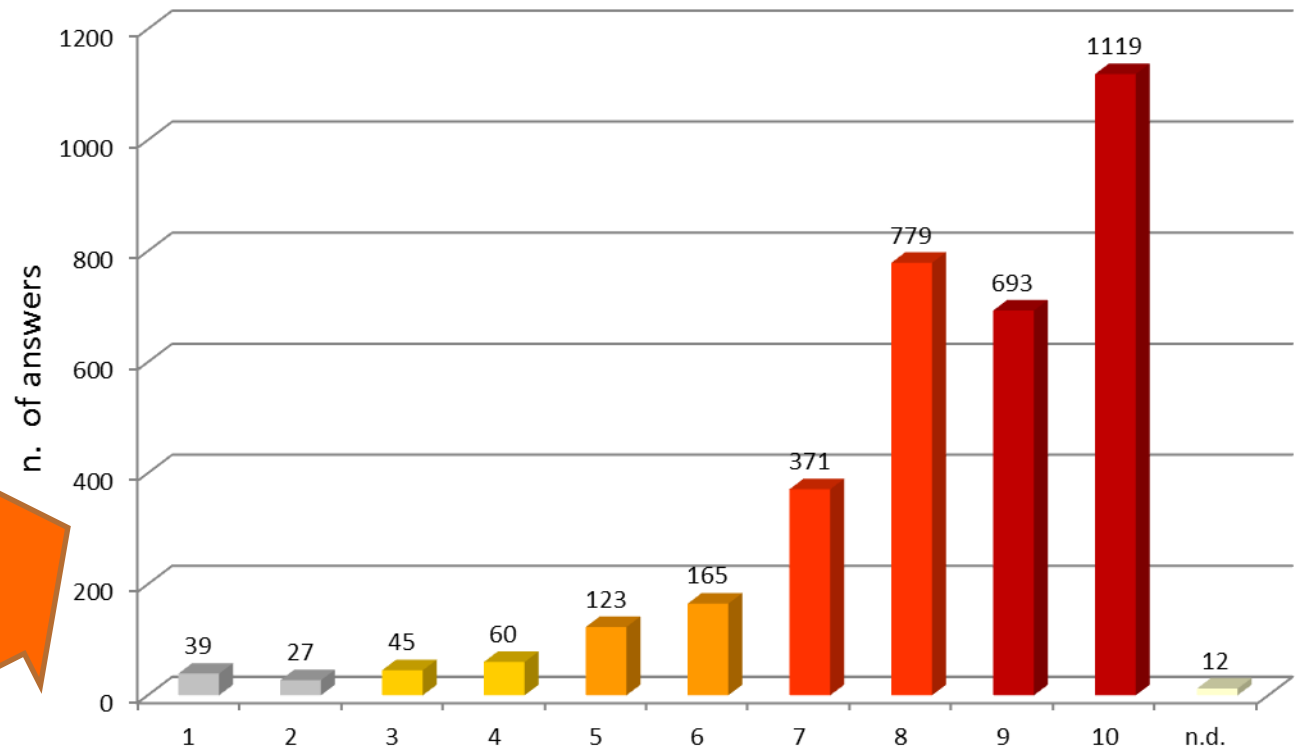(not to be considered as a statistically representative sample)

Concern about climate changes
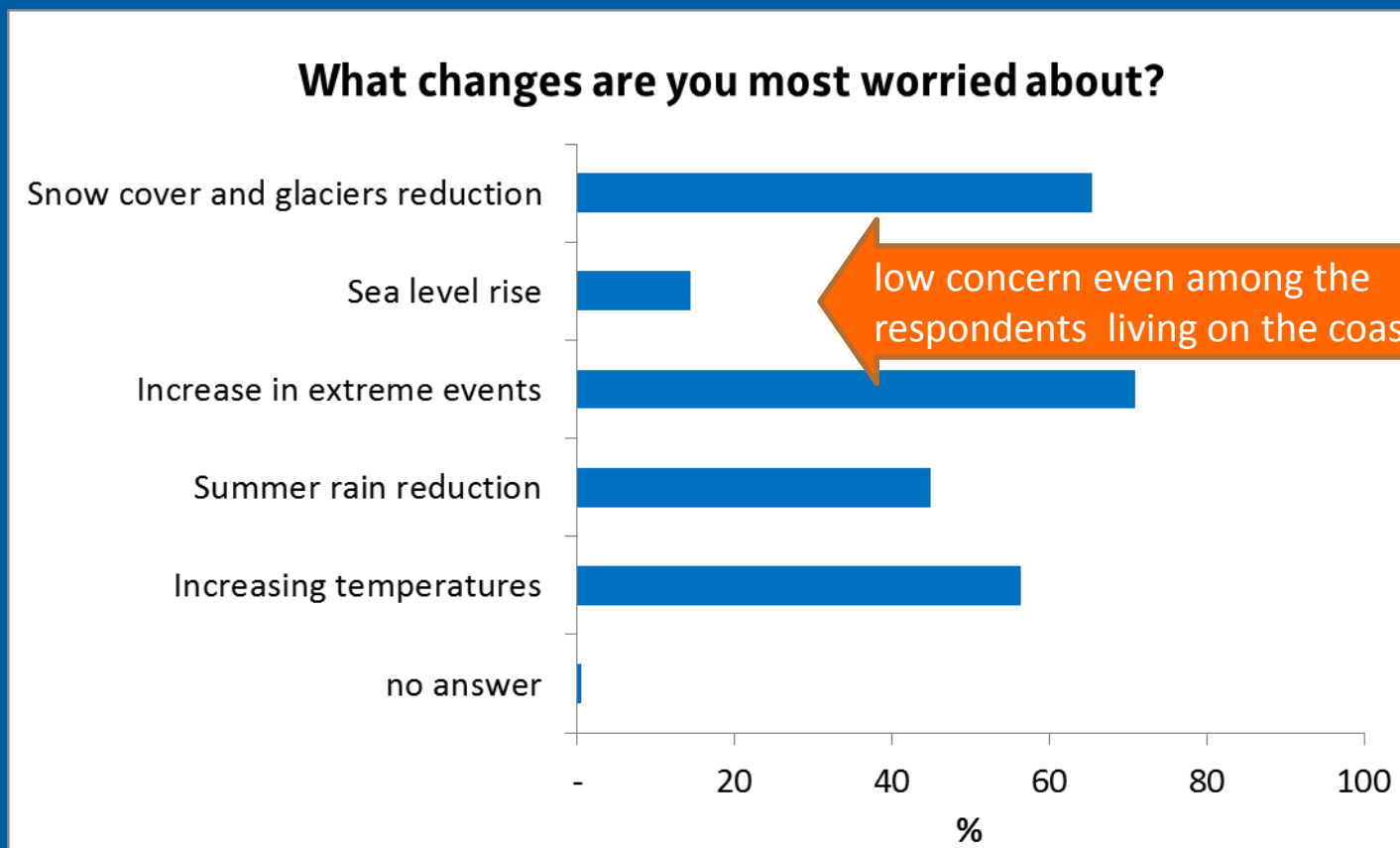
What changes are you most worried about?

- Snow cover and glaciers reduction
- Sea level rise
- Increase in extreme events
- Summer rain reduction
- Increasing temperatures
- no answer

low concern even among the respondents living on the coast

- 20 40 60 80 100

%

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

(multiresponse question, max 3 options could be selected;
only close-end answers were processed, not the "other" option free answers)

Concern about local impacts

same categories as National CC Adaptation Strategy
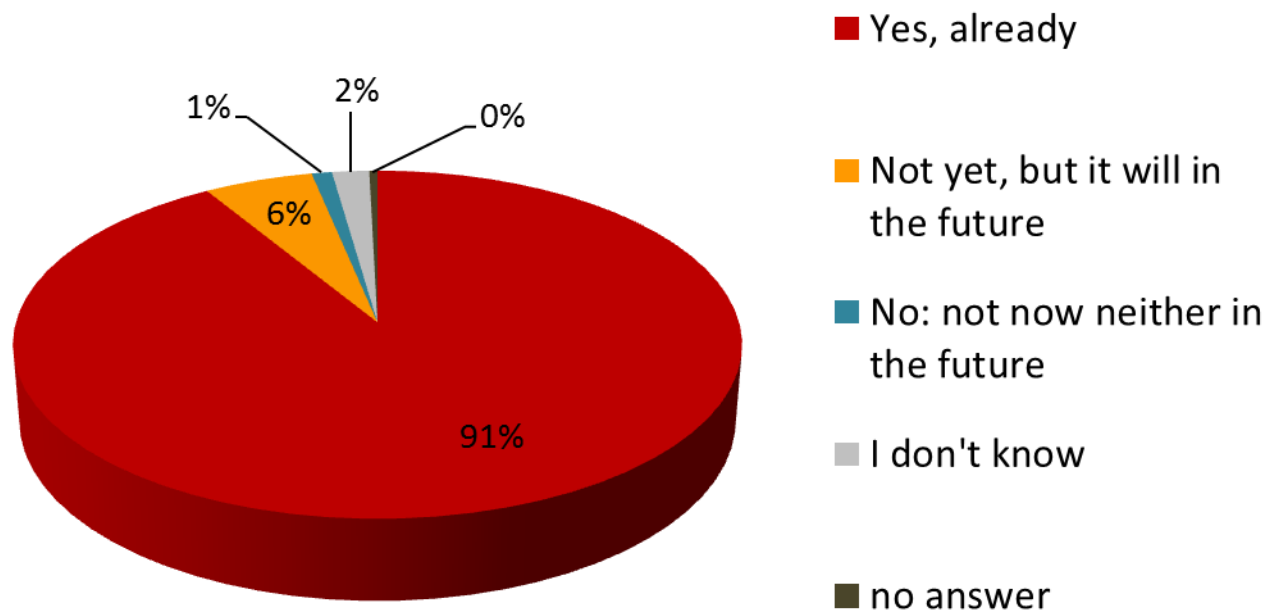
Results based on 3433 interviews = people who spontaneously answered the on-line survey (not to be considered as a statistically representative sample)

responses maybe biased by the questions' order?

What local impacts are you most worried about?

- no answer
- Water (rivers, lakes, groundwater)
- Soil (desertification, degradation
- Hydrogeological instability
- Biodiversity and ecosystems
- Health, well-being
- Forests (timber, forest fires)
- Agriculture, livestock farming
- Fishery, aquaculture
- Energy
- Coastal areas
- Tourism
- Cultural heritage
- Transports, infrastructures
- Industries , hazardous infrastructures

higher than expected

lower than expected

(multiresponse question,
max 5 options could be selected;
only close-end answers were processed,
not the "other" option free answers)

%

How to tackle climate change

In your opinion, how important is:
- REDUCING GHG EMISSIONS in order to limit the temperature increase?
  (MITIGATION = tackling the causes)
- ADAPTING TO THE NEW CONDITIONS, in order to limit the impacts e reduce the risks?
  (ADAPTATION = tackling the effects)

need to sintethise and explain the 2 concepts

Results based on 3433 interviews = people who spontaneously answered the on-line survey (not to be considered as a statistically representative sample)
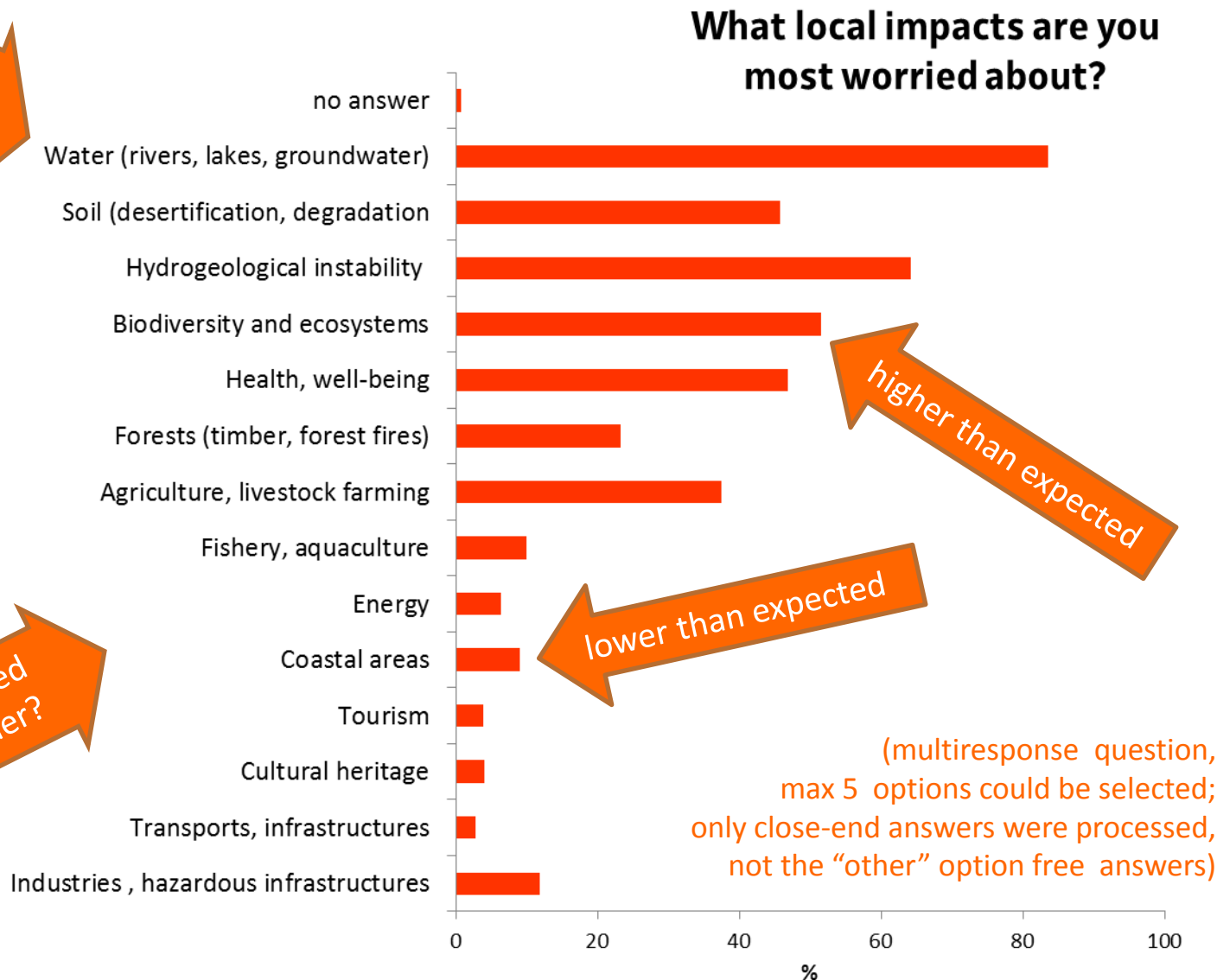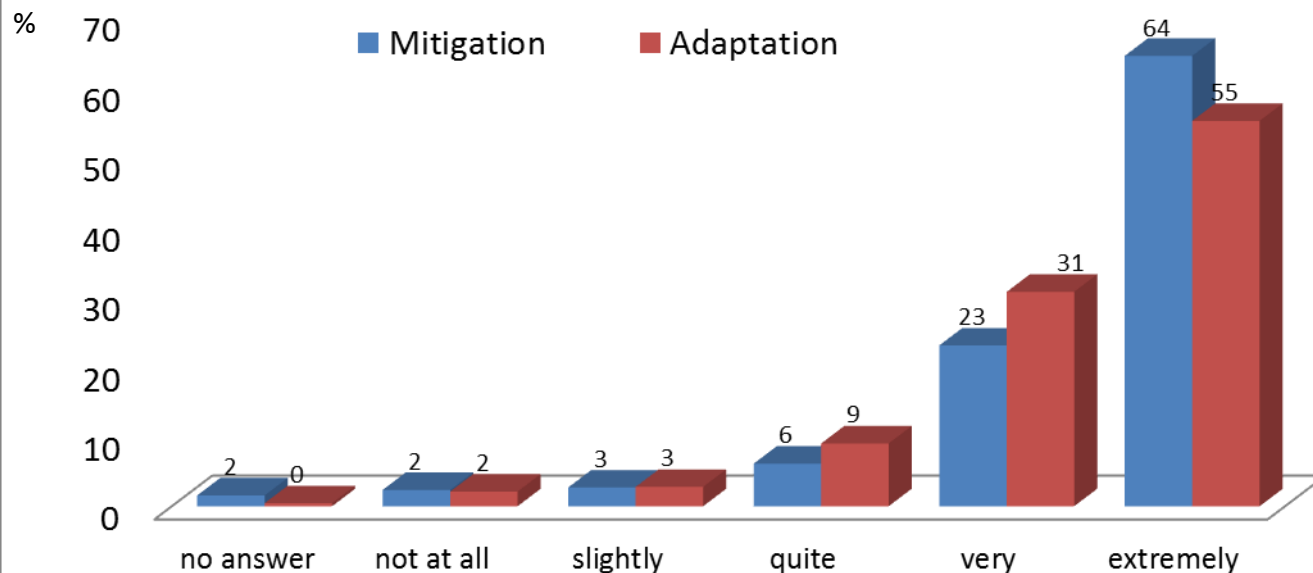

Bar chart comparing Mitigation and Adaptation importance:

Category	Mitigation	Adaptation
no answer	2	0
not at all	2	2
slightly	3	3
quite	6	9
very	23	31
extremely	64	55

Importance categories obtained by processing the original answers on a 1 to 10 scale
(1 e 2 = not important; 9-10 = extremely important)

Who should tackle the issue?
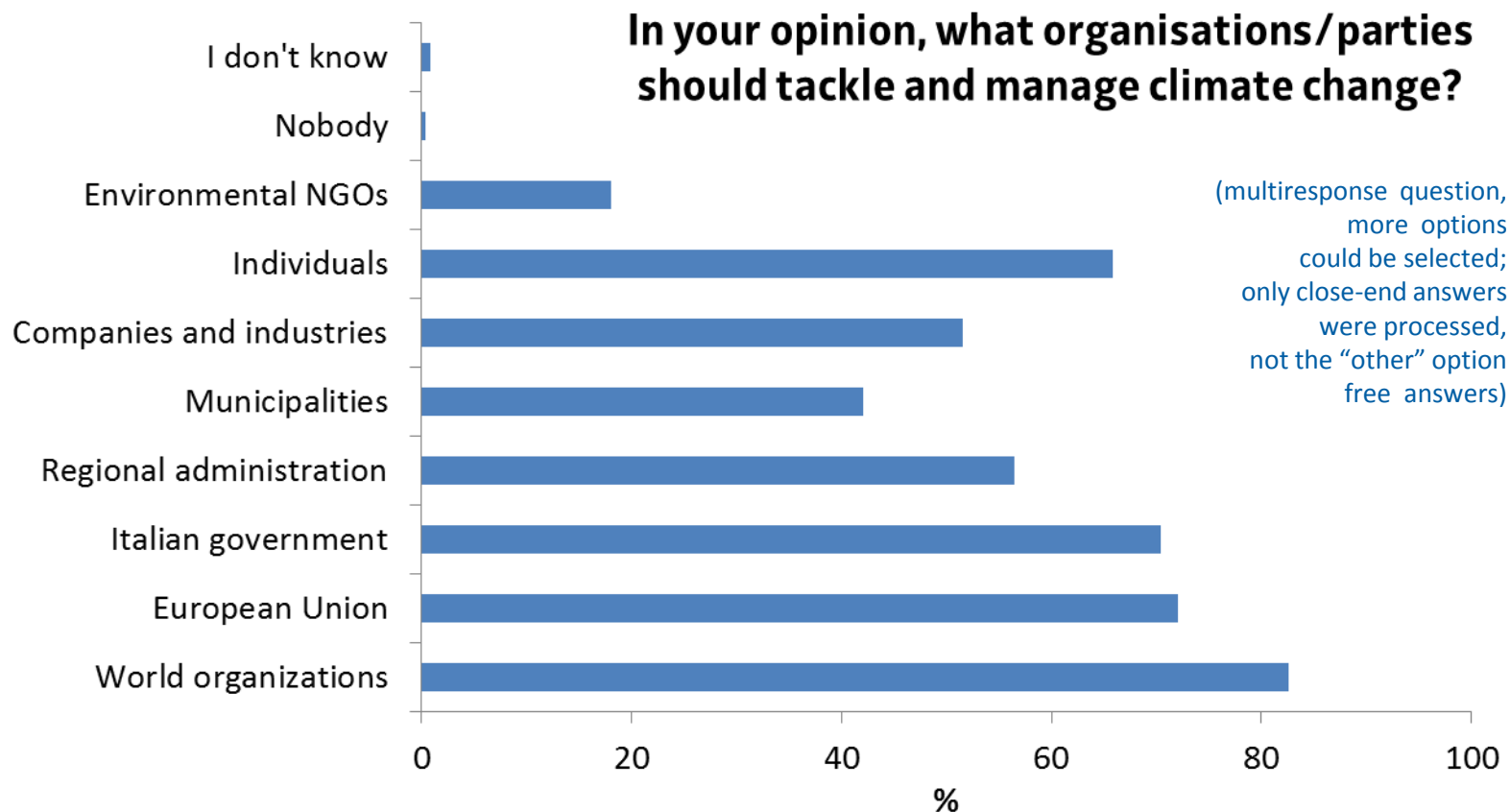
In your opinion, what organisations/parties should tackle and manage climate change?

(multiresponse question, more options could be selected; only close-end answers were processed, not the "other" option free answers)

Taking action personally

Are you personally trying to do something to mitigate the climate change?

- ■ Yes
- ■ Not yet, but I shall in the future
- ■ No, I'm not willing to
- ■ I don't know
- ■ No answer

2%
2% 1%
5%
90%

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

Individual actions

What are you personally doing to mitigate climate change?

(multiresponse question, more options could be selected; only close-end answers were processed, not the "other" option free answers)
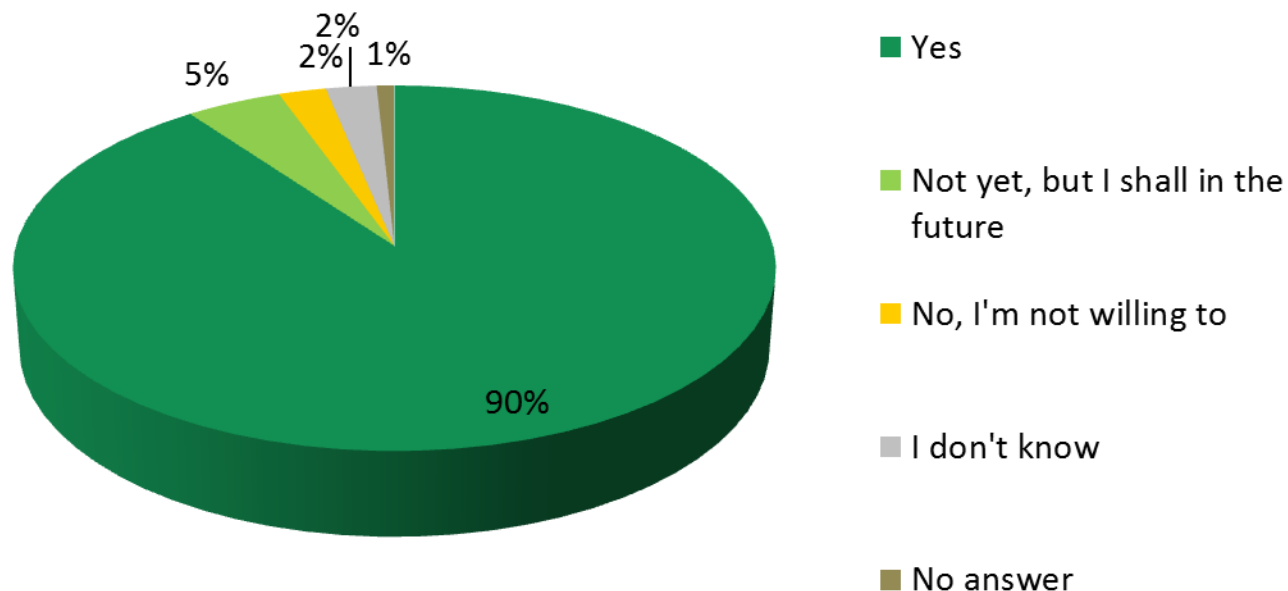
Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

Information sources

What are your information sources about climate change?

(multiresponse question, more options could be selected; only close-end answers were processed, not the "other" option free answers)
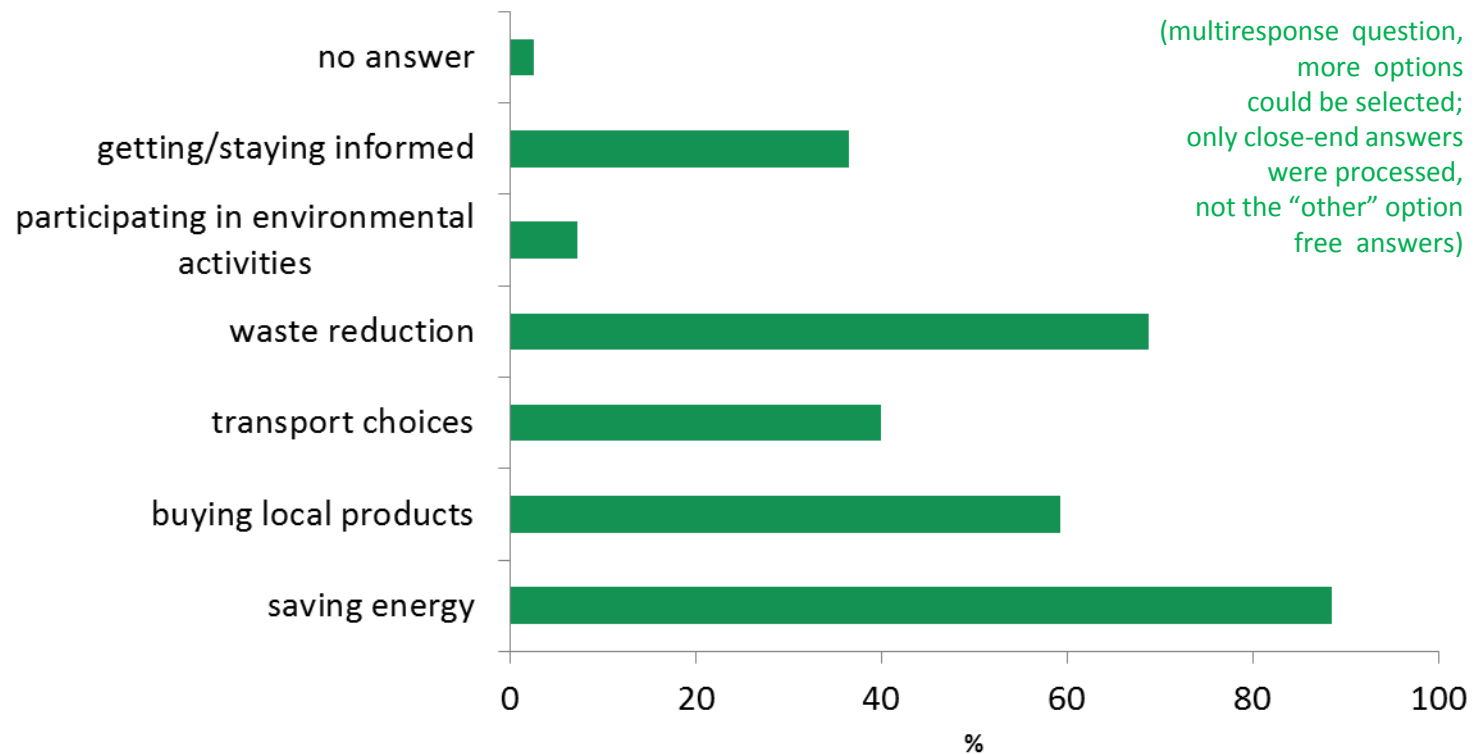
Results based on 3433 interviews = people who spontaneously answered the on-line survey
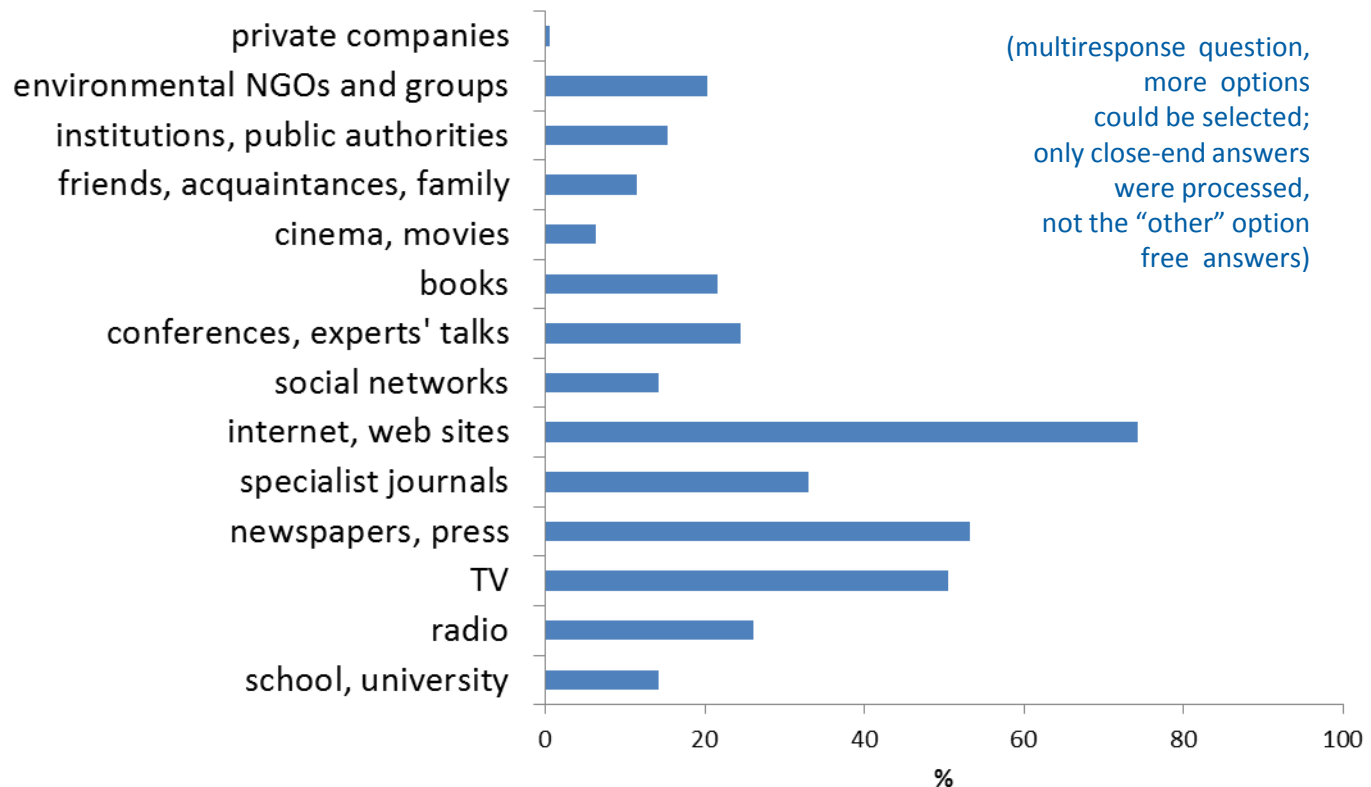(not to be considered as a statistically representative sample)

Trust in information sources

How much do you trust the following information sources about climate change?

- environmental NGOs
- journalists
- other meteo services
- regional public meteo centres
- international scientific organizations
- FVG Universities and research centers

1 no trust
2 very little
3 enough
4 very much
5 absolutely

Average score obtained processing valid responses related to each information source

Results based on 3433 interviews = people who spontaneously answered the on-line survey
(not to be considered as a statistically representative sample)

First outcome and next developments

Results: published on line in April 2018 on ARPA's institutional web site, OSMER's thematic web site devoted to the regional weather forecast and social networks. Some highlights published on local newspapers.

Hopefully: further data processing (e.g. open ended questions; gender, age, residency sub-samples…)

Planning: a comparable, but more specific survey **addressed to high school students** (through collaboration with schools)

communication/education and survey: mutual benefit
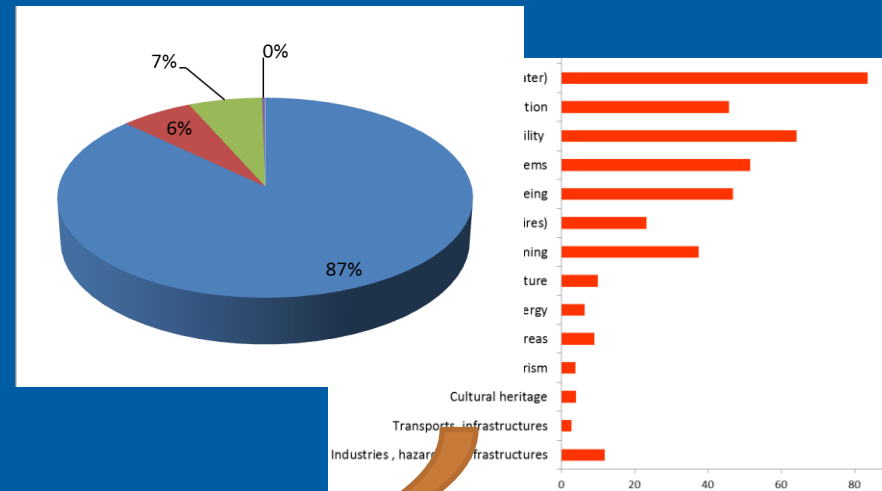
communication and education activities
on one hand contributed to setting up and carrying out the survey,

on the other hand they are already profiting
from the information collected through the survey

Summary

Only in-house resources and on-line free tool, with related pros (no extra costs) **and cons** (possible misleading settings in the questionnaire ; limits and difficulties in processing data)

Key to success: employing media and strengths of the weather forecast service

Piloting the questionnaire: involving high school students and exploiting informal settings

Promoting the survey: weather forecast web site (most effective), social networks and mass media

Actual **on-line survey**: 4 months

More than **3400 respondents:** a very large sample, although not strictly representative

Results: interesting and somehow even surprising

Further developments on the way

ARPA FVG
agenzia regionale per la
protezione dell'ambiente
del Friuli venezia giulia

Sistema Nazionale
per la Protezione
dell'Ambiente

Thank you

ARPA FVG - struttura OSMER

Osservatorio Meteorologico Regionale
Settore Meteo del CFD di Protezione Civile FVG

www.meteo.fvg.it
http://www.arpa.fvg.it/cms/tema/osmer/

federica.flapp@arpa.fvg.it

meteo.fvg

meteo_fvg