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# Community awareness of climate change and urban flood risk: the case of the Simeto River Basin


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DICAR

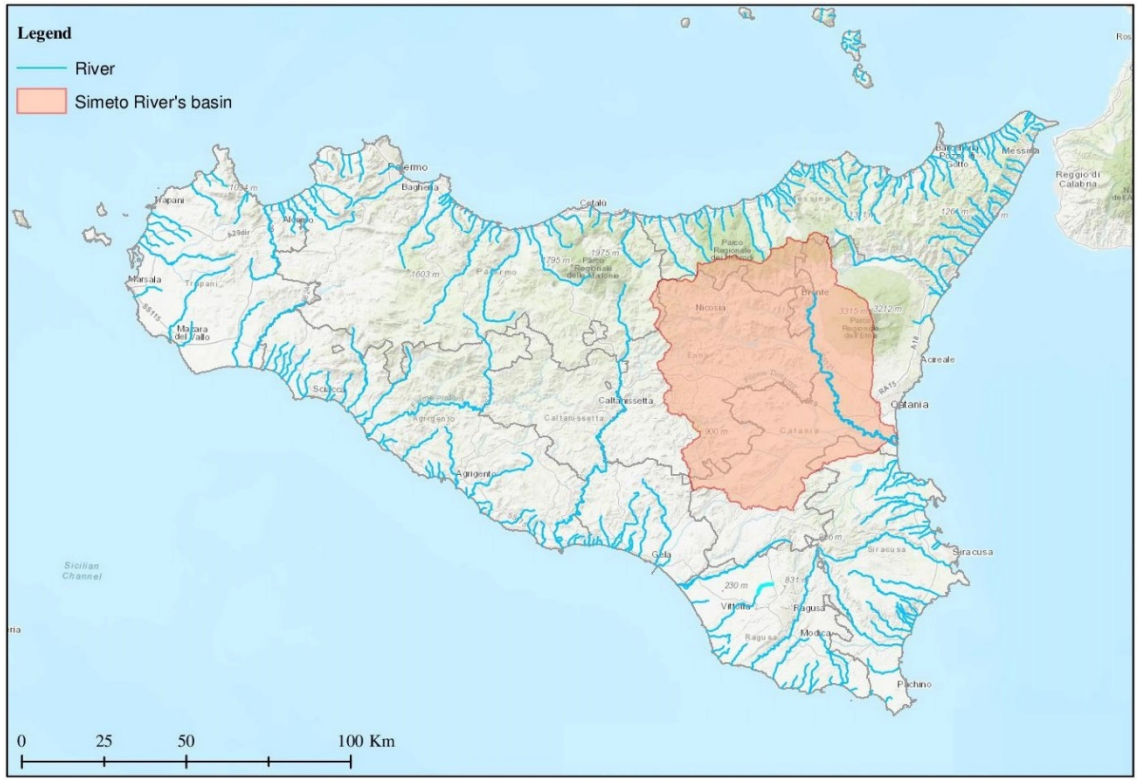
Simeto RES
Urban adaptation and community learning for a resilient Simeto Valley

Life

# INTRODUCTION

# SIMETO IN A NUTSHELL






- The **Simeto River Valley** (SRV) is located on the South-West of Mount Etna
- Approximately **150.000 people** live in the SRV area
- The basin extends in the territories of the provinces of Catania, Enna and Messina, with a surface of **4.030 km²**
- The annual average precipitation pattern is typical of the **Mediterranean climate**
- SRV has been repeatedly hit in the recent years by intense urban **flooding events**

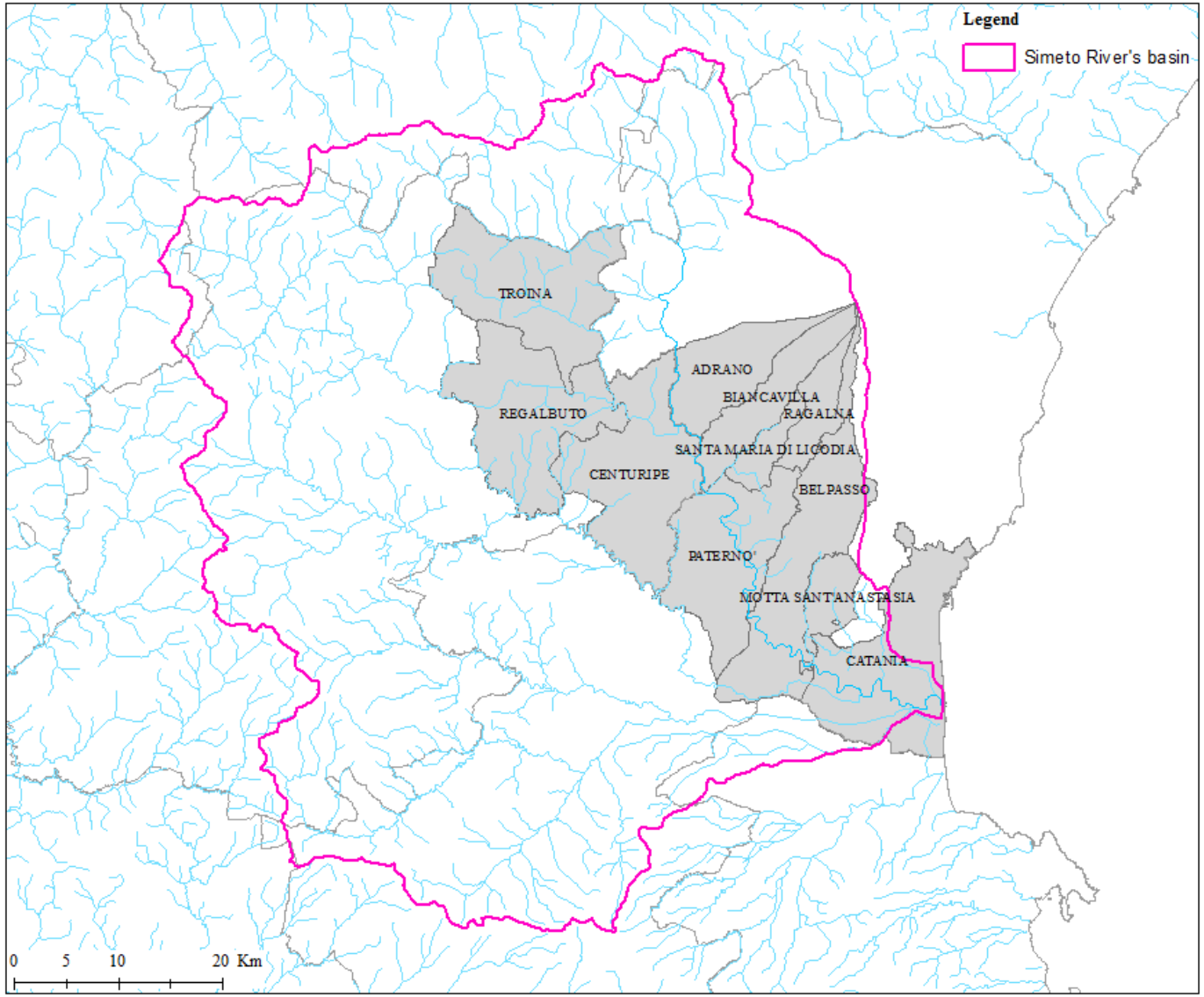
Nanni, P., Peres, D.J., Musumeci, R.E., & Cancelliere, A. - Community awareness of climate change and urban flood risk: the case of the Simeto River Basin

# THE SURVEY AREA



The survey area included the municipalities of Paternò, Ragalna, S.M. di Licodia, Motta Sant' Anastasia, Belpasso, Biancavilla, Adrano, Centuripe, Troina, and Regalbuto, for a total of about 100.000 inhabitants.

The location of the city of Catania is included, where the University of Catania is located.



# THE SURVEY

# STRUCTURE AND DISTRIBUTION



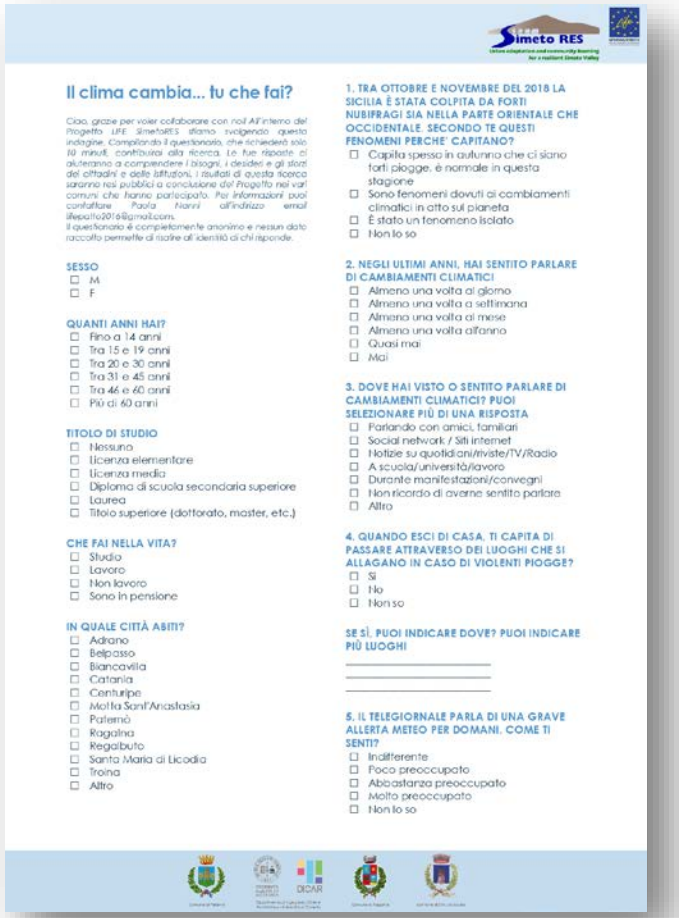
The survey was published and distributed mainly electronically though the web platform of **EU Survey** (https://ec.europa.eu/eusurvey), for a period of about 3 months and was advertised through the social channels of the LIFE SimetoRES Project. A paper hardcopy version of the survey was also distributed during some public events in order to involve even those who have limited access to social media

The survey consisted of **10 questions** and is divided in **3 sections:**

1. The **perception of climate change**

2. The **direct experience** of citizens in coping with urban flood, their **level of concern** during weather alerts, their **behavior during the flood** events and their way to attribute **responsibilities**

3. The degree of understanding of **adaptation measures** and the willingness to contribute



Il clima cambia... tu che fai?

Ciao, grazie per voler collaborare con noi! All'interno del Progetto LIFE SimetoRES stiamo svolgendo questa indagine. Compilando il questionario, che richiederà solo 10 minuti, contribuirai alla ricerca. Le tue risposte ci aiuteranno a comprendere i bisogni, i desideri e gli stati dei cittadini e delle istituzioni. I risultati di questa ricerca saranno resi pubblici a conclusione del Progetto nei vari comuni che hanno partecipato. Per informazioni puoi contattare Paola Nanni all'indirizzo email lifepatto2016@gmail.com.
Il questionario è completamente anonimo e nessun dato raccolto permette di risalire all'identità di chi risponde.

SESSO
- M
- F

QUANTI ANNI HAI?
- Fino a 14 anni
- Tra 15 e 19 anni
- Tra 20 e 30 anni
- Tra 31 e 45 anni
- Tra 46 e 60 anni
- Più di 60 anni

TITOLO DI STUDIO
- Nessuno
- Licenza elementare
- Licenza media
- Diploma di scuola secondaria superiore
- Laurea
- Titolo superiore (dottorato, master, etc.)

CHE FAI NELLA VITA?
- Studio
- Lavoro
- Non lavoro
- Sono in pensione

IN QUALE CITTÀ ABITI?
- Adrano
- Belpasso
- Biancavilla
- Catania
- Centuripe
- Motta Sant'Anastasia
- Paternò
- Ragalna
- Regalbuto
- Santa Maria di Licodia
- Troina
- Altro

1. TRA OTTOBRE E NOVEMBRE DEL 2018 LA SICILIA È STATA COLPITA DA FORTI NUBIFRAGI SIA NELLA PARTE ORIENTALE CHE OCCIDENTALE. SECONDO TE QUESTI FENOMENI PERCHE' CAPITANO?
- Capita spesso in autunno che ci siano forti piogge, è normale in questa stagione
- Sono fenomeni dovuti ai cambiamenti climatici in atto sul pianeta
- È stato un fenomeno isolato
- Non lo so

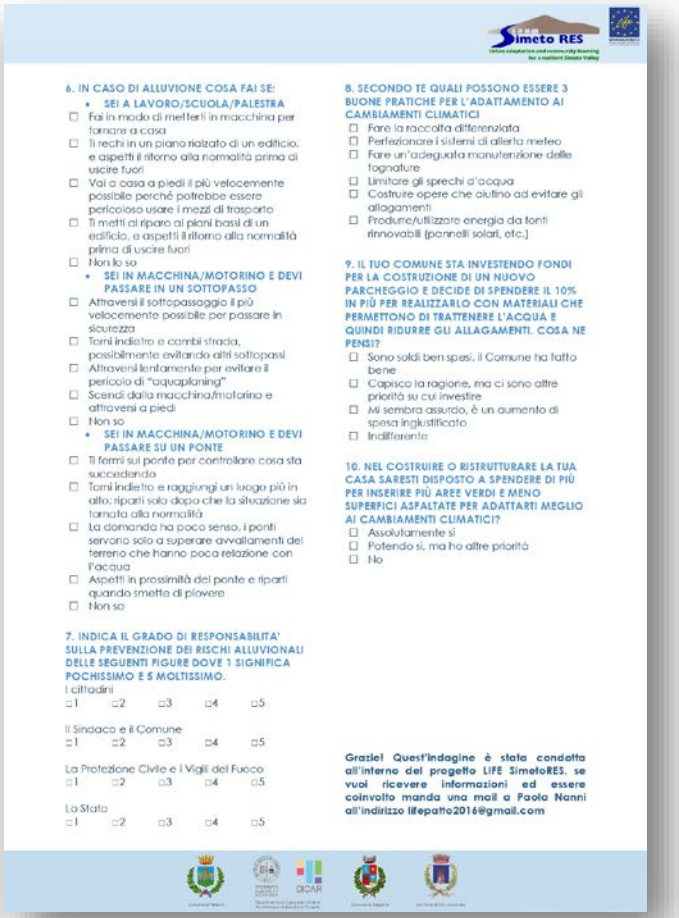
2. NEGLI ULTIMI ANNI, HAI SENTITO PARLARE DI CAMBIAMENTI CLIMATICI
- Almeno una volta al giorno
- Almeno una volta a settimana
- Almeno una volta al mese
- Almeno una volta all'anno
- Quasi mai
- Mai

3. DOVE HAI VISTO O SENTITO PARLARE DI CAMBIAMENTI CLIMATICI? PUOI SELEZIONARE PIÙ DI UNA RISPOSTA
- Parlando con amici, familiari
- Social network / Siti internet
- Notizie su quotidiani/riviste/TV/Radio
- A scuola/università/lavoro
- Durante manifestazioni/convegni
- Non ricordo di averne sentito parlare
- Altro

4. QUANDO ESCI DI CASA, TI CAPITA DI PASSARE ATTRAVERSO DEI LUOGHI CHE SI ALLAGANO IN CASO DI VIOLENTI PIOGGE?
- Si
- No
- Non so

SE SÌ, PUOI INDICARE DOVE? PUOI INDICARE PIÙ LUOGHI

5. IL TELEGIORNALE PARLA DI UNA GRAVE ALLERTA METEO PER DOMANI. COME TI SENTI?
- Indifferente
- Poco preoccupato
- Abbastanza preoccupato
- Molto preoccupato
- Non lo so



6. IN CASO DI ALLUVIONE COSA FAI SE:
- SEI A LAVORO/SCUOLA/PALESTRA
- Fai in modo di mettertì in macchina per tornare a casa
- Ti rechi in un piano rialzato di un edificio, e aspetti il ritorno alla normalità prima di uscire fuori
- Vai a casa a piedi il più velocemente possibile perché potrebbe essere pericoloso usare i mezzi di trasporto
- Ti metti al riparo ai piani bassi di un edificio, e aspetti il ritorno alla normalità prima di uscire fuori
- Non lo so
- SEI IN MACCHINA/MOTORINO E DEVI PASSARE IN UN SOTTOPASSO
- Attraversi il sottopassaggio il più velocemente possibile per passare in sicurezza
- Torni indietro e cambi strada, possibilmente evitando altri sottopassi
- Attraversi lentamente per evitare il pericolo di "aquaplaning"
- Scendi dalla macchina/motorino e attraversi a piedi
- Non so
- SEI IN MACCHINA/MOTORINO E DEVI PASSARE SU UN PONTE
- Ti fermi sul ponte per controllare cosa sta succedendo
- Torni indietro e raggiungi un luogo più in alto; riparti solo dopo che la situazione sia tornata alla normalità
- La domanda ha poco senso, i ponti servono solo a superare avvallamenti del terreno che hanno poca relazione con l'acqua
- Aspetti in prossimità del ponte e riparti quando smette di piovere
- Non so

7. INDICA IL GRADO DI RESPONSABILITA' SULLA PREVENZIONE DEI RISCHI ALLUVIONALI DELLE SEGUENTI FIGURE DOVE 1 SIGNIFICA POCHISSIMO E 5 MOLTISSIMO.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| I cittadini | ☐ | ☐ | ☐ | ☐ | ☐ |
| Il Sindaco e il Comune | ☐ | ☐ | ☐ | ☐ | ☐ |
| La Protezione Civile e i Vigili del Fuoco | ☐ | ☐ | ☐ | ☐ | ☐ |
| Lo Stato | ☐ | ☐ | ☐ | ☐ | ☐ |

8. SECONDO TE QUALI POSSONO ESSERE 3 BUONE PRATICHE PER L'ADATTAMENTO AI CAMBIAMENTI CLIMATICI
- Fare la raccolta differenziata
- Perfezionare i sistemi di allerta meteo
- Fare un'adeguata manutenzione delle fognature
- Limitare gli sprechi d'acqua
- Costruire opere che aiutino ad evitare gli allagamenti
- Produrre/utilizzare energia da fonti rinnovabili (pannelli solari, etc.)

9. IL TUO COMUNE STA INVESTENDO FONDI PER LA COSTRUZIONE DI UN NUOVO PARCHEGGIO E DECIDE DI SPENDERE IL 10% IN PIÙ PER REALIZZARLO CON MATERIALI CHE PERMETTONO DI TRATTENERE L'ACQUA E QUINDI RIDURRE GLI ALLAGAMENTI. COSA NE PENSI?
- Sono soldi ben spesi, il Comune ha fatto bene
- Capisco la ragione, ma ci sono altre priorità su cui investire
- Mi sembra assurdo, è un aumento di spesa ingiustificato
- Indifferente

10. NEL COSTRUIRE O RISTRUTTURARE LA TUA CASA SARESTI DISPOSTO A SPENDERE DI PIÙ PER INSERIRE PIÙ AREE VERDI E MENO SUPERFICI ASFALTATE PER ADATTARTI MEGLIO AI CAMBIAMENTI CLIMATICI?
- Assolutamente si
- Potendo si, ma ho altre priorità
- No

Grazie! Quest'indagine è stata condotta all'interno del progetto LIFE SimetoRES, se vuoi ricevere informazioni ed essere coinvolto manda una mail a Paola Nanni all'indirizzo lifepatto2016@gmail.com

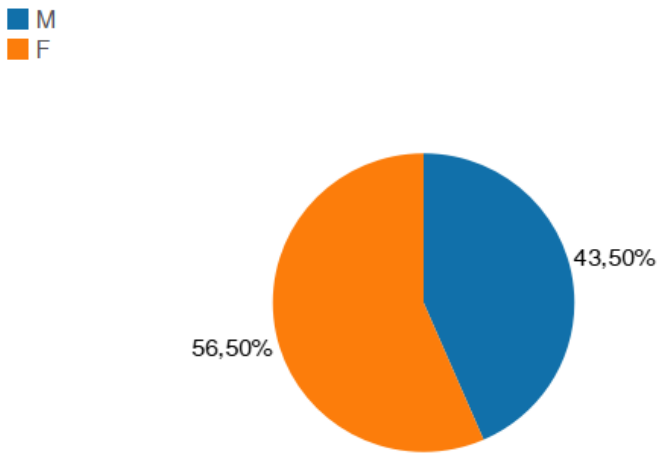
# THE SAMPLE



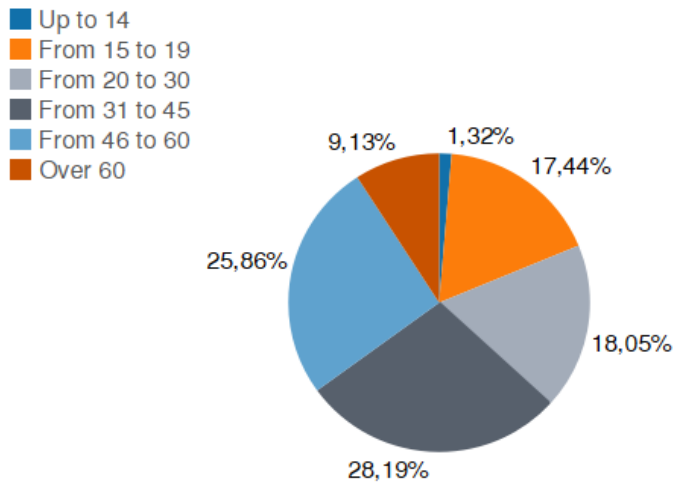
**1143 answers**: 1078 collected electronically, and 65 hardcopies.
The **1% of the population** was involved.

The sample interviewed is composed as shown in the figure:

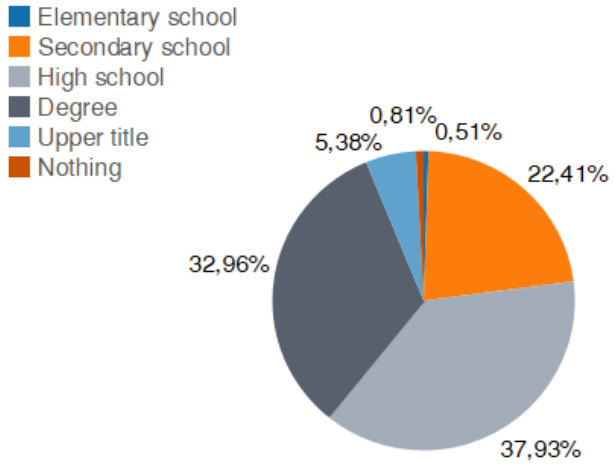
- The percentage of women is slightly higher than the percentage of men
- The age groups are adequately represented except for the group of children
- Almost 38% of the participants are high school graduates and approximately one-third are university graduates
- The majority of participants study or work, only 11% are unemployed and just over 4% are retired



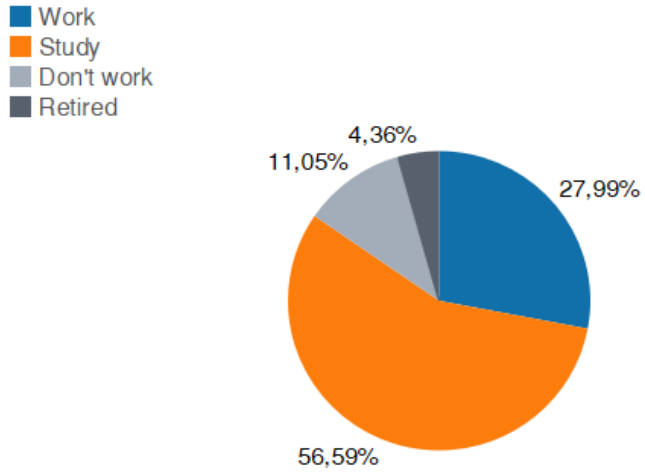

a)




b)



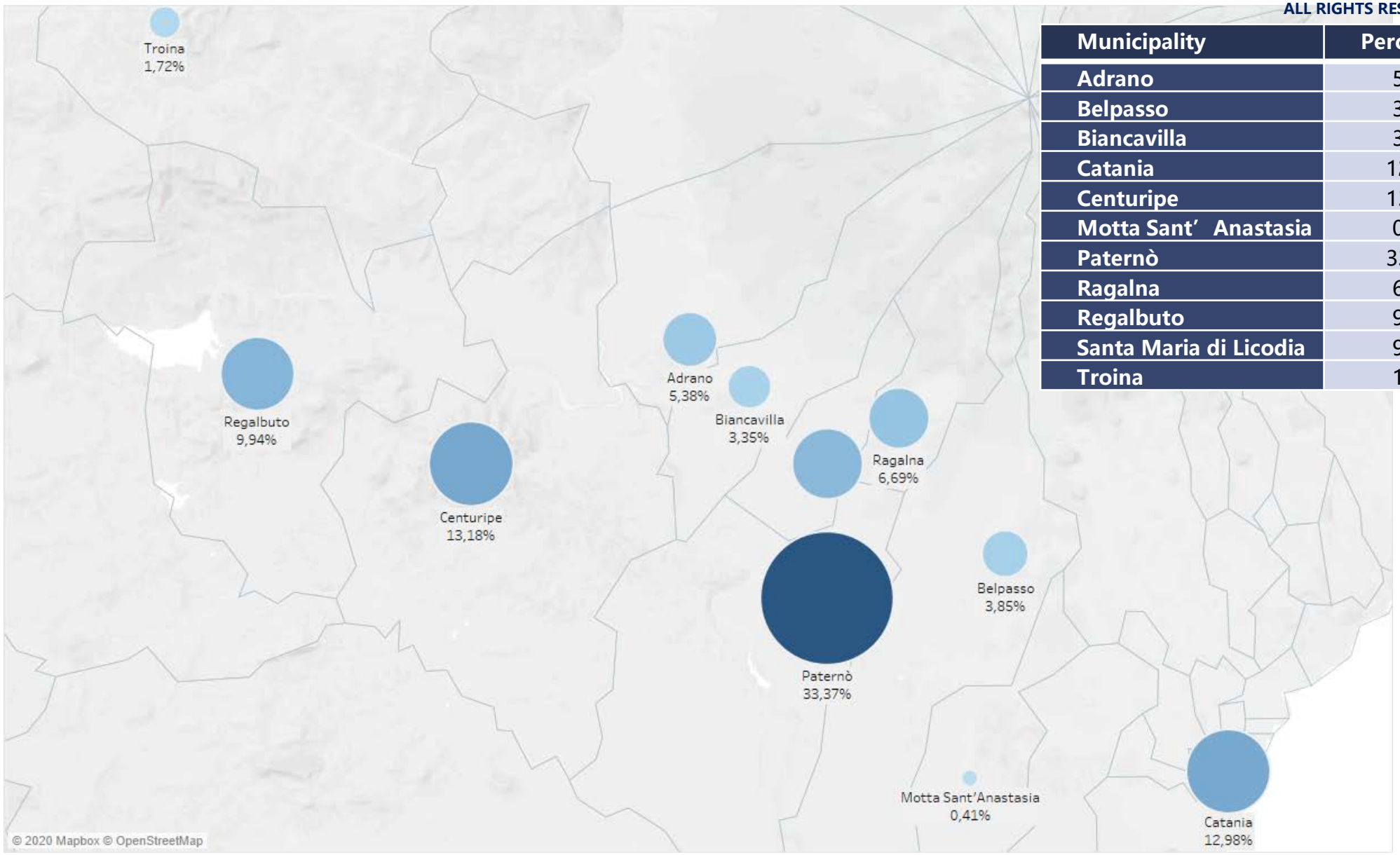

c)




d)

# ORIGIN OF THE ANSWERS






| Municipality | Percentage |
|---|---|
| Adrano | 5,38 % |
| Belpasso | 3,85 % |
| Biancavilla | 3,35 % |
| Catania | 12,98 % |
| Centuripe | 13,18 % |
| Motta Sant' Anastasia | 0,41 % |
| Paternò | 33,37 % |
| Ragalna | 6,69 % |
| Regalbuto | 9,94 % |
| Santa Maria di Licodia | 9,13 % |
| Troina | 1,72 % |

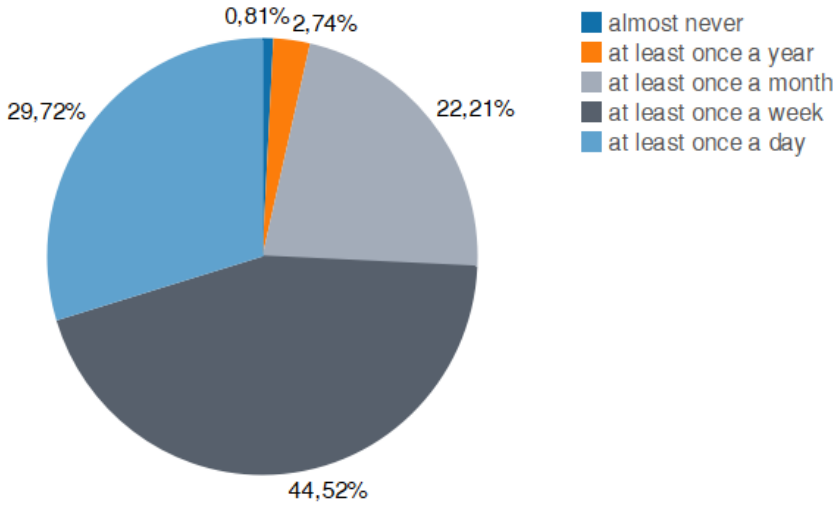
# RESULTS

# CLIMATE CHANGE PERCEPTION



*During the autumn of 2018, Sicily was hit by heavy rains in both the eastern and western parts, what do you think these phenomena are due?*

- The 84% attributes the extreme rainfall events to climate change
- The 8.7% believes that these phenomena are compatible with the normal climate of the area
- The 20% of over-60s believes that these phenomena are compatible with the normal climate of the area: This may be a sign of a stronger historical memory of this type of phenomena within the elder population
- The 30,77% of children does not feel to give a definite answer



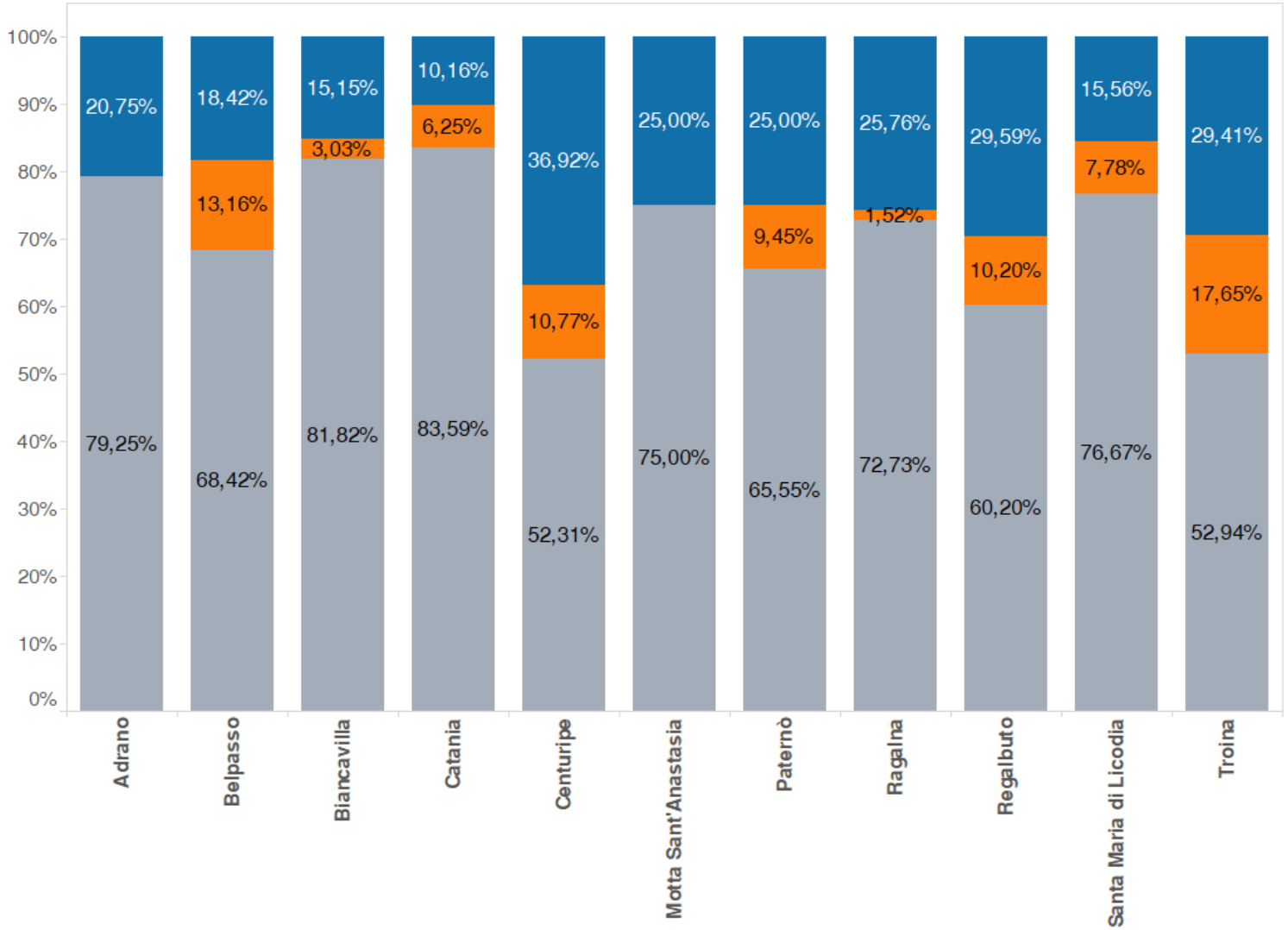

*In the last years, how often do you hear about climate change?*

Over 44% of participants answered that they hear about climate change "at least once a week" and almost 30% even "once a day". This confirms that climate change is a "hot topic" which entered in every-day conversations, also in the investigated geographical area.

# DIRECT EXPERIENCE



*Do you cross areas that are likely to be flooded during a rain event?*




The **floodable areas**:

- More in **Catania**, **Biancavilla** and **Adrano**
- Less in **Centuripe**, **Troina** and **Regalbuto**

However in every municipality a percentage higher than 50% of participants stated that they cross dangerous areas during intense storms: this could be due to the commuting between the cities.

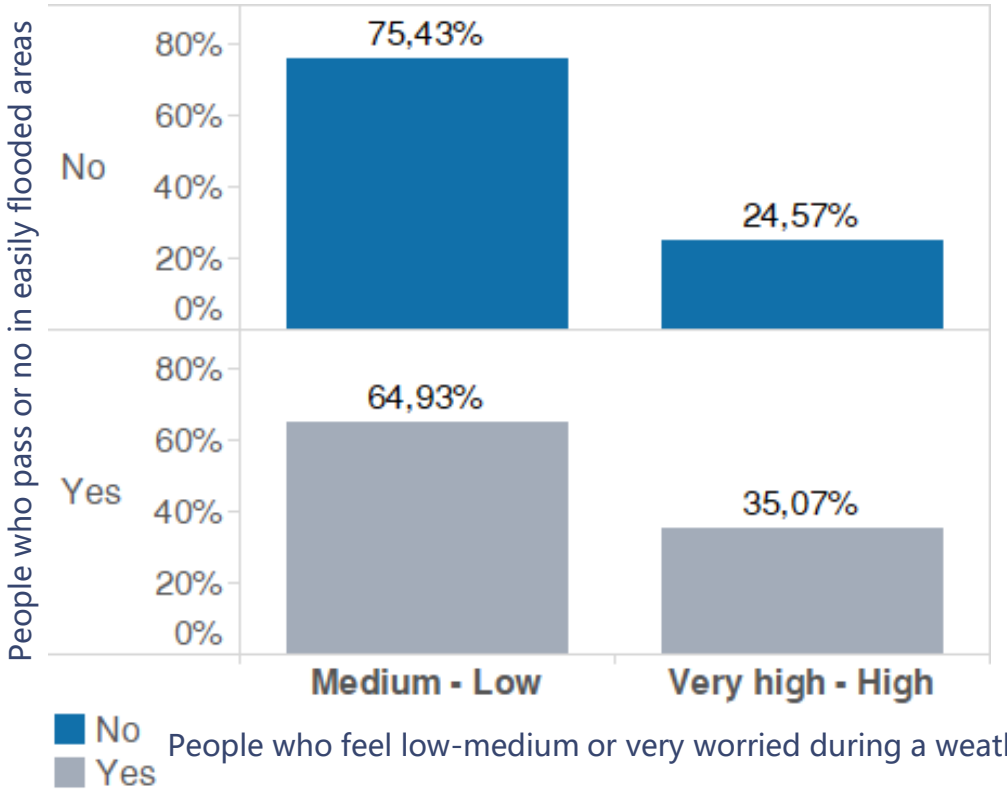
# DIRECT EXPERIENCE



*The news talks about a serious weather alert for tomorrow, how do you feel?*

The most of respondents have a "medium" level of concern and only 32% have a high or very high level of concern

| Level of concern | Percentage of answers |
|---|---|
| very low level of concern | 5,17% |
| low level of concern | 16,53% |
| medium level of concern | 45,84% |
| high level of concern | 23,23% |
| very high level of concern | 9,23% |




We would expect that those who pass through flooded areas during extreme events were really concerned about weather warnings, but the contingency matrix shows that for almost 65% this is not the case, and **only the 35% is really concerned** when a weather alert is issued.

# RISK AWARENESS

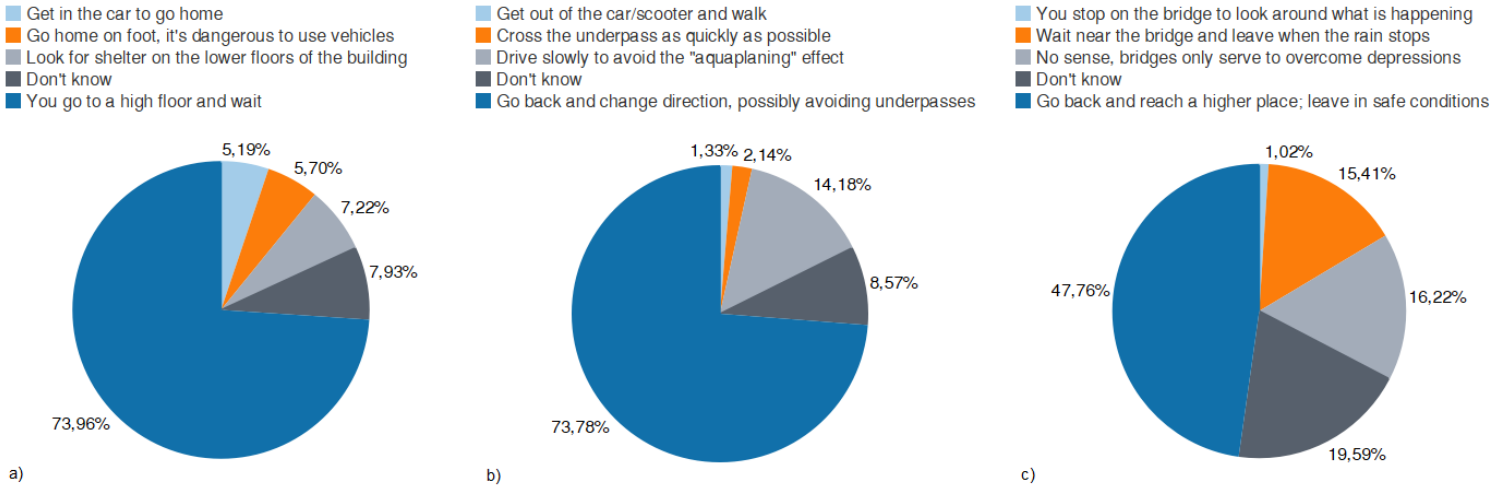


*In the event of a flood what do you do if:*

*a) You are at work / school / gym*

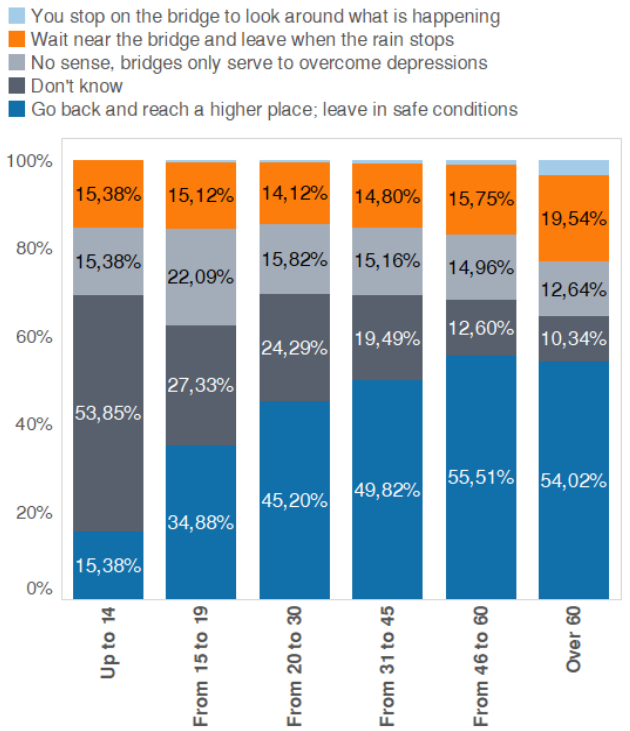
*b) You are in your car/scooter and you have to pass an underpass?*

*c) You are in your car/scooter and you have to pass a bridge?*




Investigating the answers according to the different age groups we discovered that young people are actually the least aware about what to do in the case of an extreme rain event.

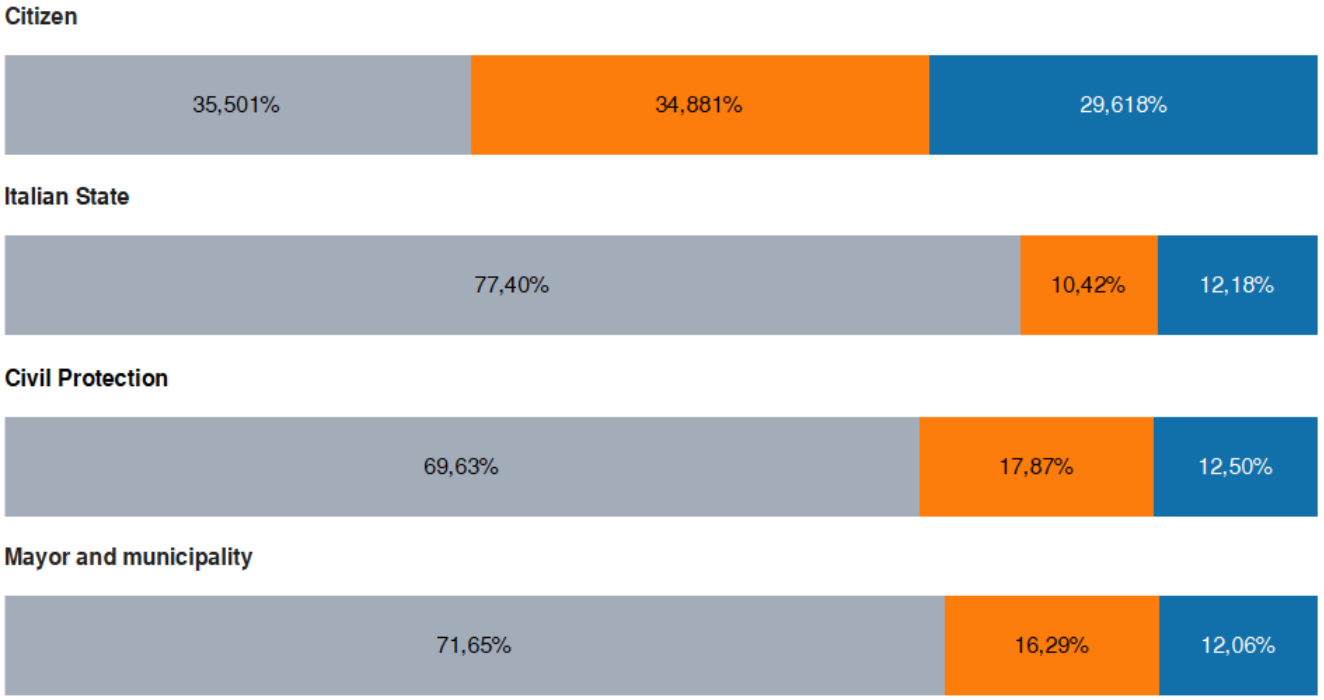
Only 15% of children (up to 14) and 35% of teenagers (from 15 to 19) answered correctly.



# RISK AWARENESS



*Indicates the degree of responsibility for the prevention of flood risk of the following figures where 1 means very little and very much 5*




- Only 35.5% of citizens consider themselves to have responsibility in flood prevention
- Almost 30% believe they have a very low responsibility
- There is a high tendency is to attribute most of the responsibility to public bodies, in particular to the State.

# WILLINGNESS TO ADAPTATION

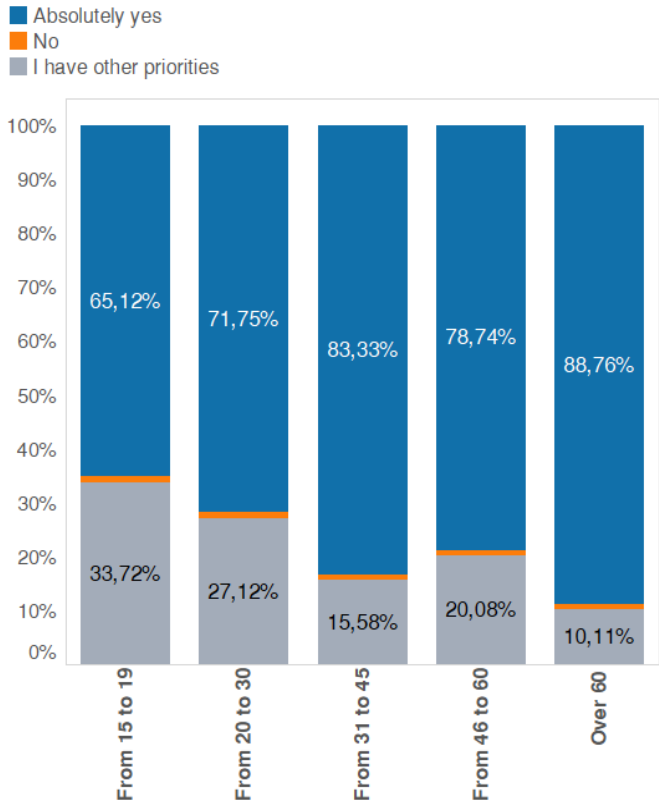


*Your municipality is investing funds for the construction of a new parking and decides to spend 10% more so to built it with draining materials that may help reducing the severity of urban flooding events. what do you think about this?*

- Most of the citizens replied that it is money well spent (over 50%)
- The 24% of teens and 22% of people up to 30 years understand the reason, but there are other priorities

*In building or renovating your home would you be willing to spend more to introduce more green areas and less asphalted surfaces to better adapt to climate change?*

- It is encouraging that the 30-45 age group is well prepared to invest in adaptation measures (over 83%)
- Only the 65% of teens is well disposed to adaptation measures, over 33% has other priorities



# CONCLUSION

# CONCLUSION



- The population is very concerned about climate change. Undoubtedly it' s hot-topic
- Younger age groups seem to be over-exposed to the daily news on climate change
- Over-60s seem to have more balanced opinion on climate change
- The population is still not adequately prepared to the urban floods that occur on a yearly basis in the SRV
- In the municipalities with significant flooding hazard population has not declared a level of concern greater than the other municipalities, neither a better preparation for dealing with flood emergencies


# CONCLUSION



- Young people are significantly less prepared than adults and this is an indicator of how the actions of preparing a community must involve to a higher degree the youth
- Citizens feel that can do very little in terms of responsibility for protection against urban flooding events, and they tend to blame the authorities for the related damage
- Inadequate perception of the risks related to flooding in urban areas and knowledge of the correct behavior during a risky situation. Citizen should be helped to understand that they have their own responsibility in the individual choices, besides the municipality or the State
- The data collected through the survey can provide guidelines for improving the effectiveness of any information campaign
- Helping the public to be prepared is an essential responsibility for the authorities because raising community awareness, preparedness and resilience is a strategic instrument for saving lives

# ACKNOWLEDGEMENTS AND REFERENCES

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