ADAM MICKIEWICZ UNIVERSITY IN POZNAN
Faculty of Human Geography and Planning

Citizen science supporting climate action and adaptation policy.
Crowd-Mapping insights from six pilot regions within the TeRRIFICA project

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6th Conference Urban e-Planning
Institute of Geography and Spatial Planning
University of Lisbon, Portugal
7 - 12 April 2022 (Virtual / Online)

TeRRIFICA
Territorial RRI Fostering Innovative Climate Action

wgseigp.amu.edu.pl geokompleks.amu.edu.pl www.terrifica.eu

TeRRIFICA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 824489

Territorial RRI Fostering Innovative Climate Action – Consortium Partners –

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1	Wissenschaftsladen Bonn (Bonn Science Shop)	DE
2	ACUP, Barcelona	ES
3	Sciences Citoyennes, Paris	FR
4	Adam Mickiewicz University, Poznań	PL
5	University of Vechta	DE
6	Center for the Promotion of Science, Belgrade	RS
7	Association Education for Sustainable Development, Minsk	BY
8	Rhine-Waal University of Applied Sciences, Kleve	DE

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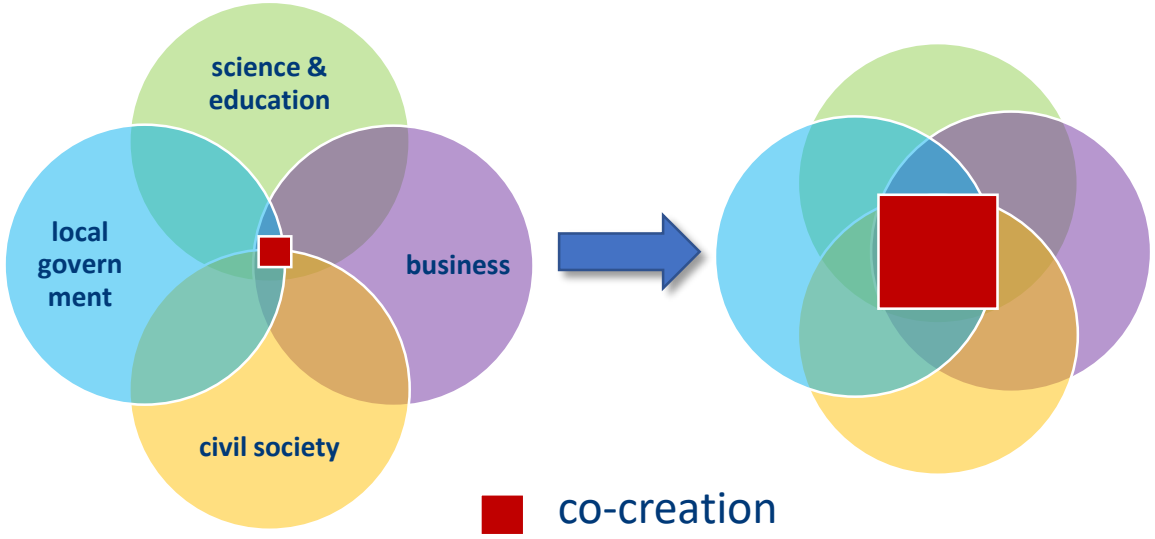
Territorial RRI Fostering Innovative Climate Action – Objectives –

- ✓ Involve citizens in agenda-setting processes corresponding to climate change challenges;
- ✓ **Develop climate change adaptation plans that will lead to institutional and governance change;**
- ✓ Develop, test and evaluate concrete actions (pilots) focused on mitigation of and adapting to climate change issues;
- ✓ **Design and implement a crowdmapping tool for identification of climate change effects;**
- ✓ Enhance the Responsible Research & Innovation principles in local and regional policy.



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Crowdmapping tool – Web Mapping – VGI

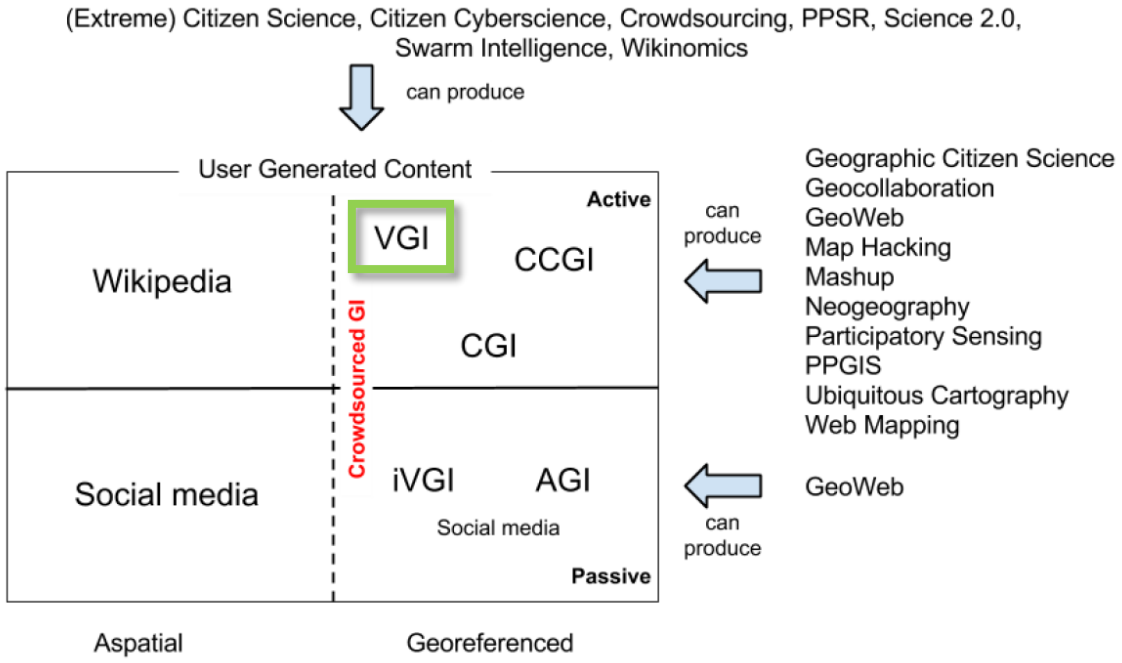
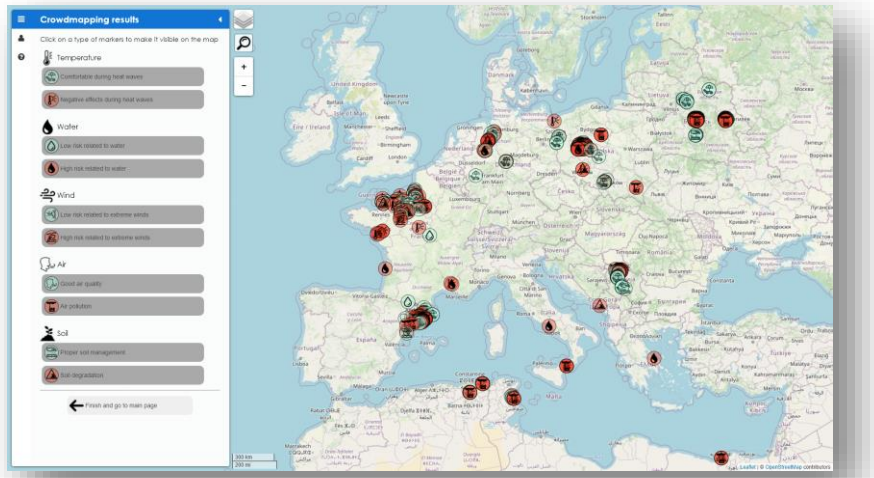


Figure 1. Placing crowdsourced geographic information in the context of the terminology found in the literature and the media. AGI: Ambient Geographic Information; CCGI: Citizen-contributed Geographic Information OR Collaboratively Contributed Geographic Information; CGI: Contributed Geographic Information; PPGIS: Public Participaton in Geographic Information Systems; PPSR: Public Participation in Scientific Research; iVGI: Involuntary VGI: Volunteered Geographic Information.

From See et al., 2016

Volunteered Goegraphical Information (VGI)

- „the harnessing of tools to create, assemble, and disseminate geographic data provided voluntarily by individuals" (Goodchild, 2007)
- „spatial information that is voluntarily made available, with an aim to provide information about the world" (Elwood et al., 2012)
- data are collected using an "opt-in" agreement, e.g., OpenStreetMap and Geocaching where users choose to actively participate (See et al., 2016)



Crowdmapping tool: climatemapping.terrifica.eu

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Main climate change categories included in geo-questionnaire:

Temperature
- Comfortable during heat waves
- Negative effects during heat waves

Water
- Low risk related to water
- High risk related to water

Wind
- Low risk related to extreme winds
- High risk related to extreme winds

Air
- Good air quality
- Air pollution

Soil
- Proper soil management
- Soil degradation

Crowdmapping tool: climatemapping.terrifica.eu

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OUR TOOL:

- ✓ is dedicated to the identification of **green**, **grey** and **blue** infrastructure linked to climate change adaptation & mitigation;
- ✓ it allows to point places on the map where users have observed **positive** and **negative** phenomena linked to climate change;
- ✓ it allows to identify the local/ regional key players and stakeholders involved in climate actions;
- ✓ it includes „**learning by doing**" approach – stakeholders/users are encouraged to learn and to participate in our living lab.

Crowdmapping tool: 8 language versions

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Belarusian – belklimat.terrifica.eu

French – climatoscopie.terrifica.eu

German – klimakarte.terrifica.eu

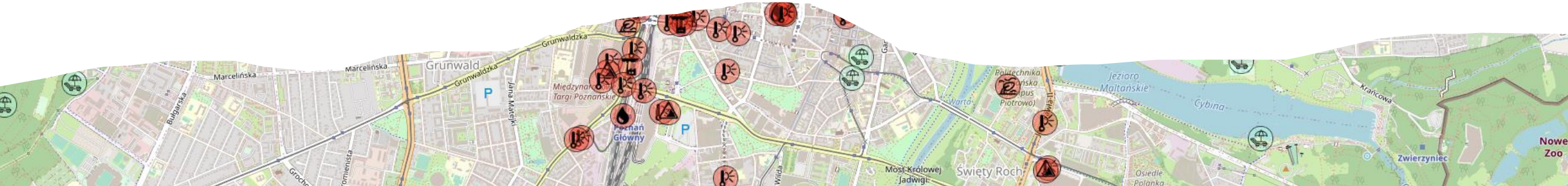
Polish – mapujklimat.terrifica.eu

Serbian – belgrade.terrifica.eu

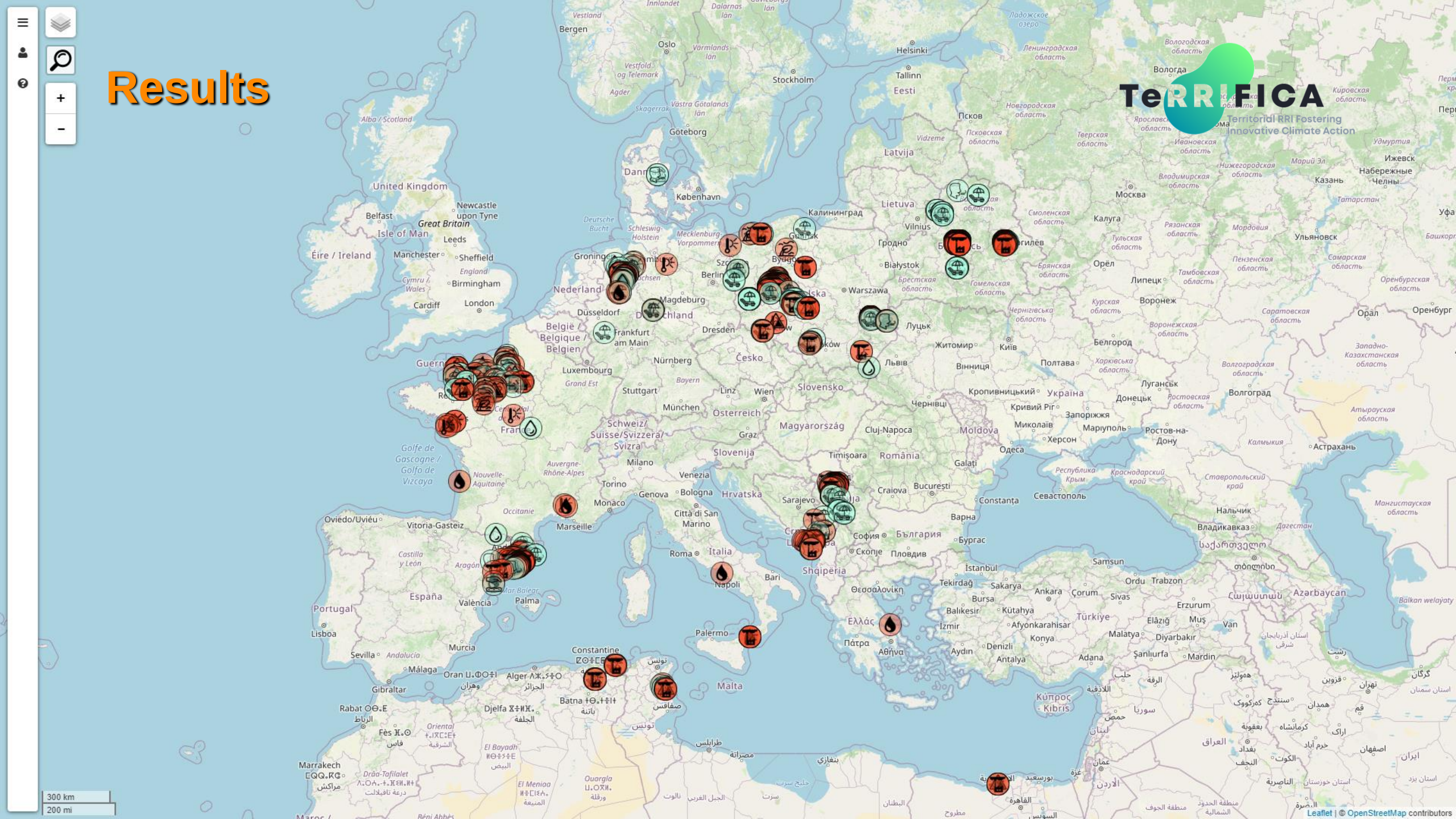
Spanish – cambioclimatico.terrifica.eu

Catalan – canviclimatic.terrifica.eu

English – climatemapping.terrifica.eu



Results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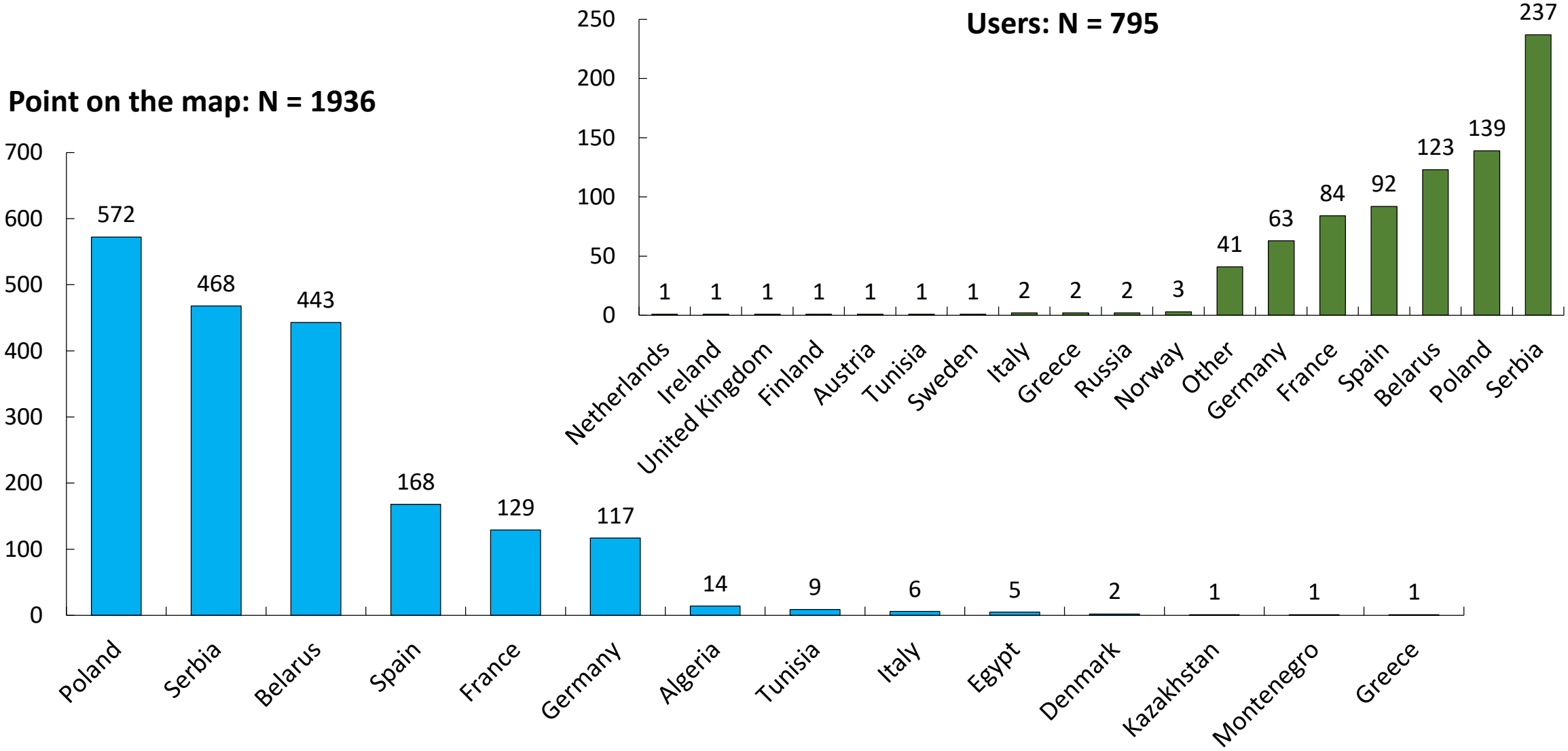
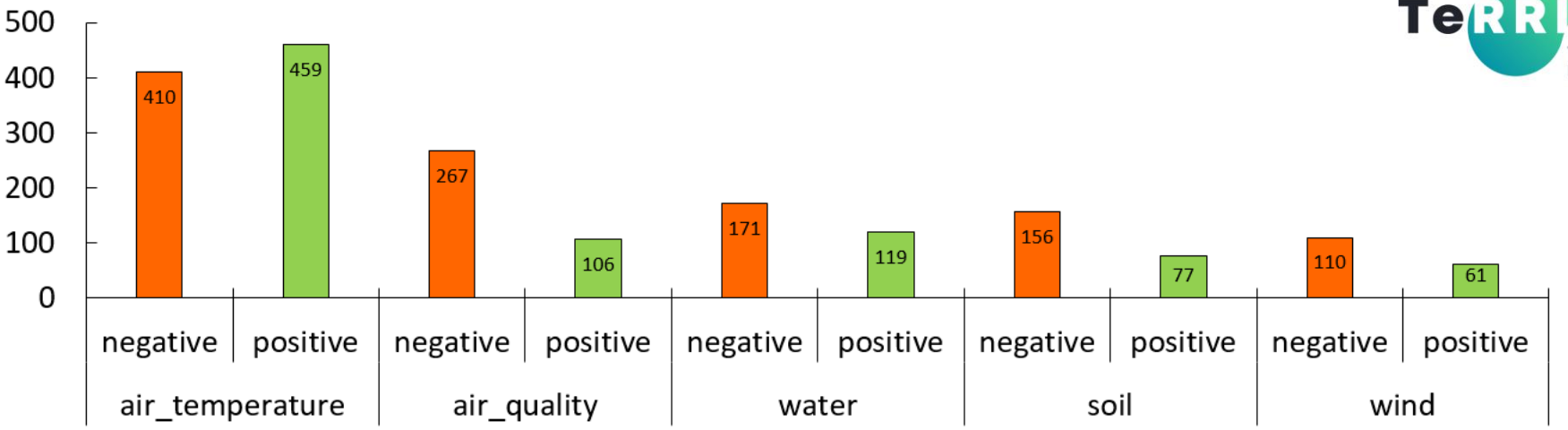
300 km
200 mi
Leaflet | © OpenStreetMap contributors

Results

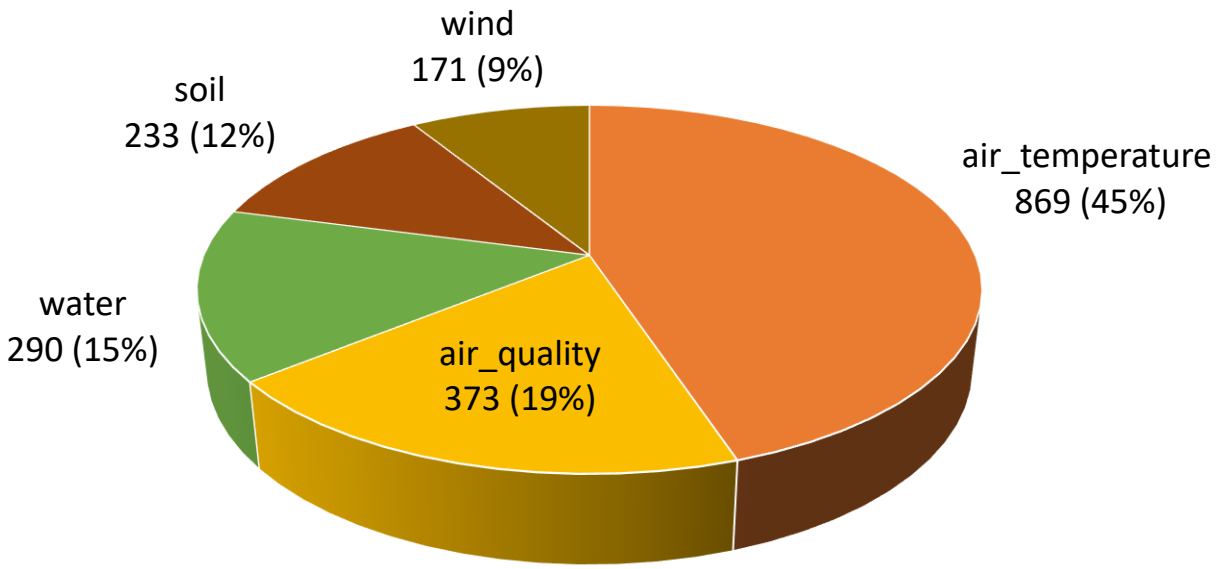

Point on the map: N = 1936
700
600
500
400
300
200
100
0
572
468
443
168
129
117
14
9
6
5
2
1
1
1
Poland
Serbia
Belarus
Spain
France
Germany
Algeria
Tunisia
Italy
Egypt
Denmark
Kazakhstan
Montenegro
Greece
Users: N = 795
250
200
150
100
50
0
1
1
1
1
1
1
1
2
2
2
3
41
63
84
92
123
139
237
Netherlands
Ireland
United Kingdom
Finland
Austria
Tunisia
Sweden
Italy
Greece
Russia
Norway
Other
Germany
France
Spain
Belarus
Poland
Serbia

Results

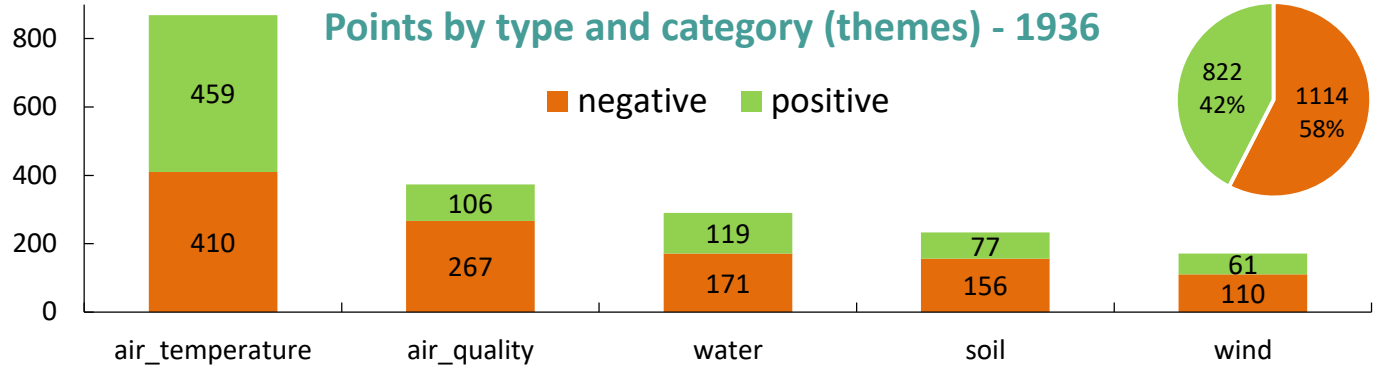
Points by type and category (themes)



Points by category (themes)



Results



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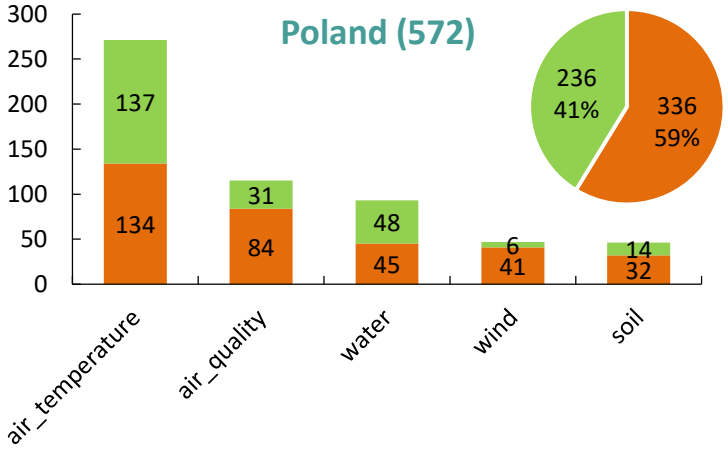

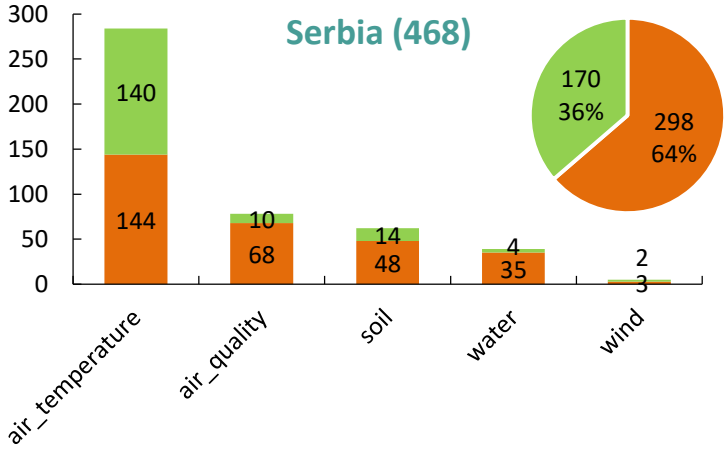

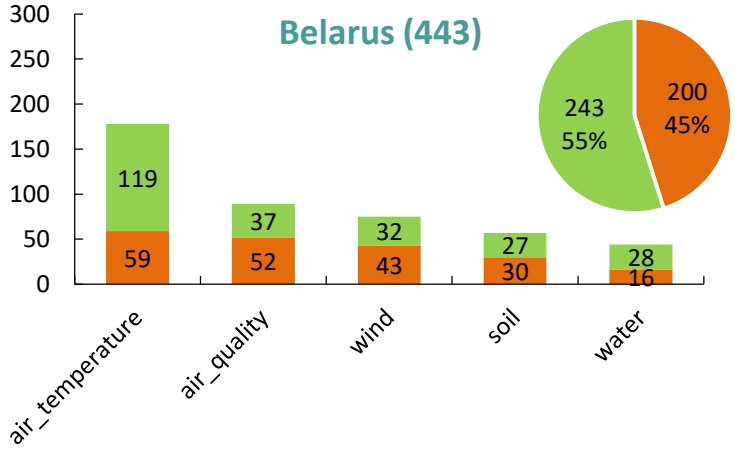

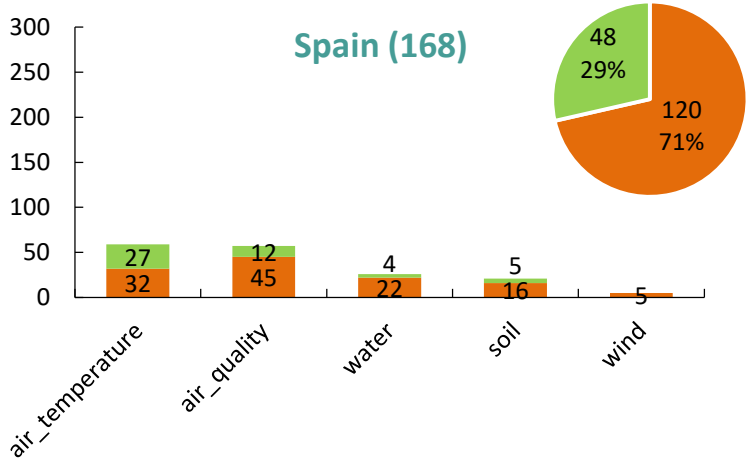

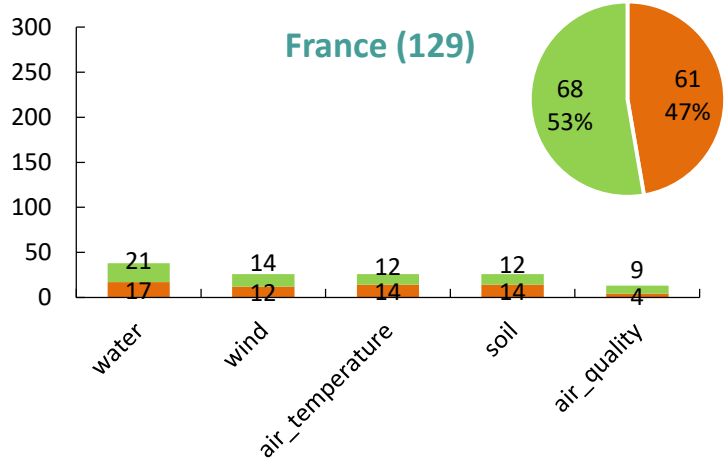

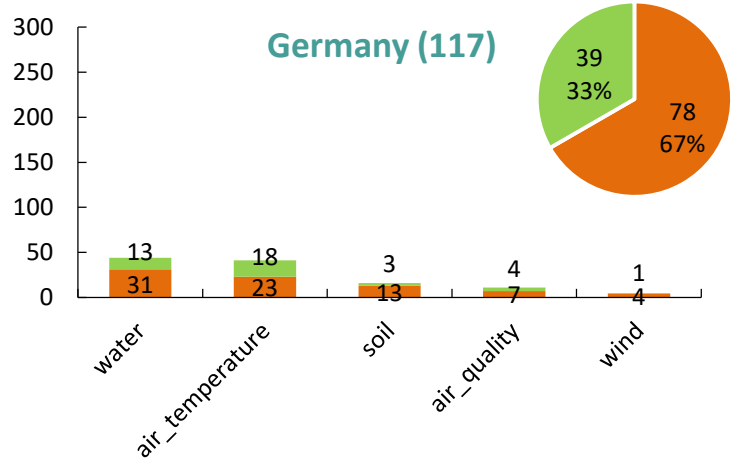

How users justify mapping a spot?
Review of the main reasons for adding a point.

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✓ Negative points:

Air_temperature	Wind	Water	Air_quality	Soil
lack of trees and green areas 81%	insufficient protection against wind damage through buildings 42%	limited access to installations capturing and/or storing water 31%	presence of air pollutants (traffic, farming or industrial pollutants) 39%	high level of sealed surfaces (parking lots, asphalt, concrete) 41%
insufficient number of installations (e.g. fountain, water dispensers) 7%	bad condition or missing of trees, bushes or hedges 41%	insufficient number of water bodies and watercourses capturing and storing water 28%	insufficient number of trees and green areas 27%	lack of actions against soil erosion/landslides (tree planting, balks, mid-field afforestation and bushes) 38%

✓ Positive points (potential solutions):

Air_temperature	Wind	Water	Air_quality	Soil
trees and green areas 84%	protection against wind damage through bushes, hedges, trees 49%	natural water bodies and watercourses capturing and storing water 47%	trees and green areas 84%	actions against soil erosion/ landslides (permanent vegetation, tree planting) 50%
natural water areas (e.g. lakes, ponds, rivers, streams) 8%	protection against wind damage through buildings 49%	installations capturing and/or storing water 26%	policies and infrastructures reducing car traffic (public transport, bicycle roads, pedestrian zones) 9%	no sealed ground (parking lots, asphalt, concrete) 26%

TeRRIFICAs Living labs in pilot regions: Climate Action Plans for the hot spots

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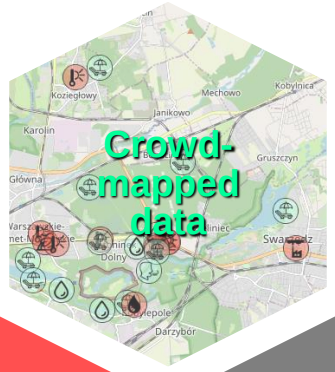
Green infrastructure



Climate Change Mitigation & Adaptation policies

Data collected during regional summer schools in pilot regions

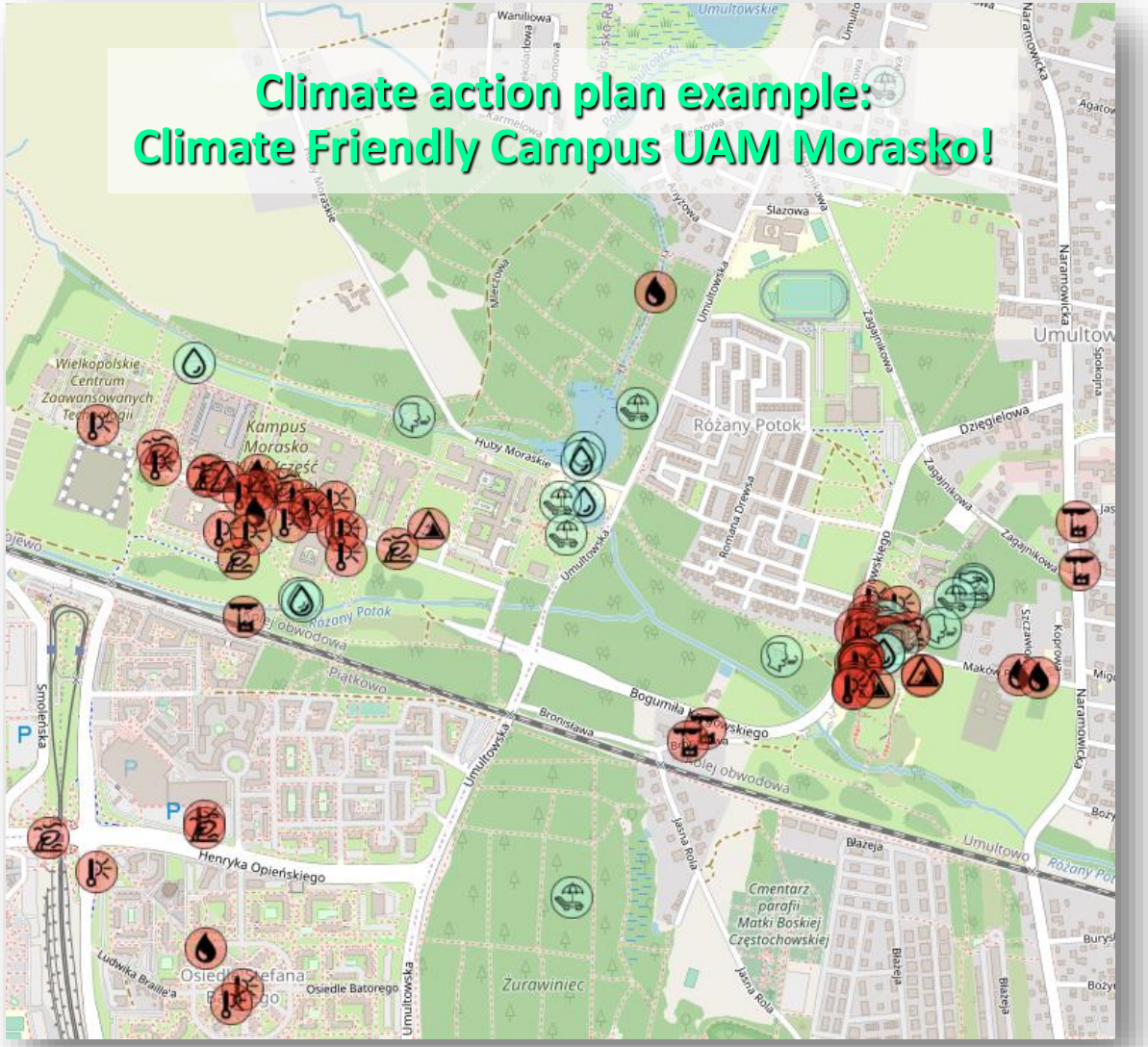
Issues/ challenges identified by society

Grey infrastructure

Blue infrastructure

Solutions co-created by society

Data collected during regional consultation workshops and other participatory events



Crowdmapping & Climate Change Adaptation Plan for Poznań Agglomeration

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POZnań metropolia

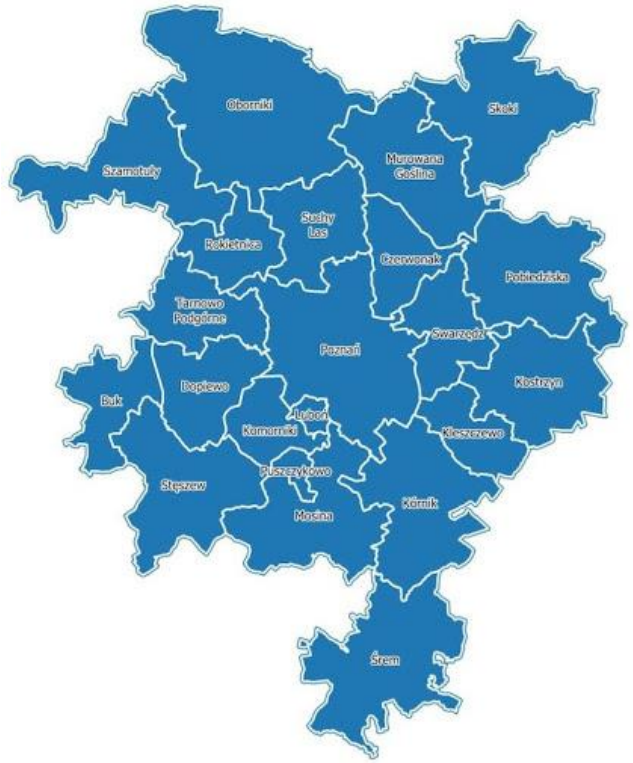
Participatory Mapping – VGIS approach
TeRRIFICA mapujklimat.terrifca.eu

Quadruple Helix actors

CO-CREATION

„Living Lab" workshops in each municipality of Poznań Agglomeration

Climate Change Adaptation Plan for Poznań Agglomeration



Summary and conclusions (in progress ;-)

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- ✓ Online participatory tools (PPGIS/VGIS based ones) can support the planning process, especially in times of climate emergency and rapid population growth when the biohazards (like COVID-19) might occur more frequently. These innovative solutions in the field of participatory planning are effective despite the sanitation restrictions introduced during the Covid-19 pandemic.

- ✓ The limitation on the way to use the crowd mapping tools broadly in planning is strongly related to the social inclusion challenges. For some social groups (e.g. older adults) crowd mapping applications might be hard to use (lack of computer literacy, lack of interest in technology).

- ✓ There are differences in crowd mapping results between the pilot regions. In more urbanized areas, air temperature and air quality challenges seem to be identified more frequently than in rural ones, where water issues are more relevant!

- ✓ Nature-based solutions and green infrastructure as the most frequently identified measures empowering climate resilience (by users of the TeRRIFICA crowd-mapping tool)!

- ✓ Currently we are processing the result of crowdmapping action in pilot regions to prepare a scientific paper!

ADAM MICKIEWICZ UNIVERSITY IN POZNAN
Faculty of Human Geography and Planning

Thank you!

IJEPR 2022 Conference
6th International Conference on 'URBAN E-planning'
7 - 12 April 2022

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