

From **data** to **decision-making** under conditions of uncertainty

August 26th to 28th, 2025

RISK
Summer
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2025



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DECODE Project

Decode stands for : DEvelop COmptences DEvoted to the management of uncertainty with creativity and drama tools

**BRITISH
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AQUASOC

An online tool for the self-assessment of social impacts and social capacities in local flood-risk planning

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Universitat d'Alacant
Universidad de Alicante



INSTITUTO UNIVERSITARIO DEL AGUA
Y DE LAS CIENCIAS AMBIENTALES



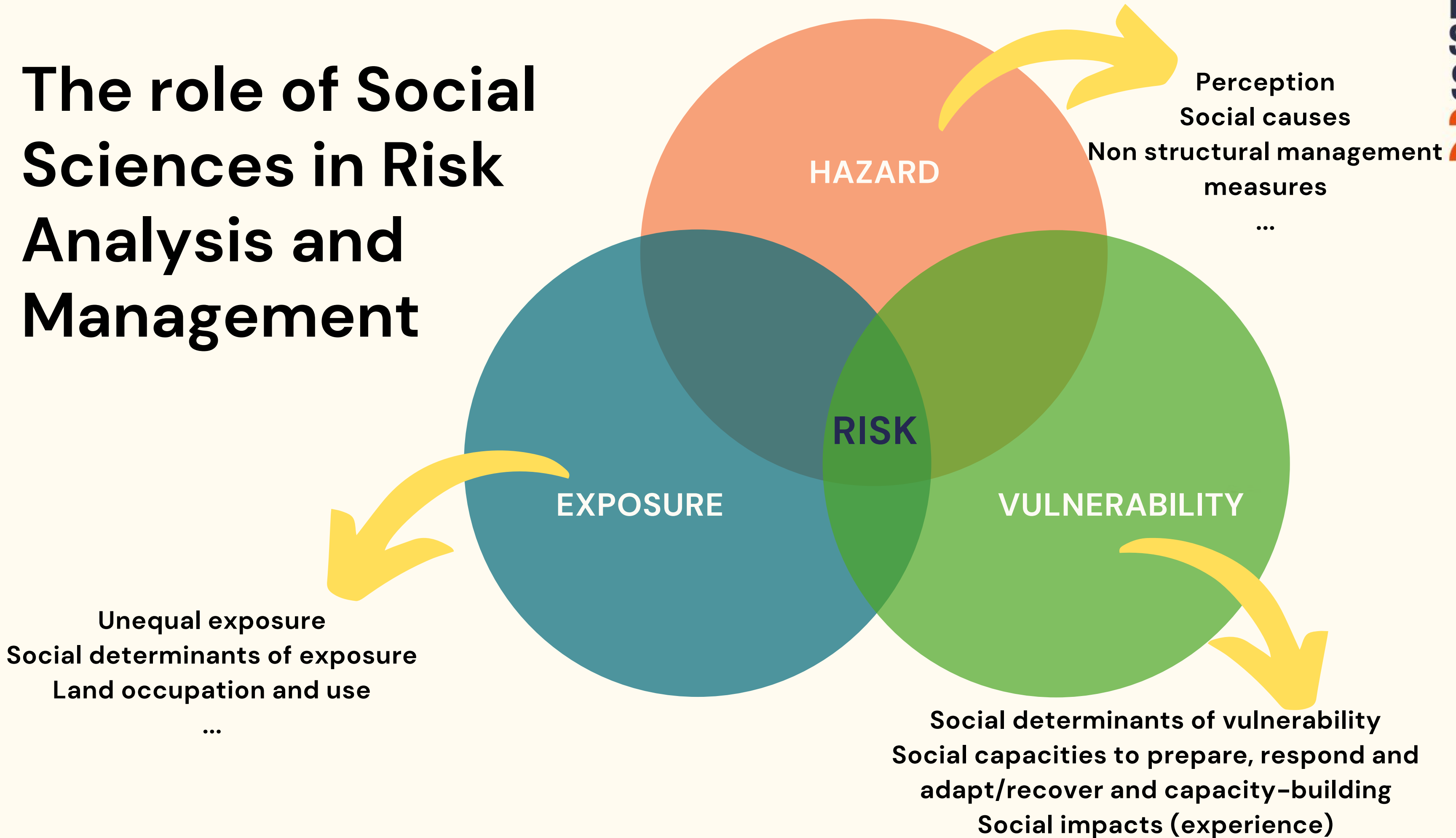
EUROPE
Society for Risk Analysis



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DE INUNDACIONES Y SEQUÍAS

The role of Social Sciences in Risk Analysis and Management





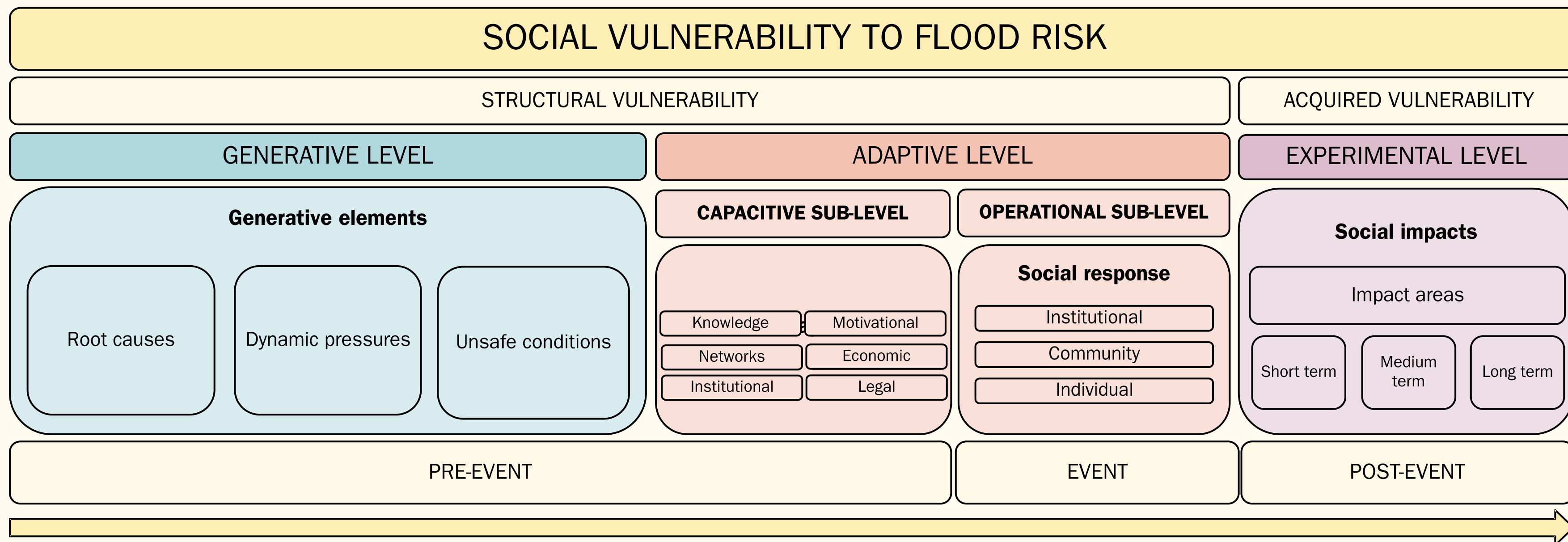
The research problem:

–Fragmented approach to Social Vulnerability:

- Social Impact Assessment
- Capacities/Resilience
- Determinants of SV:
 - Quantitative, SoVI, cartography, absence of non mensurable elements

–(Social) Science–Policy Gap

- Absence of integration of the social dimension of risk in local flood-risk management
- Lack of trasposition of international guidelines into local flood-risk plans





Objectives:

1. To exhaustively catalogue social impacts in diverse case studies

2. To analyze the causes of the impacts to identify social capacities

3. To design tools for capacity building in flood-risk management (AQUASOC tool)

**Social
Impacts**

Social Capacities

Social Capacity-Building Priorities

Case Studies:



Alicante
2019

overflow



Tenerife
2002

flash flood



Huelva
2021

coastal

+ International cases

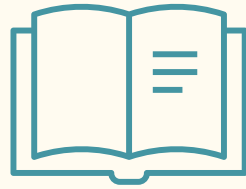
- Tuscany (Italy)
- Recife (Brazil)
- Louisiana (USA)

Completeness and
generalizability

**Exhaustive identification and analysis
of Social Impacts and Capacities**



Data Collection:



Systematic literature review

- 190 documents on social impacts of floods
- 655 documents on social capacities
- Qualitative meta-analysis (identification of analytical categories)



Stakeholder mapping

- 8 main categories of stakeholders:
 - Public administration
 - Political representatives
 - Technicians
 - Emergency services
 - Social services
 - Citizen organisations
 - Affected population
 - Flood risk experts
 - Media



Qualitative interviews

- 117 semi-structured interviews
- Identification of social impacts and their links to social capacities

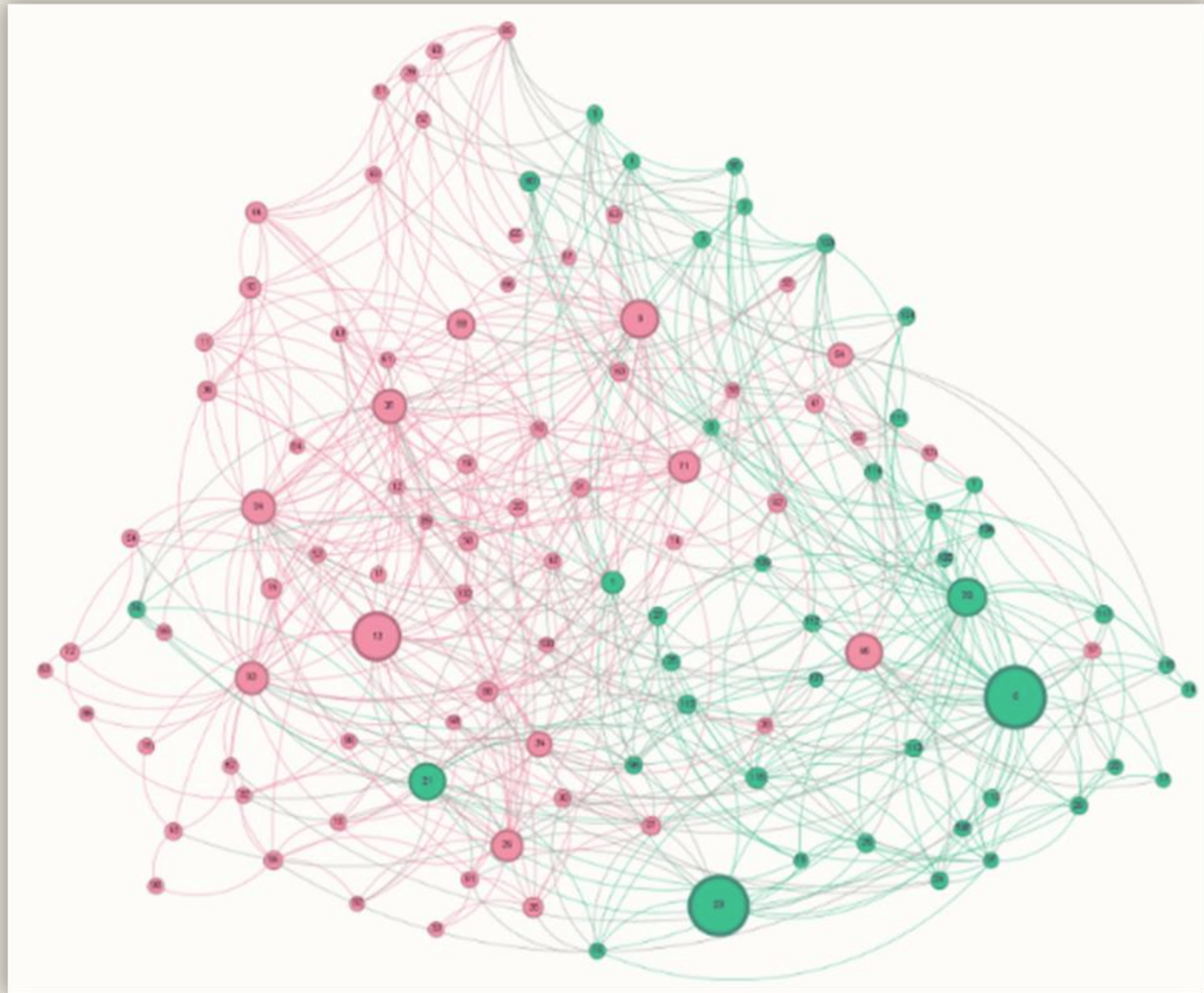
Other sources



- Economic analysis (insured costs/public aid/volunteering)
- Governance analysis (local risk management plans)



588 edges
115 nodes
(72 SI – 43 SC)



Ortiz et al. (2025) Connecting social impacts and social capacities for flood risk management and disaster risk reduction. *Journal of Risk Research* (Accepted-In press).

<http://dx.doi.org/10.1080/13669877.2025.2553078>



72 Social Impacts

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1. Domestic life and economy

Quality of life, supplies, resources shortages, household damages, losses in household income, savings, increase in external economic dependency

2. Productive sector, local business and labour

Productivity decrease, deterioration of labour conditions, reputation, etc.

3. Mobility, communications and supplies

Limitation of movements, accessibility and communication, effective provision of supplies (energy, water, etc.)

4. Physical and psychological health

Life threat, injuries, health services, physical and mental health

5. Educational and cultural services

Interruption of educational activity, loss of educational resources, effects on cultural services

6. Emergency services and institutional response

Difficulties of rescue, evacuation and relocation action, victim assistance, emergency resources allocation, institutional overload, budget assignment, etc.

7. Community cohesion and conflict

Loss of local identity, effects on family and community ties, perception of insecurity, community conflicts, social mobilization, discrimination, vandalism.



43 Social Capacities

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1. Knowledge

Memory and knowledge about: self-protection measures, agents involved, legal frameworks, aid-request processes

2. Attitudinal and Psychologic

Motivation and willingness to self-protection and individual/collective responsibility, institutional trust, creativity

3. Network-community

Relationships of trust between local and community actors (formal and informal), social capital

4. Institutional-Governance

Efficiency of policies, programs and institutional assistance, flexibility to make decisions and access to resources

5. Economic

Income/purchasing power, own material resources, type of employment, savings, home ownership

6. Services

Efficiency of critical and essential services (transportation, health, telecommunications, educational, administrative, social services)

7. Communicative and Technological

Access to and use of reliable and critical information and communication before, during and after the event



www.aquasoc.org

Welcome to AQUASOC

AQUASOC is a tool designed to help assess the social impacts of flooding and identify training strategies for local communities exposed to these types of disasters.



Before you start...

How to use AQUASOC?

AQUASOC consists of several interactive screens that will guide you through the identification and self-diagnosis of the social impacts of flooding in your municipality and the capabilities needed to prevent and address it.



ID



Assessment



Development

Give your report a title *

Example. Albacete

Start Self-Test

STEP 1

20%

Selection of categories of social impacts of floods

On this screen, you can select the categories of social impacts that, in your opinion and professional experience, have affected your municipality in the past or could affect it in the future during flood events. Each category is accompanied by a list of social impacts, which you can assess in the following sections.

Remember that:

-  By checking each category, you are selecting the impact groups that will appear on the following screens for your evaluation.
-  If you prefer not to assess the impacts of a particular category or believe that this category does not and would not impact your municipality, leave it unchecked.
-  If this is your first time using AQUASOC, we recommend selecting "Select all options" to assess all the impacts the tool incorporates.

☐ Select all options



☐ Life and domestic economy

This category includes social impacts related to the alteration of domestic dynamics and household resources.



☐ Productive, labor and business system of the municipality

This category includes social impacts related to decreased productivity, deteriorating working conditions, and difficulties in accessing key economic activities.



☐ Mobility, communications and supplies

This category includes social impacts linked to limitations in connectivity, transportation, and access to essential basic services.



☐ Physical and psychological health

This category includes social impacts related to the deterioration of physical and mental well-being, the reduction in the quality of medical care, and the impact on health and hygiene conditions.



☐ Educational and cultural services

This category includes social impacts that affect access to education, the quality of training, and participation in cultural, sports, and leisure activities.



☐ Emergency services and institutional response

This category includes social impacts that limit emergency response, access to essential goods, and the management of shelters, impacting municipal resources.



☐ Community cohesion and conflict

This category includes social impacts that weaken community identity, increase social exclusion, and generate conflict, affecting coexistence and social stability.

Start evaluating

Self-assessment of social impacts of floods

On the following screens, you can self-assess the social impacts grouped according to the categories you selected above. This way, you can select and evaluate each of the impacts you consider impacting your municipality. Each impact will be accompanied by a brief description that will serve as support and reference.

How to evaluate?



Select by checking the box the social impacts that, in your opinion, have affected your municipality in the past or could affect it in the future due to a flood event.



For those selected impacts, criteria will be displayed, allowing you to evaluate them from 1 to 5 based on their scope, intensity, and reversibility. Move the marker for each criterion to the desired score.



LIFE AND DOMESTIC ECONOMY

This category includes social impacts related to the alteration of domestic dynamics and household resources.

☒ Problems of access to food and basic household goods

Restriction or interruption of access to essential resources such as food, hygiene products and/or medicines as a result of a flood.

Rate the criterion from 1 to 5, with 1 being the lowest value and 5 being the highest value.

① Intensity



① Population reach



① Management difficulty



☐ Permanent change of address

Permanent relocation to a new home due to irreparable damage to the primary residence, its uninhabitability, or its total destruction as a result of a flood.

☐ Increased economic dependence on the household

Increased need for additional financial support (private, bank, and/or family loans, sudden need for multiple jobs) among affected individuals due to loss of income, decreased assets, and increased expenses related to the emergency and/or recovery.

☐ Loss of quality and quantity of free time

Lack of free time due to the demands and responsibilities related to managing the effects of a flood.

☐ Temporary change of address

Temporary relocation to a new home or shelter due to unsafe conditions in the usual residence as a result of flooding.

☐ Increase in homelessness

An increase in the number of people experiencing temporary or permanent homelessness due to the destruction or serious damage to their homes, a lack of support networks, loss of income and savings, and a lack of insurance to cover recovery costs.

☐ Difficulty in acquiring or renting housing

Difficulty purchasing or renting a home due to a shortage of available properties, rising real estate market prices, and/or a lack of financing following the flood.

☐ Deterioration of domestic life dynamics and routines

Deterioration or disruption of usual routines, roles, and relationships within the home related to the organization and distribution of household tasks and interactions between household members.

Self-assessment of social capacity categories in response to flooding

The following screens will display the social capacities needed to prevent and address the social impacts of flooding that you selected and assessed earlier. This will allow you to assess the extent to which your municipality has each of these capacities. The social capacities will be presented grouped by category and accompanied by a brief description that will serve as support and reference.

How to evaluate?



Please rate, using a scale of 0 to 5, the level to which each of the capabilities in your municipality has been developed to date, based on your knowledge and professional experience.



Please note that 0 represents a zero level of development (total absence of social capacity in your municipality) and 5 indicates a complete or full level of development of said capacity.



FLOOD KNOWLEDGE CAPABILITIES

This category includes skills related to knowledge of response strategies, flood event memory, identification of key stakeholders in flood management and response, management of emergency indicators, and understanding of the current regulatory framework.

Knowledge of preparedness and response strategies

Understanding that community members have of effective methods and strategies for preparing for and responding to floods.

Level of development

Non-existent 0 1 2 3 4 5 Complete

Knowledge and identification of actors in flood management and response

Community members' understanding of who the government, institutional, and third-sector actors are involved in flood management.

Level of development

Non-existent 0 1 2 3 4 5 Complete

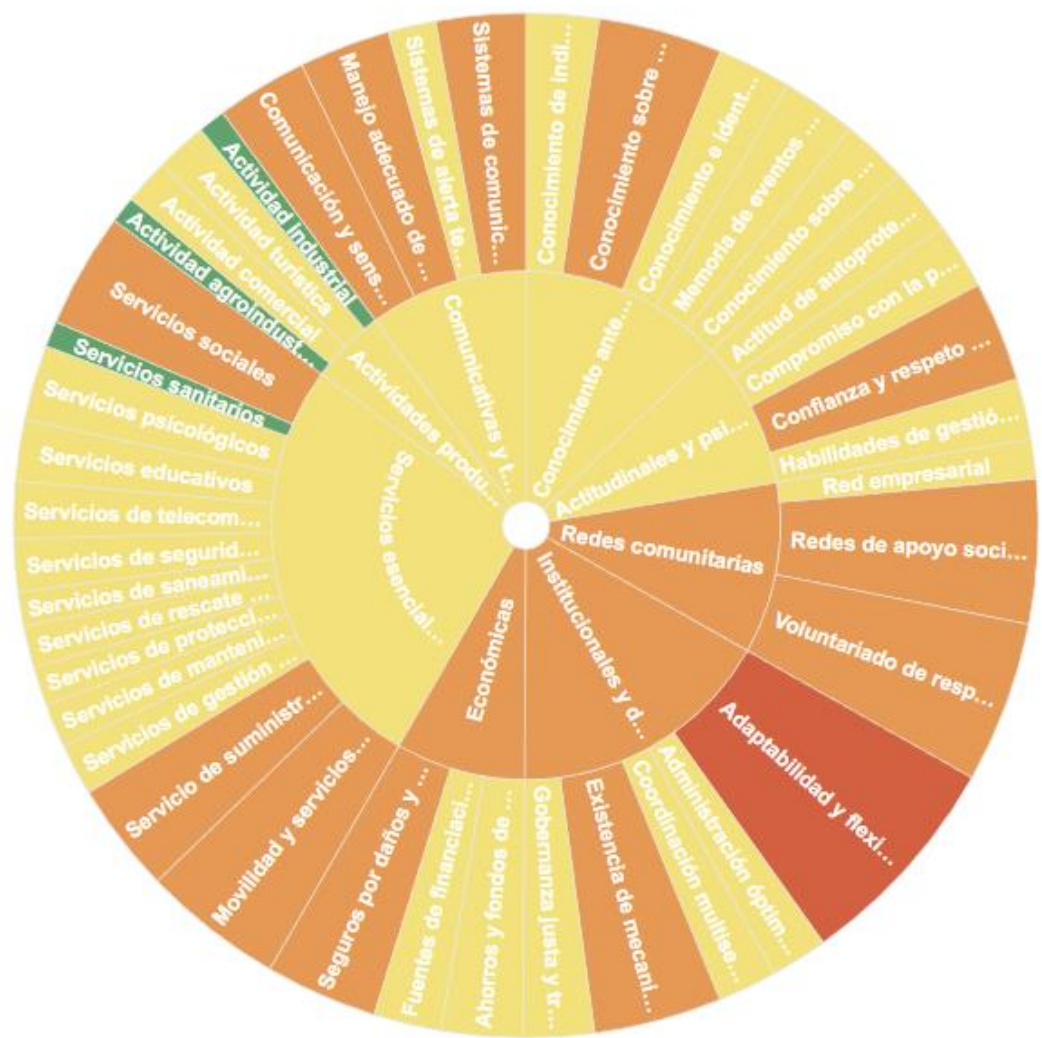
Flood event report

Recollection of previous experiences that members of a community have about the causes and consequences of previous flood events.

Level of development

Non-existent 0 1 2 3 4 5 Complete

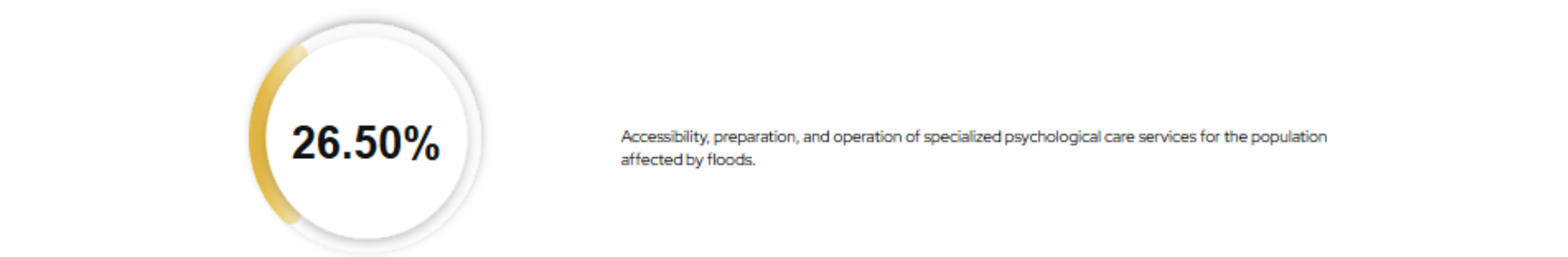
Summary of social capabilities according to their level of urgency



Priorities for action in social training

Critical emergency capabilities	High urgency capabilities	Moderate urgency capabilities	Low urgency capabilities
77.46% Adaptability and flexibility of municipal flood management mechanisms	56.88% Flood Response Volunteering 50.64% Social support networks 49.62% Mobility and transportation services 45% Existence of municipal strategic planning mechanisms for flooding 43.43% Knowledge of preparedness and response strategies 40.52% Social services 39.44% Insurance for damages and losses 38.86% Basic supplies service 35.31% Trust and respect for institutions	28.63% Savings and contingency funds 26.5% Psychological services 26.35% Flood event report 26.05% Knowledge and identification of actors in flood management and response 25.53% Knowledge of emergency indicators 24.91% Fair and transparent governance in the face of floods 23.73% Sources of external financing for households and/or businesses 23.71% Commitment to collective	9.65% Industrial activity 9.44% Agroindustrial activity 9.17% Health services

Psychological services26.50%



Accessibility, preparation, and operation of specialized psychological care services for the population affected by floods.

Related impacts

Below are the impacts you have assessed on the AQUASOC platform that have a direct or indirect causal relationship with this capacity. In other words, strengthening this capacity could help mitigate or prevent the following impacts:

- Psychosocial problems
- Difficulties in accessing psychological care
- Reduction in the quality of psychological care
- Social tension
- Duel
- Difficulty accessing healthcare services
- Problems of insecurity and coexistence in reception spaces

Other related capabilities

Below are the capabilities you have assessed on the AQUASOC platform that have a direct or indirect causal relationship with this capacity. In other words, strengthening this capacity could also contribute to strengthening the following capabilities:

- Existence of municipal strategic planning mechanisms for flooding
- Mobility and transportation services
- Flood communication and public awareness
- Health services
- Social services
- Trust and respect for institutions

Recommended actions

As an example, some actions aimed at developing this capacity are suggested:

- Action 1

Development of protocols for managing the psychological and emotional impact experienced by all personnel responsible for managing and responding to the flood disaster
- Action 2

Development of psychological assistance protocols for people affected by flood events (support for families of fatalities, emotional crisis management, post-event follow-up of cases).
- Action 3
- Action 4

MOVING FORWARD: From AQUASOC to AQUACAP

Objectives:



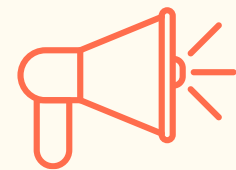
**Export and
improve
AQUASOC**



**Develop a
Catalog of SCB
Actions for flood
risk reduction**

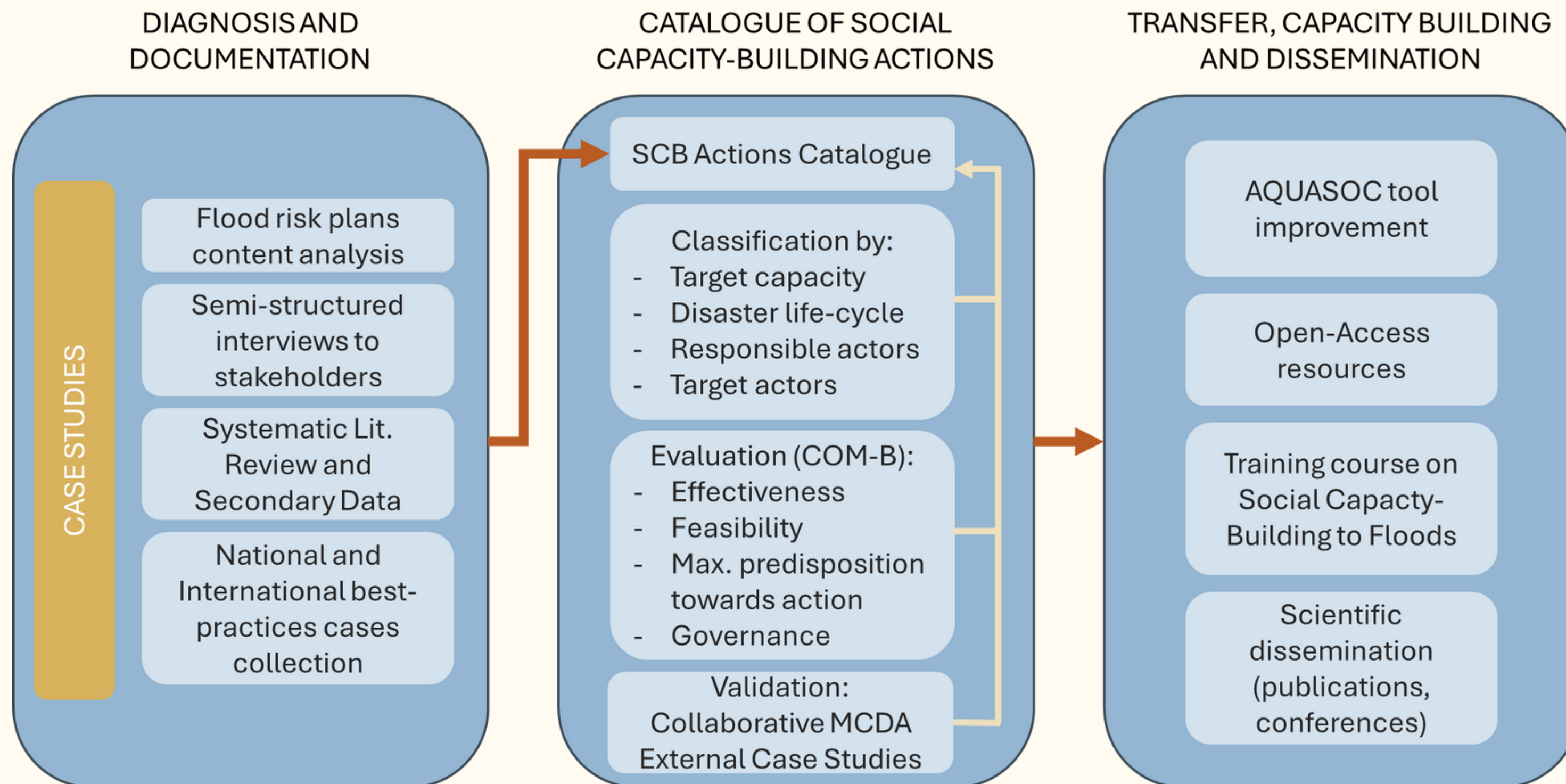


**Classify and
collaboratively
evaluate the SCB
actions**

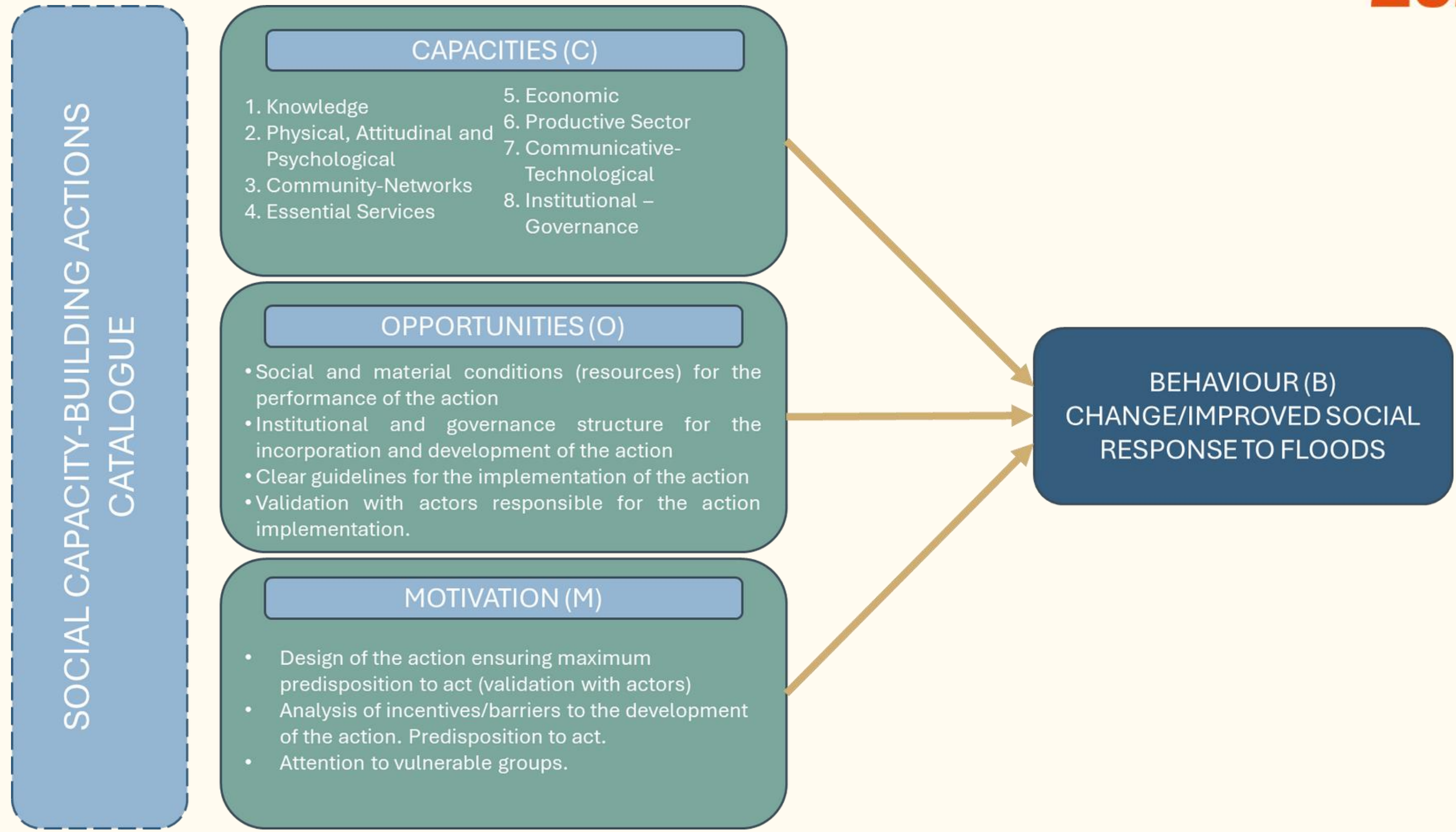


**Transfer and
dissemination**





Application of the COM-B Model to the Development and Assessment of SCB Actions



Ways to connect / Our platforms:



www.obsis.es



www.iuaca.ua.es



www.redrides.org



www.sraeurope.org



www.cost.eu/actions/CA23126

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Thank you!

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