

# PARTICIPATORY METHODS FOR VULNERABILITY ASSESSMENT

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ClimaSouth  
Regional Workshop

*Milano, 3 Feb. 2016*



# PARTICIPATION IS...?

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- have you ever been involved in a participatory process?
  - what was your role?
  - what was the goal?
  - what was the outcome?
- have you ever organized/designed a participatory process?
  - what was your role?
  - what was the goal?
  - what was the outcome?
- what was your level of satisfaction vs. your expectations?



# OUTLINE

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- Background: why participation
- Examples: share experiences
  - your experiences
  - vulnerability assessment: Tabasco
  - stakeholder selection: CLIM-RUN
  - brainstorming: BRAHMATWINN
  - cognitive maps: PhD
  - monitoring: ACLIMAS
- Discussion: strengths and weaknesses
- Conclusions
  
- Hands on: participatory vulnerability assessment



# INTRODUCTION

why do we need to engage stakeholders  
in participatory processes to assess vulnerability?

## who is a stakeholder?



one who is **involved** in or **affected** by  
a course of action

commitment

expertise

**top-down VS. bottom-up**



# Arnstein (1969)

Real participation or “citizen power”	(8) <i>Citizen Control</i> (7) <i>Delegated Power</i>	stakeholders obtain the majority of decision-making seats, or full managerial power
	(6) <i>Partnership</i>	allows stakeholders to negotiate with policy-makers as peers
Tokenism	(5) <i>Placation</i>	still amounts to tokenism since stakeholders are allowed to advise but the decision-making power is not in their hands yet
	(4) <i>Consultation</i> (3) <i>Informing</i>	citizens can make their voice heard and get informed; however, their input does not need to be taken up by the authorities
Non-participation	(2) <i>Therapy</i> (1) <i>Manipulation</i>	the real objectives are to educate and “cure” the stakeholders through illusory involvement

Arnstein S. 1969. A Ladder Of Citizen Participation. *Journal of the American Institute of Planners* 35(4): 216-224



# PARIS AGREEMENT – UNFCCC COP21 (2015)

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## ARTICLE 7

5. Parties acknowledge that adaptation action should follow a country-driven, gender-responsive, **participatory** and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, **traditional knowledge, knowledge of indigenous peoples and local knowledge systems**, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.



# Share

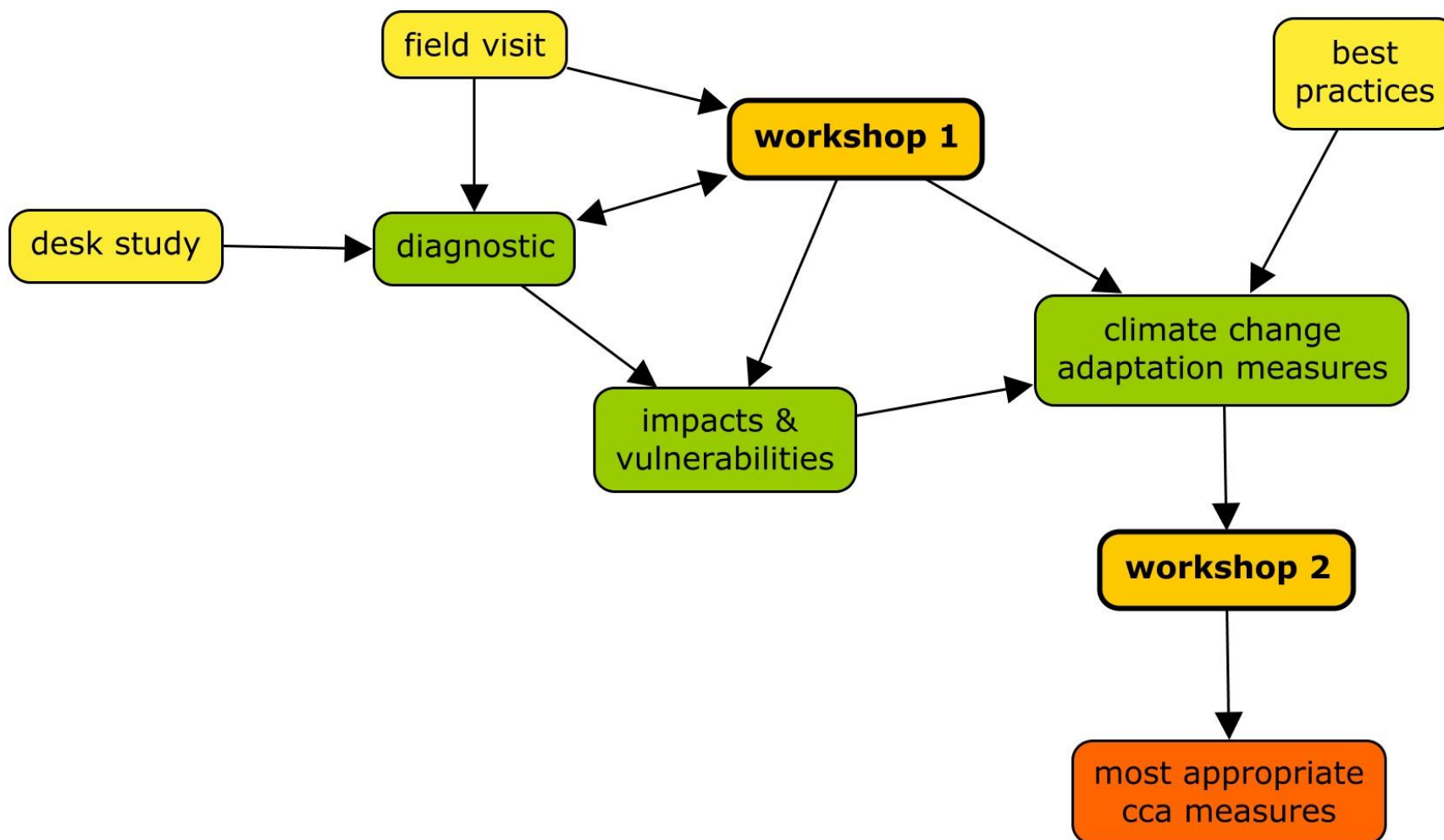
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your experience?

your doubts?



## Design of adaptation measures for the coastal lagoon system Carmen-Pajonal-Machona (Mexico)

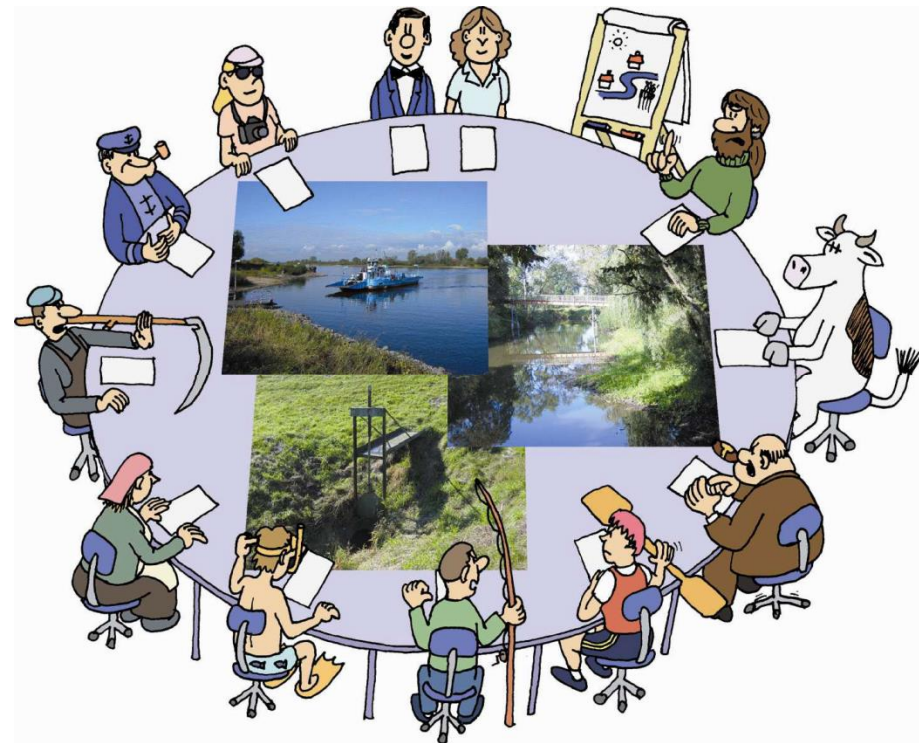




## Workshop 1 (March 2015)

Investigate problems associated with impacts from climate and from human activities to identify possible adaptation measures, which should reduce vulnerability.

- Describe socio-ecosystem and its vulnerability to impacts from climate change
- Identify existing public policies and resources useful for improving resilience to climate change
- Identify possible adaptation measures, which should decrease vulnerability



## Workshop 2 (June 2015)

Evaluate relative effectiveness of identified/proposed adaptation measures



Who are the stakeholders?

1. institutions, academic – day 1
2. local communities – day 2



# TABASCO – day 1



## Programa

Maestro de Ceremonias: Dr. Emiliano Ramieri (Thetis)

Hora	Actividad
8:00 – 9:00	<b>1. Registro de participantes</b>
9:00 – 9:15	<b>2. Inauguración</b> <ul style="list-style-type: none"> <li>Dra. Margarita Caso Chávez. Directora de Vulnerabilidad y Adaptación Ecológica del INECC.</li> <li>Ing. Luis Alberto López Carbajal. Delegado de la SEMARNAT en Tabasco.</li> </ul>
9:15 – 10:15	<b>3. Presentaciones del contexto</b> <ul style="list-style-type: none"> <li>Biol. Alejandra Domínguez Álvarez. Jefa del Departamento de Especies en Riesgo del INECC. "Introducción al Cambio Climático".</li> <li>M. en C. Luis Felipe Zamora. Director de Políticas para el Cambio Climático de la SERNAPAM. "Acciones Estratégicas de Política Ambiental en Materia de Cambio Climático".</li> <li>Dr. Manuel Mendoza Carranza. Coordinador de manejo de cuencas y zonas costeras de ECOSUR. "Contexto de Cambio Climático en el sistema lagunar Carmen-Pajonal-Machona".</li> <li>Dra. Margarita Caso Chávez. Directora de Vulnerabilidad y Adaptación Ecológica del INECC. "El Proyecto de Adaptación de Humedales Costeros frente a Cambio Climático".</li> <li>Dra. Valentina Giannini. Consultora de Thetis. "Avances en la Investigación para el Diseño de Medidas de Adaptación".</li> <li>Dra. Valentina Giannini. "Objetivos del taller y mecánica de trabajo".</li> </ul>
10:15 – 10:30	<b>Receso</b>
10:30 – 12:00	<b>4. Mesas de trabajo</b> <ul style="list-style-type: none"> <li>Contribución de las actividades humanas en los impactos derivados del cambio climático – Matriz 1A.</li> <li>Contribución de las actividades humanas a las características socioambientales del sitio – Matriz 1B.</li> </ul>
12:00 – 12:15	<b>Receso</b>
12:15 – 13:15	<b>5. Mesas de trabajo</b> Impactos del cambio climático en las actividades humanas – Matriz 2
13:15 – 14:00	<b>6. Exposición de resultados</b> en plenaria por mesa de trabajo
14:00 – 15:00	<b>Comida</b>
15:00 – 16:30	<b>7. Mesas de trabajo</b> Identificación y propuesta de medidas de adaptación – Matriz 3
16:30 – 16:45	<b>Receso</b>
17:00 – 17:40	<b>8. Presentación de resultados por mesas de trabajo en plenaria</b>
17:40 – 17:50	<b>9. Cierre del Taller</b>

	institution	No.	
1	Consortio Thetis-CMCC-CE	7	team:  17 people
2	INECC	10	
3	IMTA	3	
4	UJAT	6	stakeholders:  37 people
5	ECOSUR	3	
6	Colegio Montecillo	1	
7	Instituto Tecnología de los Ríos	1	
8	SEMARNAT	7	
9	SERNAPAM	1	
10	CONAFOR	1	
11	CONABIO	1	
12	Secretaría de Salud	1	
13	Comisión Estatal Forestal	1	
14	COMESFOR	1	
15	Coordinación General Desarrollo Regional	1	
16	Centro del Cambio Global y de la Sostenibilidad	1	
17	PNUD	2	
18	API Puerto dos Bocas	3	
19	ADIS BACAB	1	
20	GASIPA-PEP	1	
21	PEMEX-GASIPA	1	



# TABASCO – day 1



Matrix 1A: Contribution of human activities to the climate change impacts

		Climate change impacts					
		sea level rise	temperature increase	change in precip. patterns	extreme hydro-met. events	water availability	changes in species distribution
Human activities	livestock						
	fishing						
	agriculture						
	tourism						
	aquaculture						
	infrastructure						
	forestry						
	industry						
	human settlements						

impact	value
very high	5
high	4
average	3
low	2
very low	1
no impact	0



# TABASCO – day 1



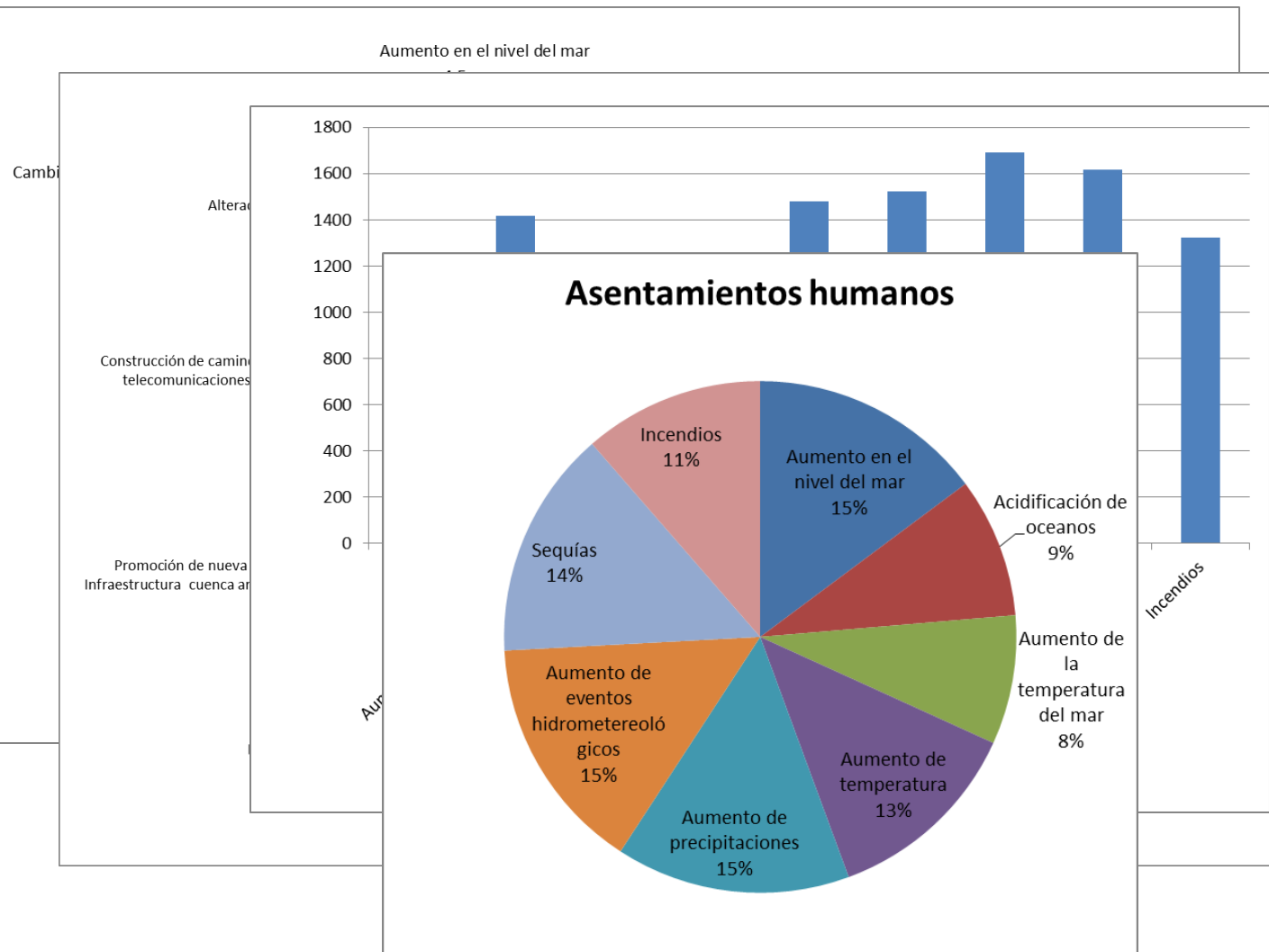
Matrix 1B

		Anthropogenic impacts							
		fresh water quality	salt water quality	watershed deforestation	introduction of invasive species	overexploitation of resources	dev. of costal infrastructure	dev. of infrastructure	
Human activities	livestock								
	fishing								
	agriculture								
	tourism								
	aquaculture								
	infrastructure								
	forestry								
	industry								
	human settlements								

impact	value
very high	5
high	4
average	3
low	2
very low	1
no impact	0



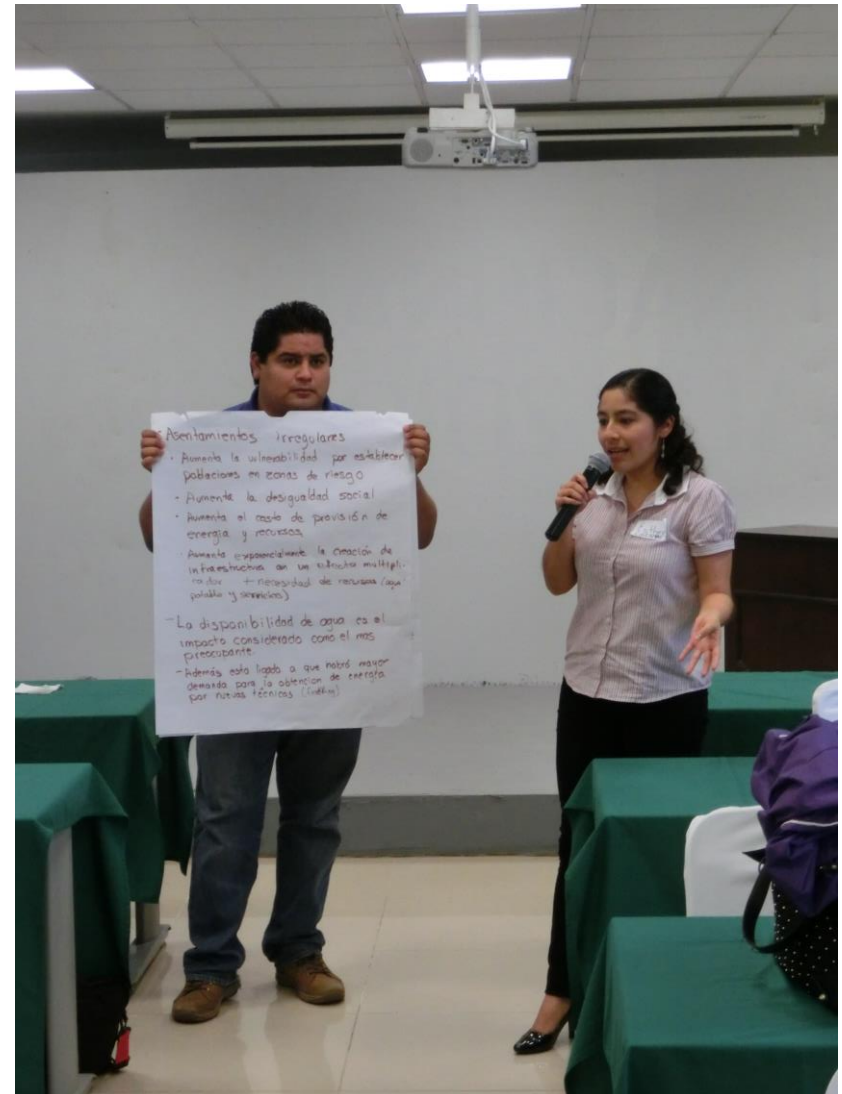
# TABASCO – day 1



# TABASCO – day 1

Matrix 2: identification of climate change impacts on human activities

Matrix 3: identification of adaptation measures



# TABASCO – day 2



	community/ institution	No.	
1	Consortio Thetis- CMCC-CE	7	team:  21 people
2	INECC	10	
3	IMTA	1	
4	Ayuntamiento Cárdenas	4	
5	ADIS BACAB	2	other:  5 people
6	Academia	2	
7	Ingeniera	1	
8	El Bari Primera	1	Costa Grande:  3 people
9	El Bari Segunda	1	
10	Las Calzadas	1	
11	Aldeas	1	Costa Chica:  19 people
12	Azucena Tercera	1	
13	El Mingo	2	
14	Golpe Segunda	5	
15	Guano Solo	2	
16	Las Coloradas	3	
17	Poza Redonda Primera	1	
18	Ria El Mingo	3	
19	Santuario Tercera	1	
20	Santa Maria Periférico	1	Cárdenas:  1 person

**Programa**  
Maestro de Ceremonias: Dr. Emiliano Ramieri (Thetis)

Hora	Actividad
8:00 – 9:00	<b>1. Registro de participantes, pago de transporte y desayuno</b>
9:00 – 9:20	<b>2. Inauguración</b> <ul style="list-style-type: none"> <li>• Dra. Margarita Caso Chávez. Directora de Vulnerabilidad y Adaptación Ecológica del INECC.</li> <li>• Ing. Luis Alberto López Carbajal. Delegado de la SEMARNAT en Tabasco.</li> <li>• C. Avenamar Pérez Acosta. Presidente Constitucional del Municipio de Cárdenas, Tabasco.</li> </ul>
9:20 – 9:50	<b>3. Presentaciones del contexto</b> <ul style="list-style-type: none"> <li>• Biol. Alejandra Domínguez Álvarez. Jefa del Departamento de Especies en Riesgo del INECC. “Introducción al Cambio Climático”.</li> <li>• Dra. Margarita Caso Chávez. Directora de Vulnerabilidad y Adaptación Ecológica del INECC. “El Proyecto de Adaptación de Humedales Costeros frente a Cambio Climático”.</li> <li>• Dra. Valentina Giannini. Consultora de Thetis. “Avances en la Investigación para el Diseño de Medidas de Adaptación”.</li> <li>• Dra. Valentina Giannini. “Objetivos del taller y mecánica de trabajo”.</li> </ul>
9:50 – 10:00	<b>Sesión de preguntas</b>
10:00 – 10:30	<b>Receso</b> Proyección de video
10:30 – 11:15	<b>4. Mesas de trabajo itinerantes para la socialización de conceptos clave</b> <ul style="list-style-type: none"> <li>• Cambio climático</li> <li>• Adaptación</li> <li>• Vulnerabilidad</li> </ul>
11:15 – 12:15	<b>5. Mesas de trabajo 1: Identificación de los impactos del cambio climático en las comunidades</b>
12:15 – 12:45	<b>Exposición de resultados en plenaria</b>
12:45 – 13:30	<b>6. Mesas de trabajo 2: Identificación de acciones de adaptación desde una visión social</b>
13:30 – 14:15	<b>Comida</b>
14:15 – 14:30	<b>7. Dinámica para promover la participación</b>
14:30 – 15:10	<b>8. Mesas de trabajo 2: Identificación de acciones de adaptación</b>
15:10 – 15:50	<b>Exposición de resultados en plenaria</b>
15:50 – 16:00	<b>9. Cierre del Taller</b>





# TABASCO – day 2

- What is climate change?
- What is adaptation?
- What is vulnerability?



# TABASCO – day 2

Matrix 1: impacts of climate change in the local communities

impacts	family env.	community env.	working env.	most common impacts
sea level rise				
sea temperature increase				
air temperature increase				
precipitation increase				
extreme events increase				
droughts increase				



# TABASCO – day 2



	family env.			community env. agriculture			working env. livestock			working env. fisheries			working env.			
<b>impacts</b>	P	A	M	P	A	M	P	A	M	P	A	M	P	A	M	SUM
sea level rise	6	8	6	4	8	7	0	4	6	4	0	0	6	8	6	73
sea temperature increase	3	7	7	0	0	2	0	0	2	4	3	7	0	0	3	38
air temperature increase	4	6	7	2	6	7	2	7	8	5	1	7	6	7	7	82
precipitation increase	0	1	7	2	7	7	4	6	6	5	0	7	6	6	7	71
extreme events increase	4	4	7	4	8	7	1	7	8	4	0	7	6	10	7	84
droughts increase	5	7	7	1	6	6	0	5	1	4	1	8	6	6	7	70
SUM	22	33	41	13	35	36	7	29	31	26	5	36	30	37	37	<b>418</b>

# TABASCO – day 2



Matrix 2: adaptation measures

	needs	capacities	proposals ideas	involved institutions
impacts				
sea level rise				
sea temperature increase				
air temperature increase				
precipitation increase				
extreme events increase				
droughts increase				



# CLIM-RUN

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**AIMS** at developing a protocol for applying new methodologies and improved modeling and downscaling tools for the provision of adequate climate information at regional to local scale that is relevant to and usable by different sectors of society (policymakers, industry, cities, etc.).

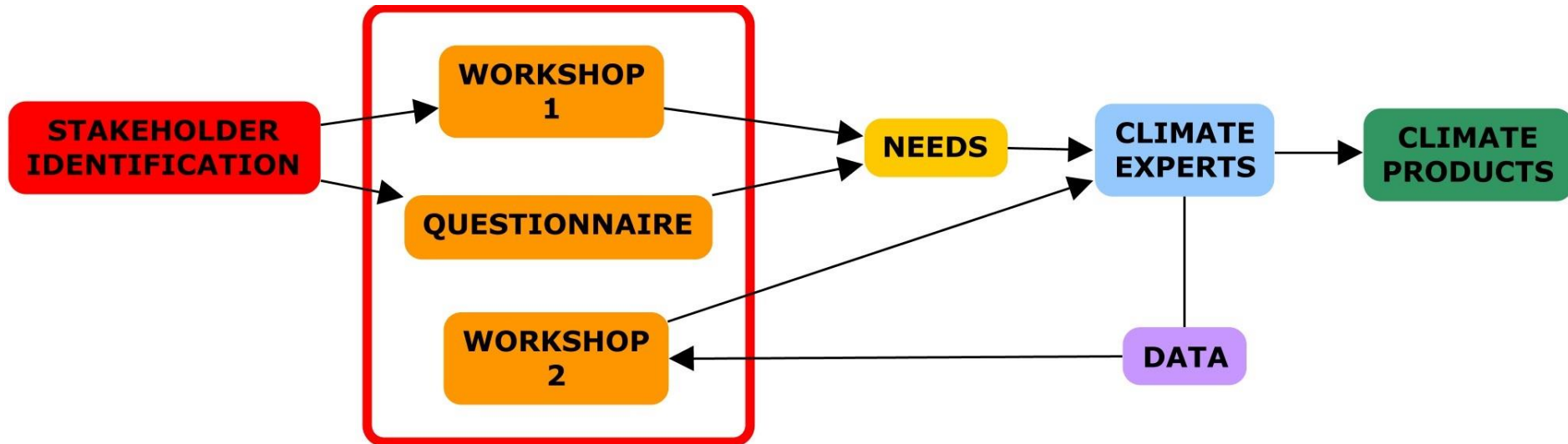
A **PARTICIPATORY PROCESS** involving stakeholders is organized to assess needs of end-users.

## **IMPROVEMENT:**

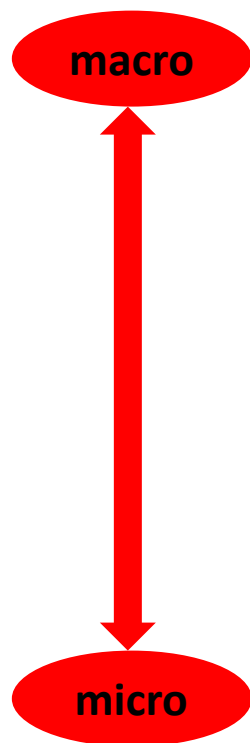
- more adequate climate information
- consolidation of relationship between climate scientists and stakeholders



# CLIM-RUN



# CLIM-RUN



LEVEL	VENETO	FRIULI VENEZIA GIULIA
NATIONAL		
INTER-REGIONAL		
REGIONAL		
INDEPENDENT AUTHORITIES		
PARKS AND RESERVES		
PROVINCES		
MUNICIPALITIES		



# CLIM-RUN

macro

micro

Level	Veneto	Friuli Venezia Giulia
<b>National</b>	<ul style="list-style-type: none"> <li>▪ Civil Protection, regional office</li> </ul>	<ul style="list-style-type: none"> <li>▪ Civil Protection, regional office</li> </ul>
<b>Inter-regional</b>	<ul style="list-style-type: none"> <li>▪ Autorità di bacino delle Alpi Orientali</li> <li>▪ Autorità di bacino dell'Alto Adriatico</li> <li>▪ Autorità di bacino del Po</li> </ul>	
<b>Regional</b>	<ul style="list-style-type: none"> <li>▪ ARPAV</li> <li>▪ Segreteria regionale per l'ambiente</li> <li>▪ Segreteria regionale per le infrastrutture e l'urbanistica</li> <li>▪ Genio Civile (Regione Veneto)</li> <li>▪ Segreteria regionale per la cultura e turismo</li> <li>▪ Pesca ed acquacoltura</li> <li>▪ Servizio idrico integrato: ATO</li> <li>▪ Industria</li> <li>▪ Energia</li> </ul>	<ul style="list-style-type: none"> <li>▪ ARPA FVG</li> <li>▪ Sviluppo sostenibile</li> <li>▪ Urbanistica e pianificazione territoriale (incluso infrastrutture)</li> <li>▪ Aree naturali e biodiversità</li> <li>▪ Ente tutela pesca</li> <li>▪ Servizio idrico integrato</li> <li>▪ Industria</li> <li>▪ Energia</li> <li>▪ Turismo</li> </ul>
<b>Independent Authorities</b>	<ul style="list-style-type: none"> <li>▪ Port Authority of Venice</li> <li>▪ ASPO Chioggia</li> <li>▪ Magistrato delle acque di Venezia</li> <li>▪ Consorzio di Bonifica Adige Po</li> <li>▪ Consorzio di Bonifica Delta Po Adige</li> <li>▪ Consorzio di Bonifica Adige Euganeo</li> <li>▪ Consorzio di Bonifica Bacchiglione</li> <li>▪ Consorzio di Bonifica Acque Risorgive</li> <li>▪ Consorzio di bonifica Piave</li> <li>▪ Consorzio di Bonifica Veneto Orientale</li> </ul>	<ul style="list-style-type: none"> <li>▪ Port Authority of Trieste</li> <li>▪ ASPO Monfalcone</li> <li>▪ Consorzio di Bonifica Bassa Friulana</li> <li>▪ Consorzio di Bonifica Cellina Meduna</li> <li>▪ Consorzio di Bonifica Ledra Tagliamento</li> <li>▪ Consorzio di Bonifica Pianura Isontina</li> </ul>
<b>Parks and reserves</b>	<ul style="list-style-type: none"> <li>▪ Parco Regionale Veneto del Delta del Po</li> <li>▪ Riserva Naturale Bocche di Po</li> <li>▪ Riserva Naturale Integrale Bosco Nordio</li> </ul>	<ul style="list-style-type: none"> <li>▪ Area Marina Protetta di Miramare</li> <li>▪ Riserva Naturale della Foce dell'Isonzo</li> <li>▪ Riserva Naturale Foci dello Stella</li> <li>▪ Riserva Naturale della Valle Canal Novo</li> <li>▪ Riserva Naturale della Valle Cavanata</li> <li>▪ Riserva Naturale delle Falesie di Duino</li> <li>▪ Riserva Naturale regionale laghi di Doberdò e Pietrarossa</li> <li>▪ Riserva Naturale della Val Rosandra</li> <li>▪ Biotopo Magredi di San Canciano</li> </ul>
<b>Provinces</b>	<ul style="list-style-type: none"> <li>▪ Venezia</li> <li>▪ Rovigo</li> </ul>	<ul style="list-style-type: none"> <li>▪ Trieste</li> <li>▪ Gorizia</li> <li>▪ Udine</li> </ul>
<b>Municipalities</b>	<ul style="list-style-type: none"> <li>▪ San Michele al Tagliamento</li> <li>▪ Caorle, Eraclea</li> <li>▪ Jesolo</li> <li>▪ Cavallino-Treporti</li> <li>▪ Venezia</li> <li>▪ Chioggia</li> <li>▪ Rosolina</li> <li>▪ Porto Viro</li> <li>▪ Porto Tolle</li> </ul>	<ul style="list-style-type: none"> <li>▪ Muggia</li> <li>▪ Trieste</li> <li>▪ Duino Aurisina</li> <li>▪ Monfalcone</li> <li>▪ Staranzano</li> <li>▪ Grado</li> <li>▪ Marano Lagunare</li> <li>▪ Lignano Sabbiadoro</li> </ul>

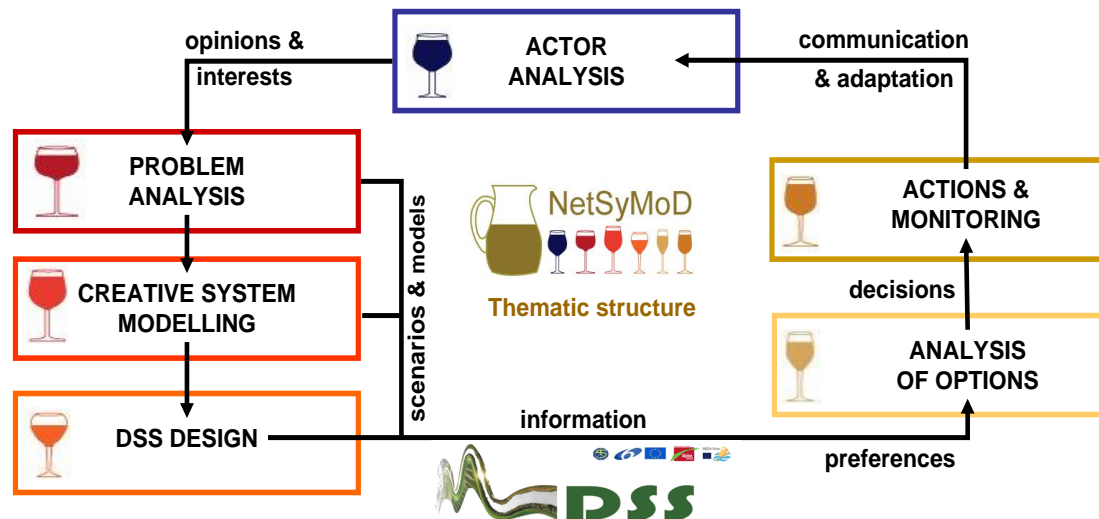




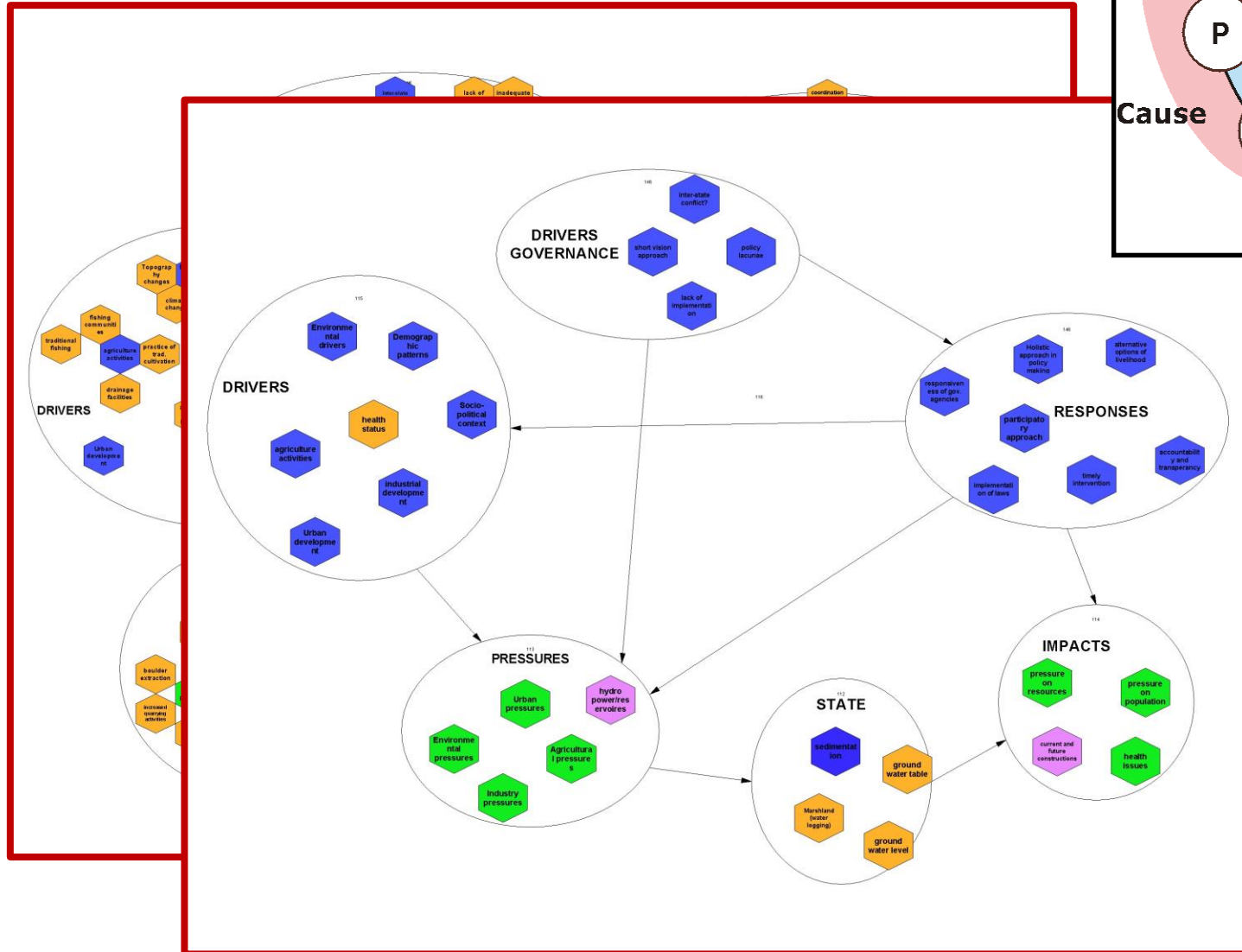
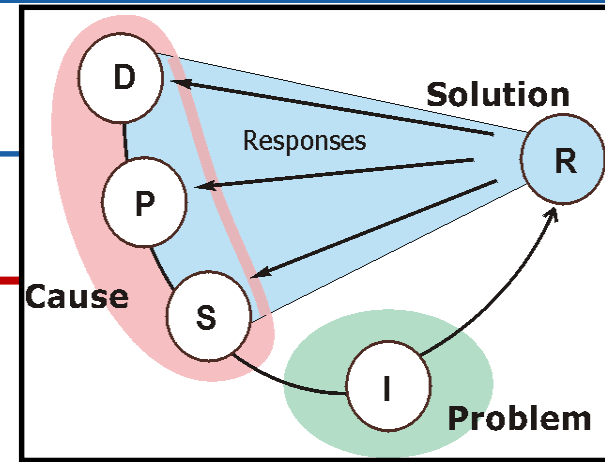
# BRAHMATWINN

enhance capacity to carry out a harmonized integrated water resources management (IWRM) approach as addressed by the European Water Initiative in headwater river systems of alpine mountain massifs already impacted from climate change

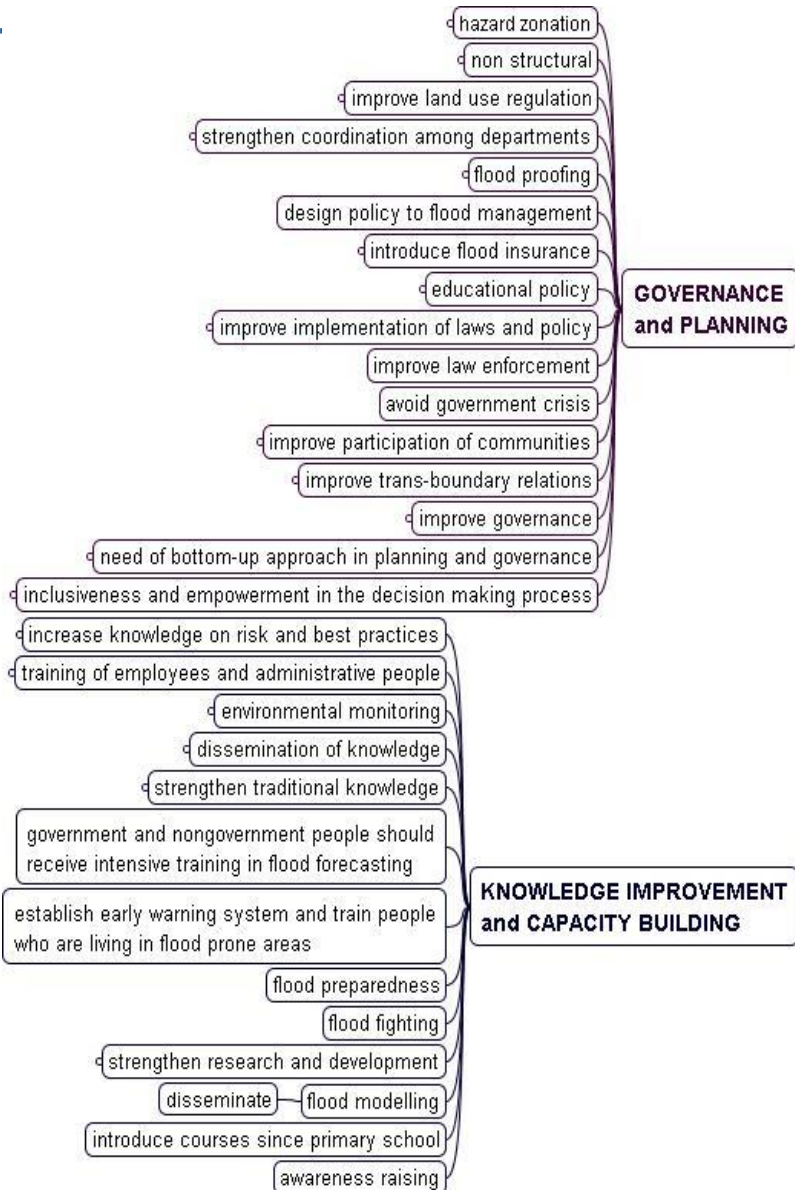
<http://www.netsymod.eu/>



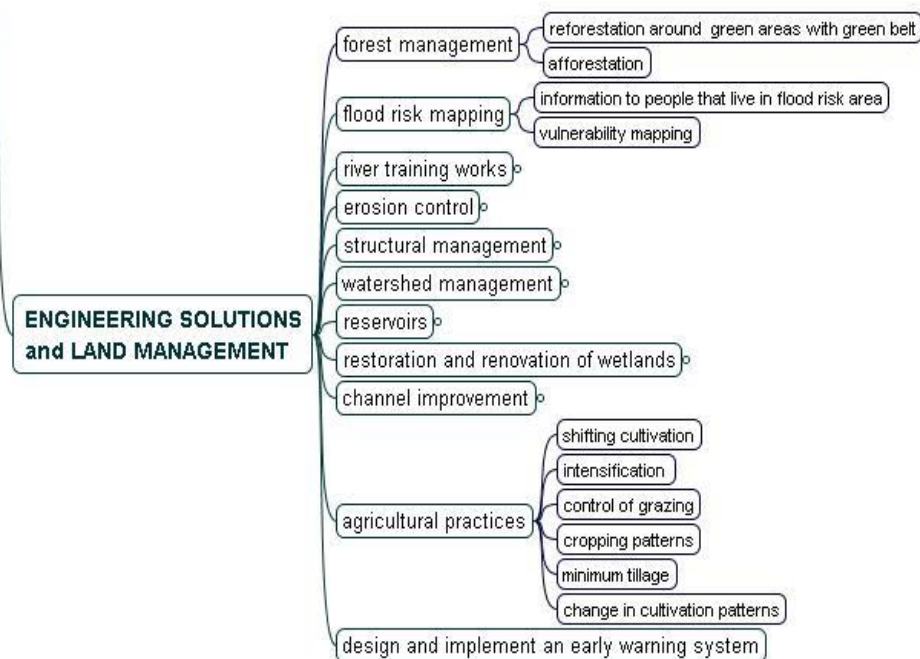
# BRAHMATWINN



# BRAHMATWINN



Which response strategies would you recommend to cope with flooding risk and climate change in the UBRB? Which actions are more promising for the UBRB?



research goal:

- enable interaction among GOs, NGOs, and civil society for disaster risk reduction
- integrate knowledge to identify disaster risk reduction measures
- define roles and responsibilities of each

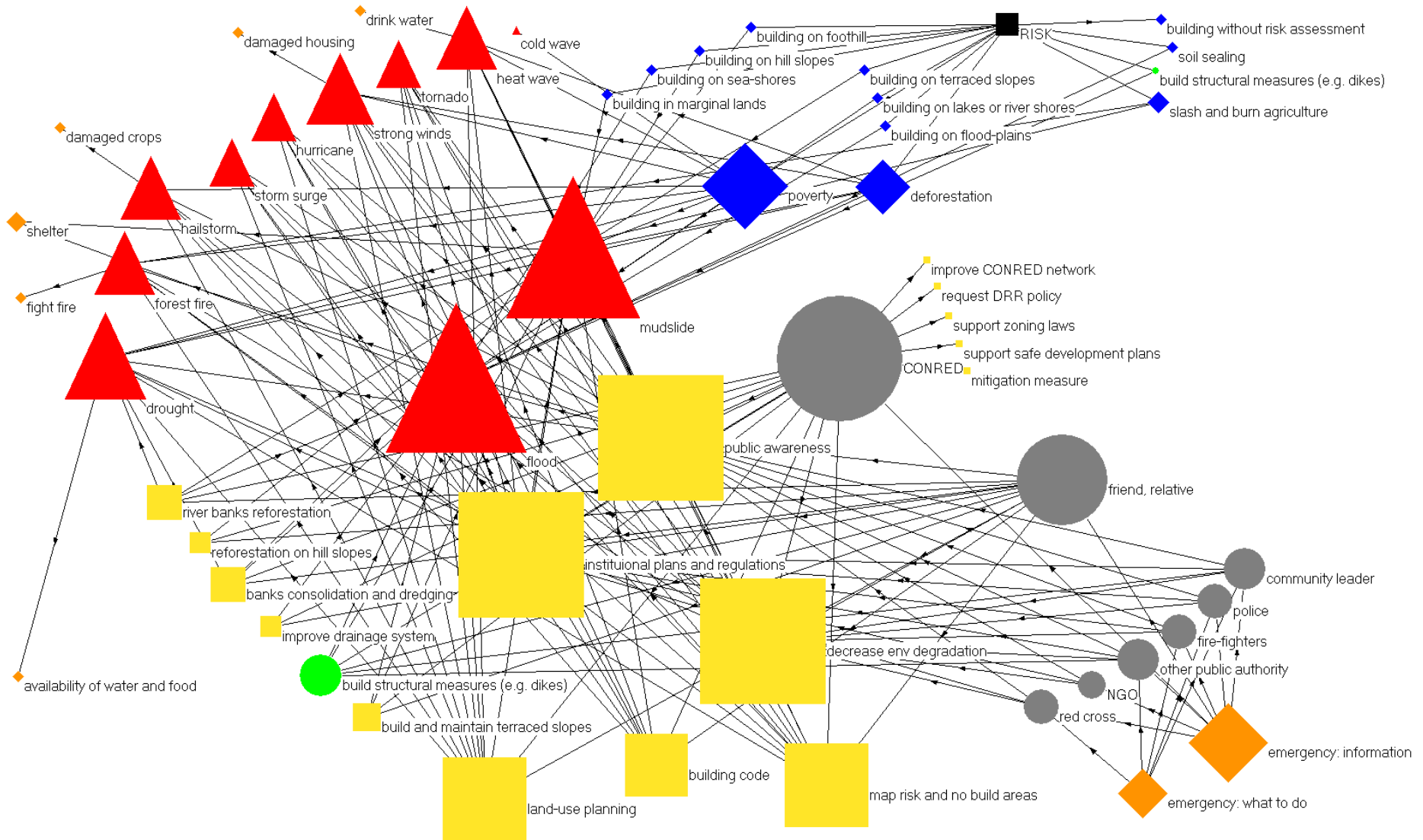
## COGNITIVE MAPS

methodological steps:

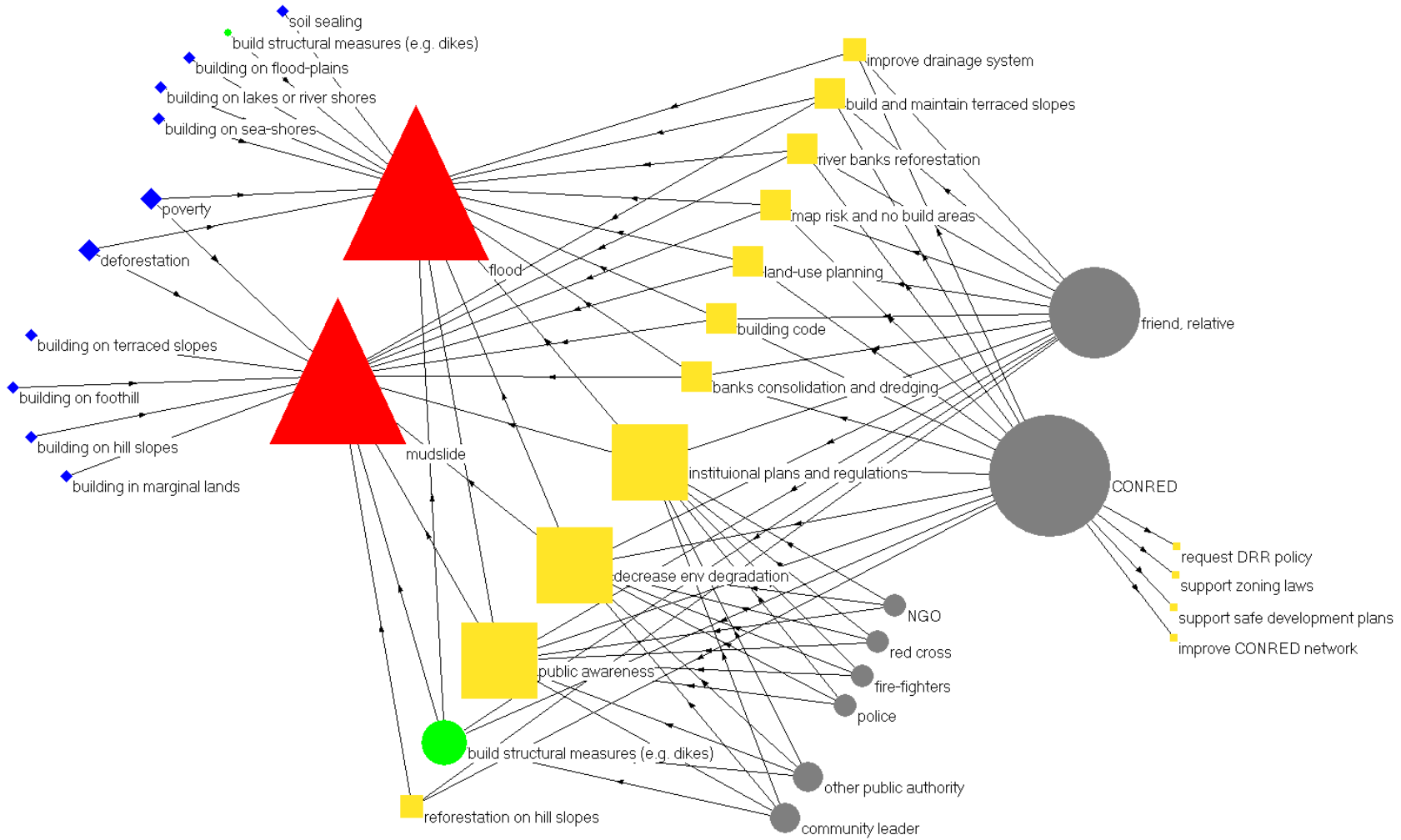
- identify stakeholders
- prepare questionnaire
- organize questionnaire info in matrix
- draw cognitive maps

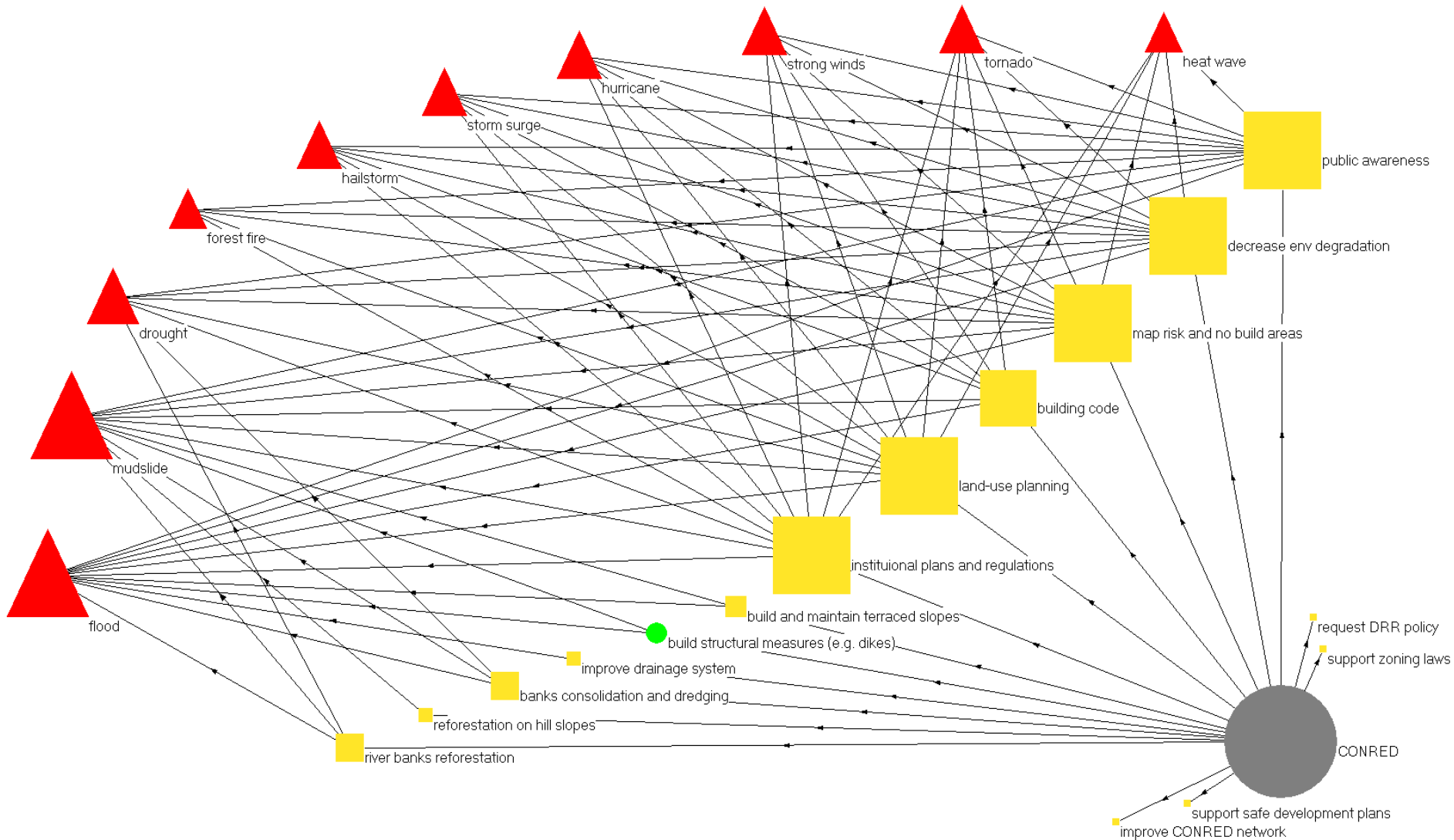


# PhD



# PhD





# PhD

VISION: PER ES UN PROMOTOR EXITOSO DE LA

RES  
DE





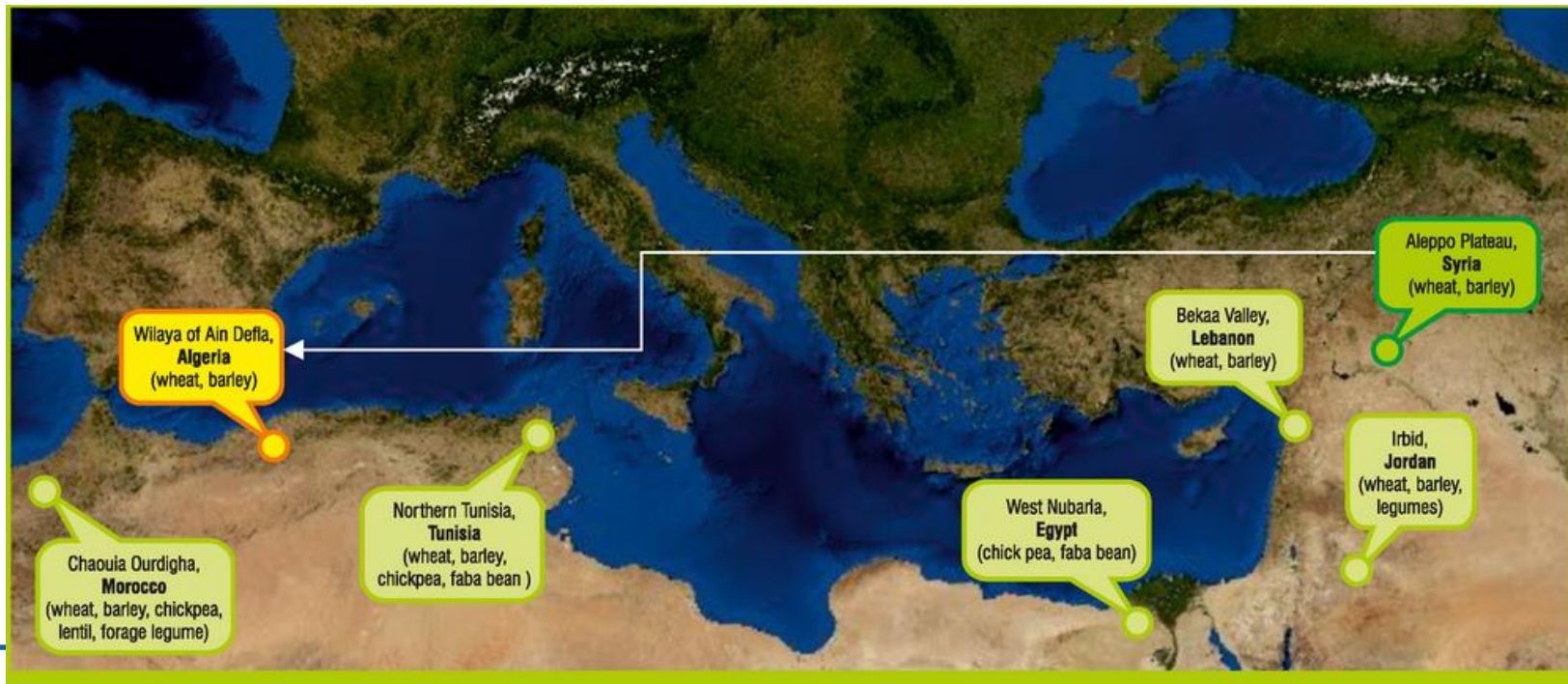
# ACLIMAS

## goal

- disseminate value of **no-till** agricultural practices: potential for adaptation to climate change

## beneficiaries

- local stakeholders: farmers, water users associations, NGOs, local government extension services
- local and national decision-makers (incl. governmental research institutions)



## *MONITORING for Sustainability*

### ACTIVITIES:

- Elicitation of local stakeholders' objectives
- Design of the knowledge base
- Selection of indicators
- Preliminary qualitative assessment of farming systems
- Collection of quantitative data
- Identification of data gaps and solutions (e.g. qualitative data)



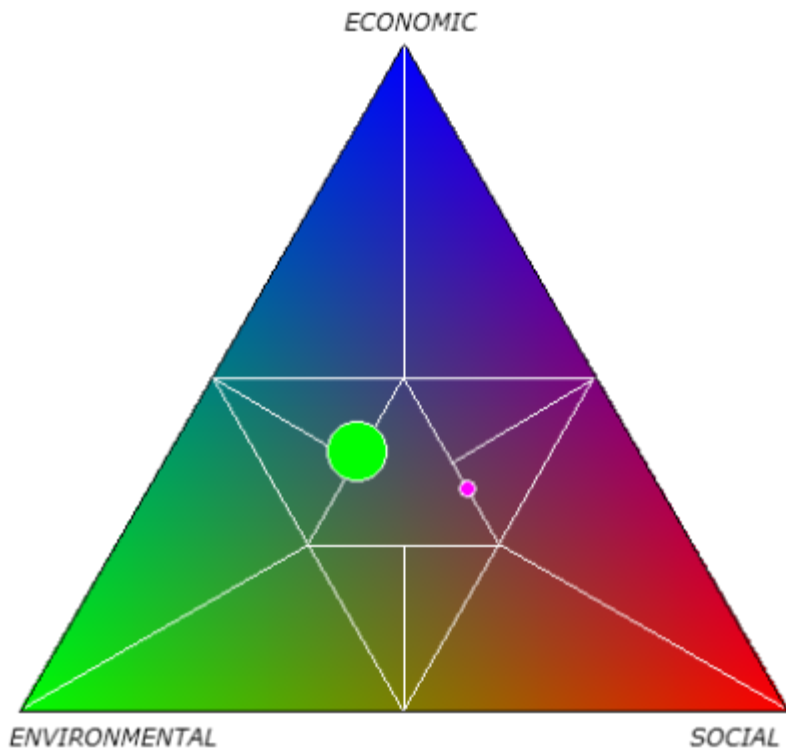
# ACLIMAS

sustainability pillar	main issues discussed	indicators
<p><b>ECONOMIC:</b> competitiveness of agricultural sector</p>	<ul style="list-style-type: none"> <li>• agricultural income and its variability</li> <li>• input cost and their availability</li> <li>• competitiveness from surrounding countries</li> </ul>	<p>yield stability</p> <p>production costs</p> <p>farm income</p> <p>labour demand</p>
<p><b>SOCIAL:</b> rural life viability</p>	<ul style="list-style-type: none"> <li>• social insecurity for farmers and their families</li> <li>• decline in food availability</li> <li>• role of women in agricultural activities</li> </ul>	<p>straw availability</p> <p>household food security</p> <p>access to machinery</p>
<p><b>ENVIRONMENTAL:</b> natural resources management</p>	<ul style="list-style-type: none"> <li>• soil erosion problems</li> <li>• water resources scarcity and quality deterioration</li> <li>• agricultural polluters for the environment</li> </ul>	<p>soil erosion</p> <p>water consumption</p> <p>agrochemicals consumption</p> <p>diesel consumption</p>



# ACLIMAS

mDSS <http://www.netsymod.eu/DSSwelcome.html>



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1. NO-TILL = 0.9285  
● coord: (0.37, 0.24, 0.39)
2. TILL = 0.2738  
● coord: (0.25, 0.42, 0.33)

CRITERIA	Envir onme tal	So ci al	Eco no mic
water consumption	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
agrochemicals consumption	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
diesel consumption	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
household food security	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
yield stability	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
production costs	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
labour demand	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
access to machinery	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
farm income	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
soil erosion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
straw availability	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



# DISCUSSION

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- positive and negative aspects
- usefulness
- when is it necessary?
- when not...



# CONCLUSIONS

Real participation or “citizen power”	(8) <i>Citizen Control</i> (7) <i>Delegated Power</i>	stakeholders obtain the majority of decision-making seats, or full managerial power
	(6) <i>Partnership</i>	allows stakeholders to negotiate with policy- makers as peers

- top-down AND bottom-up
- commitment through engagement
- scientific AND traditional knowledge
- ethics
- indaba



grazie



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# PARTICIPATORY VULNERABILITY ASSESSMENT



AGRICULTURE COASTAL ZONE FISHERIES CITIES ENERGY





# PARTICIPATORY VULNERABILITY ASSESSMENT

## STEPS

- define goal of participation
  - which rung of Arnstein's ladder?
- define criteria to select stakeholders
  - experts?
  - affected by?
  - ?
- use criteria to identify stakeholders
  - lists and tables
- identify or design method
  - look for similar cases
  - best practices
- implement method
  - invite stakeholders
  - prepare agenda
  - define specific goals
- assess results (with respect to expectations)
  - end meetings with discussions
  - gather info from stakeholders
- treasure experience to improve
  - keep track of what worked and what did not
  - note ideas
  - learn from others

