ICARIA: IMPROVING CLIMATE RESILIENCE OF CRITICAL ASSETS

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Improving climate resilience of critical assets

WHY

	REPORTED DISASTERS	TOTAL DEATHS	TOTAL AFFECTED	US ECONOMIC LOSSES
1980-1999	4,212	1.19 million	3,.25 billion	1.63 billion
2000-2019	7,348	1.23 million	4.03 billion	2.97 billion

WHAT

Promote the use of a comprehensive asset level modelling framework to achieve a better understanding about climate related impacts produced by complex, compound and cascading disasters and the possible risk reduction provided by suitable, sustainable and cost-effective adaptation solutions.

Hazards: Floods, Storm surges, Heat waves, Forest fires, Droughts, Storm winds

Assets/services: Turism, Properties, Natural areas, Transport, Water assets, Electricity assets, Waste assets

Tangible impacts: Flood Damage, Water demand / supply, Energy demand / supply

Includes: Compound hazards, Cascading effects on assets

WHO

PROJECT PARTNERS			COPS
ORGANIZATION	COUNTRY	ROLE	
1. AQUATEC	ES		**CoPs (communities of practices) created in each study:**
2. CETAQUA	ES		• Provide requirements • Feedback on the methods and tools developed and implemented
3. FIC	ES		
4. IREC	ES		CSF · CoPs · RO
5. UNEXE	UK		**3rd parties**: • Local governments • Public and private asset operators • Civil society actors • Other relevant stakeholders
6. DEMOKRITOS	GR		
7. LNEC	PT		
8. DRAXIS	GR		
9. CERTH	GR		
10. PLINIVS	IT		
11. AIT	AT		
12.AMB	ES		
13.SAR	GR		
14.VERB	AT		

Coordinator (C)
Transversal cross-cutting partner (TCCP)
Case study facilitator (CSF)
Risk owner (RO)

WHERE

	BARCELONA METROPOLITAN AREA		SOUTH AEGEAN REGION		SALZBURG REGION	
	Trial	Mini trial	Trial	Mini trial	Trial	Mini trial
Hazards						
Assets/ services						
Tangible impacts						

HOW

IMPLEMENTATION PHASE	REPLICATION PHASE	EXPLOITATION PHASE
Replication of modeling and risk assesment methods from other case studies		
Hazard Modeling → Impact & Resilience Assessment → Adaptation measeures → Scenarios definition → **Trials**	Hazard Modeling → Impact & Resilience Assessment → Adaptation measeures → Scenarios definition → **Mini trials**	
• Adaptation measures • "best case study scenarios" • Good data availability • Well-known climate hazards and impact assessment methods	• Less resources • Suboptimal data availability • Coarse climate data • Limited data for impact assessment	• Comunidad Valenciana (ES) • Region of Central Macedonia (GR) • Regione Campania (IT) • Upper Austria (AT) • Crete (GR) • Naples Metropolitan Area (IT) • Greater London (UK)

KEY OUTCOMES

Technological results:
- Climate Multi-Hazard modeling tools
- Holistic climate resilience assessment tool
- Portfolio of adaptation solutions
- Decision Support System for adaptation to extreme and compound events with cost-effective measures.

Scientific results:
- Project framework for climate multi-hazard holistic assessment at a regional level
- Regional climate projections in long term considering the local socio-economic dimension
- Methods for mending the data gaps and uncertainty analysis for the risk and impact models
- Climate-related multi-risk tangible impact assessment method
- Multi-risk and resilience assessment for the 3 case studies
- Replication, sustainability and explorations of ICARIA results.

CURRENT SCENARIO	BUSINESS AS USUAL (BAU)	ADAPTATION SCENARIOS (MANY)
Data • Climate • Asset • Vulnerability functions	**Data**	**Data**
Multi-hazard modelling	**Multi-hazard modelling** • Climate modeling for long term projections	**Multi-hazard modelling** • Climate modeling for long term projections • Portfolio of adaptation solutions
Assessment • Risk • Resilience	**Assessment**	**Assessment**
Results • Expected annual damage (EAD) • Risk maps • Resilience metrics	**Results**	**Results**

Scenario comparison

Results
- Cots-benefit analysis (CBA)
- High Risk reduction (%)
- Resilience increase
- Best scenario

Users
- Decision makers
- Asset and service managers
- Other stakeholders

More info:
www.icaria-project.eu

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