AWARE Project

Empowering communities to manage water and climate risks in the Andes

VLIR-UOS Short Initiative 2025-2027

01/09/25 → 31/08/27

Promotor team

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AI applications in Water and Climate

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Ecohydrology and Climate Change

Stakeholders

ETAPA EP
(Municipal Water Utility)

Gobierno Provincial del Azuay
(Irrigation Direction)

UNESCO
(Office in Ecuador)

Staff and graduate students

UCUENCA

Research Faculty

- Mario Córdova
- Juan Pesántez

PhD students

- Cindy Urgilés
- Patricio Luna
- Santiago Núñez

MSc students

- Danny Aucapiña
- Evelyn Loja
- A 3rd student TBD

What do we know?

Rural areas:

- Over 200 Andean irrigation systems face increased drought-related crop losses
- Lack of tools and data limits climate-informed water and agricultural management

Urban areas (Cuenca):

- Rapid urban growth in peri-urban watersheds increases flood risk
- Dry spells and extreme heat reduce comfort, increase diseases, and drive up water consumption

The impact we want

- Andean urban and rural communities have strengthened their **resilience** to climate variability and climate change by **reducing vulnerabilities** through climate risk-based decision-making, effective water management and active community engagement.

- This transformation has been achieved through **sustained collaboration** among empowered communities, strengthened local institutions, innovative universities, and regional governments **by co-creating adaptive solutions** for a sustainable and equitable future.

What do we propose?

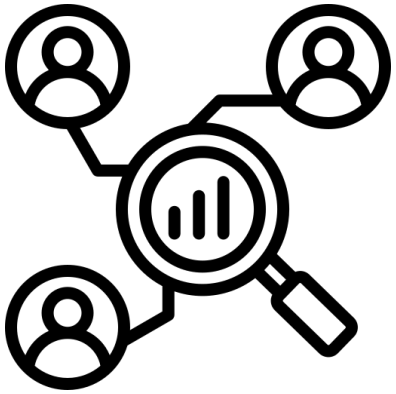
1. **Community-based monitoring:** Low-cost sensors in two case studies (irrigation system and vulnerable neighbourhood) to empower stakeholders in monitoring.
2. **Climate scenarios and stress tests:** Scenarios simulating extreme and future conditions (e.g., P and T) to guide stress tests to identify vulnerabilities and thresholds in both case studies.
3. **Application of UNESCO-CRIDA framework:** Co-development of strategies for managing risks in a participatory approach
4. **Capacity building:** A regional workshop aimed at technicians and decision-makers from Andean countries to adopt and replicate methodologies. Graduate students and non-academic technicians will receive targeted training, developing practical skills.

Outcome 1. Higher quality and inclusive education

- Hosting the first regional workshop on CRIDA applications.
  - This workshop will evolve into an annual summer school
  - Target: non-academic technicians in water utilities, irrigation and environmental government agencies, as well as university students
- The workshop will be integrated into the MSc in Hydrology
- Scholarships for three master's students
- Establishment of a robust alumni network to address challenges such as maintaining updated content and adapting to future needs.

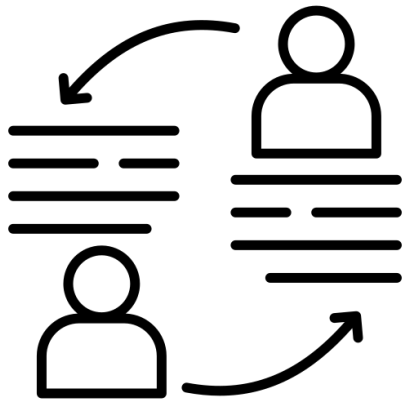
Outcome 2. Higher quality and needs-oriented research

- The region will have a group of people able to identify climate risks for decision support at any study site.
- Bridging gaps in problem identification, community-based data collection, and analysis.
- Collaborative North-South scientific exchange of experiences
- Generation of guidelines for CRIDA applications and publications
- Decision-support tools such as monitoring dashboards.



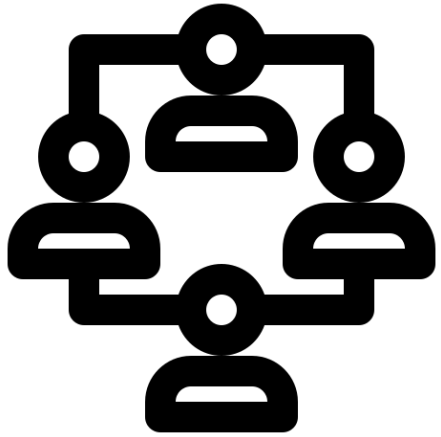
Outcome 3. Enhanced conditions for the uptake of new knowledge, applications or services

- Establishment of local partnerships: (i) academia - local government – irrigation communities and (ii) academia - drinking water utility - urban communities,
- Support the uptake of our results by the end users.
- These uptake conditions will be enhanced by the generation and maintenance of a web-based monitoring dashboard.



Outcome 4. Strengthened knowledge-driven science-society interactions

- The project will strengthen effective collaboration among academia, government, water utilities, and local communities.
- Stakeholder platforms will be institutionalized
  - Regular knowledge-sharing meetings will be held to maintain momentum and engagement.
- Active network and collaboration
  - Annual scientific dissemination workshop of IDRHICA.



Deliverables

Community-based monitoring	• Real-time point and RS monitoring • Protocols data collection/processing • A web-based data platform with visualization tools
Climate scenarios and stress tests	• Rural and urban case studies
Application of UNESCO-CRIDA framework	• Rural and urban case studies • Policy briefs for both case studies
Capacity building	• 3 master students (publications) • Stakeholders worshops • 1-week regional workshop in 2027


THANK YOU