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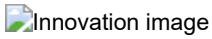
Groundwater, Climate and Stakeholder Engagement in Arizona's Santa Cruz Active Management Area



In partnership with the OECD Studies on Water: Stakeholder Engagement for Inclusive Water Governance

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Organisation: U.S. National Oceanic and Atmospheric Administration (NOAA)

Country: United States

Level of government: Local government

Sector: Environmental protection

Type: Communication

Launched in: 2011

Overall development time: 1 year(s) 6 month(s)

Link to the innovation's website

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Description

Arizona is acutely challenged by climate change, and stakeholder engagement supported by relevant information is needed to move towards better management of water scarcity and adaptation to increasingly extreme conditions. Various management options have been discussed, but relatively little guidance exists on how public utilities and agencies can evaluate the suitability and effectiveness of water-harvesting strategies to provide tangible and significant benefits to the community.

With funding from the U.S. National Oceanic and Atmospheric Administration (NOAA), the Water Harvesting Assessment Toolbox was created over a two and a half year period beginning in August 2011 by the University of Arizona Water Resources Research Center (WRRC), in direct response to multiple requests from local residents for information on water harvesting and consensus among professionals that up-to-date information was too dispersed.

The project developed guidance for assessing and planning water harvesting at multiple scales, to help meet the challenges of managing water resources under conditions of changing climate and increasing water demands.

In August 2012, the University of Arizona launched a similar project on “Incorporating Climate Information and Stakeholder Engagement in Groundwater Resources Planning and Management.” This project uses a modelling framework related to climate change, surface water and groundwater, and extensive stakeholder interactions to address climate uncertainties with a sophisticated modelling framework; increase stakeholder capacity to adapt water planning and management to future trends; and to establish the transferability of the modelling framework and capacity-building approach.

Why the innovation was developed

- Planning to meet water demands in semi-arid regions is particularly challenging for groundwater dependent communities where aquifers are being replenished by intermittent streamflow events. Projected and observed climatic changes for the Southwestern United States increase uncertainties.
- This project, which is funded by the U.S. National Oceanic and Atmospheric Administration (NOAA) employs a novel modeling framework and extensive stakeholder interactions to achieve the following three objectives: 1) Address climate uncertainties with a sophisticated modeling framework; 2) Increase stakeholder capacity to adapt water planning and management to future climate uncertainties; and 3) Establish the transferability of the modeling framework and capacity building approach.
- The funded project partners are the University of Arizona, Tucson, Arizona, and Hydrologic Research Center, San Diego, California. On the international border, Nogales, Arizona, and surrounding communities rely on water resources from a relatively shallow regional aquifer. Highly variable seasonal flow events on the Upper Santa Cruz River are the main source of recharge to this aquifer and create a tightly linked relationship between localized aquifer conditions, streamflow variability, and regional climate patterns. Recognizing the interrelated hydrologic conditions, the Arizona Legislature formed the Santa Cruz Active Management Area in with a two-part statutory management goal: a) Maintain a safe-yield condition in the active management area; and b) Prevent local water tables from experiencing long term declines.

- The project included an extensive approach to stakeholder engagement in order to inform stakeholders on the project methodology and obtain their input into the development of the case study scenarios.
- Given that the project involved complex modelling related to climate change, surface water and groundwater, we wanted to engage the stakeholders early in order to foster understanding of the technical methodology. In addition and importantly, the objective of the study is to provide information that is useful to achieving the management goal for the region, which is established by the state of Arizona.
- This region is in what is known as the Santa Cruz Active Management Area (SCAMA), one of five active management areas in the state of Arizona where groundwater is actively regulated. The statutory management goal of the SCAMA is to maintain a safe-yield condition in the active management area and to prevent local water tables from experiencing long term declines.
- Rules (Arizona Revised Statues) regarding the showing of a 100-year assured water supply are still under formulation and it was thought that better understanding of future climate change-surface water-groundwater scenarios could assist with the formulation of the rules.

- Government
- Service providers
- Water institutions
- Regulators
- Science, academia and research centres
- Civil Society
- NGOs

Results

Efficiency

- Sustainability and resilience: This project has not involved development of mitigation measures or consensus. It has been about understanding the implications of different groundwater use scenarios in the context of uncertain future climate.

Effectiveness

- Capacity-development: This project has involved interaction of researchers from multiple disciplines and has therefore increased our understanding of the science and the communication of the science. We trained a graduate student, who obtained a job with a local agency immediately upon completion of his second academic year working on the project. We think his work on this project contributed to his being the candidate selected for the position. The project is ongoing and the team continues to plan for joint presentations and additional workshops. Mutual respect and understanding, both within the project team and with external stakeholders, have resulted from this project.
- Broader economic development: Water is essential to communities for many reasons, including their economic development. Arizona regulations require showing of a 100-year-assured water supply to support new development. We are hopeful that the results of this project will assist in the formulation of the regulations.

Service quality

Responsiveness:

- Acceptability/ownership of stakeholders involved: Verbal feedback and continuity of involvement is an indication of acceptance of the stakeholder engagement effort.

Other:

- Additional project proposals have emerged from this effort. They involve the state agency involved and possibly different federal funding partners.

Development

Design

The leaders of the study are the Water Resources Research Center (WRRC) at the University of Arizona and the Hydrologic Research Center (HRC). Stakeholder engagement was a key component of the project as proposed to NOAA.

In addition to engaging stakeholders through multiple workshops, the lead team engaged four experts through establishment of a Project Advisory Committee (PAC) to the project. The Arizona Department of Water Resources, the Salt River Project, the U.S. Geological Survey, and the City of Nogales are represented on the PAC.

The PAC member from the Arizona Department of Water Resources was formerly the Deputy Director and is now the Director. He has significant regulatory and decision making authority The input of the PAC has provided additional external (to the project team) input throughout the project.

Testing

- No methods were used to test the innovation.

Implementation

Tools used:

- The innovation relied on email communications, web site postings, and workshops. The workshops have been included presentations and facilitated discussion. The transferability workshops held in April 2014 were carried out in regions other than the geographic area of focus and involved partners who helped secure a workshop location and publicize the workshops.
- Because we have been dealing with complex climate and hydrologic modeling, extensive effort went in to making the scientific materials understandable to a broad audience of people. The approaches were generally successful, but there is opportunity to make the materials more understandable to audiences of diverse backgrounds and interests.
- The four transferability workshops demonstrated that to us, and we modified our presentations to improve their clarity and focus. The summary of the transferability workshops can be found at http://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/pdfs/Groundwater%20Resources%20Planning.pdf.

Resources used:

- The federal funding entity, NOAA, provided funding for the development of the stakeholder engagement process.
- Participants in the workshops and meetings funded their own travel. Overnight accommodations were not required for anyone other than project team members.
- Stakeholder engagement was an integral part of this project from its formulation. Therefore, the budget for stakeholder engagement was written into the proposed budget.

Challenges and solutions

- To date, the engagement process has proceeded well. We are not done with the project, so some challenges may emerge.

Lessons Learned

Lessons Learned

- The WRRC is engagement with stakeholder through other efforts and is submitting another case study write-up. Efforts like this can be replicated if project budgets have sufficient funds for engagement elements and personnel with expertise or interest in stakeholder engagement are involved.
- It is critical that involved agencies, universities, NGOs, and others recognize that effective stakeholder engagement, just as other project elements, requires resources and planning. Sharing of experiences through multiple mechanisms, including papers, particularly those that focus on lessons learned and those that synthesize, is important.
- Fundamentally, there must be commitment to stakeholder engagement by the project team and the funding agency. Some still think that holding a workshop (or workshops) requires little or no resources. Meaningful and robust stakeholder engagement does not come free or easy.

Conditions for success

- Clearly having a budget and personnel resources for stakeholder engagement are essential. It is important to have personnel who understand the importance of outreach and how to go about it.
- The WRRC, which has outreach/engagement as a key mission, provided leadership to this aspect of the effort. It was helpful that the WRRC is known and already had established relationships with many so that we were not “starting from scratch” when considering whom to contact.
- The Project Advisory Committee was also extremely helpful to our engagement efforts.

Other information

http://wrrc.arizona.edu/GCASE

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