Stories from the field

Women at a community well near Ait Hakim in the Atlas Mountains
Photo: DFID / I. Koziell

Understanding adaptation decisions in Morocco's plains and mountains

In Morocco, the threat posed by climate change has been recognized for some time by decision-makers at national and provincial levels. Erratic rainfall, an overall decline in precipitation, and recurring heat waves are creating chronic water shortages in the agricultural areas that support 80% of the population. Water available per capita has dropped by 25% since 1994, from 1100 cubic meters to 830 cubic meters, with further declines forecast.

Effective planning and policy responses require a deeper understanding of how communities are affected, what impacts pose the greatest risks to their livelihoods, and how they have responded to past episodes of climate extremes such as drought.

The poorest communities in Morocco live in arid and semi-arid rural areas, relying mainly on farming and pastoralism. These vulnerable regions already experience episodic drought, and increasing climate variability is expected to deepen poverty and reverse recent development gains.

Research led by the Settat Regional Centre of Morocco's National Institute for Agronomic Research (INRA) is exploring adaptation in two contrasting settings — one in the High Atlas Mountains and another in the arid plains below. The project aims to strengthen local capacity to identify and create appropriate technical, institutional, and policy options.

Climate data analysis shows that over the last five decades average precipitation has decreased significantly in the mountains, while minimum average temperatures are increasing in both plains and mountains. Most of the annual rainfall comes early in the season and is concentrated in fewer days. In the high valley communities surrounding Tabant in Azilal province, mountain snow cover is diminishing. As the water supplies shrink, friction between neighbouring villages increases.

On the plains below, the rural commune of Lamzoudia in Chichaoua province has known consecutive years of extreme drought in recent decades, to the point where many people have been forced to migrate. No cereal grains were harvested on the plains between 1996 and 2008.

To better understand how these communities make decisions around natural resource use, and how they are adapting to the ongoing changes, researchers use a range of interview and dialogue techniques,

including demographically targeted surveys, focus groups, and meetings with community groups and leaders.

Household-level interviews can reveal vulnerabilities and perspectives that are overlooked in public discussions on climate change. This is particularly true for the views of women, who are largely excluded from public debate and decision-making in both regions under study. In 2008, interviews with women in three mountain villages revealed how their concerns about domestic water supplies – crucial for family health and sanitation – are given less weight in community decision-making processes on water, which have focused mainly on crop irrigation.

While research will continue until 2010, throughout the process the INRA team is engaging decision-makers at various levels, capitalizing on its role as a national institution with a regional base. The ultimate aim is to support community-based action plans, and to see these backed by appropriate technical assistance and development policies.

Shepherd with his flock on the plains near Lamzoudia, Morocco
Photo: IDRC / M. O'Neill

Abdelouahid Chriyaa
Project Leader
National Institute for Agronomic Research (INRA)
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Born and raised in rural Morocco, Project Leader Abdelouahid Chriyaa knows well the difficulties of living in a hostile environment, and the resilience it takes to overcome them.

"As a researcher," he says, "I'm motivated to seek out the challenges facing these communities and to find creative solutions." Such challenges include limited understanding of the issues, a lack of information on technologies for adaptation, and a lack of cooperation between populations on the sustainable use of natural resources.

"We want to create awareness in communities that climate change is inevitable, that the threats are real, serious, and long-term, and that we must adapt."

In their research to date on the adaptation measures communities are taking, INRA is finding some – such as deepening wells in response to shrinking groundwater – are not sustainable. Such findings underscore the need for reliable information and for wider processes of participation involving communities, policymakers and researchers. The need for support on the plains, where people have dealt with successive droughts, is acute.

While their project activities address the information gap through training workshops, exchanges, and demonstrations, Chriyaa is encouraged that: "Local authorities and elected representatives are well aware of the potential impacts of climate change on their environments, and of the need for individual and collective measures to adapt to them."

*This project illustrates progress towards CCAA's **outcome area 1**: Research institutions are better able to assess climate-related vulnerabilities and to evaluate and develop adaptation options; and **outcome area 4**: Policy processes are informed by good quality science-based work on vulnerability and adaptation, and by the experiences of the rural and urban poor.*

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