Research Influence on Public Policy: A Case Study

# Searching for an interim irrigation solution

Researchers in Syria investigate whether – under some conditions – brackish water can be used for irrigation without damaging soil

*Economically dependent upon agriculture and facing a deepening water crisis, Syria needs to find ways to make its limited water go further. As farmers turn to irrigating with saline water, IDRC-supported researchers proposed that perhaps they should be allowed to continue – if guidelines for using brackish water can be established. But who are most likely to pay attention to the researchers' findings: government officials, farmers, or regional agencies?*

In Syria – as in neighbouring Middle-Eastern countries – access to water is a daunting problem.

The World Bank classifies the Middle East and Northern Africa (MENA) region as one of the driest areas of the world. With a current region-wide availability of water estimated at 1200 cubic meters per capita per year, this group of countries hovers only marginally above the Bank's benchmark of 1,000 cubic meters of available water per capita per year – a cut-off point below which countries are considered to have a serious water shortage.

By this definition, Syria – one of the most severely parched countries within the MENA group – can already be considered to be in crisis: its current water availability is calculated at 432 cu m/capita/year, far below the World Bank's demarcation point for water scarcity. And the situation appears destined to deteriorate further. Pressure from a young and growing population and the demands of an economically crucial agricultural sector are expected to lower Syria's available water to a mere 160 cubic meters by 2025.

Given the pressures that are already being felt, Syrian farmers have been implementing several adaptive measures that, in the long run, may make matters worse. For example, the digging of new wells – most of them illegal – has contributed to a decline in ground water levels, as wells are pumped faster than they can be renewed. Farmers are also increasingly using brackish water to irrigate their crops, a practice that is likely to increase the salinity of the soil and in turn lower agricultural productivity.

## Farmers' survival tactics

Higher salt levels in soil are normal in the arid climatic conditions typical of Syria's deserts and steppes. Crystalized salts are left at the soil surface – at the interface between the land and air – as water is drawn upward through the soil and evaporates into the atmosphere. In the past this has not posed serious problems: under the traditional Syrian system of crop rotation, which leaves the land fallow for extended periods, levels of salt in topsoil have remained relatively low.

Recent changes in agricultural practices, however, have altered the picture. Intensive agriculture involving more frequent crop rotations has increased the volumes of water moving through the soil, thereby boosting its salinity. The salt content of soil and groundwater have also been increased by the growing practice of "flood irrigation," whereby large volumes of water are pumped onto fields, creating standing pools that eventually percolate down through the soil. This has resulted in more salt finding its way into underground reservoirs and wells. In turn, the increasing salinity of groundwater, which is used for irrigation, has become a key contributor to elevated salt levels in the soil.

The implications of this trend are profound and disturbing. Syria sees a robust agricultural sector as central to its plans both for food security and for future economic growth. Those plans would fall apart, however, if increased soil salinity led to decreased productivity of agricultural lands.

Yet at the same time, it would be unrealistic to expect farmers to simply stop irrigating with brackish water. For some, it is the only type of water they have. It is estimated, for example, that over 70 percent of Syrian farmers use flood irrigation and that many continue to do so after their wells have become saline.

Given that these practices are so firmly established, the Brackish Water Project set out to investigate if there were circumstances under which saline water could be safely used for irrigation. The group hoped to establish parameters that would instruct farmers and government on how to use brackish water without threatening the environment or significantly diminishing the productivity of the soil (and, by extension, farmers' livelihoods). In doing so, they would formulate a "bridge" strategy where current practices could be continued, in a modified form, until more permanent solutions to MENA's water crisis are found. Such a strategy would be of interest not just in Syria but across the region.

## Water, public policy, and IDRC

For IDRC, supporting the Brackish Water Project was a natural fit, because the project's goals intersected with at least two of the Centre's ongoing thematic interests.

First, IDRC has a history of supporting research on water that focuses on small-scale, decentralized, local-level solutions. IDRC's small-scale orientation meshed with the approach of researchers from the International Centre for Agriculture of Research in Dry Areas (ICARDA), Syria's University of Aleppo and Canada's McGill University, who undertook the research. The Syrian government had also expressed its interest in small-scale, demand-side approaches to water through its promotion of efficient sprinkler and drip-irrigation technologies.

Another long-term interest for IDRC is the question of how research can inform and influence government policy. On this front, however, it became increasingly clear that the project's potential was constrained by the nature of the Syrian political system, and by a policy formation process that some of the foreign researchers connected with the project described as "opaque" and difficult to understand.

In the best of circumstances, policy-oriented research can stimulate vigorous public debate, allowing for different options to be aired with, it is hoped, the best choices filtering upward to the attention of the bureaucrats and politicians who set the national agenda.

But this is unlikely to happen under a political system such as Syria's. As Bryon Gillespie, who evaluated the policy influence of the project for IDRC, states, "policy decisions are made at the top, and are not offered for public scrutiny." Any opportunity to influence how top officials make their decisions come through the apparatus of the ruling Ba'th party, rather than through the country's six-party, 250 member elected legislature (which is generally taken to operate as a 'rubber stamp') or civil society organizations.

Since the current regime came into power in 1970, Syrian agricultural policy has reflected the country's Soviet-inspired, centrally managed economic model. Recently, however, President Bashar Al Asad (who assumed power in 2000) has instituted limited economic reforms. The bureaucracy's role has changed from simply commanding that quotas be met, to providing farmers with technical advice and offering financial incentives (for example, by having marketing agencies buy strategically important crops at preferential prices).

## What kind of research role?

Despite such cautious steps toward liberalization, policy formation in Syria remains largely insulated from outside input. This appears to have limited the scope of the Brackish Water Project. Gillespie observed, for example, that, "I saw no social research, nor any research which looked into agricultural policies."

More broadly, the role and value of research within the Syrian system remains an open question. Gillespie noted, for example, that several experts he had spoken to remarked that "in Syria it is frequently the case that the technical reports [produced by the government's own research agencies] get shelved and go unread at higher levels."

Others, however, say that research can be effective when it is targeted to questions that officials are actively considering. While researchers will generally not be invited to contribute to the actual formation of policy, they are sometimes enlisted in a supportive role, providing technical advice on what means will be most effective in achieving already-formulated goals.

"Influencing the policy comes as you find technologies or recommendations that respond to the needs of the decision-makers at the time when they want to formulate policies," says Dr Theib Oweis, Senior Water Specialist with ICARDA.

Oweis suggests that donors sometimes place too much emphasis on the direct impact of research on policy formulation. "Not everything requires policy changes," he says, "although we know that policies are instrumental in making changes."

Researchers also have to make sure that even the terminology they use aligns with the government's broader political objectives. For instance, the phrase "water demand management" – commonly used by IDRC-sponsored researchers – is problematic in Syria. The government believes it shifts focus towards domestic consumption and away from issues of international access to water. The phrase is therefore seen as undermining Syria's case for access to water that has brought it into competition with Turkey, Iraq and other neighbours.

## Practical and political influence

Despite the apparent impenetrability of Syria's policymaking process, there was one occasion where the Brackish Water Project's research did appear to have a direct influence on policy. Research examining the variables that affect the impact of saline water on soil indicated that salt accumulation is most severe in heavier clay soils. After these findings were presented at a conference where Ministry of Irrigation officials were present, a decree was issued forbidding farmers to irrigate high clay content fields with drainage water, which is likely to have high levels of salt.

Other than that, the project's influence has so far been felt outside the sphere of formal policy-making. Researchers reported, for instance, that after the findings of a master's thesis funded by the project – which showed, among other things, that the sham 6 variety of wheat is most resistant to the effects of salt – the demand for sham 6 on the black market increased in the area where the experiments took place. This indicates that the research helped change farmers' outlook and influenced their practices.

Gillespie suggests, however, that the most significant impacts of the project fall under the rubrics of "expanding policy capacities" and "broadening policy horizons." For example, several young Syrian researchers, whose research and graduate studies were supported by the project, are now employed by the ministries of agriculture and irrigation. Bringing their knowledge and experience to their current positions, their presence indicates an effective expansion of research capacity within Syrian institutions. It also promises to bring new perspectives into the culture of the Syrian research community. For example, the researchers' experience of conducting experiments in farmers' fields–rather than at isolated research stations – was new in Syria.

## Some signs of change?

A similar expansion of capacity took place when one of the senior participants in the project was appointed – co-incidentally, rather than as a direct result of the project's work – to the position of Minister of Agriculture and Agrarian Reform. In his new role as minister, Dr Noureddin Mona instituted a series of reforms intended to elevate the stature of research within the ministry. While Mona was minister only for a short time, it is possible that the ascent of members of the research community into decision-making roles may lead to a new reality where research becomes a stronger contributor to policy formulation.

Gillespie considers that the most important impact of the Brackish Water Project to have occurred on the regional stage. The creation of the International Centre for Biosaline Agriculture (ICBA), headquartered in Dubai, speaks volumes about the growing currency of the idea that standards can be established for the safe use of brackish water – an idea that was not part of the debate on the Mideast water shortage before the project first held it up to scrutiny.

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## Key lessons

- ❏ Political context can limit the scope and types of research that are possible.
- ❏ Research can have an impact even if it doesn't change policy. In this case, for example, farmers acted on research results.
- ❏ Expansion of domestic research capacity and shifts in understanding at the international level are longer term forms of policy influence.