Reports & Analyses

Water for Food: *Feeding what?*

A Comparative Analysis of Egyptian and Israeli National Water Policies toward Water in Agricultural Production

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Key Findings:

- "Water for food" is not necessarily synonymous with "water for food security"
- Countries with similar geological conditions face very different geopolitical realities; national water policies and agricultural motivations reflect this
- Water policies and research should seek to understand "water for food" and its connections with economics, the environment, and securities more broadly

Keywords: *water security, Egypt, Israel, water policy, agriculture*

Purpose of and Motivation for Brief

Agriculture accounts for 70% of the world's "blue" freshwater use. Understanding how and why this amount of water is allocated for agricultural production is critical in properly managing water resources.

This policy brief will examine how water for food is understood and utilised in national water policies. Using comparative analysis with Egyptian and Israeli case studies, the brief will explore how different geopolitical realities can create drastically different motivations for agricultural water allotments.

Egypt and Israel were selected as case studies for geopolitical considerations. Both are arid or semi-arid, yet devote of a great proportion of national water resources to for agriculture. Each is a downstream riparian but also a regional hegemon. However, the states have drastically different national cultures and priorities. Israel's status as a regional "outcast" in many ways and the recent political turbulence in Egypt – motivated partially by food issues – make the countries particularly interesting for study.

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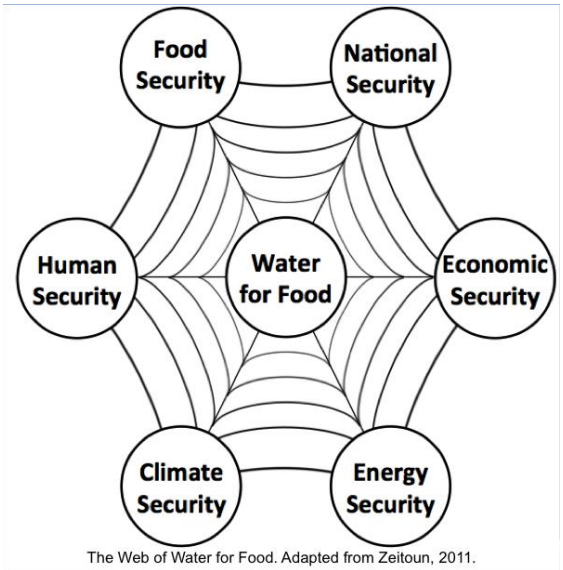
The Web of Water Security

Connections between water, food, energy, and climate are increasingly highlighted in academic research and policymaking. A number of nexuses have arisen in discourses surrounding these issues, the most popular of which is the "Water-Energy-Food Nexus", a concept taken up by numerous think tanks, environmental organisations, international bodies, and governments. More recently, Mark Zeitoun (2011) has suggested a "Global Web of National Water Security", a conceptual tool meant to draw attention to the strong but often unrecognized links between biophysical and social processes surrounding water resources. Zeitoun's web places "water security" at the centre with six connected spokes: national security, water resources security, food security, energy security, climate security, and human/community security.



The Web of Water for Food. Adapted from Zeitoun, 2011.

The Web of Water for Food

This policy brief builds on Zeitoun's web, making the water-food linkage the centre of its own web. The "Water for Food Web" suggests that agricultural water is not necessarily water meant primarily for food as food itself. Instead, national policies around water and agriculture build on a variety of motivations and uses of agricultural production and food products.

- **National Security**. Water and agricultural development have strong ties to nation building. Food production may reduce dependence on external actors and promote internal stability.

- **Economic Security**. Agricultural products may be used in trade. Agricultural sectors can grow local economies and industries. Internal food production may improve resilience to global food price shocks.

- **Energy Security**. Crops may be used for biofuels. Food production may free up money previously spent on food for oil, natural gas, etc.

- **Climate Security**. Agricultural development may increase adaptation possibilities and teach countries to better manage water. Internal production may protect against or make a country more susceptible to climate shocks.

- **Human Security**. Food may be meant to feed people for their own sake. Agricultural production may provide local jobs.

- **Food Security**. Food production may be meant "simply" for food security. But whether food security matters more for urban elites or rural populations and for the sake of individuals or the nation is not always clear.

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Egyptian and Israeli National Water Policies

Current Egyptian policies are muddled by government instability; research reflecting on previous policies may thus be particularly relevant in informing possible future steps. This brief is based on the 2005 "Integrated Water Resources Management Plan" and "Water for the Future: National Water Resources Plan 2017", the latter of which was supported by the Dutch Government. Stated major concerns are water for people; water for food production; water for industry, services, and employment; developping a strong institutional framework; quality, supply, and demand management; protection and restoration of vital ecosystems; and cooperation with Nile Basin countries.

The State of Israel has a nationalised water sector. This brief is based on the 2002 "Transitional Master Plan for Water Sector Development in the Period 2002-2010" and 2011 "Long-Term Master Plan for the National Water Sector", which focus on action in uncertain conditions; system management; consumption management; water and agriculture; urban water systems; improving institutional-organisational structures; quantities and qualities of water; minimising harm to ecological system services; and balancing economic, social, environmental considerations.

The word clouds above highlight the most commonly used words in Egyptian and Israeli National Water Policies, illustrating the two states' different approaches to and priorities in water management. "Agriculture" and "nature" both appear in Israel's; "land" and "agricultural" are relevant keywords for Egypt. "Desalination", "wastewater", and "sewage" are prominent in Israel's,, while "environmental" appears more prominently in Egypt's.

Word cloud ("water" removed)generated from the Egyptian Integrated Water Resources Management Plan, 2005.

Word cloud ("water" removed) generated from the Israeli Long-Term Master Plan for the National Water Sector, 2011.

These word clouds shed light on national-level discourses around water-based resources and indicate the primary motivating factors driving water policies.

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Water for Food in Egypt and Israel

While increasing populations and rising demands are the major concern in both countries' national water policies, Egypt and Israel heavily prioritise agricultural development, working to ensure adequate water resources for these sectors. In Egypt, agriculture regularly accounts for more than 80% of its freshwater use. Israel's "Long-Term Master Plan" explicitly states that, once the water sector has stabilised, "the amount of water for agriculture will not be limited and will fully match the needs of the sector's development" (State of Israel 2011: 44). But the two states' motivations for allocating water to their agricultural sectors vary. These motivations can be explored using the "Water for Food Web".

At a Glance: Egyptian and Israeli Agricultural Water

	Egypt	Israel
Population (2011)[1]	82,536,770	7,765,700
GDP (billion current USD, 2011)[1]	229.5	242.9
GDP per capita (current USD, 2011)[1]	2,780.8	3,1282.3
Agricultural sector value (per cent total GDP)[2]	14.7	2.5
Employment in agricultural (per cent total employment, 2008)[1]	31.6	1.7
Agricultural land (% total land area, 2009)[1]	3.7	24.1
Permanent crop land (% total land area, 2009)[1]	0.8	3.6
Renewable internal freshwater resources (billion cubic meters, 2011)[1]	1.8	0.8
Renewable internal freshwater resources per capita (cubic meters, 2011)[1]	21.8	96.6
Annual agricultural freshwater withdrawals (% of total freshwater withdrawal, 2011)[1]	86.4	57.8

1. *World Bank*; 2. *CIA World Factbook*

Water for Food…

…for National Security

Where on the web? Linkages between water for food and securities in Egyptian and Israeli national policies.

	Egypt	Israel
National Security	2	3
Economic Security	2	2
Energy Security	0	1
Climate Security	1	1
Human Security	2	2
Food Security	3	2

Above: 3=strongest; 1=weakest; 0=no link.

Egyptian national security has recently been rather shaken by protest and the overthrow of President Hosni Mubarak. National unrest in the past decade has been motivated partially by global food price spikes over grain, a staple of the Cairene diet. The Egyptian government has since prioritised food self-sufficiency to protect national security against global shocks and has made multiple statements on the need to expand agriculture through irrigation.

Israeli policy documents regularly call agriculture development a "national objective". "Making the desert bloom" was central to Zionist policy. Agricultural success was seen as a way to legitimise the Jewish claim to the land.

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The state continues to employ its technical expertise in irrigation and water efficiency technologies for diplomatic relations. In this way, water for food has been water for nation building more than water for food itself.

...for Economic Security

Egypt's IWRM Plan recognises that agriculture is a "major economic activity in Egypt", accounting for nearly 15% of its GDP. Egypt has been more susceptible than most countries to food price shocks; internal food production is thus partially a mechanism for ensuring economic resilience.

Israeli agricultural produce is marketed throughout Europe and is one of the country's links to countries, something sorely needed for a country unrecognised by many of its neighbours. Israeli policies of agricultural water pricing promote economic sustainability for the sector.

...for Energy Security

Egyptian national water policies say virtually nothing about the link between water for food and energy. For Israel, energy is one of the few issues present in this web that does not come under the direct control of the National Water Authority. A great deal of energy is used in water for food: Drip irrigation and other agricultural technologies are energy-intensive.

...for Climate Security

In Egypt, food industries are one of the major contributors to water pollution. Water for food is thus considered by the state as a climate security issue primarily through the lens of environmental sustainability concerns, and the link between water for food and climate security is a negative one.

In Israel, the bulk of the water used in agriculture is marginal water from brackish sources. Israeli policy documents also speak of the need for water to help preserve the land's fertility. For this country, then, the water for food-climate link is a more positive one.

...for Human Security

Egyptian water policies consider rising populations and improved standards of living, indicating that water for food is considered, at least partially, an issue of human security. Policy documents also speak of the desire to improve farmers' incomes, raising another consideration in water for food. Israeli documents discuss the need to care for rural communities. Population growth, primarily from immigration influxes, is seriously considered.

...for Food Security

Egyptian water policy documents explicitly mention "food security" as often as they do "water security"; indeed, food security is listed as the first challenge "facing the Government of Egypt as pertaining to water resources management" (Arab Republic of Egypt 2005a: 19). Food security is also stated explicitly in Israeli documents as a major policy motivation, but the state is richer and thus more able to depend on food imports if needed.

The links between water for food and food security are obvious in many ways, but consideration is needed of the myriad number of ways states employ "food security". Food security for whom and to which ends?

Conclusions and Recommendations:

- Agricultural water can contribute more than food to a state's national security.
- States facing different geopolitical conditions may have different motivations that lead to similar

policy actions (e.g., Egypt and Israel both prioritise water for their agricultural sectors but for different reasons).

- Policymakers should understand and act on the ways agriculture and food production impact other sectors. In particular:

- The Egyptian and Israeli governments should better incorporate issues of energy and climate security in their national water policies.

- Governments should consider the *negative* impacts of agricultural water on the six securities of the "Water for Food Web" as well as the positive.

- Researchers must consider the nuances of states' motivations in agricultural water allotments.

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