



Strategic Plan Executive Summary November 2015

The Challenge

The Robert B. Daugherty Water for Food Institute (WFI) at the University of Nebraska (NU) was established to address one of the most urgent challenges of the 21st century with significant political, environmental, social and economic implications: how to achieve greater food security with less pressure on water resources. At present, almost a billion people in the world are food-insecure, without access to enough safe and nutritious food to lead healthy and active lives. Many of them are also water-insecure, without reliable availability of an acceptable quantity and quality of water to meet their needs, while also exposed to the risks of droughts and floods. To ensure sustainable global food and water security in the face of population and income increases, a changing climate and the growing demand for scarce water resources, it is imperative to improve water use and management in agricultural and food systems.

While this enormous challenge manifests itself in different ways and situations, some of the major problems that need to be solved in the quest for greater water and food security cut across a range of contexts. Subject areas that are central to water and food security both in the United States and globally include: closing water and agricultural productivity gaps; groundwater management for agricultural production; enhancing high-productivity irrigated agriculture; freshwater and agricultural ecosystems and public health; and management of agricultural drought.

Core Assets and Expertise to Address the Challenge

The institute's principal assets are the specialized faculty, students, and staff at NU with expertise in water, agricultural, atmospheric, information and social sciences; water law; public health; and public/business administration; as well as the institute's global network of partnerships with national and international institutions.. The university has nearly 150 years of leadership in agriculture and water management and four campuses in the state: University of Nebraska-Lincoln, University of Nebraska at Kearney, University of Nebraska-Omaha and the University of Nebraska Medical Center, also in Omaha. NU also has an important set of highly-relevant specialized centers, such as UNL's National Drought Mitigation Center (NDMC), the College of Public Health at UNMC, and the Nebraska Water Center (NWC) and its Water Sciences Lab, now part of WFI. The NWC facilitates research addressing water problems throughout Nebraska and advances knowledge through publications, workshops, conferences, lectures and tours. The lab provides state-of-the-art analytical technology to evaluate water quality and serves as a technical resource for researchers, students, natural resource managers and policy makers.

On a Mission to Make a Difference

The institute's vision is that of a food and water secure world, where global food security is ensured while maintaining the use of water to meet other vital human and environmental needs. Its mission is to have a lasting and significant impact on achieving more food security with less pressure on water resources through research and policy, stakeholder engagement, communication and education programs. Staff exemplify the shared values of integrity, excellence, transformation, service, learning and collaboration, working closely with agricultural producers and other water managers; local, state, national and international decision makers; decision makers in industry groups, private companies, non-profit

organizations and NGOs; faculty, scholars, and undergraduate/graduate students at NU and other educational institutions; and the general public.

Comparative Advantages

In relation to other important organizations working to reduce water and food insecurity, WFI has a number of unique characteristics that make it an innovative contributor to the field, beyond its access to expertise. These assets include its location in the U.S. High Plains, one of the world's major farmland regions and a natural agricultural laboratory; Nebraska's water management excellence; the Daugherty Foundation grant and the flexibility it gives to partner and initiate projects quickly; the institute's links with the private sector and ability to build strong collaborations with private partners; and its focus on both research and applied impact-related projects.

Subject Areas and Geographical Locations: A Focused Approach

The WFI concentrates on four subject areas that are vital to water and food security in Nebraska and around the world, bridging the worlds of large-scale and smallholder agriculture:

- Closing water and agricultural productivity gaps, building on the pioneering work of the Global Yield Gap and Water Productivity Atlas, as well as the university's expertise in plant breeding and biotechnology development, to reduce productivity gaps in crop and livestock systems.
- Improving groundwater management for agricultural production, drawing on the vast experience of Nebraska's water governance institutions and farmers, focusing on scientific and policy research to improve understanding of the human and natural dynamics of groundwater.
- Enhancing high productivity irrigated agriculture, working in partnership with the private sector, NGOs and social entrepreneurial groups to provide research, technology transfer, education and outreach to further the goal of increasing water productivity in all forms of irrigated agriculture.
- Freshwater and agricultural ecosystems and public health, ensuring that efforts to improve water and food security also advance public health and protect ecosystem integrity, and drawing on the university's leadership in natural resources management, water quality analysis and public health.

In addition, the WFI works on a cross-cutting subject, the management of agricultural drought. In this area, WFI works closely with its affiliated center NDMC, bringing together the globally-recognized work of the NDMC on drought monitoring and mitigation with WFI's expertise in water and agricultural productivity, groundwater management, water conservation policies, and irrigated agriculture. And in its work in Nebraska, the WFI works with and through the NWC on a broader set of water issues of priority importance to the state of Nebraska, which encompass water quantity, water quality, and basin-specific issues.

The institute concentrates on geographical locations of high policy impact and representative of the challenges in its four subject areas of focus, as well as areas where it has a comparative advantage through its faculty and global partnerships. To date, it has worked in Nebraska and the High Plains region in the US; India, China and Brazil; and a small number of countries in sub-Saharan Africa and the Middle East and North Africa (MENA).

Programmatic and Institutional Strategy

The institute operates through three inter-related programming pillars: research and policy, education, and communication, all of which involve active engagement with the institute's stakeholders. These pillars

support the institute's efforts to build a culture of impact assessment, learning and evaluation. The institute's programs address issues at local to global scales.

Since the institute's mission is to contribute to advancing water and food security, its programs are designed not simply to produce useful outputs, such as publications, websites and trained personnel, but more importantly, to achieve strong positive outcomes in terms of changes in knowledge, changes in action, and ultimately, changes in water and food security. The institute connects immediate outputs to desired impacts through an explicit "output to impact" approach.

WFI operates as a network, a "distributed institute," leveraging the university's faculty, specialized centers, global partnerships and affiliated faculty. The institute includes a small core staff at its base at the Nebraska Innovation Campus, as well as Faculty Fellows at the university's four campuses and Faculty Associates at other institutions in the U.S. and overseas. It is governed by a Board of Directors and advised by Faculty and International Advisory Panels, and its reach is extended through global assets and partnerships.

Financial Strategy

The institute was established with a \$50 million gift from the Robert B. Daugherty Foundation to be spent over a 15 year period beginning in 2010. The institute also receives significant in-kind support from the University of Nebraska as well as funding from external sources, including those from competitive federal funds. The grant facilitates quick responses to project opportunities, helps attract external funding, and fosters a variety of collaborations with local, state, federal and international organizations and joint ventures with private and non-profit groups. Together with the University of Nebraska Foundation, the institute is developing a strong plan for financial sustainability post-2025, to include endowment funding.

Measureable Impacts

In keeping with its "output to impact" approach, success is measured through changes in knowledge (e.g. as a result of research outcomes shared through engagement activities), action (e.g. changes in policies or practices that result from knowledge gained), and condition (e.g. improvements in water and food security that result from actions taken). The institute also evaluates its internal impacts on the university.

Annually, the institute will evaluate the outcomes and impacts of each WFI-led program, as well as the collaboration and engagement projects with NU faculty and students. The institute will review and assess progress and produce an annual report on developments and accomplishments.