**Summary Report**

**Increasing Expertise in Resolving Complex Food-Health Challenges**

By

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The food we produce has enormous potential to resolve complex health problems facing our globe today. For example, obesity and health related diseases cost the U.S. alone about 322 billion annually. Healthier food consumption (e.g., fruits and vegetables could significantly reduce non-communicable diseases especially in poorer communities (minority and Native American communities). Food security and malnutrition are other major challenges we face today. Even though current production has excess calories for 1.5 billion people, more than 1 billion people around the globe go hungry. A significant share of food related problems could be solved with managing food waste in some parts of the globe, an average of more than 1.3 billion tons.

Complex food-health challenges are magnified by water shortage, climate change, and increasing world population in poorer communities and countries. The global population is anticipated to increase from 7 to 9 billion people by 2050. The emphasis of this project is to examine ways to increase expertise (human capital development) in research to address these complex challenges, with an emphasis on expertise from poorer communities. Human capital development in graduate and undergraduate research will serve as trigger points where marginal contributions in research could lead to big, long-run, changes.

NDSU grand challenge has food-health issues as a major area of emphasis. Our Agribusiness and Applied Economics Department went through an approximate 1.5 year rigorous process to develop a strategic plan that is aligned with the NDSU mission.1 Part of the plan emphasizes collaboration with the College of Business and other units; Great Plains Institute of Food (GIFSIA) <https://www.ag.ndsu.edu/GIFSIA> and food ecology centers, Great Plains Institute of Food, and other universities in India (NITTA) and Africa (University of Buea).

**Some Accomplishments and Impacts**

 We have seen several accomplishments in the following areas:

* Initiated joint graduate programs.
	+ A Stage II Masters in Agribusiness and MBA proposal with College of Business has been completed. Stage II implies the final stage of approval.
	+ A Stage I PhD program, joint with Mathematics, Statistics, Transportation and Logistics has been completed.
* Fund raising in the Department has increased significantly. Two faculty have generated $11.5 million and $4 million dollar endowments. These funds will also provide scholarships for students to complete research in the areas food security, nutrient demand, obesity, transportation and logistics, food waste, etc.
* Recruiting minority students and students from poorer communities. One incoming student has been awarded the Robert Wood Johnson Foundation-Health Policy Research Scholars (RWJF-HPRS) program, a $120,000 over four years.

In summary, my participation in the FSLI program has helped me in several ways. First, it enable me to understand the need of a systems approach to resolve complex food-health problems. A systems approach that identifies critical trigger points could have significant long-run impacts. Second, it enabled me to engage more with fund raising. Fund raising provide financial capital to help accomplish major goals. Third, the training helped me a lot with communication (e.g., how to lead faculty and other stakeholders to have a clear vision and establish a plan to assess progress). Finally, I was able to develop strategies to engage global partners and to work with a more diverse population.