Assessing Sustainable Nutrition Security: The Role of Food Systems

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on behalf of the CIMSANS Sustainable Nutrition Security Workgroup

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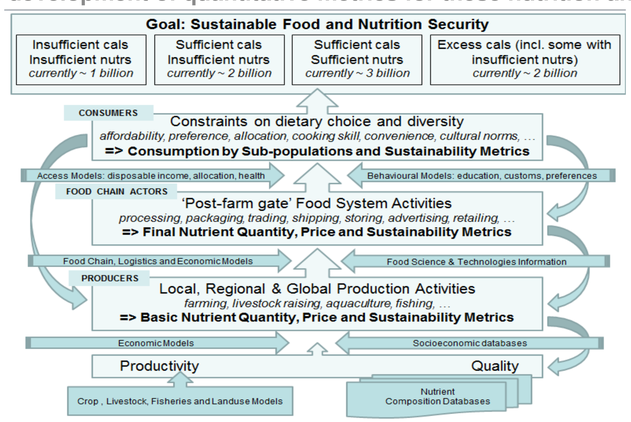
The Problem

The nutrition component of food security assessments to date has focused on macronutrients, being incomplete with respect to both MICRONUTRIENTS and the SUSTAINABILITY IMPLICATIONS of meeting growing food demand amidst global change. The emerging science of integrated modeling is being used to assess how food systems must evolve given these challenges. However, the underlying models being used in these assessments are often based on weak assumptions and very limited or outdated information. There is a pressing need to improve current food security assessment methodologies, and critically, our understanding of how to provide nutritionally-adequate diets to the anticipated 9.6 billion (in 2050) while preserving our planet.

The Project

An expert working group, convened by CIMSANS[1], explored the key domains of Sustainable Nutrition Security (SNS). A methodology was proposed which characterizes the sustainability and dietary quality outcomes of food systems. The development of quantitative metrics for these nutrition and sustainability aspects of food systems are described for testing within an integrated modeling framework, launching a 3-year work plan.

Step 1: Create a conceptual framework for the modeling of overall food systems, intended for translation into an advanced integrated model:



Step 2: Develop quantitative 'SNS' metrics:

- *Caloric and nutrient adequacy*
- *Dietary quality*
- *Dietary diversity*
- *Dietary sustainability*
- *Consumer choice*
- *Resiliency of the food system*
- *Overall food system sustainability*

Step 3: Prioritize and implement additional critical modeling improvements

- *Climate variability*
- *Extreme weather*
- *Ozone*
- *Biotic stresses*
- *Soil degradation and soil health*
- *Changes in nutrient composition*
- *Genetic improvements*
- *Urban and peri-urban food production*
- *Consideration of toxic plant components*
- *Food loss and waste*

Step 4: Execute the work plan

YEAR ONE:

Prioritize list of desired integrated modeling improvements;

Evaluate existing tools for quantifying nutrition security will be evaluated for possible use in the SNS assessment;

Identify means to add all SNS metrics to available integrated models.

YEAR TWO:

Implement improvements to integrated models, including the addition of SNS metrics;

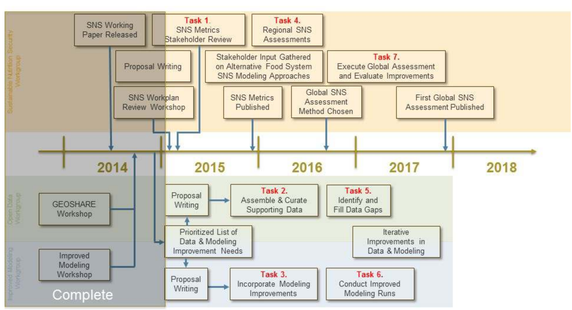
Complete assembly of all necessary data, models, and methods for conducting the SNS assessment.

YEAR THREE:

Conduct SNS assessment and publish findings;

Implement case study validations.

Overall SNS Assessment Timeline



Conclusions

The assessment methodology described in the CISMANS Working Paper[2] can be deployed to evaluate the impact of potential food system interventions on various aspects of SNS. This advanced methodology is critical to achieving SNS now, and given mounting food demand and climate challenges, into the future.

1 http://www.ilsi.org/ResearchFoundation/CIMSANS/Pages/HomePage.aspx

2 Acharya, T. *et al*. June 2014. Assessing Sustainable Nutrition Security: The Role of Food Systems. ILSI Research Foundation, CIMSANS. Washington, DC. Accessible at: http://goo.gl/gEyQ1F