

TITLE: A prototype, scenario-based, decision support system for integrating food security and ecosystem management in Jamaica.

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The development of decision support systems to assist decision-makers and stakeholders in the science-policy-practice dialogue is one of the primary research objectives of the international research project “Global Environmental Change and Food Systems (GECAFS). These decision tools support a fundamental GECAFS goal to determine strategies that create adaptive, food-secure and environmentally-resilient systems that successfully cope with the impacts of global environmental change. In this respect, food security is reflected in a variety of multi-disciplinary concepts including, food utilization (nutritional value, social value, food safety), food access (affordability, allocation, preference) and food availability (production, distribution, exchange). In constructing initial decision support methodologies and tools, researchers have combined aspects of scenario analysis and decision support modeling.

Scenario analysis is a powerful way to think about uncertainty and risk. The methodology assists teams in analyzing past and present trends, detailing possible future developments, and using the insight they gain to explore potential actions designed to improve the current situation. The scenario analysis approach has been shown useful in a variety of contexts, including economic strategy, business development, and environmental management.

The Questions and Decisions™ (QnD™) screening model system was created to provide an effective and efficient, open-source, decision tool. QnD incorporates ecosystem, management, economics and socio-political issues into a user-friendly model/scenario framework. An initial decision support system (QnD:Jamaica) was created to explore the spatially explicit (parish-level) food, economic and population dynamics of rural and urban populations. QnD’s object-oriented design structure allows iterative development of model components that can be easily changed as group learning occurs.

This paper describes how the QnD:Jamaica model was used with different global change scenarios to provide interactive future worlds for participants to explore potential policy actions. Initial scenario results show how the food security of various rural and urban populations can vary over time and space with respect to climatic and economic changes. At local-scales, adaptation options are limited for most resource-poor populations. This vulnerability highlights the need for systematic policy options that integrate food systems, economic and natural resource management.