

VISTA AND CISTA FRAMEWORKS FOR VULNERABILITY ASSESSMENTS IN FOOD-WATER NEXUS

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Food and water are essential resources. Altered environment and increasing population are stressing the food production and water resource systems. This is resulting in an increased demand for food-water-energy as well as creating a need for vulnerability assessments. The overall objective of this study was to develop a novel tool that can translate a theoretical concept [vulnerability of food and water resources (VFWR)] to an operational framework mainly under altered temperature and precipitation. The tool developed using novel systems thinking approach had three stages. Stage-1: Translating theoretical concept to characteristics identified from studies; Stage-2: Operationalizing characteristics to methodology in VWR; Stage-3: Utilizing the methodology for development of a conceptual modeling tool for VWR: FWR-VISTA (Food-Water Resource Vulnerability assessment conceptual model using Indicators selected by System's Thinking Approach). The specific novelties were: 1) The important characteristics in VFWR were identified in Stage-1 (target system, system components, scale, level of detail, data source, frameworks, and indicator); 2) FWR-VISTA combined two vulnerability assessments frameworks: the European's Driver-Pressure-State-Impact-Response framework and the Intergovernmental Panel on Climate Change's framework (IPCC's); and 3) used systems thinking approaches for indicator selection. The developed application was demonstrated in Florida, using ~10 indicators with intermediate level of detail. The developed tool can be easily replicated to other regions within and outside the US.

PRESENTER BIO: Dr. Aavudai Anandhi is an Assistant professor in the Biological System Engineering program at Florida A&M University. During the last 20 years her research, teaching and service involves exploring the beautiful world of food-water-energy nexus and environmental change, its vulnerability adaptation and mitigation using complex systems thinking.