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## Holistic Food Systems support Climate Resiliency:

The inherent complexity of food systems in a changing climate requires a multidisciplinary approach. Rutgers Center for Agriculture Food Ecosystems (RUCAFE) researchers, from a variety of disciplines, have joined together to develop a holistic approach to sustainable climate resilient food systems that bridges Agriculture and Plant Sciences, Marine and Aquaculture Sciences, Agribusiness, Nutrition, Engineering, Ethnobotany and Social Sciences

## Partnership with the Federated States of Micronesia:

Rutgers has active and developing MOUs with three states (Pohnpei, Yap and Kosrae) of the four states that comprise the Federated States of Micronesia (FSM), an island nation in the north Pacific that consists of 607 islands and one million square miles of ocean with some of the most biodiverse terrestrial and marine ecosystems in the world. The people of FSM, speaking eight major indigenous languages across four independent states, are directly impacted by climate change ranging from sea level rise, king tides, altered rainfall and increased storm frequency/intensity that is already having an impact on local food production.



## Why Island Food Systems?

Over 730 million people, approximately 11% of the world's total population, live on islands that are directly impacted by climate change ranging from sea level rise, altered rainfall and increased storm frequency/intensity. The 2021 UN Intergovernmental Panel on Climate Change (IPCC) report predicts that island countries will continue facing extreme food security risks due to land loss, coral bleaching and salt water inundation impacting vital food production from terrestrial and marine food sources. Rutgers interdisciplinary food system research team intentionally connects Marine and Agricultural sciences to advance a holistic, integrated approach to environmentally sustainable food systems development for island nations. Rutgers FEEDS model includes seed banks, sustainable soil management and agriculture engineering, infrastructure of cultivation houses, solar based irrigation and drying systems, these integrated models combining culture and science knowledge that have demonstrated success creating jobs that provide income for local populations. Rutgers brings over a century of applied aquaculture research. This expertise is complemented with Rutgers leading ocean observing technology used to support sustainable ocean management/prediction that can be applied for the planning and development of effective management practices of natural wild stocks as well as growing ocean aquaculture capabilities.

**Acknowledgements:** Rutgers Center for Agricultural Food Ecosystems (RUCAFE), RU Global, Green Climate Fund, Micronesia Conservation Trust, State of Pohnpei, the national government of the Federated States of Micronesia, and the Depts of Marine and Coastal Sciences and Plant Biology.

## Green Climate Fund supported Food System research in Micronesia:

Rutgers Holistic Food System Science team has been awarded a grant from the Green Climate Fund (GCF) "Climate-resilient food security for farming households across the Federated States of Micronesia (FSM)" through the Micronesia Conservation Trust (MCT) and the FSM Department of Resources and Development (R&D), to gather baseline data assessing FSM farming households' food production, market challenges and goals for agriculture, livestock, poultry, fish and marine mammals, within a changing climate. Most FSM families have access to land and ocean through traditional clan based land tenure. For this baseline survey, FSM farming families are defined as any household that harvests, raises, grows, fishes and/or hunts local foods from the rainforest, oceans, rivers or local gardens. Working in partnership with FSM educational institutions and local experts including women's association, the agricultural/farming associations, and the fishery associations in each of the four states of Yap, Pohnpei, Chuuk and Kosrae, we are surveying 600 farming families across the country and an anticipated 60 commercial food producers as well as focus groups with IRB protocols approved both in FSM at the College of Micronesia (COM) and from Rutgers. Data collected on the ground will be compared and integrated with published prior studies to assess the strengths and weaknesses of the local food systems as well as the climate resiliency needs of subsistence and aspiring commercial farmers and fishers.



## Invited by the Community, Learning from the Community:

With support also from an RU Global seed grant, Rutgers researchers spent three weeks in Micronesia meeting with local farmers, fishers, university researchers, NGOs, markets, buyers, food processors and legislators to support the state's long term food security goals. These meaningful knowledge sharing meetings led to additional partnerships with Pohnpei State to assist them in developing their food policy strategy and conduct a SWOT analysis to improve the chicken and egg production in Pohnpei.

## Established Partnerships with Local Leaders:

Across all four FSM states, Rutgers works directly with local leaders and food system champions providing training, capacity building and knowledge sharing with community based NGOs, colleges and state governments. FSM partners include Pohnpei State: Dir. of R&D Hubert Yamada and COM's Engly Ioanis, MCT's Winfred Mudong and Conservation Society of Pohnpei's Eugene Joseph & Francisca Sohl Yap State: Dir. of R&D Arylne Chugen, Yap Catholic High School's Michael Wiencek and Constantine Yowbalaw Kosrae State: Kosrae Safety and Conservation Society's Andy George and Heidi Floyd Chuuk State: Dir. of Ag. Tim Mondale and Chuuk Women's Council's Mary Rose Nakayama and Courtney Benito



## Anticipated Outcomes:

- Results from the Green Climate Fund baseline survey for climate resilience among farming households will be placed alongside the national and individual island states' food security strategies and plans and offer recommendations for food system development.
- Pohnpei' State's new 5-year sustainable food policy strategy that includes sustainable development of the island state's terrestrial and marine food sources.
- SWOT analysis of chicken and egg production and strategies to promote local feed production for animal and poultry husbandry.
- Developing new partnerships with the national and state governments, vocational schools and the College of Micronesia.
- New opportunities for Rutgers faculty and students for research and teaching exchanges.

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