Program and abstracts for the

2022 Sustainable Island Futures Symposium IV

hosted by
The Metabolism of Islands & The Sustainable Island Solutions through STEM

Thursday, June 9, 2022

6:00 - 9:00 PST
9:00 - 12:00 EST
9:00 - 12:00 AST
13:00 - 16:00 UTC
15:00 - 18:00 CEST

Name	topic	time (AST)
	Welcome and introduction	9.00 - 9.05
Keynote: prof. dr. Georges Felix	Agroecological Resilience and Food Sovereignty in the Caribbean	9:05 – 9:30
Elham Mohamed	Food Security in the Caribbean: Challenges and Options	9.30 - 9.55
Shupa Rahman	Can the Caribbean localize its food system?	9.55 – 10.20
discussion/feedback		10.20 - 10.30
break		10.30 - 10.40
Jeltzlin Semerel	Valorization of Aloe vera waste	10.40 –11.05
Zoe Barois	Building Resilience for Food Security in a Changing Climate. Small Developing Island States: Kiribati, a Case Study	11.05 - 11.30
discussion/feedback		11.30 –11:40
closing		11.40 –11:50

Abstracts:

1. Elham Mohammadi, PhD student Waterloo

   Food Security in the Caribbean: Challenges and Options
   The Caribbean region remains susceptible to an increasing frequency of natural disasters, rising international debt, out-migration, rapid urbanization, and high imports to meet basic needs. Food and nutrition insecurity persists in these small island states, with around 67.5% of the population living in moderate or severe food insecurity. Policy adjustments required to address the targets subsumed by the second sustainable development goal (SDG2 or Zero Hunger) are still at an infant stage. This research offers rigorous and up-to-date analyzes of the current status of Caribbean food policies and practices through a scoping review and expert interviews to answer the question, "What constraints and enablers impact the ability of small island states to achieve the Zero Hunger goal?". A scoping review is performed following the relevant population, concept, and context (PCC) methodology by the Joanna Briggs Institute (JBI). Five major challenges and barriers are identified through the scoping review: (i) island geography, (ii) governance deficiencies, and (iii) institutional constraints, compounded by (iv) collaboration barriers, and (v) externally imposed impediments (including environmental and financial shocks). To address these challenges, synergistic linkages and restrictive connections have been recognized for SDG2 localization. It was concluded that three dimensions of food security (utilization, agency, and sustainability) are mainly overlooked, necessitating special attention and action. By identifying bridging institutions and engaging various actors in supporting shared rulemaking, power, conflict management, and knowledge-sharing among local, national, and regional policy actors, a polycentric governance system is recommended as a suitable mechanism to help islands move towards food security.

2. Shupa Rahman, Graduate Alumni, School of Environment, Enterprise and Development, University of Waterloo

   Title: Can the Caribbean localize its food system?
   Exploring strategies to promote circular food systems in the Caribbean islands Research presented from the following publication: Rahman, S. (2022). Can the Caribbean localize its food system? Exploring strategies to promote circular food systems in the Caribbean islands [Master's thesis, University of Waterloo]. UWSpace. Rahman, S., Singh, S. & McCordic, C. (2022) Can the Caribbean localize its food system? Evidence from biomass flow accounting. Journal of Industrial Ecology. Advance online publication. DOI: 10.1111/jiec.13241

   Abstract: Inherent vulnerabilities and key stages in development of Caribbean small island developing states (SIDS) have led to a risky dependence on food imports. Moving away from the current food system and enhancing self-sufficiency according to circular

economy (CE) principles is advocated. One suggested way to enhance circular food systems is by diversifying production and consumption through localization. This research takes stock of localization as a potential strategy of CE for island food systems. The socio-metabolic transition of island food systems is traced over time to conceptualize the biophysical aspect of the socio-ecological system of an island ecosystem. The chosen cases are Barbados, Dominica, Grenada, and Jamaica. Indicators derived from a diachronic biomass flow accounting from 1961-2019 suggest a declining trend in local food production for all cases. While in Barbados and Jamaica this decline already began in the 1960s, for Dominica and Grenada this did not start until late 1970-80s. The physical trade balance of biomass is similar across all cases: from net exporters at the start of the study period to net importers as countries developed, albeit at different time periods. This study further disaggregates biomass flows to crop level to assess the extent of localization in the four islands and discuss their feasibility. Barbados and Jamaica indicate a trend that is moving away from localization, while Dominica and Grenada appear to be modestly moving towards localization recently. The potential benefits of localization and the trajectory of high import dependence in these islands warrant the exploration of localization as a strategy to promote circular food systems in the region.

3. Jeltzlin Semerel, Junior Researcher, SISSTEM University of Aruba/KU Leuven

Valorization of Aloe vera waste.
Aloe vera plant is known worldwide for its medicinal properties and application in gel-based products such as shampoo, soap, and sunscreen. However, the demand for these gel-based products has led to a surplus production of Aloe vera waste. Aloe vera waste contains various carbohydrates, amino acids, minerals, vitamins, lipids, and bioactive components. Currently the Aloe vera waste is being disposed or used as fertilizer. A sustainable waste management system for the Aloe vera waste should be considered, due to the negative societal and environmental impacts of the currents waste disposal methods. Therefore, this review focuses on various approaches that can be used to valorize Aloe vera waste into value-added products. Researchers have reported Aloe vera waste for environmental applications such as animal fodder and biosorbents. Several studies have also reported on the valorization of Aloe vera waste for production of energy such as biogas, syngas, and bioethanol. Aloe vera waste valorization was also reviewed through extraction of value-added bioactive compounds such as aloe-emodin, aloin and aloe resin. These value-added bioactive compounds have various applications in the cosmetics (non-steroidal anti-inflammatory, tyrosinase inhibitors) and pharmaceutical (anticancer agent and COVID 19 inhibitors) industry

4. Zoe Barois, MSc. (student) thesis research at Vrije Universiteit Amsterdam

Title: Building Resilience for Food Security in a Changing Climate. Small Developing Island States: Kiribati a Case Study.
The interaction between health and the environment is intensified amongst small island developing states (SIDS). Of particular concern are the low-lying islands of the Pacific, as their geographic dispersion and limited land areas places them amongst the most vulnerable to climate change. From these islands, Kiribati has begun to experience the detrimental effects of climate change, especially on food security. The lack of contextualized research and policy actions have failed to respond to local priorities and accommodate for local capacity, leaving minimal positive impacts on society. A novel contextualized perspective towards building resilience for food security is therefore adopted by implementing a mixed methods design with a nested transdisciplinary component. The notion of complex adaptive systems is used to further explore and integrate findings to overcome national challenges and ensure the generation of robust evidence through stakeholder collaboration. A statistical exploration using MICS and FAOSTAT data is conducted to investigate the impacts of climate change on food security, the long-term trends in food security and the expected prevalence and distribution of health outcomes throughout Kiribati. Interviews will supplement and further contextualize the analysis and will be followed by a final collaborative workshop. The results will aid in formulating a tool-kit composed of policy and research recommendations that can be later generalized and adapted to other SIDS facing similar food security and climatic threats.