



Implications of Everyday Adaptation for Food Security in the Changing Climate

Brianna Castro, PhD

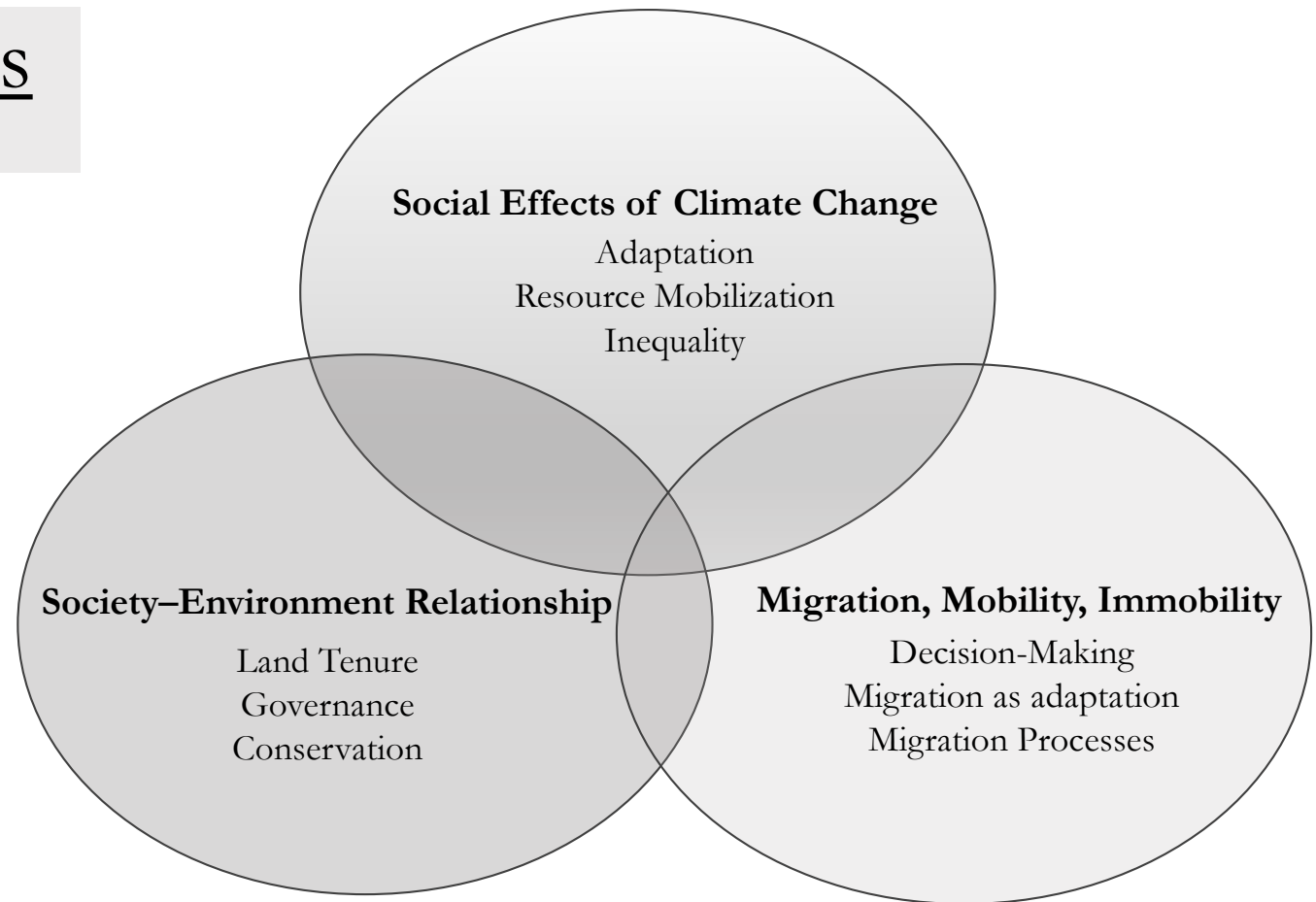
Assistant Professor | Vanderbilt University

IGES Workshop March 13, 2024

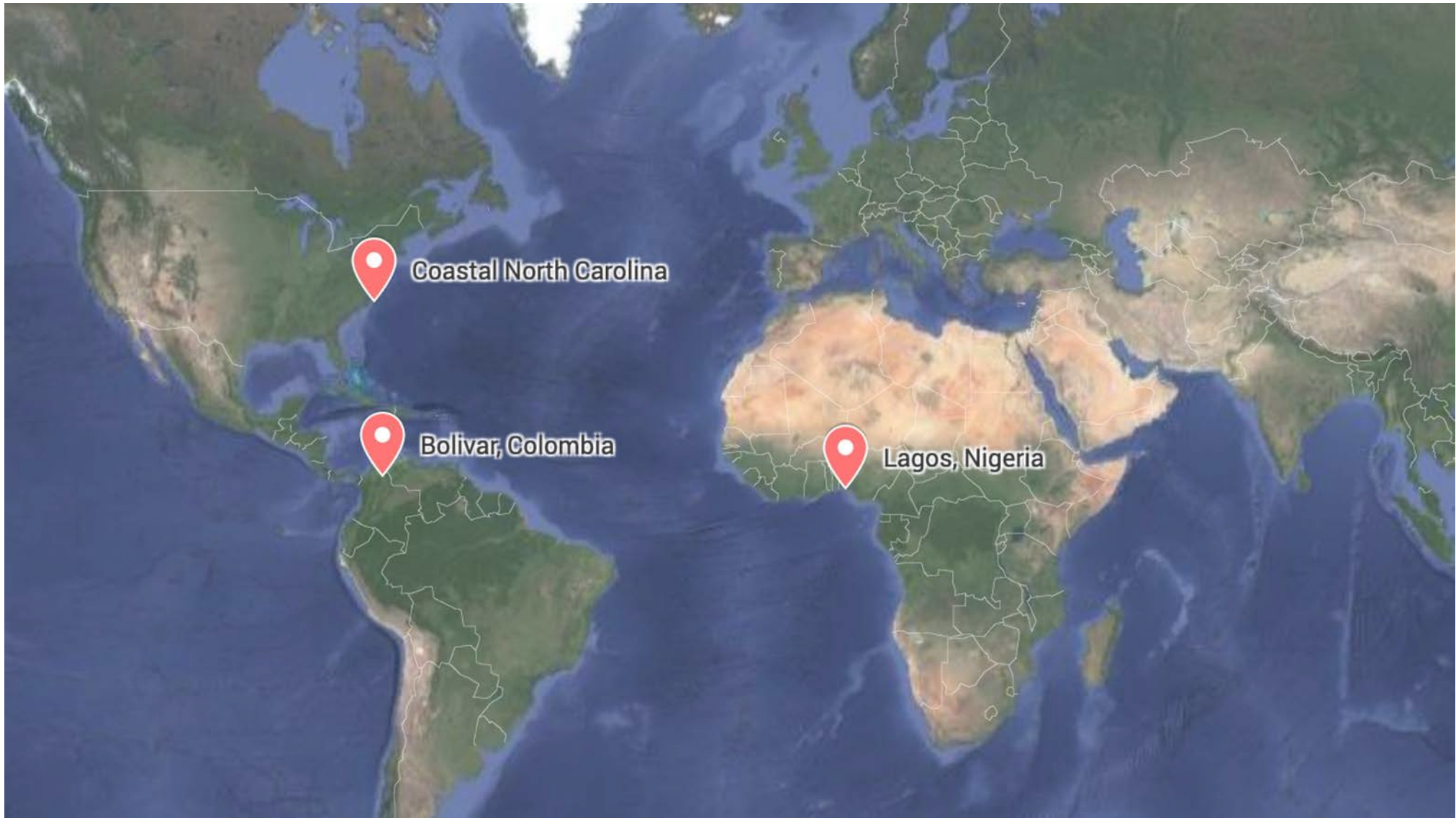
Hayama, Japan



Research Areas



Methods: *Field Research, In-depth Interviews, Participant Observation, Focus Groups, Surveys*



My Argument: Individual climate change adaptations affect food security

1. Define everyday adaptation
2. Lessons from everyday adaptation research for food security
3. Opportunities for policy synergy to support both adaptation and food security derived from microlevel research

Everyday adaptation: localized, individual responses to living in a changing climate (Castro and Sen 2022)

How do individuals and households adapt to climate change in everyday life? (micro-level)

How does institutional context influence microlevel adaptation? (macro-/meso- level)

Everyday Adaptations to Climate Change

Category	Adaptive Practices
Preparedness	Designated savings for home upgrades and repairs Storing more seeds in case of loss Diversifying household income sources
Routine Maintenance	Daily cleaning and bleaching of home surfaces Daily raking and shoveling of slipping gravel or eroding mud Moving water away from property through pumping, shoveling, barricading
Livelihood Activities	Shifted seasons of work in response to change in crab, shrimp, and fish catches Shifted agricultural work in response to saltwater intrusion impacted harvests Seeking employment in non-impacted sectors for job security Relying on more resilient crops, reducing variety in crops planted and harvest times Decreased planting overall and decreased labor time
Daily Routines	Increased reliance on non-perishable foods Skipping meals in times of climate stress Communicating incoming trends in weather through social networks Washing clothes and bathing less frequently due to water availability

Everyday Adaptations Impacting Food Security

Example 1

Shifting outdoor work practices during extreme heat

- More frequent and longer breaks
- Shifted work times to earlier in the day or later in the evening

Food Security Impact: Lower overall yields in planting and harvesting → less food produced

Opportunity for policy synergy: Same adaptations used, but outdoor farmworkers in unforested areas have far more pronounced effects than forested agricultural workers

Policy ideas Increase shaded and forested agriculture; Shifted outdoor work hours to cooler times of day (earlier morning and later evening) when productivity is higher ; Support research on the cooling services of forests and the importance of forest quality for cooling services



Contents lists available at ScienceDirect

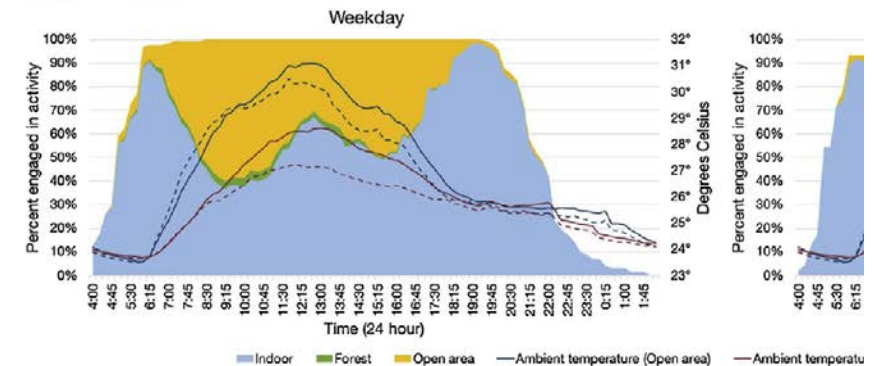
Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

How are healthy, working populations affected by increasing temperatures in the tropics? Implications for climate change adaptation policies

Yuta J. Masuda^{a,*}, Brianna Castro^{b,1}, Ike Aggraeni^{c,1}, Nicholas H. Wolff^{a,1}, Kristie Ebi^{d,e}, Teevrat Garg^f, Edward T. Game^a, Jennifer Krenz^d, June Spector^d

Panel A: Women



Panel B: Men

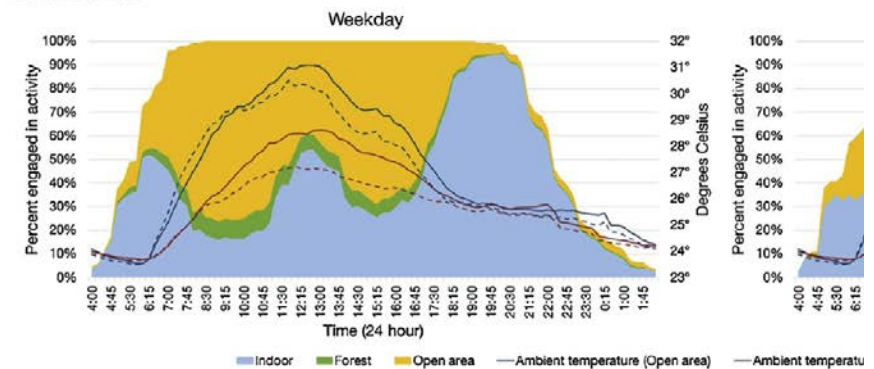


Fig. 3. Indoor and outdoor activity participation for weekday and weekend with open area and f

Everyday Adaptations Impacting Food Security

Example 2

Transition to more resilient crops that produce quickly

In Colombia, shift to bananas, fruit trees and vines. Less planting of staple crops like tubers that have a long growing season. In North Carolina, transition to cotton from sweet potatoes and soy due to hurricane resilience.

Food Security Impact: Changing food availability → less planting of staple crops

Opportunity for policy synergy: Increase food system resilience by supporting planting and harvesting of diverse, resilient crops. availability of resilient crops through providing drought, flood, and/or salt tolerant seed varieties.

Policy ideas Provide seeds for diverse, resilient crops ; Monetary support for failed harvests of staple crops ; Research what plants are successful in extreme climate conditions at the local level



Everyday Adaptations Impacting Food Security

Example 3

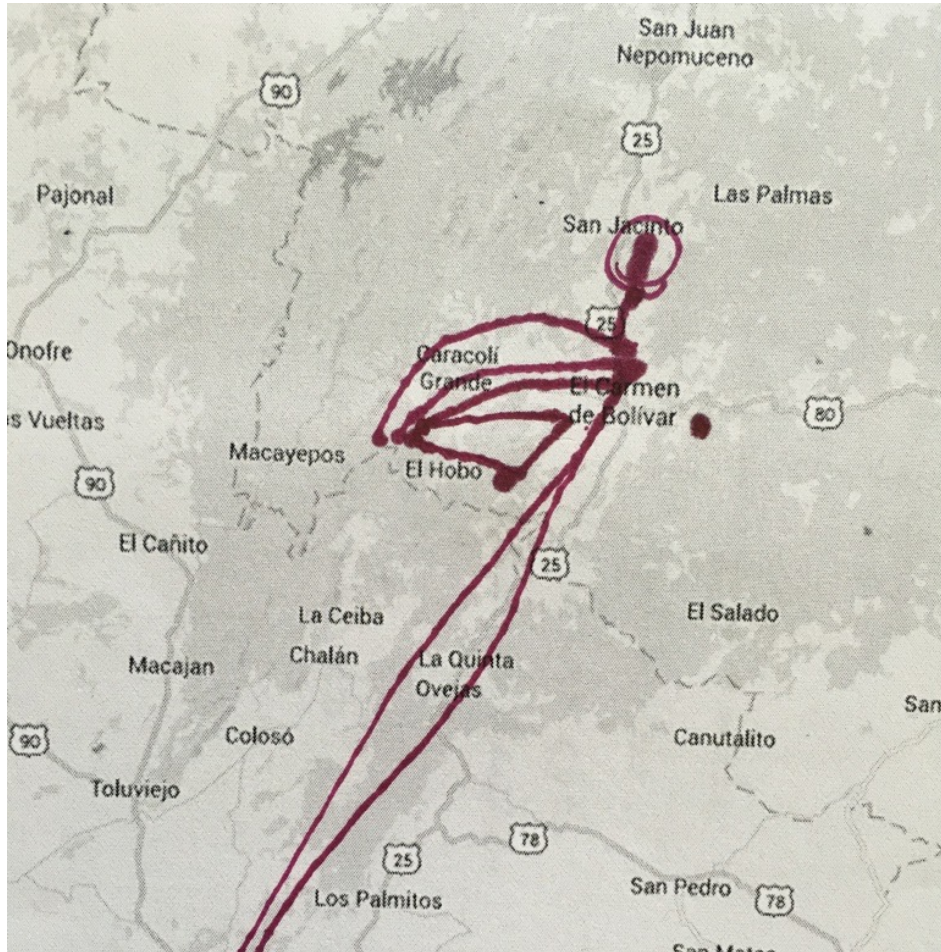
Increased mobility in pursuit of viable land for planting and shifting land that is planted or left dormant according to climate conditions

Rural farmers moving and renting parcels from others where rain is more likely than drier areas where they have tenured land.

Food Security Impact: Unpredictable local food markets

Opportunity for policy synergy: Translocal social support systems

Policy ideas Communal land tenure ; increased tenure security



Everyday Adaptations Impacting Food Security

Example 4

Farmers transition from cattle to small livestock in response to protracted drought and unpredictable rainfall

Food Security Impact: Shifting supply of livestock available in local food economy

Opportunity for policy synergy: Support the kinds of livestock farmers and households find viable in less predictable natural resource environments

Policy ideas Provide small livestock investments for farmers – chickens, pigs, goats, turkeys – in drought prone regions





Broader Implications

1. Bottom-up, individual adaptations aggregate to impact food security, especially in the agricultural sector.
2. Climate change adaptation is a social process. Small farmers' practices are relational, occur in networks, and often communal.
3. Policy and finance can support synergies in local adaptations to scale them up for increased food security.

An abstract network diagram with a light gray background. It features numerous nodes of various sizes and colors (blue, green, pink, yellow) connected by thin, light gray lines. Some nodes are solid, while others are hollow or have patterns like stripes or concentric circles. The connections form a complex, interconnected web across the entire image.

Reimagined Approach to Food Security?

1. Conceptualizing adaptation as an aggregate of bottom-up adjustments to climate conditions key to anticipating food security at the microscale
2. Land tenure as food security policy
3. Climate mobility as food security
4. Lessons from small-scale and indigenous farmers for large scale agriculture?



Thank you +
Looking forward to
a lively discussion!

Brianna.castro@vanderbilt.edu
@briblu

