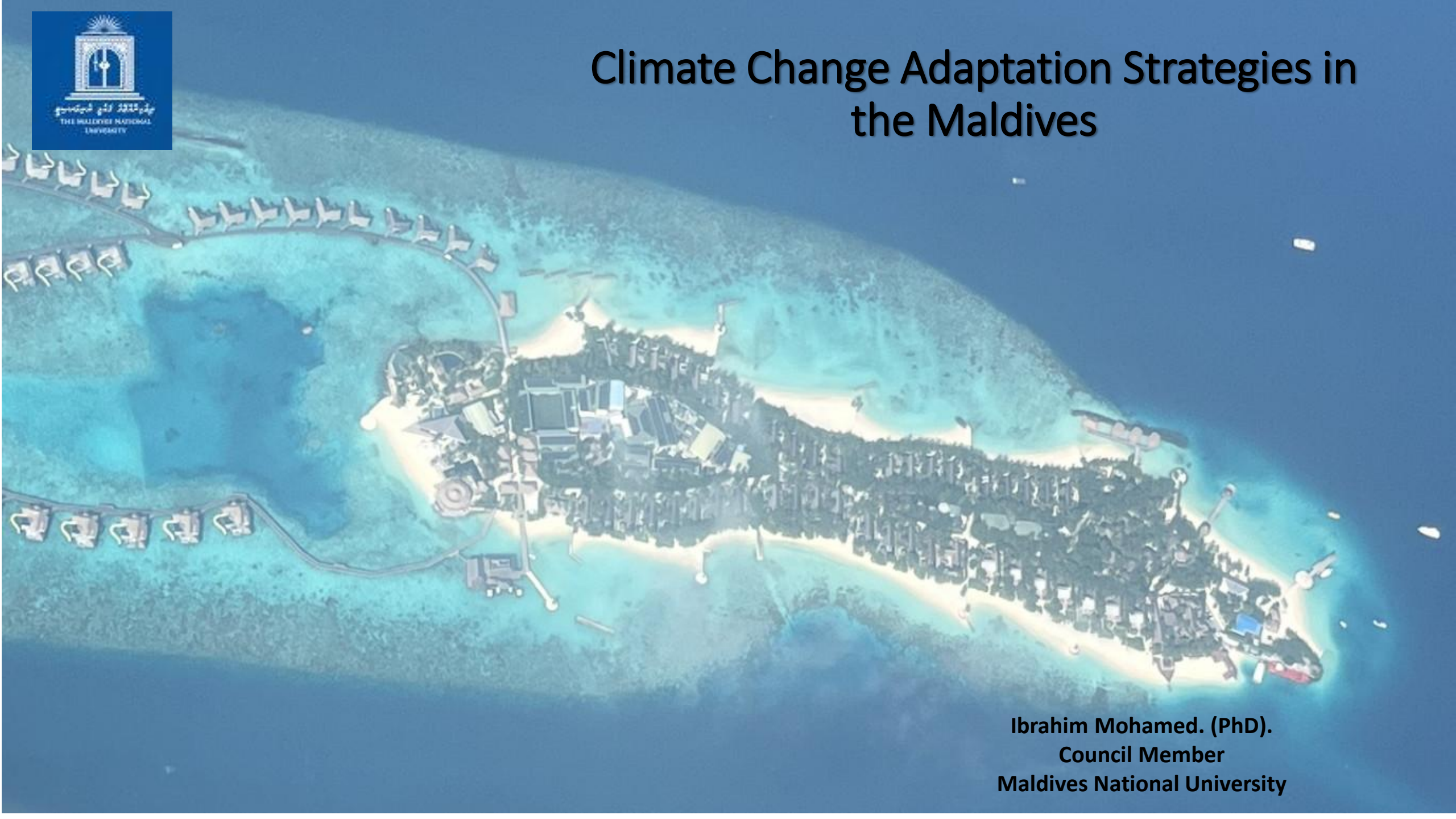
Climate Change Adaptation Strategies in the Maldives



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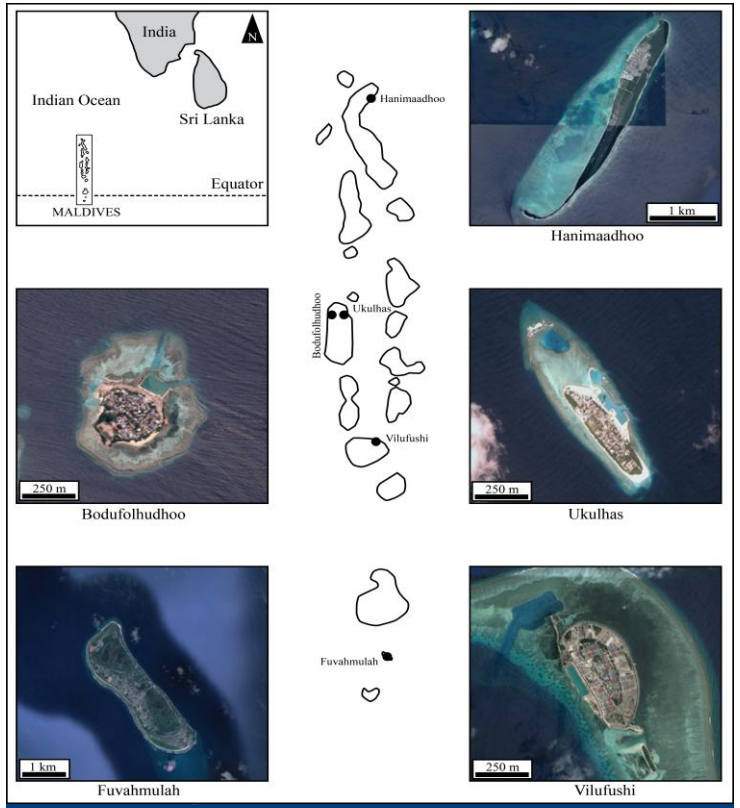
Maldives

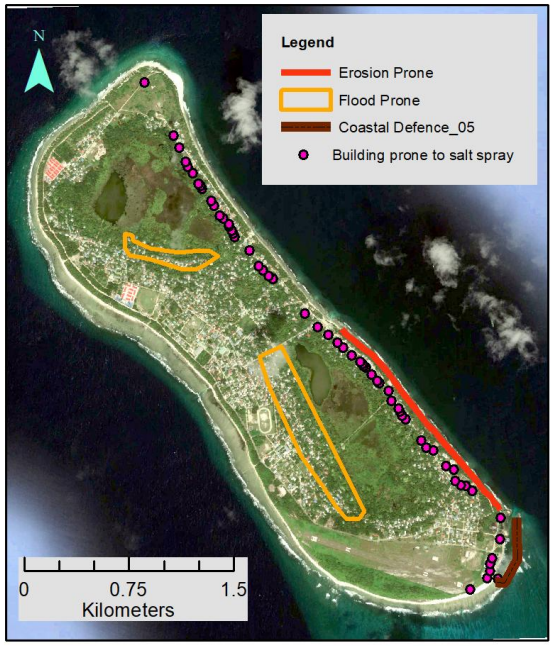
- Situated in the Indian Ocean
- Archipelago of islands, 1192 low-lying islands, clustered into 26 atolls
- Resident Population; 515,132 (NBS 2022)
- Average elevation of islands are 1.5 metres above sea-level (MEE 2016). ~ may have changed as more islands reclaimed
- Makes Maldives highly vulnerable to environmental change and natural hazards.
- These islands are also extremely vulnerable economically.

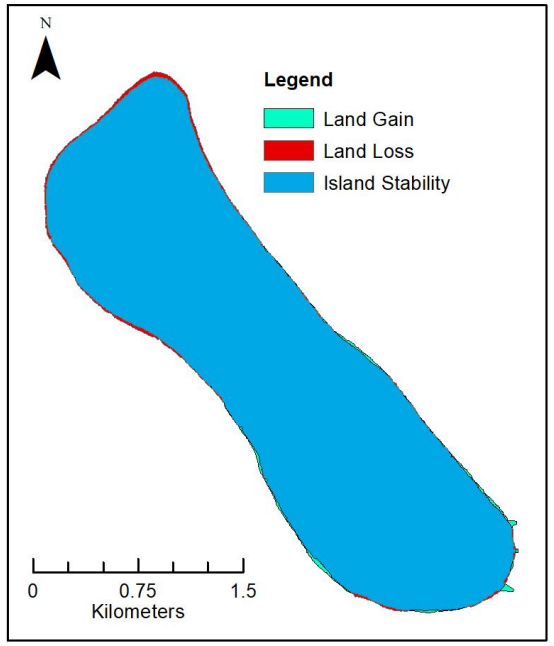


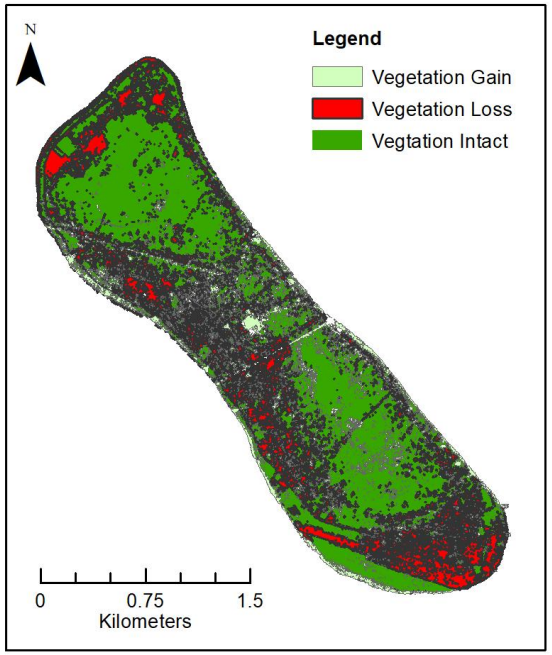
- The Maldives consists of 1192 islands and has 26 atolls
- The Country of the Maldives runs North to South for 35,000 square miles
- The Highest elevation In the Maldives is 4 ft. 11 in.

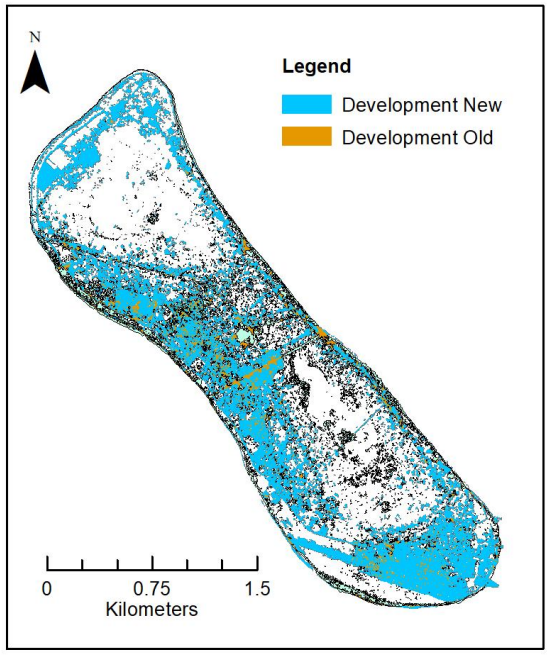
Island level Impacts

- Evidence shows that climate-change induced sea-level rise makes small islands vulnerable to ocean-borne impacts
- Intergovernmental Panel on Climate Change (IPCC) names three general response strategies to adapt to increased coastal risk and sea level rise: protection, accommodation and retreat
- Between 2017 and 2019, the cross-sections along the east side show distinct differences in morphologic changes
- Government is in favor of generic adaptation measures and implements these measures









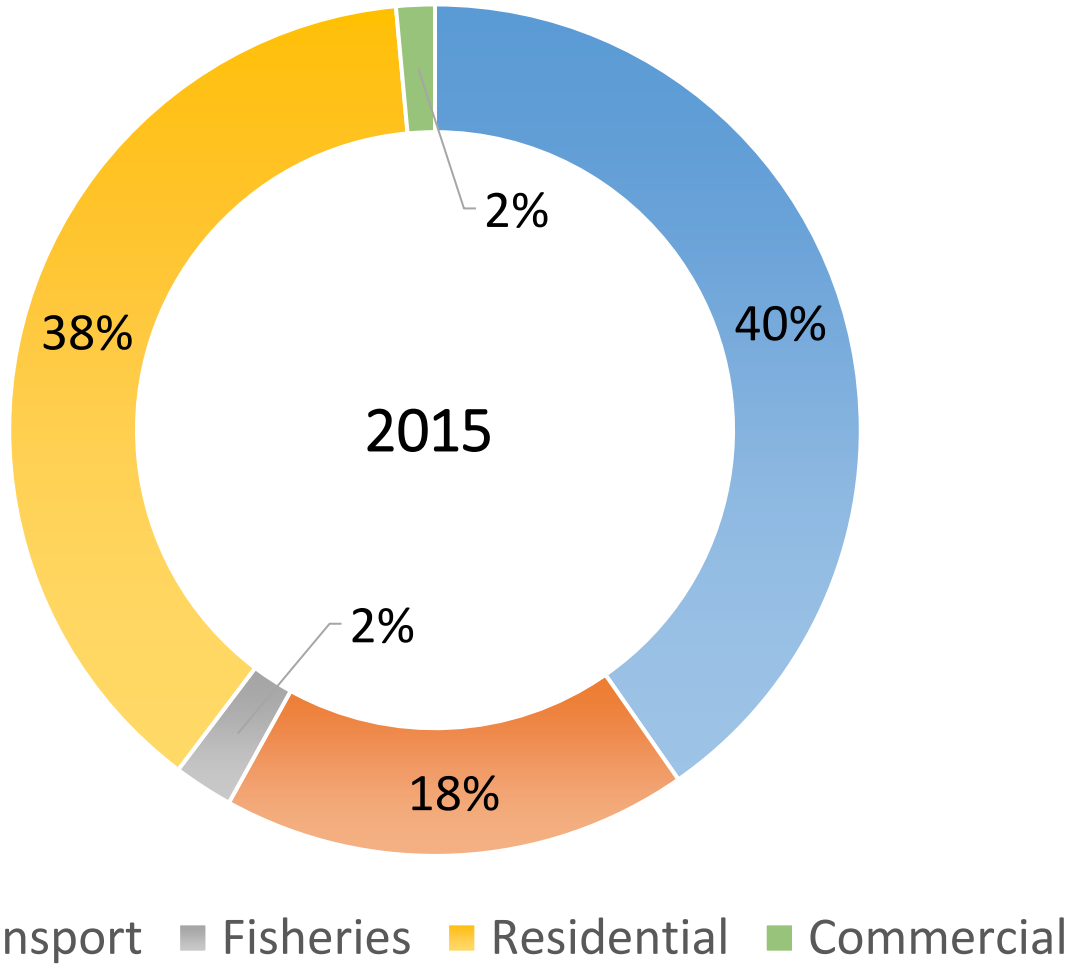
Impacts of Climate Change

- Coastal-inundation due to sea-level rise is a major threat to our islands and it significantly threatens critical infrastructure (schools, hospitals, utilities etc) situated in close proximity to the shorelines
- 90% of the islands have reported flooding annually
- 97% are reporting shoreline erosion
- 64% of the islands are experiencing severe erosion
- Nearly 50% of all housing structures are also within 100 meters from the coastline, while only few of this are capable of withstanding tidal floods, let alone tsunamis
- Maldives have experienced number of extreme events, including fury of cyclones, localized storms, flooding or inundation of parts of islands due to strong wind and heavy rainfall
- Some of these events have led to relocation of entire populations of some of islands

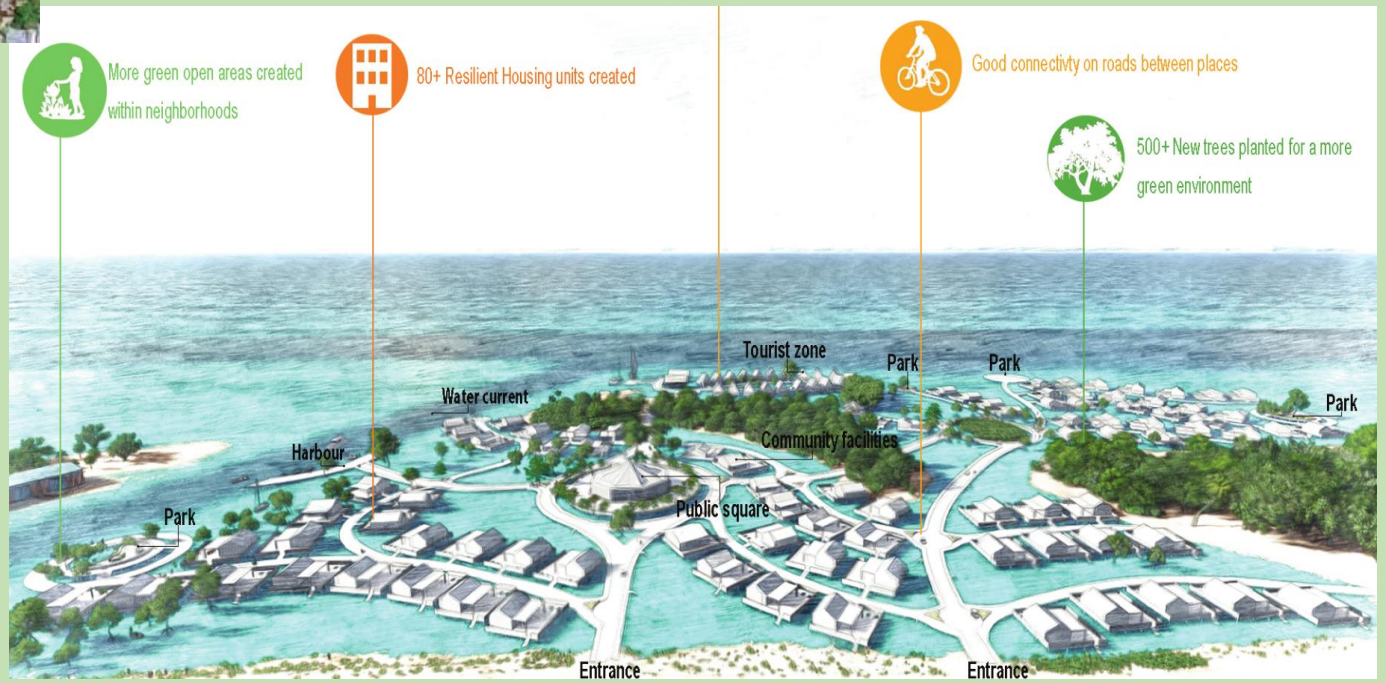
More than 44% of human settlement and more than 80% of critical infrastructure in Maldives is within 100m of coast

Emissions by national sectors

- National Sectors considered in planning
  - Tourism
  - Transport
  - Fisheries
  - Residential
  - Commercial
- 40% of national emissions from Tourism sector
- 38% from residential sector
- 18% from Transport sector



Climate change policy initiatives



Climate Emergency Act (No: 9/2021)

- Ratified by President in May 2021
- Stipulates actions to address the climate emergency resulting from the severe impacts of climate change
- Introduces;
  - Legal Structure and guidelines for addressing issues and concerns related to climate change
  - Enhance adaptation and resilience
  - Formulation of special fund for Climate actions and investments
  - Development of an action plan to achieve net zero emissions by 2030 with support from donors
  - Carbon budgeting

Maldives Draft Nationally Determined Contribution (NDC, 2025)

- Commits to reduce 1.52 million tonnes of CO2eq in 2035, conditional on receiving adequate support and financial resources, technology, capacity building, and other means
- Scaling Up Renewable Energy (RE):
  - Meet 33% of electricity needs from renewable energy sources.
  - Enhancing Energy Efficiency:
  - Expand standard labelling program as it goes into mandatory implementation.
  - Enhance and upgrade electricity grids to reduce energy loss in power generation facilities nationwide.
- Waste Management:
  - Develop and operationalise three regional waste management systems in the Maldives.
  - Expand composting programmes across the Maldives to promote waste-to resource recovery.
- Transitioning to More Efficient Transport:
  - Introduce national vehicle emissions standards.
  - Expand public transport networks throughout the entire country.
  - Introduce incentives to promote electric (EV) and hybrid vehicles.

Maldives Draft Nationally Determined Contribution (NDC, 2025). Cont.

- Enhance the use of evidence-based approaches for coastal adaptation planning and coastal zones management.
- Support the development of a national coastal management policy to ensure
- sustainable development and safeguard ecosystems, infrastructure, and livelihoods.
- Support the mobilization of adequate resources to reduce communities' exposure to coastal hazards, to ensure that the islands have sufficient coastal defenses.
- Promote viable technologies that will provide technical solutions to enhance coastal protection.
- Continue to facilitate coastal protection investments to ensure long-term resilience of vital coastal zones around the islands and protect communities and areas of

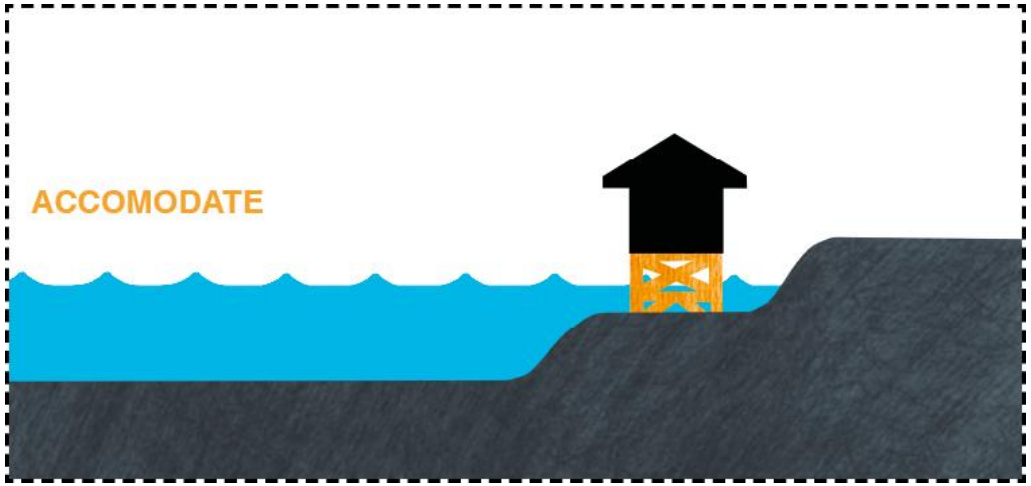
Photo credit: NIRAS

Coastal Protection Measures

- The Maldives has a history of coastal adaptation, often involving land reclamation.
- The most prominent example is the artificial island of Hulhumalé, which has been raised 1.8-2.0m above mean sea level
- Maldives have not primarily reclaimed land to adapt to SLR. But is to address current land use needs
- Purpose: Increasing land elevation, reducing flood risk, accommodating population growth. Island.
- Considerations: Environmental impact, cost, long-term sustainability.
- Concrete ‘tetra pods’ are the most expensive structures, costing MVR64,000 per linear m (in 2011 prices).
- Other options include sheet piles (MVR40,000 per m), armor rocks (MVR37,000) and concrete piles (MVR36,000).

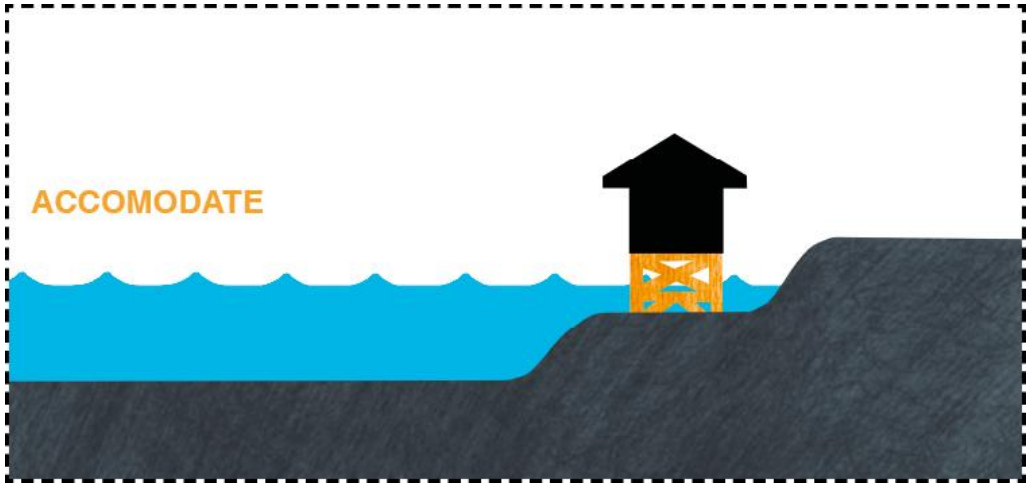
Adaptation Strategies: Acommodate

- Using accommodation to naturally elevate coral islands to adapt against rising sea levels:
- Houses and infrastructure on the coral reef island are built on stilts to withstand frequent flooding.
- As the island is flooded, sediment from the coral reef is deposited onto the island, enabling it to grow vertically alongside sea level rise.



Adaptation Strategies: Accommodate

- Using accommodation to adapt a coral island: Modular, floating houses and infrastructures are designed to withstand future sea-level rise and flooding, ensuring long-term resilience.

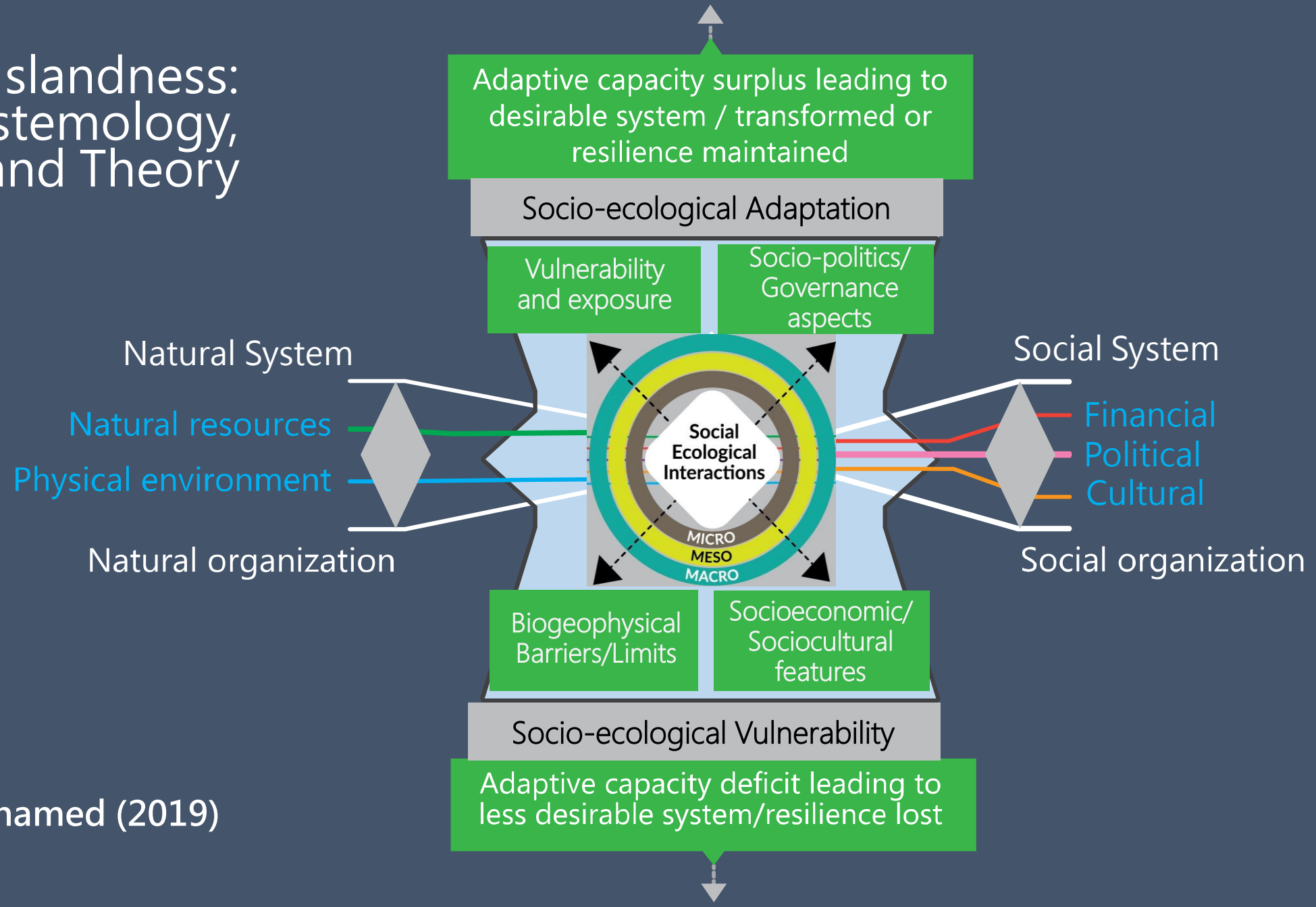


Adaptation Strategies: Advance

- Using land reclamation to create a new island, or to expand an existing one: An artificial island is reclaimed onto the sea with a higher elevation than existing coral islands to adapt against future sea-level rise.

- Using protection to adapt to sea level rise: An existing coral island is surrounded by sea walls or dikes to prevent flooding, while water pumps remove excess rainwater and high groundwater, discharging it back into the ocean.

Islandness: Epistemology, Ontology and Theory



Mohamed (2019)

" ISLANDNESS ދަތުރެއްގައި"

- Islandness is a product of practices and performances - experience of being of and on the island
- These practices are a manifest of relationships arising from stocks and flows of materials, organisms, energy and non material elements such as joy and inspirations.
- We have a special connection to sights, sounds, flavours and scents of the island we dwell.
- We are on an intuitive journey by constantly adapting our island life based on our knowledge of Islandness to survive and prosper through adaptation.
- Islandness is a sense of being in place and a visceral experience of relational entanglements and relational spatialities

" Dis-connection from Islandness"

- Occurs when we lose track of our identity "*in material elements, and within flows, energy and other non material elements and values that constitute" island social ecological interactions.*

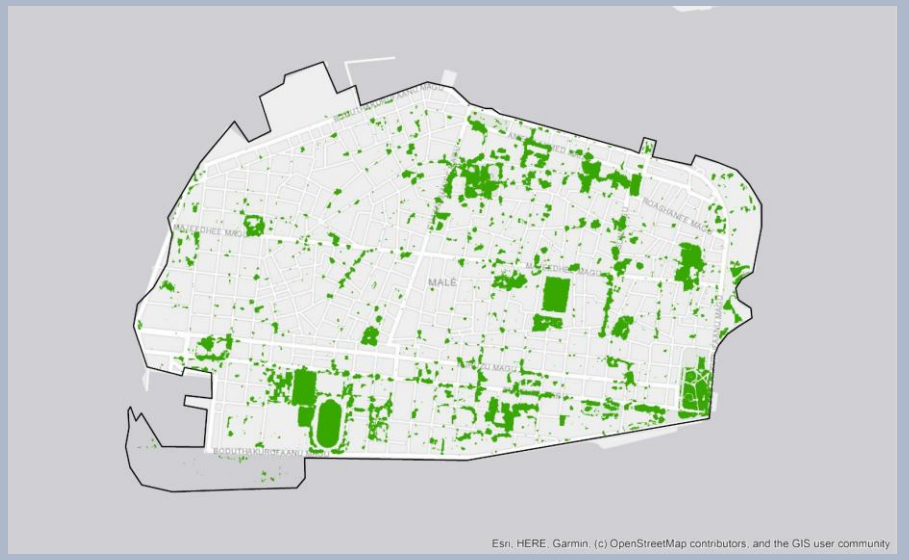
- Can be traced to ideological orientations, political relations, sociocultural norms, institutional arrangements which dissociate people from their Islandness. e.g. Hirimaradhoo Case

- *" (re)produced across a broad spectrum from individual to societal level through non linear , repetitive processes via the individual and societal inter relation"*

- "Is socially constructed and has multiple meanings and is not well researched"

(Beery et al., 2023)

CASE STUDY – Migration to reclaimed lands in the capital



- Disconnected from culturally rooted ways of life and behaviour on islands
- Exclusion and feeling of outsidedness
- Disconnection as informal green spaces are no longer available
- Access to places of sceintifically correct nature , with scientiifc ideal of biodiveristy and pure nature unavailable, as they are decimated in the name of maldevelopment
- Material disconnection at individual level.
- Lack of understanding of how food is grown and food security
- Cognitive and emotional disconnection as no knowledge of adverse impacts of land use changes and impacts from climate change
- Lacks how institutional and political processes of subsidy is implemented.

Challenges

- Capacity Building & Research
  - R & D
  - Evidence based decision making
- Finance to implement low carbon development pathway.
- Finance for adaptation from climate change impacts.
- Support to implement Maldives' Nationally Determined Contribution (NDC)

THANK YOU

QUESTION AND ANSWER