

Background

- Coastal flooding is affecting livelihoods and ecosystems in Prince Edward Island (PEI) regularly
- Recent flood risk assessment studies mainly looked at potential exposures and damage of social elements in PEI, not considering ecological elements
- A comprehensive flood risk assessment considering hazard characteristics as well as exposure and vulnerability of social and ecological systems will provide a complete understanding of coastal flood risk in PEI

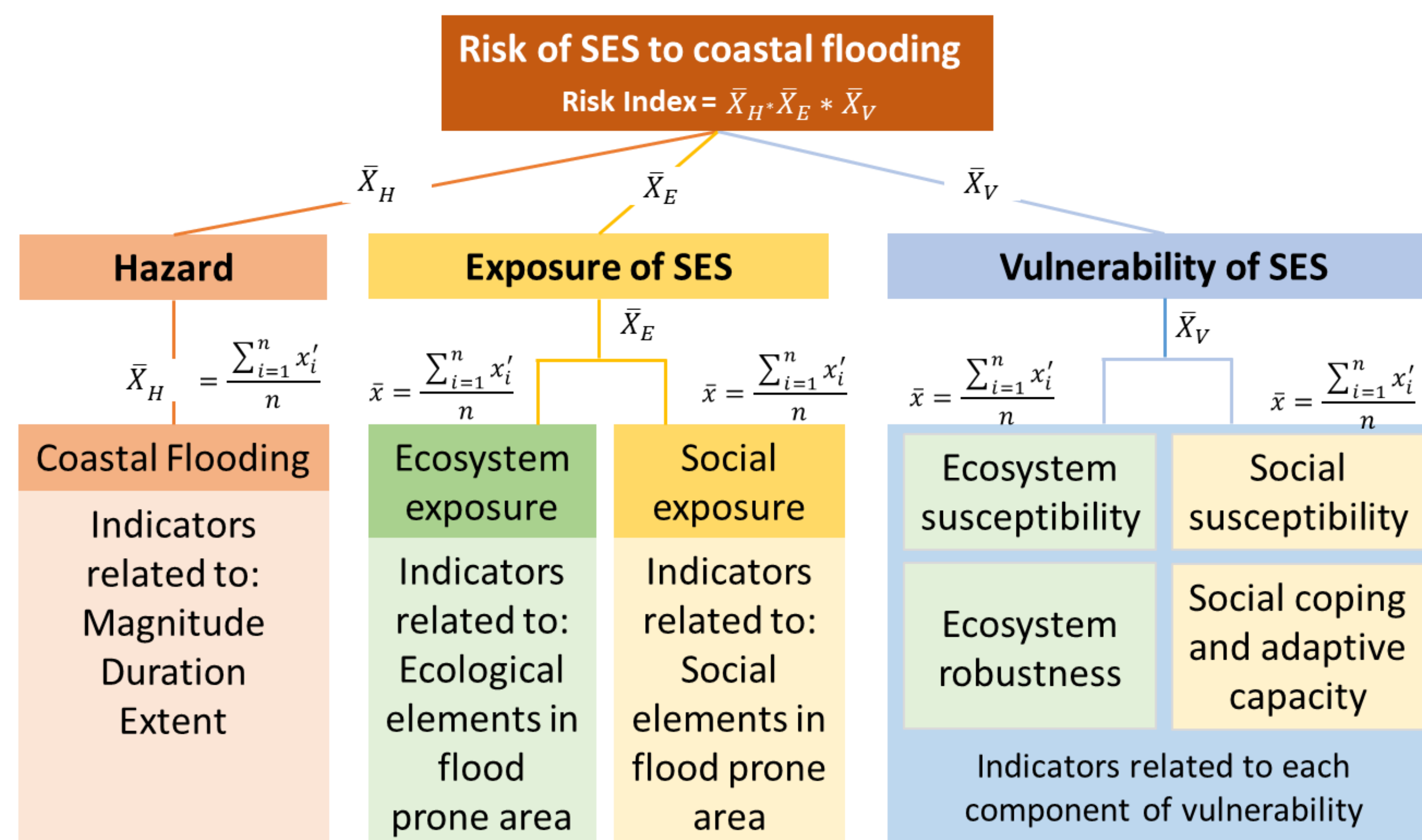
Research Objectives

- To delineate the Social-Ecological Systems (SES) exposed to coastal flooding in PEI
- To conduct a vulnerability and risk assessment of SES exposed to coastal flooding

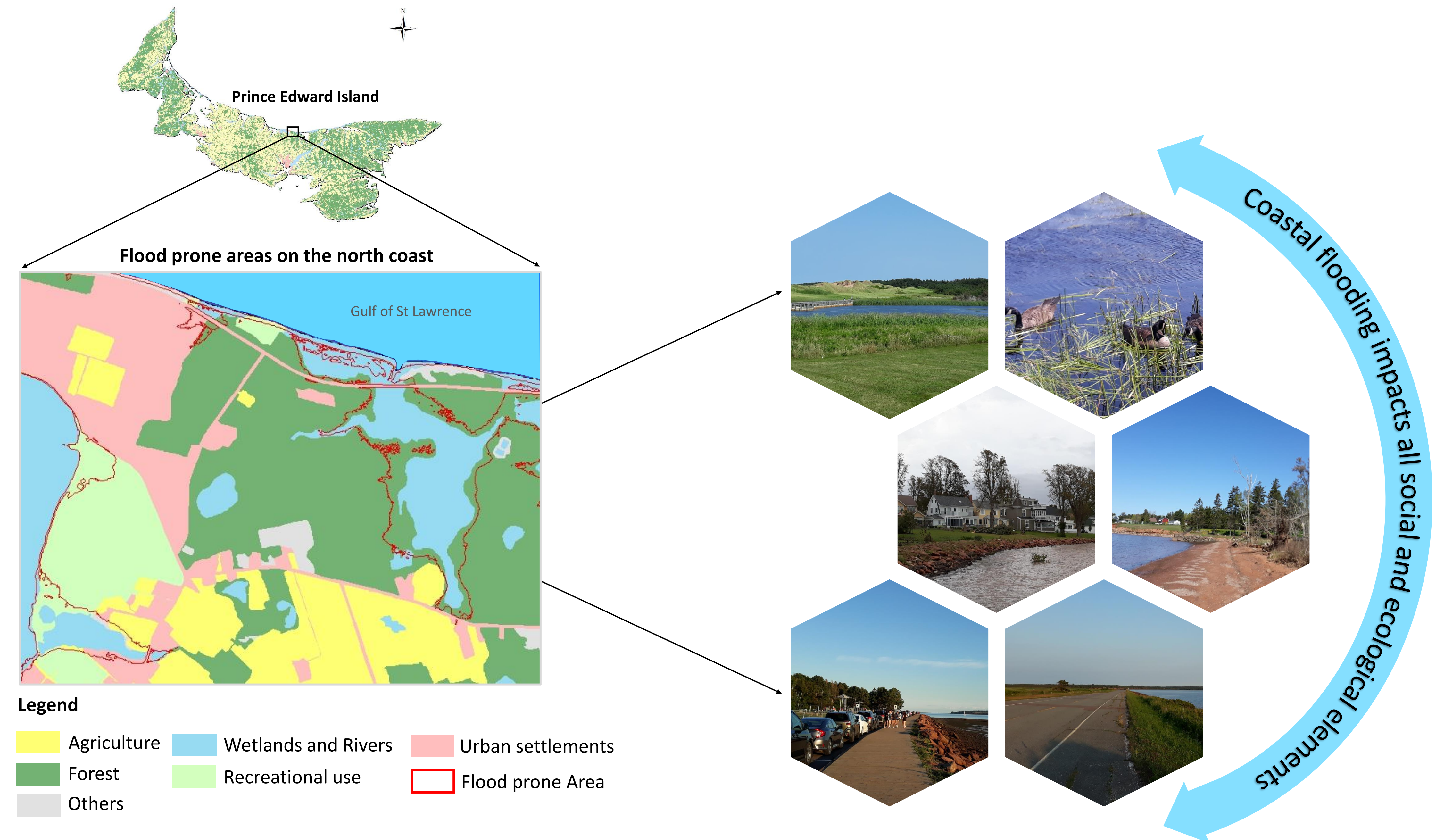
Methodology for Flood Risk Assessment

- Indicator-based Multi-Criteria Analysis to calculate flood risk index for each local census boundary
- Both secondary and primary data will be used for different indicators

Aggregative modular structure of indicator-based risk index calculation



Social-Ecological Systems (SES) Exposed to Coastal Flooding



Expected Results

- Determination of vulnerability and risk of Social-Ecological Systems to coastal flooding
- Flood risk index map for Social-Ecological Systems in coastal areas

Potential Application

- Better planning for coastal land use and infrastructure development
- Better flood risk management planning for ecologically important sites

Source of land use and flood map: Government of Prince Edward Island
All photo credit: Mohammad Aminur Rahman Shah

Example of indicators

Social indicators	Ecological indicators
Social exposure indicators: <ul style="list-style-type: none"> Population exposed to flooding (%) Proportion of buildings in flood prone area (%) 	Ecosystem exposure indicators: <ul style="list-style-type: none"> Proportion of salt marsh and wetlands prone to flooding (%) Proportion of forest prone to flooding (%)
Social susceptibility indicators: <ul style="list-style-type: none"> Proportion of house ownership (% of households) Employment rate (%) Dependency ratio (%) 	Ecosystem susceptibility indicators: <ul style="list-style-type: none"> Proportion of wetlands connected with coastal creeks Proportion of land covered with vegetation (NDVI)
Social C & A capacity indicators: <ul style="list-style-type: none"> Insurance coverage for buildings (% of buildings or households) Access to transportation network (road (km) per 1000 population) 	Ecosystem robustness indicators: <ul style="list-style-type: none"> Percent of area with flood tolerant crops (% of agri. land) Policies supporting biodiversity conservation (yes/no)