Towards Development of a National Seagrass Policy: Belize

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Ministry of Blue Economy & Marine Conservation

BLUE BOND and Finance Permanence Unit OFFICE of the PRIME MINISTER

BELIZE FISHERIES DEPARTMENT

BELIZE COASTAL ZONE MANAGEMENT AUTHORITY & INSTITUTE

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Seascape Solutions

Why Seagrass Matters for Belize: Key Environmental and Economic Benefits

Supporting Fisheries and Food Security

Seagrass beds serve as nurseries and feeding grounds for key fish species, sustaining coastal fisheries and livelihoods.

Protecting Marine Biodiversity

Seagrass provides food and shelter to species like turtles and manatees, while improving water quality to support coral reefs.

Economic Benefits and Tourism

Healthy seagrass ecosystems attract tourism activities such as snorkeling and diving, sustaining income and jobs in Belize.

Climate Change Mitigation and Coastal Protection

Seagrass stores blue carbon and stabilizes coastlines, reducing erosion and buffering storm impacts amid climate change.

Key Drivers of Seagrass Degradation

Sediment Runoff Impact:

Runoff from agriculture and deforestation increases water turbidity, reducing sunlight crucial for seagrass photosynthesis.

Physical Damage from Fishing:

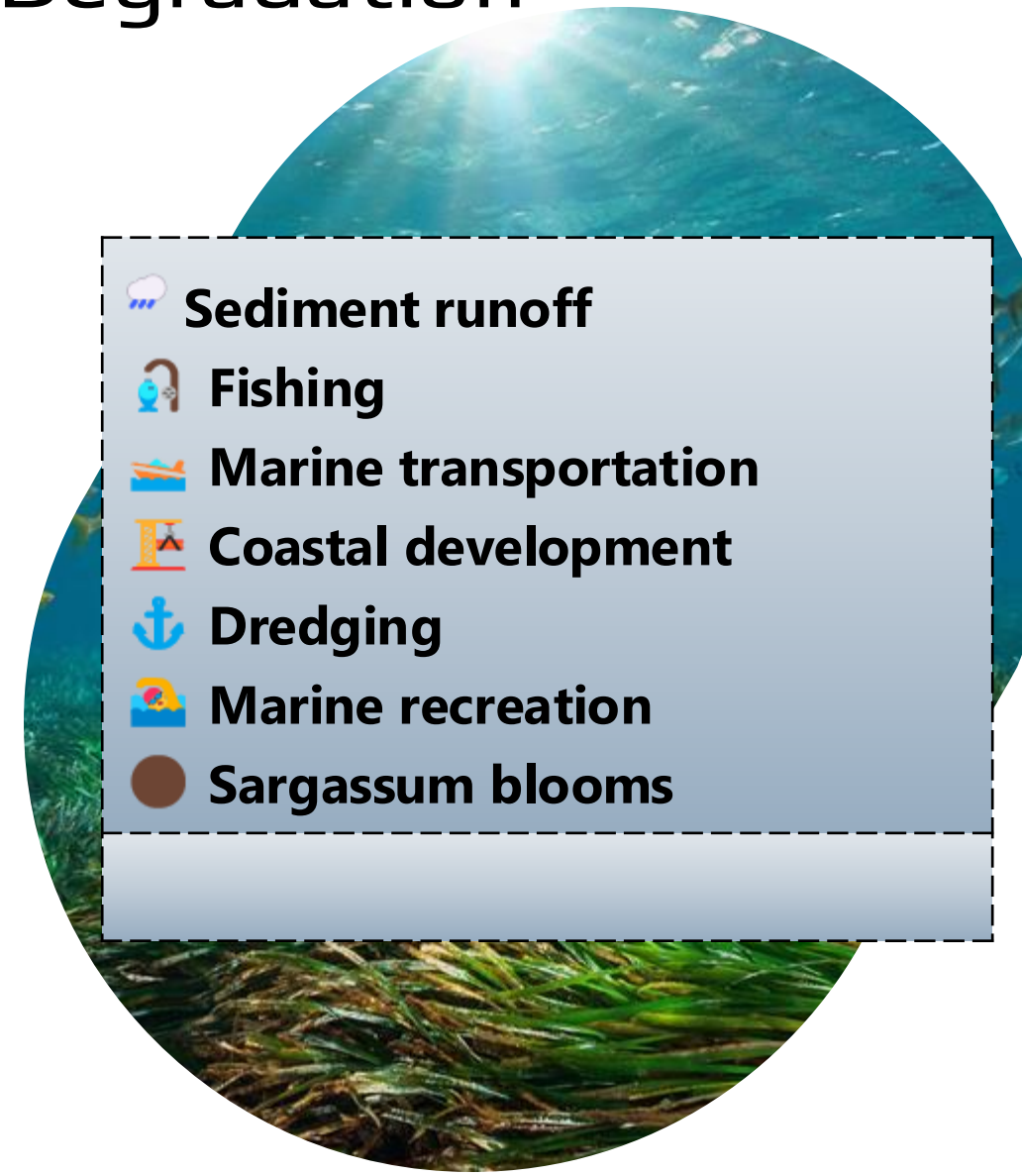
Fishing gear like fish traps and nets, and anchors physically damage seagrass beds, fragmenting habitats and harming marine life.

Marine Transportation Stress:

Boat propellers scar seagrass meadows, while fuel leaks and pollution worsen water quality.

Sargassum Influx Challenges:

Large Sargassum mats block sunlight and reduce oxygen, leading to stressful conditions and seagrass die-offs.



Why Belize Needs a Seagrass Management Policy

⚠️ Increasing threats (dredging, pollution, coastal development)

🐟 Protect fisheries & livelihoods (nurseries for fish, lobster, conch)

🌊 Safeguard coastal protection (reduce erosion & storm impacts)

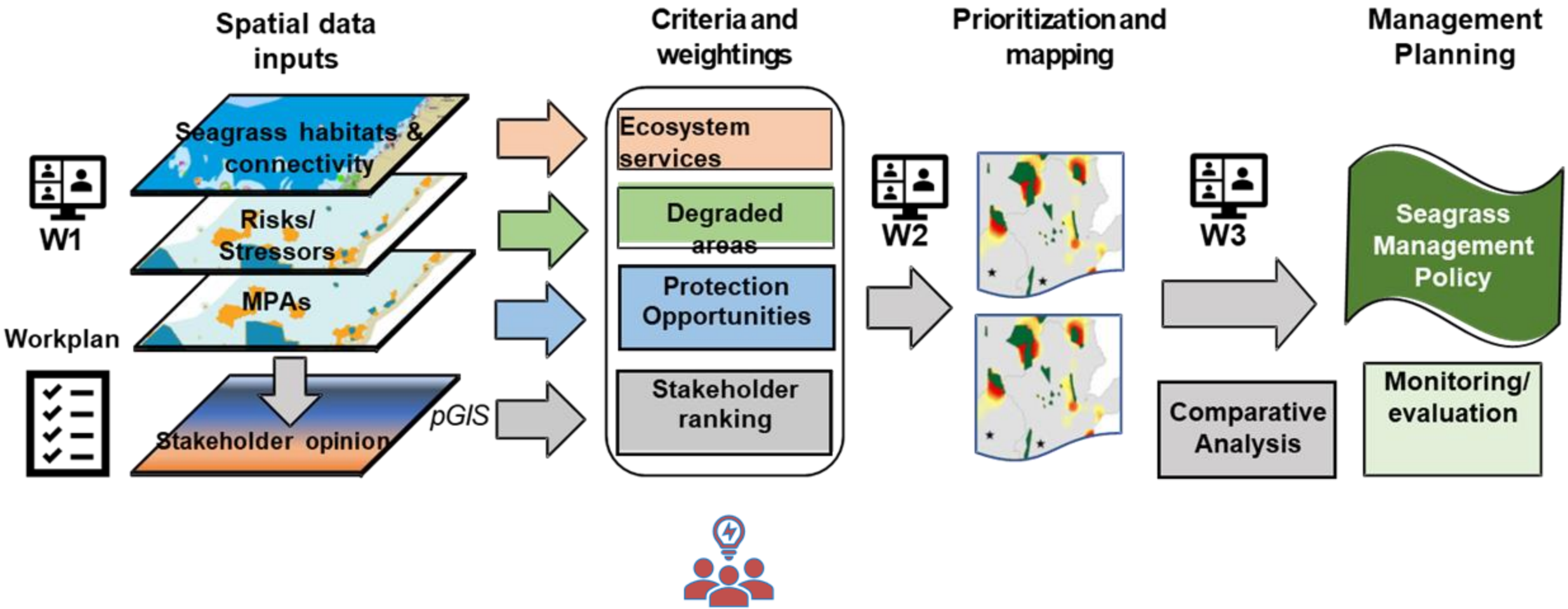
💧 Maintain water quality (filter sediments, support reefs)

🌎 Support climate action (blue carbon storage)

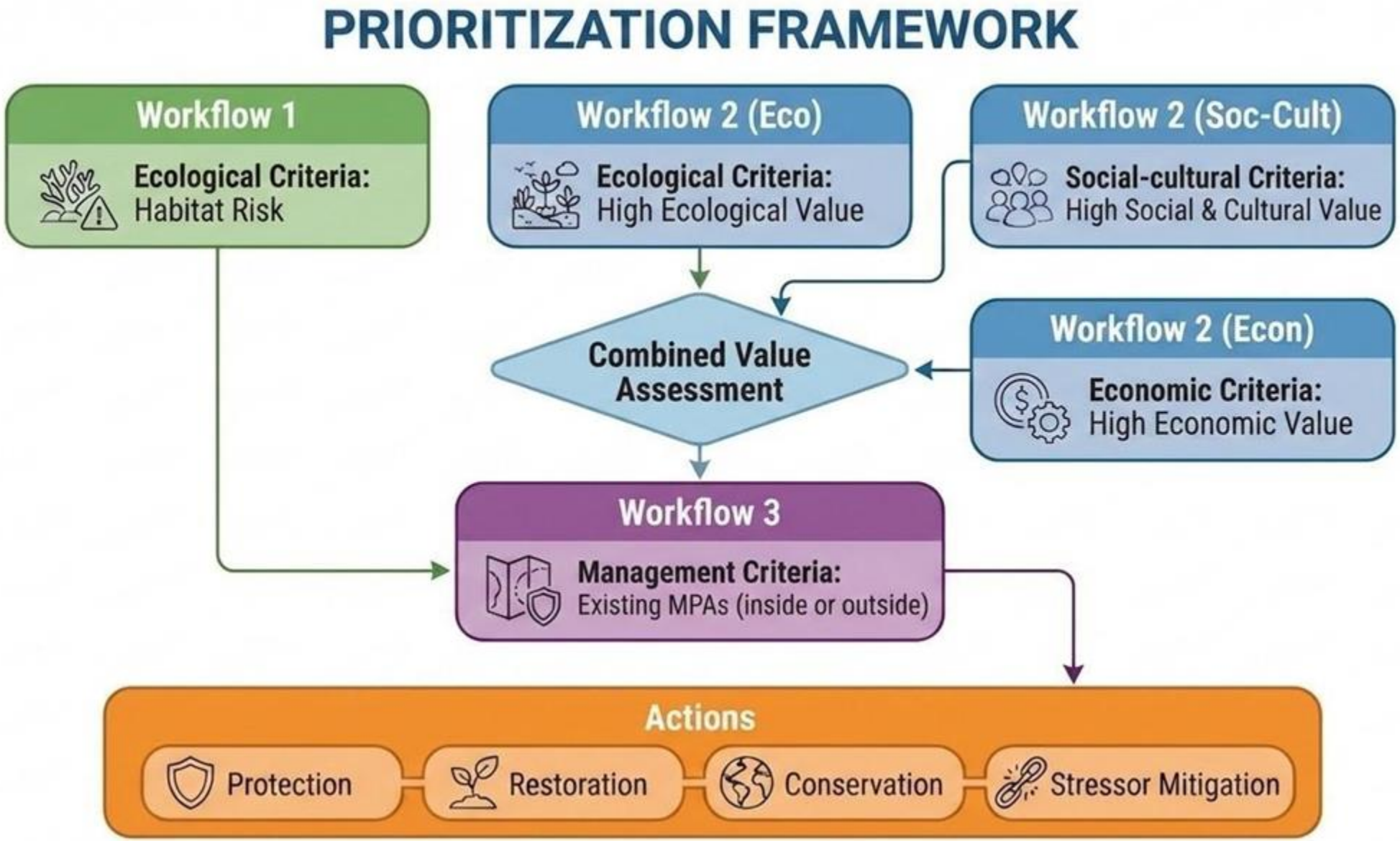
📈 Sustain tourism & blue economy

✅ Ensure long-term conservation through clear rules & enforcement

Work Process to Date



Seagrass management prioritization framework. Management actions shown are illustrative and site specific.



Stepwise Approach: What are we aiming for?

- Management Goals
  - Management Criteria
  - Criteria Weightings
- Seagrass Data
  - Habitat map
  - Spatial data layers
- Stakeholder Mapping
  - Actors and Roles
- Policy Context

- Ranking risk to seagrass from human activities
- Assess values
- Map social-cultural sites
- Assess priority areas for management
- Area-based targets & Management actions
- Site portfolio & comparative analysis

Resilience, exposure and consequence criteria for seagrass in Belize. Scores range from 1-3. Stressor buffer extents (m) shown in parentheses.

Seagrass Resilience Attributes	Score	Note
recruitment rate	1	every <1 yrs
natural mortality rate	2	20-50%
connectivity rate	3	<10km
recovery time	1	<1 yr

Seagrass Stressor Overlap Properties		
Agricultural runoff (0)		
frequency of disturbance	2	Several times per year
change in area rating	2	20-50% loss
change in structure rating	2	20-50% loss
temporal overlap rating	3	co-occur 8-12 mo/year
management effectiveness	2	somewhat effective
intensity rating	Spatial	Varies spatially based on input layer
Aquaculture (225)		
frequency of disturbance	3	Annually or less often
change in area rating	1	0-20% loss
change in structure rating	1	0-20% loss
temporal overlap rating	3	co-occur 8-12 mo/year
management effectiveness	2	somewhat effective
intensity rating	2	medium
Development (1,500)		
frequency of disturbance	3	Annually or less often
change in area rating	2	20-50% loss
change in structure rating	2	20-50% loss
temporal overlap rating	3	co-occur 8-12 mo/year
management effectiveness	2	somewhat effective
intensity rating	2	medium
Dredging (1,000)		
frequency of disturbance	2	Several times per year
change in area rating	3	50-100% loss
change in structure rating	3	50-100% loss
temporal overlap rating	2	co-occur 4-8 mo/yr
management effectiveness	2	somewhat effective
intensity rating	2	medium
Fishing (100)		
frequency of disturbance	2	Several times per year
change in area rating	1	0-20% loss
change in structure rating	1	0-20% loss
temporal overlap rating	3	co-occur 8-12 mo/year
management effectiveness	1	very effective
intensity rating	Spatial	Varies spatially based on input layer
Recreation (100)		
frequency of disturbance	1	Weekly or more often
change in area rating	1	0-20% loss
change in structure rating	1	0-20% loss
temporal overlap rating	2	co-occur 4-8 mo/yr
management effectiveness	2	somewhat effective
intensity rating	1	low

Resilience, exposure and consequence criteria for seagrass in Belize. Scores range from 1-3. Stressor buffer extents (m) shown in parentheses.

Transportation (1,000)		
frequency of disturbance	1	Weekly or more often
change in area rating	1	0-20% loss
change in structure rating	2	20-50% loss
temporal overlap rating	3	co-occur 8-12 mo/year
management effectiveness	2	somewhat effective
intensity rating	2	medium
***Sargassum* (500)**		
frequency of disturbance	2	Several times per year
change in area rating	2	20-50% loss
change in structure rating	3	50-100% loss
temporal overlap rating	2	co-occur 4-8 mo/year
management effectiveness	3	not effective
intensity rating	Spatial	Varies spatially based on input layer

Mapping high-value seagrass

Economic value
- Fisheries
- Tourism
- Coastal protection



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Ecological value
- Habitat connectivity
- Rare species habitat
- Fish habitat



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Social value
- Food gathering
- Recreation
- Culture
- Education



High-value seagrass map

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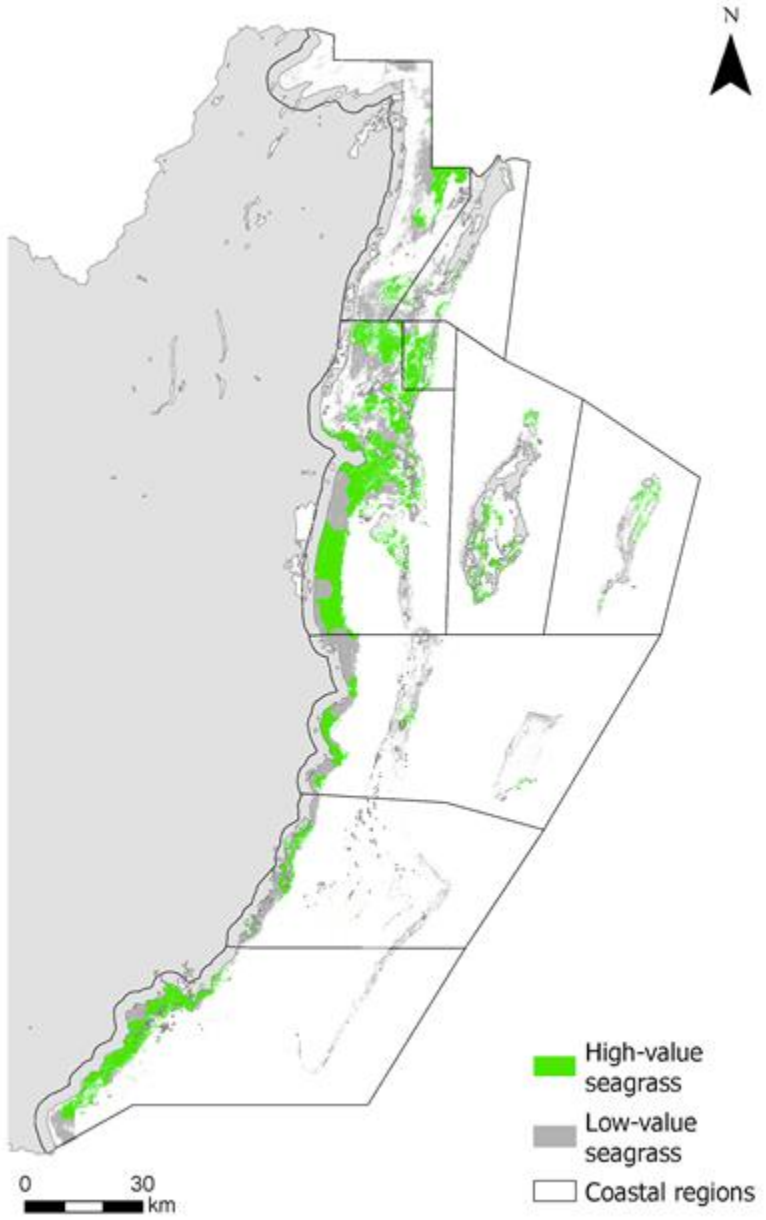


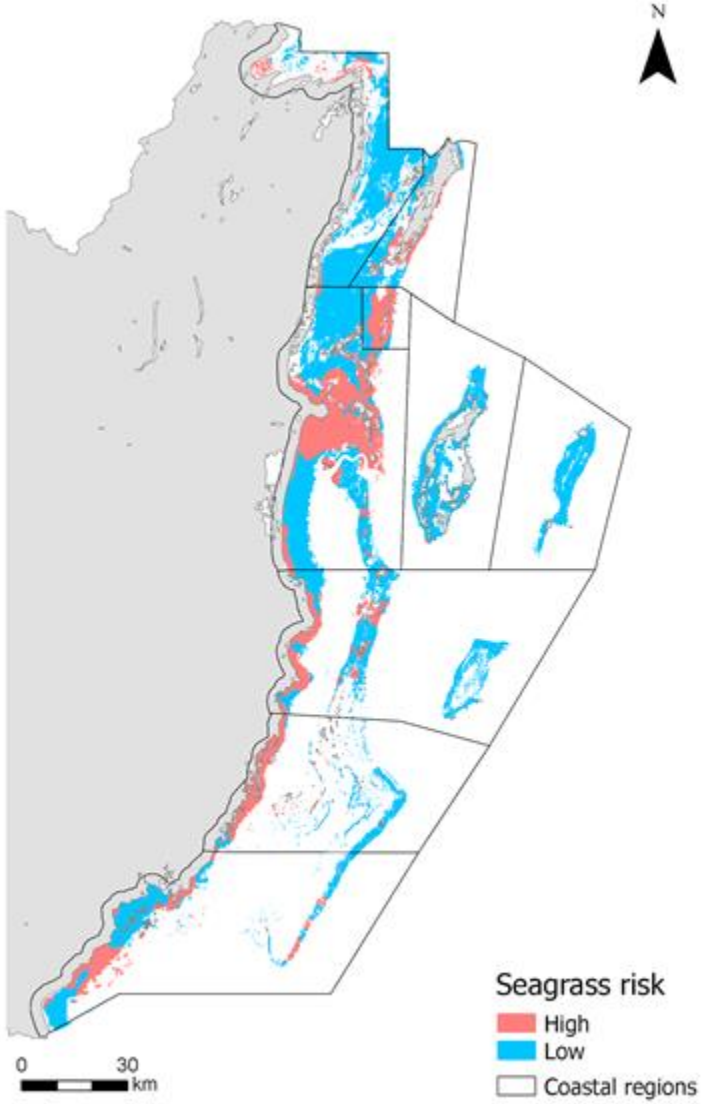
Mapping Seagrass Health

High risk = Degraded
Low risk = Healthy

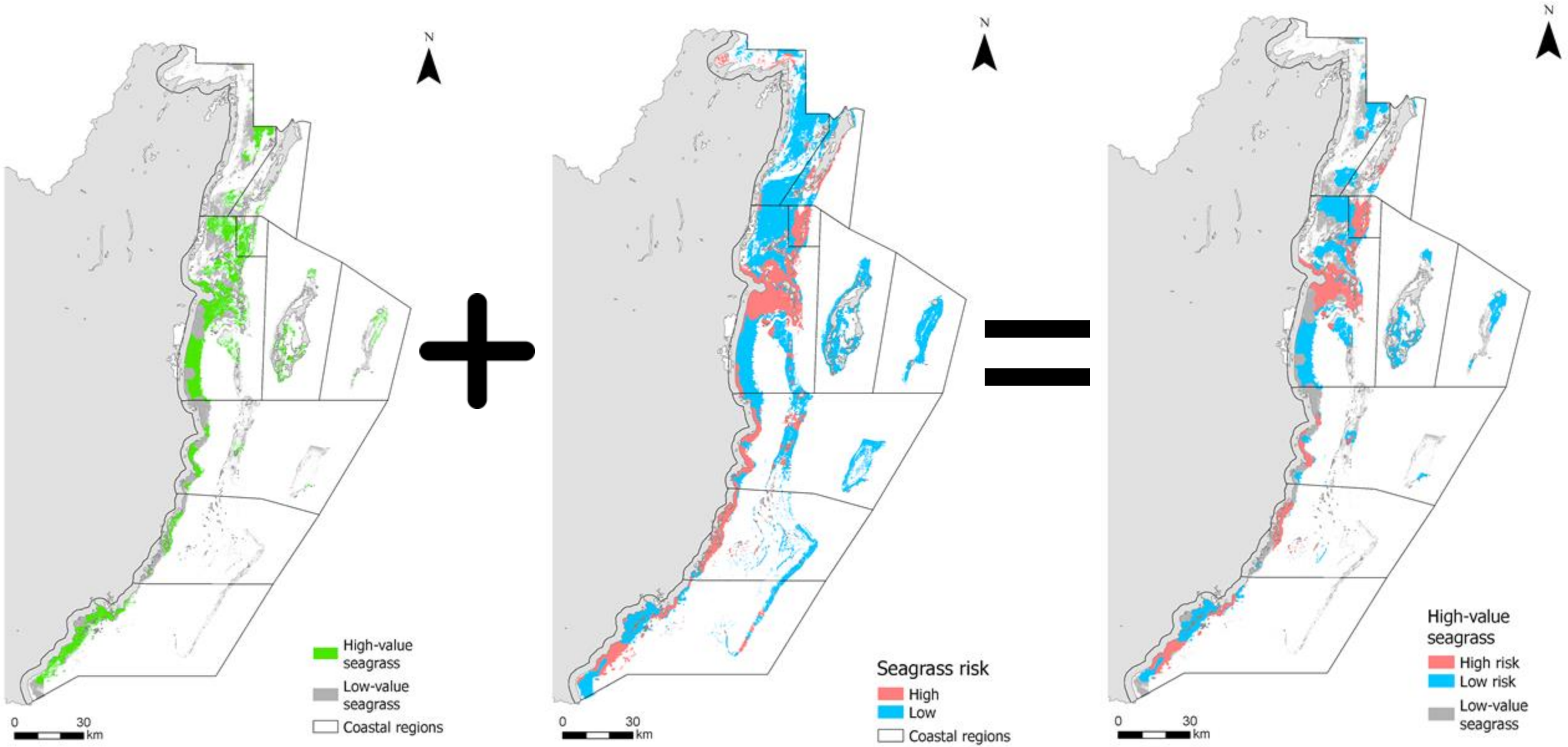
Mapped stressors:

- Sediment runoff
- Fishing
- Marine transportation
- Coastal development
- Dredging
- Marine recreation
- *Sargassum* frequency

Exposure



High-value Seagrass and Risk



Gathering inputs from communities and stakeholders on how and where to manage seagrass in Belize (n= 16 communities)

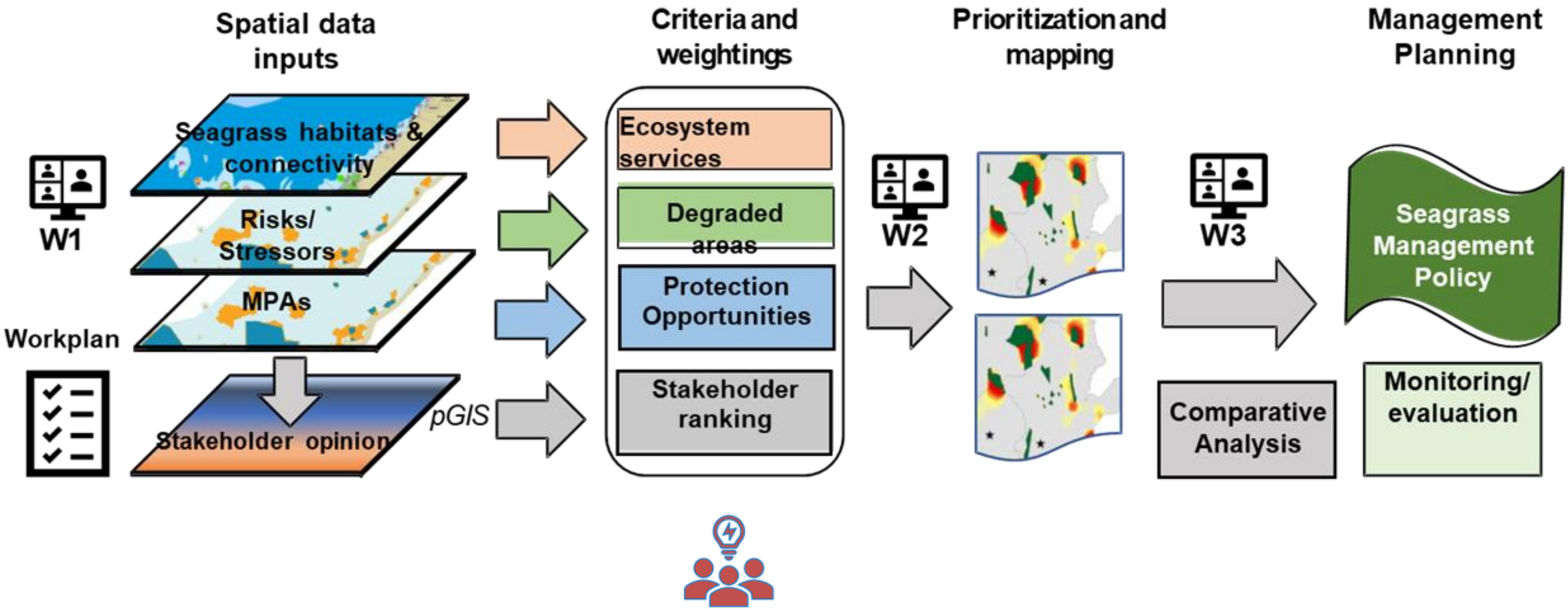
Belize City	May 21
San Pedro	May 21
Caye Caulker	May 22
Barranco	May 25
Punta Gorda	May 25
Independence	May 26
Dangriga	May 27
Placencia	May 28
Hopkins	May 29
Corozal	May 30

Ministry of Blue Economy & Marine Conservation
Belize Fisheries Department – Sustainable Fisheries For Our Future
Belize Coastal Zone Management Authority & Institute
Pew
WWF
SEA Belize – Southern Environmental Association
Strong Coasts
Alliance for Conservation and Development – SACD
Toledo Institute for Development and Environment – TIDE
Seascape Solutions

Questions to communities and local stakeholders:

- Are current MPAs effective for seagrass?
- What management actions can be used to support seagrass in your area, based on the top stressors?
- Where should these actions be implemented?
- Why are these actions and locations relevant to support seagrass?
- Who is best suited/ equipped to put these management actions in place?

Work Process to Date




THANK YOU!
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