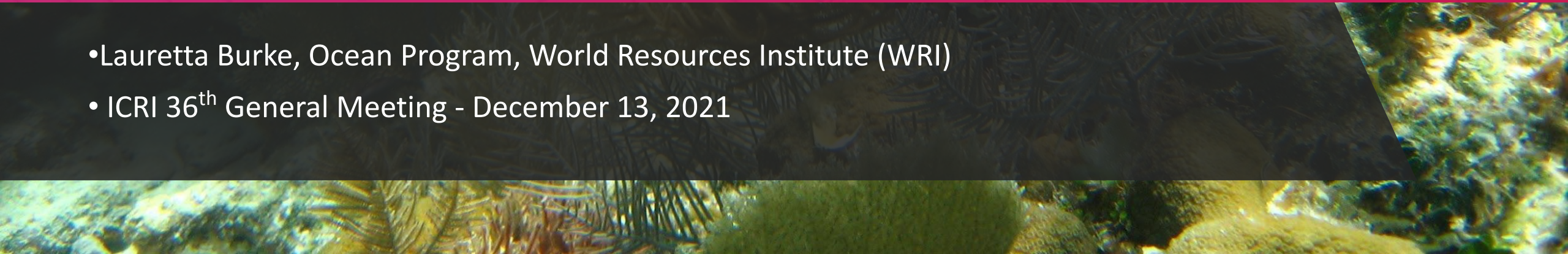# Coral Reef Dashboards

Global and regional summaries of the importance, status and outlook of coral reefs around the world

- Lauretta Burke, Ocean Program, World Resources Institute (WRI)
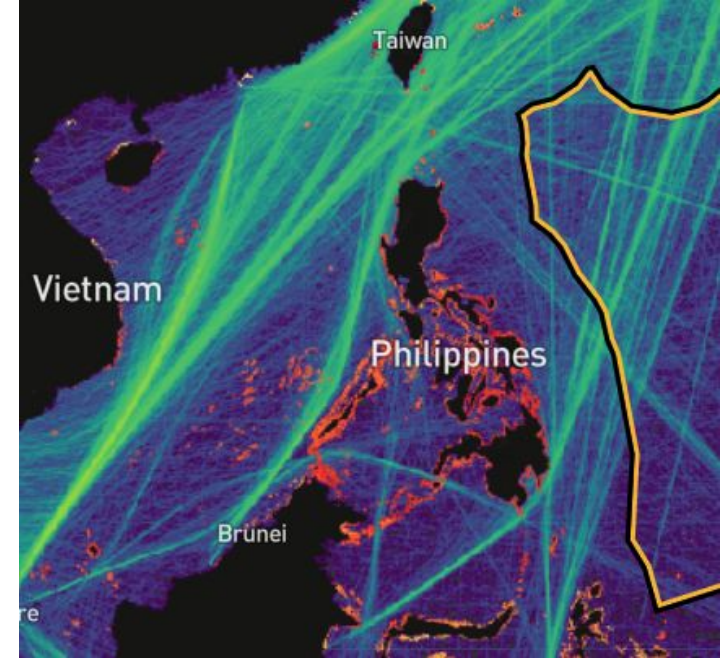- ICRI 36th General Meeting - December 13, 2021

Overview

- **Updates** to Global Coral Reef Profile

- **New** Dashboards for 10 GCRMN coral reef regions

- **Proposed** Update of Coral Reef Social and Economic Vulnerability Analysis

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What, Why, How?

1. Uhhhhh – How are coral reefs doing?

2. Data Hub concept

3. Global Data Profile / Primer

   - Integrate data on Pressure, State, Response and Values
   - GCRMN provide Condition (State)

4. Regional Dash boards – provide same data and indicators focused on a GCRMN region

   - Integrates spatial data on threats, value and protection with GCRMN chapter findings
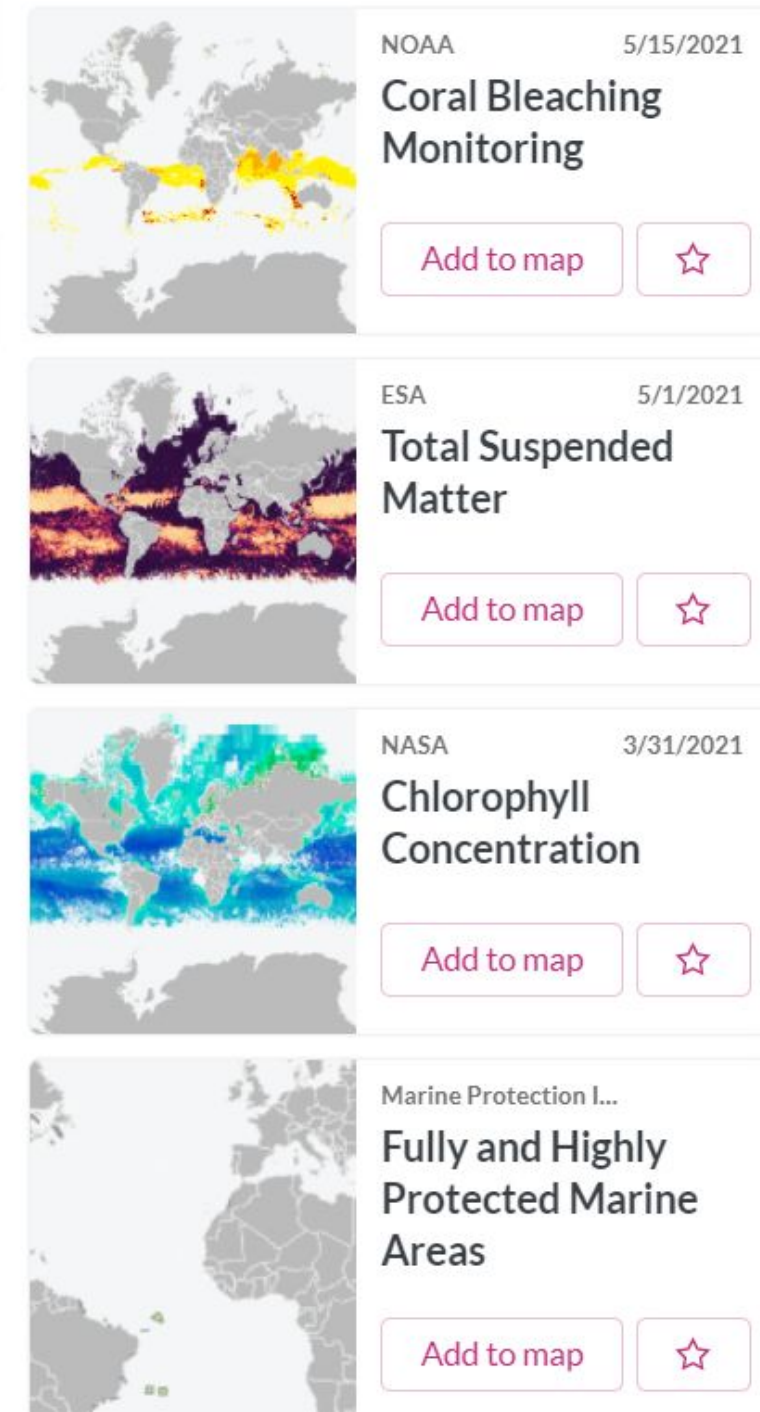
Identify Data relevant for coral reefs

- User Needs Assessment - Data needs to support decision-making relevant to coral reefs (WRI, TNC, NatGeo and Vulcan) – summary

- Audiences:
  1. Coastal Planners
  2. Risk and Insurance sectors
  3. MPA managers and networks
  4. Conservation NGOs / Scientists

Coral Reef Image Bank – Tom Vierus

Explore Data related to coral reefs

- **Habitats** - coral, mangrove (current and change)
- **Physical data** – bathymetry, wave height, cyclones, coastal elevation
- **SLR** (Historic and Projected)
- **SST** – Historic, current, projections of bleaching level stress frq.
- **Ocean Acidification** (Projected ASS)
- **Turbidity** / TSS, Chlorophyll
- **Coral Values** (MOW)
- **MPAs** and fully and highly protected areas
- Coral **connectivity** (50 reefs)
- **Local Threats** (R@R)
- **Social Vulnerability** to coral degradation

NOAA   5/15/2021
Coral Bleaching Monitoring
Add to map   ☆

ESA   5/1/2021
Total Suspended Matter
Add to map   ☆

NASA   3/31/2021
Chlorophyll Concentration
Add to map   ☆

Marine Protection I...
Fully and Highly Protected Marine Areas
Add to map   ☆

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Global Coral Reef Profile

- consolidated information on value, threats, status, trends and management of coral reefs

- interactive maps and graphics

- international target indicators for coral reefs

- https://resourcewatch.org/dashboards/coral-reefs
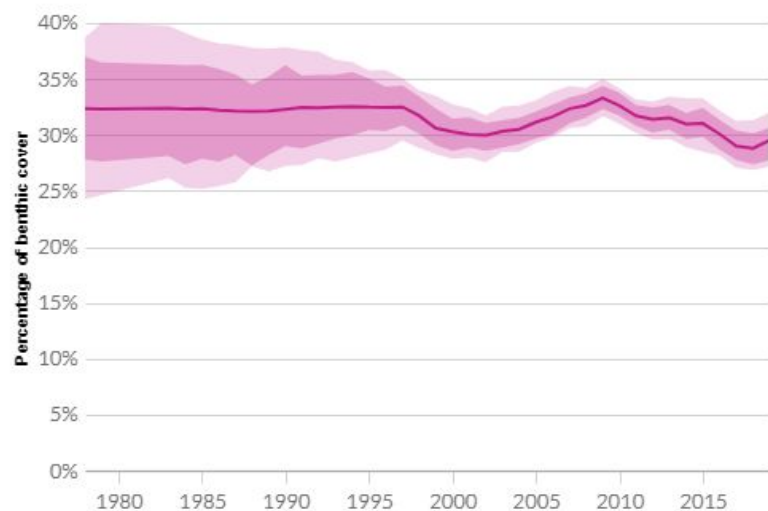
Topics

- Coral reef dependence and values

- Local threats to coral reefs

- Global threats to coral reefs

- Coral reef condition

- Management, resilience, and signs of hope

- Vulnerability to coral degradation

- Conclusion and Key Resources

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Live Hard Coral Cover

Prior to 1998, the global average cover of live hard coral was high (>30% of area) and stable, although the sparsity of data prior to 1998 increases uncertainty around this estimate. The first mass coral bleaching event in 1998 killed approximately 8% of the world's coral. Between 2002 and 2009, the average global cover of hard coral recovered to pre-1998 levels, but between 2009 and 2018, there was a progressive loss amounting to 14% of the coral from the world's reefs. This decline was primarily due to recurring large-scale coral bleaching events, with a frequency that prevented coral cover from recovering in many areas. While the influences of smaller scale disturbances and threats, such as coral disease, crown-of-thorns starfish outbreaks, tropical storms, overfishing, sediment, and pollution have undoubtedly played a role in the decline of coral reefs, their specific contributions were not assessed.
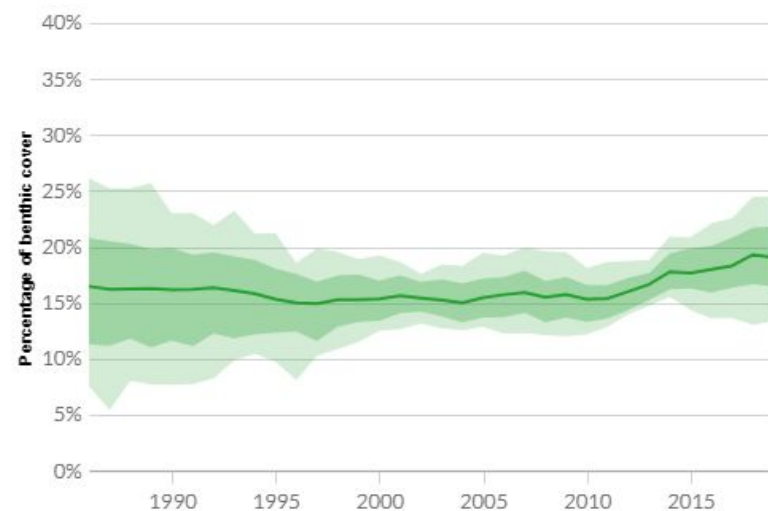
Algal Cover

Prior to 2010, the global estimated average cover of algae was low (approximately 16% of area) and relatively stable. Since 2010, algae cover has increased by about 20%, mirroring the decrease in hard coral cover. Prior to 1998, there was, on average, over twice as much coral on the world's reefs as algae, but that ratio has decreased to closer to 1.5. Transition from coral to algae dominance in a reef community reduces the complex 3-dimensional habitat that is essential to support high biodiversity and important ecosystem services—fisheries habitat and the rugged coral structure which is critical to reducing wave energy and protecting shorelines.
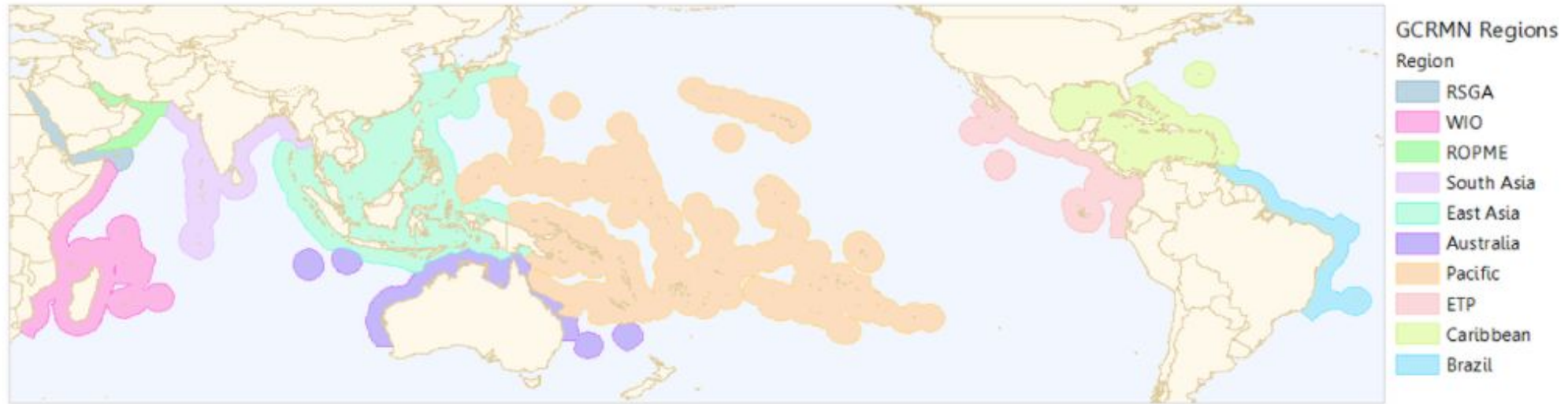
Live Hard Coral Cover Globally

Algae Cover Globally

Accessing Regional Dashboards – https://resourcewatch.org/dashboards/coral-reef-dashboards

- Red Sea and Gulf of Aden (RSGA)
- Western Indian Ocean (WIO)
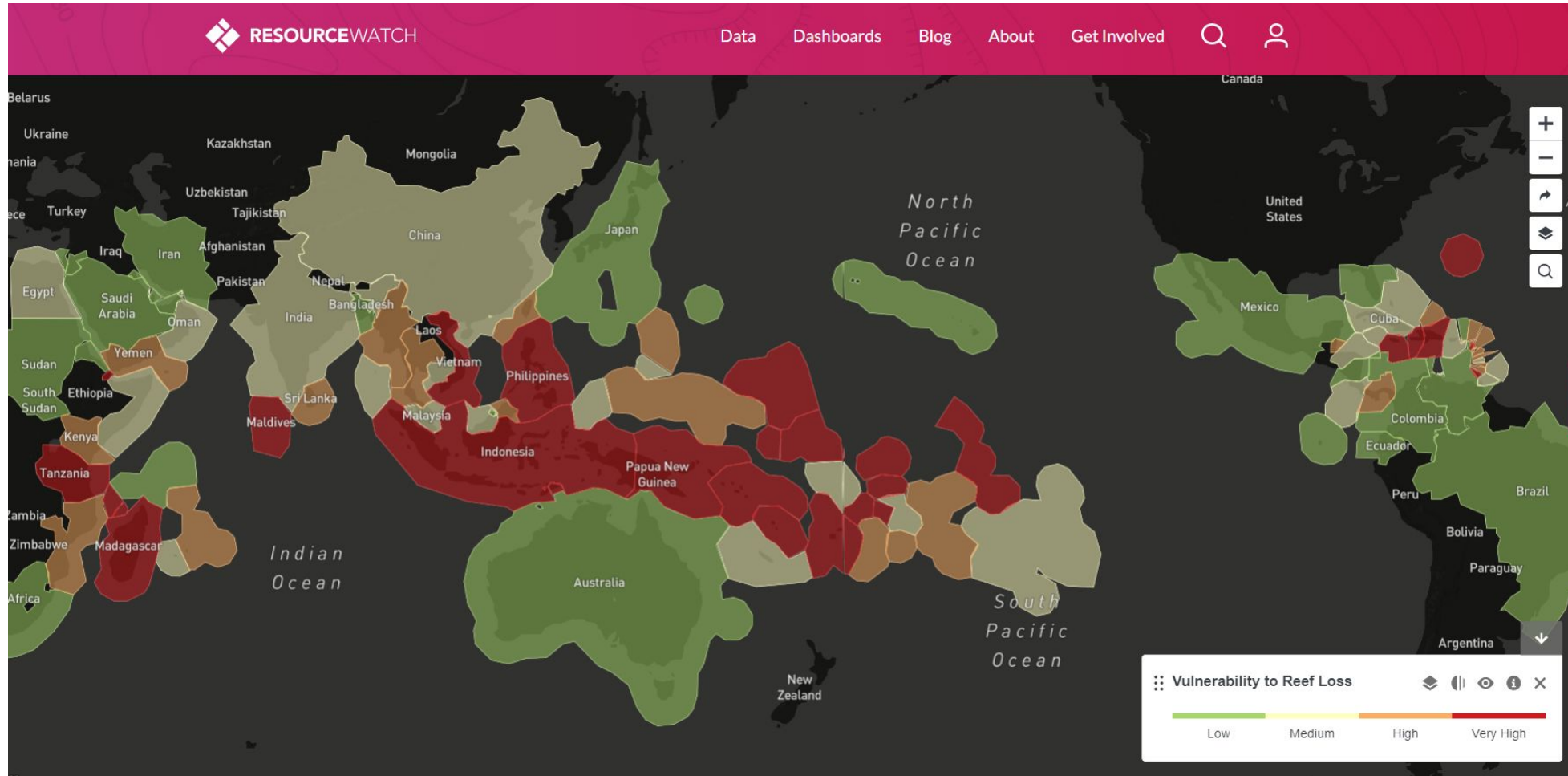- Persian Gulf and Gulf of Oman (ROPME)
- South Asia
- East Asia

- Australia
- Pacific
- Eastern Tropical Pacific (ETP)
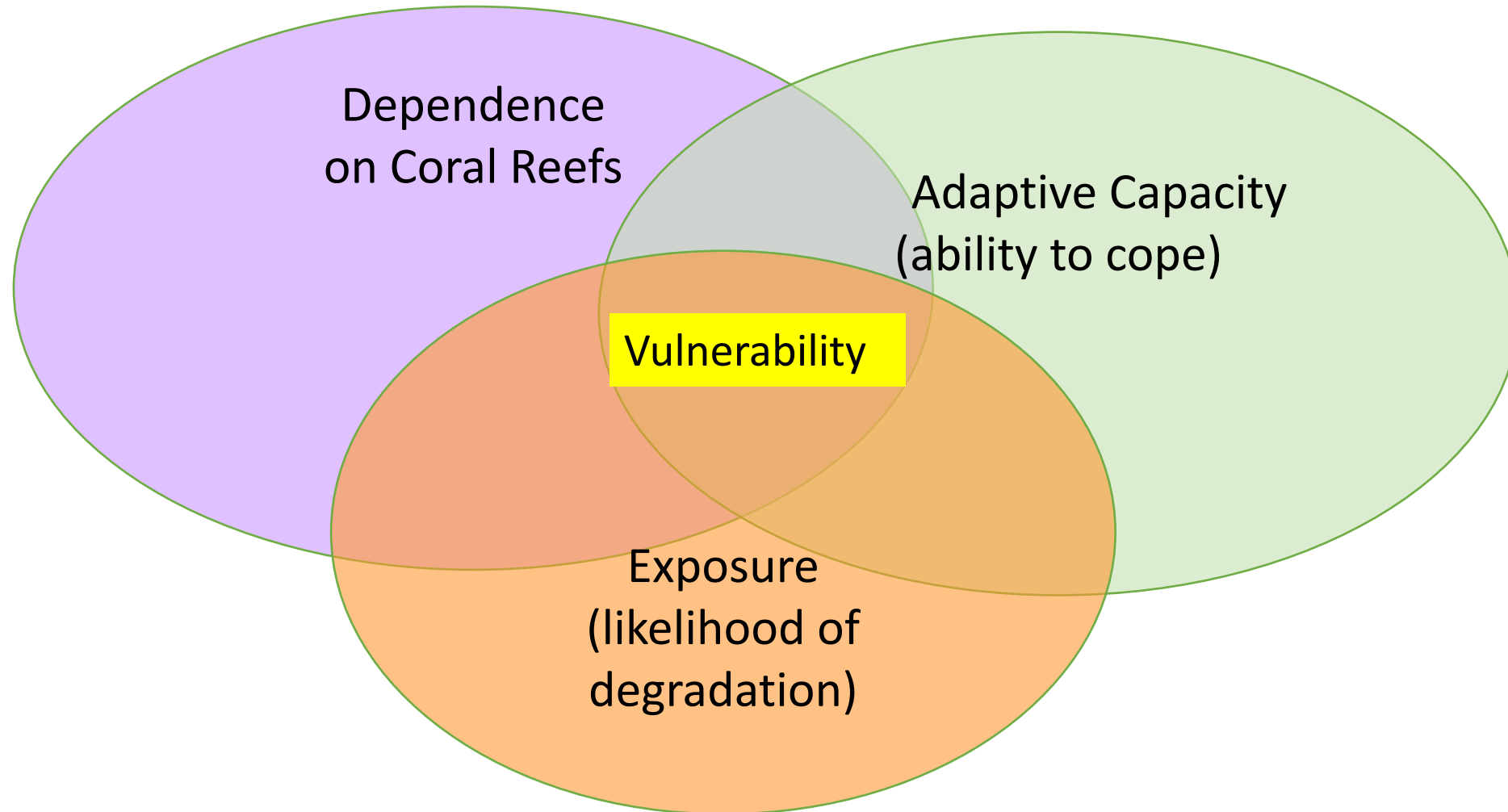- Caribbean
- Brazil

Regional Dashboards

Topic	Stats and indicators (for region)	Maps
Importance and Value	- Reef-dependent Population - Coral-associated tourist expenditures	- 3 Values (tourism, fisheries, shoreline) - Social and Economic Vuln - Reef dependence
Habitat and Protection	- Coral Reef area (2 estimates) - % in MPAs and in Fully and highly protected areas - Mangrove area, gain / loss since 1996.	- Coral reefs - Mangroves - MPAs - Fully and Highly Protected Areas
Threats to Coral	- Local threats (OVF, SED, Coastal Dev, Marine pollution) - Projections of Coral Bleaching - Projections of Ocean Acidification	**Local Threats** - OVF, SED, CD, MAR (from R@R) - Chlorophyll and TSM - Shipping Lanes **Global threats** - Historic, Current, and Projected Coral Bleaching - Projected Ocean Acidification - Historic Cyclone Intensity
Coral Condition	- Live Hard Coral Cover % - Algal Cover %	

Live DEMO of
Regional Dashboard for
Western Indian Ocean –

Social and Economic Vulnerability to Coral Reef Degradation and Loss (2011)

Social and Economic Vulnerability Components

S&E Vulnerability Component Indicators

Dependence on Coral Reefs

-   Reef-associated population
-   Reef fisheries employment
-   Reef-associated exports
-   Nutritional dependence on fish and seafood
-   Reef-associated tourism
-   Shoreline protection

Adaptive Capacity

-   Economic Resources
-   Education
-   Health
-   Governance
-   Access to Markets
-   Agricultural Resources

**Exposure
(likelihood of degradation)**

e R@R
ocal threat index
y the ratio of reef
area)

-   Indicators were a mix of
    o   Routinely updated global data sources
    o   Modeled / estimated in GIS
    o   Compiled for the 2011 analysis

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Proposed Update – Make more replicable

Main Components:
- Consultative process for input on indicators and data sources
- Design Index
  - ○ Focus on indicators which are routinely compiled and updated
  - ○ ID best data sources
  - ○ Develop innovative metrics to fill gaps
- For threats / hazard
  - ○ update threats to reflect new knowledge
  - ○ include projections of warming and acidification
- Share for review
- Update indicators
  - ○ Develop metadata
- Share all data, including maps and indicators
- Communication strategy and products

Dashboards available at:

https://resourcewatch.org/dashboards/coral-reef-dashboards

Thanks

Feedback Welcome –
lauretta@wri.org

Coral Reef Image Bank – Tracey Jennings

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