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Institute for the Advanced Study
of Sustainability

Asia-Pacific Network for Global Change Research (APN)
Knowledge Synthesis (2013-2018)

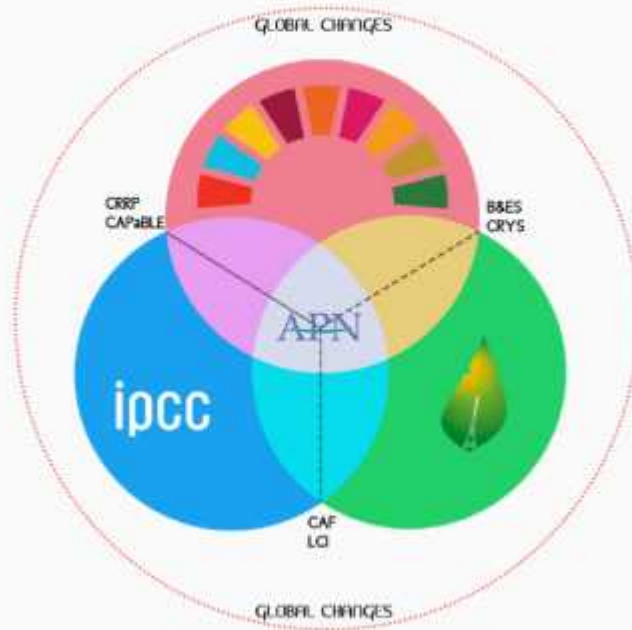
SUSTAINING CLIMATE- IMPACTED TERRESTRIAL, COASTAL, AND AQUATIC ECOSYSTEMS

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Introduction

- Objectives
- Conceptual Framework
- Methodology



IPCC AR6



24 PROJECTS & >40 OUTPUTS

TERRESTRIAL

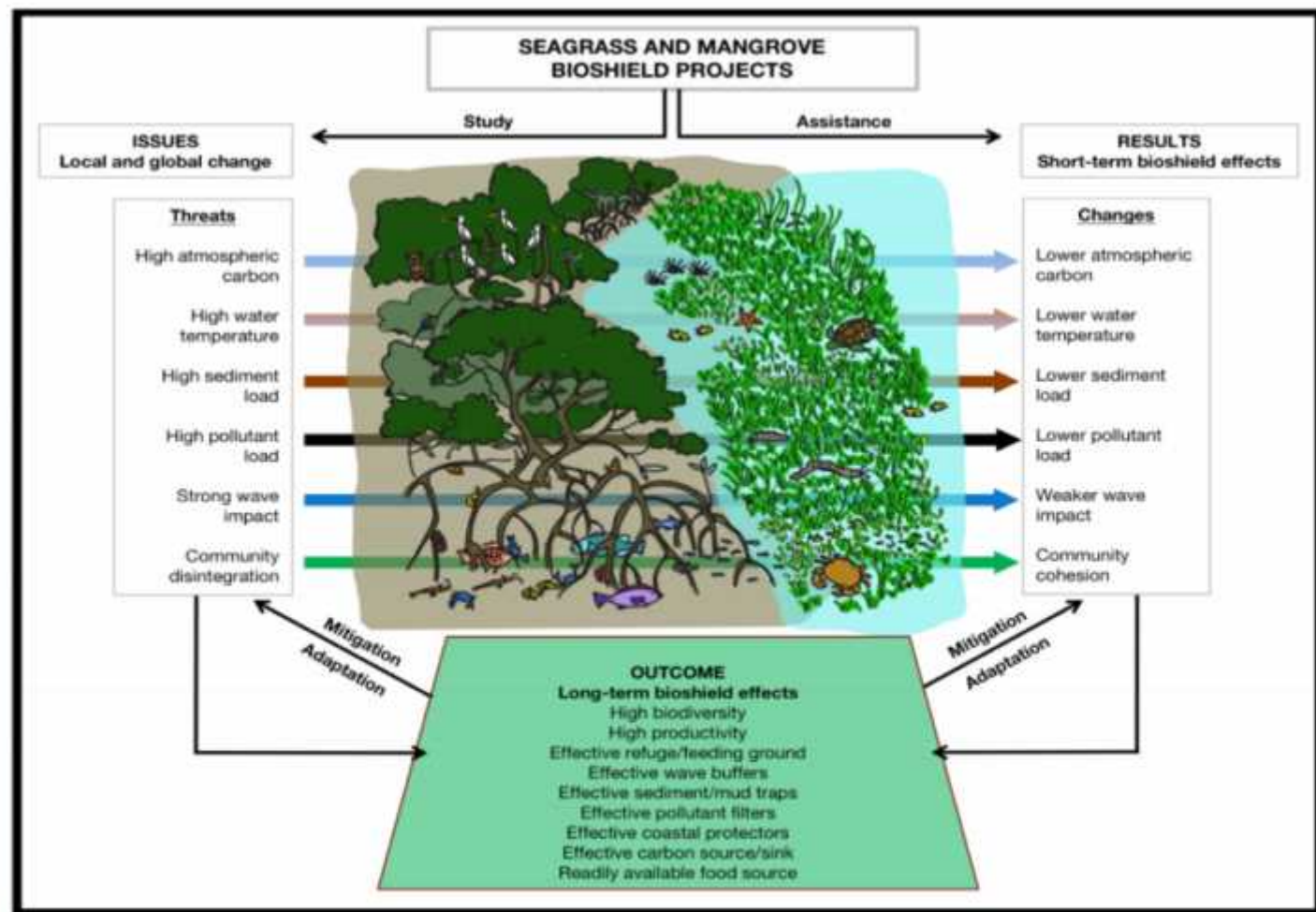
WHAT WE FOUND

- Forest and desert ecosystems would expand by 2-4% while grassland regions would shrink by as much as 11% over this century (Gang et al., 2017);
- 8 study cases - mostly in Japan, China, and the Philippines - favor the practice of community-based activities and the role of indigenous knowledge (community rights) in governing resource-efficient approaches, landscape uses, and conservation efforts (Camacho et al., 2018; Herath et al., 2015a; Chen & Nakama, 2015; Sein et al., 2015; Herath et al., 2015b; Edwards et al., 2014; Carter et al., 2014);
- APN projects have also experimented with various simulation, mapping and, analysis tools to better monitor land changes, as follows:
 - Synthetic Aperture Radar for REDD+ Monitoring (Avtar, 2016),
 - FluxPro to measure flux densities over vegetation in EC measurement (Kim et al., 2015),
 - Detachable Carbon Cycle (DCC) model to simulate equilibrium state of terrestrial carbon pool (Wang et al., 2017).

COASTAL

MIX & MATCH

- Mismanaged watershed and agricultural practices = eutrophication (Wang et al., 2017);
- Uniting sea-grass and mangrove (Bioshield) to ensure coastal sustainability supported by:
 - Spatial mapping to catalogue species,
 - Appropriate seawalls (riprap/cobble),
 - Promoting Integrated Coastal Zone Management (ICZM) through place-specific adaptation and mitigation training & policies



(Mizuno et al., 2017; Fortes & Salmo, 2016; Ngo et al., 2016; Asaeda et al., 2016; De Costa et al., 2016; De Costa & Dassanayake; Gopal, 2015).

AQUATIC

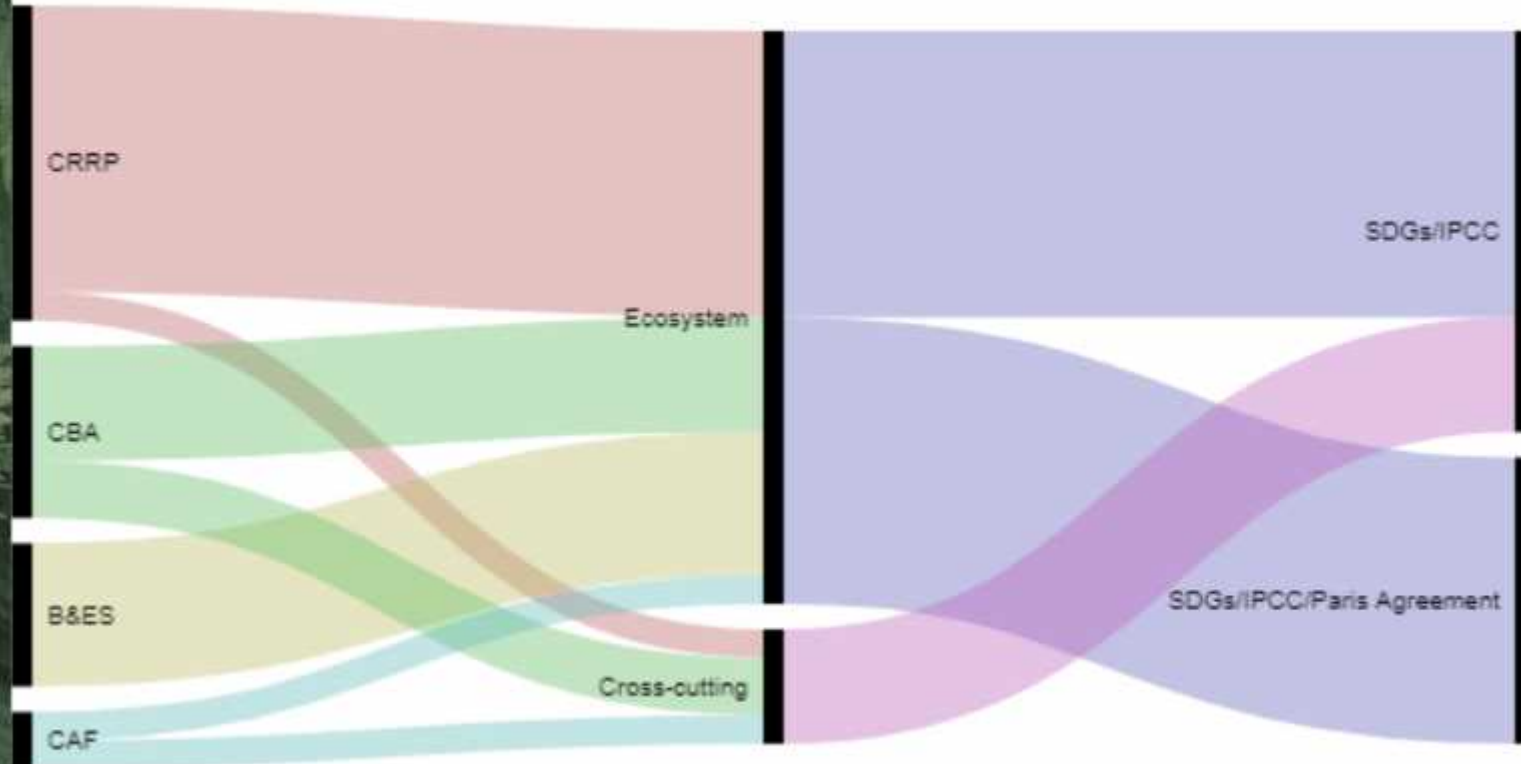
WHAT STOOD OUT

- Attribution & impacts analyses reveal further natural interlinkages;
- Rising sea surface temperature & phytoplankton.
- Water column and freshwater & the condition of monsoonal winds and ocean streams.
- Agro- and physio-chemicals & biodiversity and services.
- Trends on the dynamics of socio-economic activities on ecosystem services, phenology patterns, and biodiversity development that could exacerbate or reduce negative climate change impacts;
- Identified potentials:
 - The future of algae culture to produce food, become a sustainable energy and carbon capture vessel through modification of single rope floating raft and net culture techniques (Maity et al., 2014);
 - New business model for coral reefs protection through installing vegetated buffers on waterways to trap sediments entering the marine system, collaborative fees for tourists that will be given to reef resilience income generation, and establishing restrictive stock and monitoring mechanism for sustainable fishery practices (Chen et al., 2017; Carter et al., 2016; Pascoe et al., 2014).



CONCLUSION & SIGNIFICANCE

THE VISUAL



**HOW RELEVANT?
WHAT'S MISSING?
WHAT'S NEXT?**

THANK YOU!

I'm a fragile amateur, please don't bite me

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