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Locally managed marine areas in Kimbe Bay: Reflections and future possibilities

Russ Wise, James Butler, Tim Skewes, Nellie Bou, Nate Peterson and Barbara
Masike-Liri

Contributed presentation at the 60th AARES Annual Conference,
Canberra, ACT, 2-5 February 2016

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Locally managed marine areas in Kimbe Bay: Reflections and future possibilities



Russ Wise, James Butler, Tim Skewes, Nellie Bou, Nate Peterson and
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AARES Conference, Canberra, February 2016

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**CORAL TRIANGLE
INITIATIVE**
ON CORAL REEFS, FISHERIES AND FOOD SECURITY

**The Nature
Conservancy**

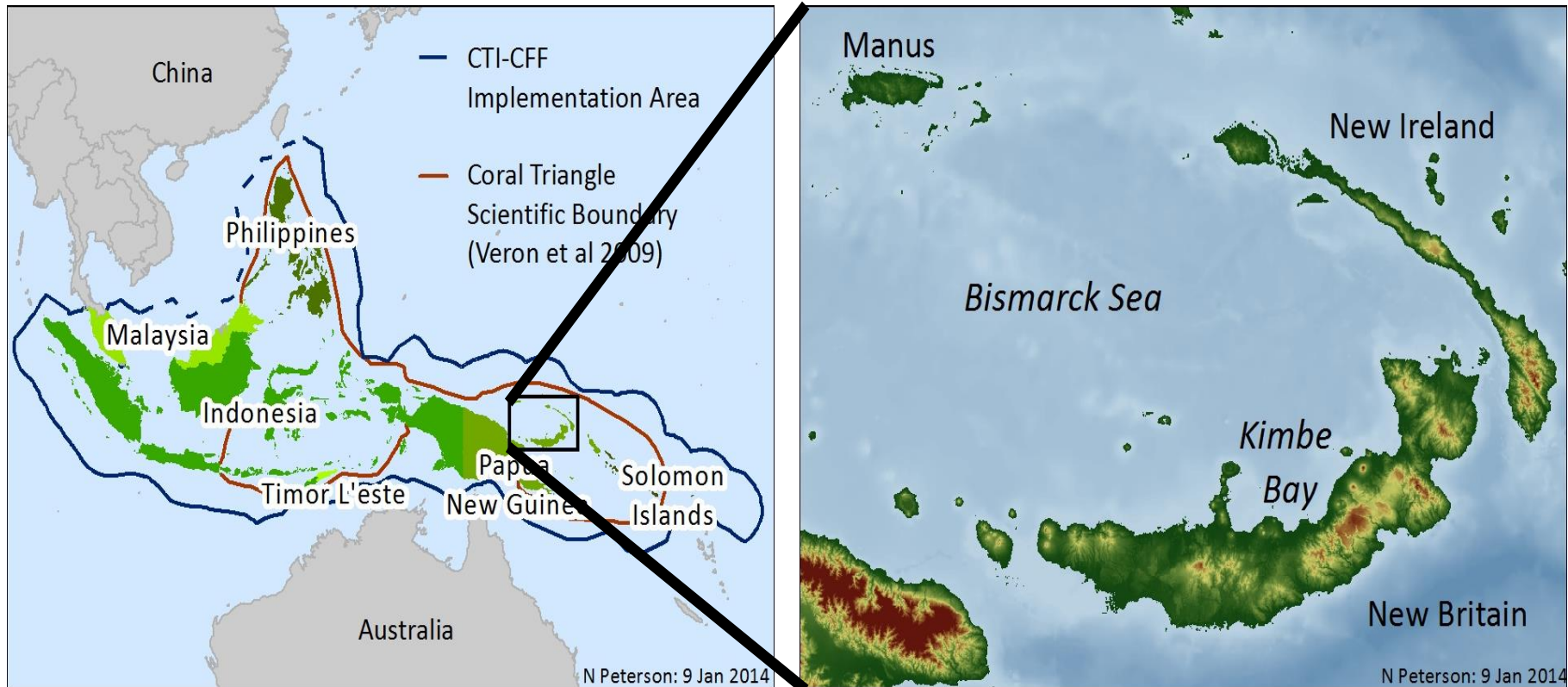


WEST NEW BRITAIN



PROVINCIAL ADMINISTRATION

Kimbe Bay: a priority seascape in the coral triangle



CTI = the 'Coral Triangle Initiative' and was established in 2007 with the goal of achieving the co-benefits of biodiversity conservation, sustainable fisheries and food security

Kimbe Bay: a priority seascape in the coral triangle

- >400 hard coral species
- +- 900 species of reef fish

Photo from coraltriangleinitiative.org



- Large, rapidly growing populations
- Many communities depend on marine resources

- Rapid economic development based on natural resources






- 31% percent of the world's mangroves

Locally managed marine areas (LMMAs)

Proposed Kimbe Bay Network Boundary

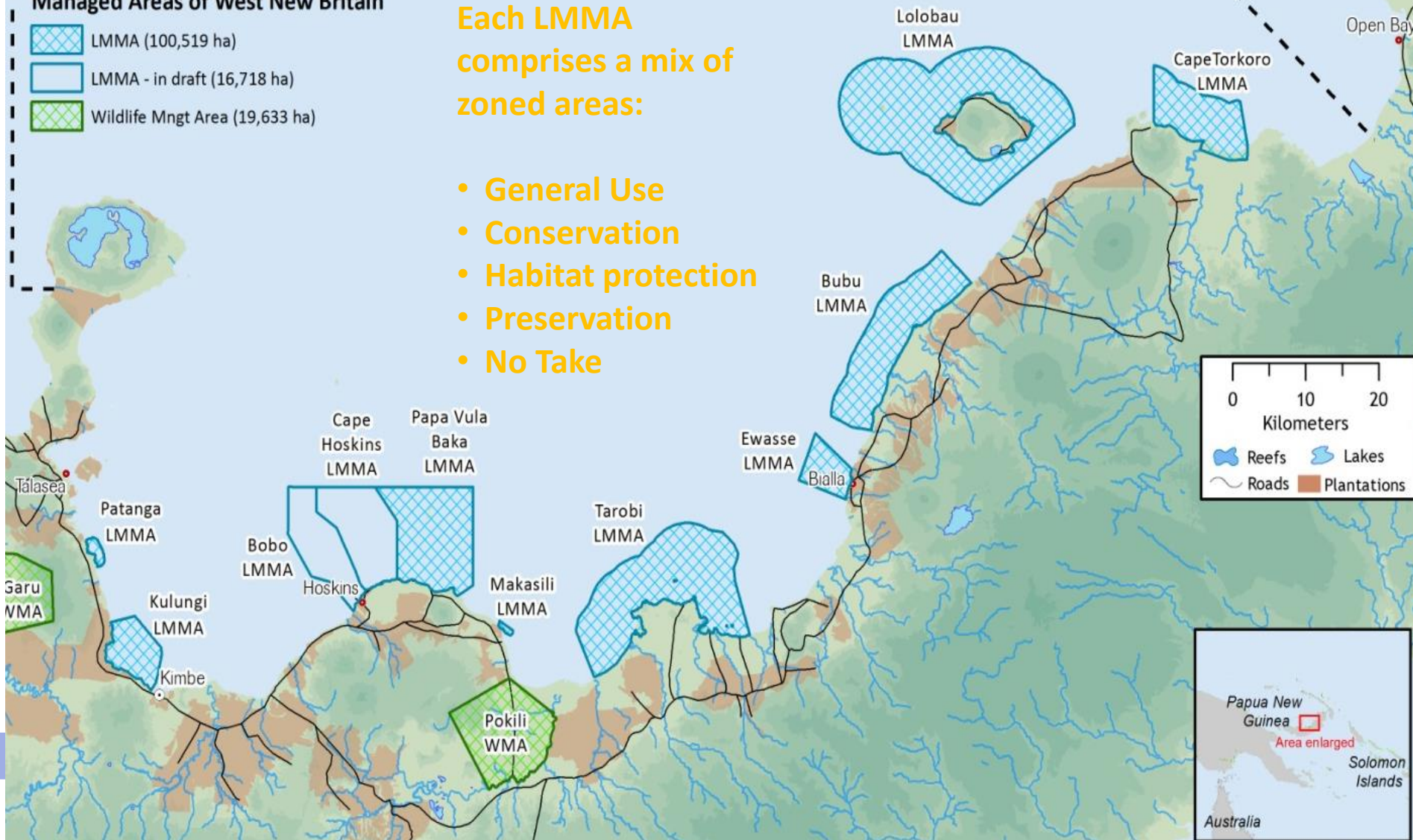
-- Marine area within Network Boundary = 1,331,545 ha

Managed Areas of West New Britain

-  LMMA (100,519 ha)
-  LMMA - in draft (16,718 ha)
-  Wildlife Mngt Area (19,633 ha)

Each LMMA comprises a mix of zoned areas:

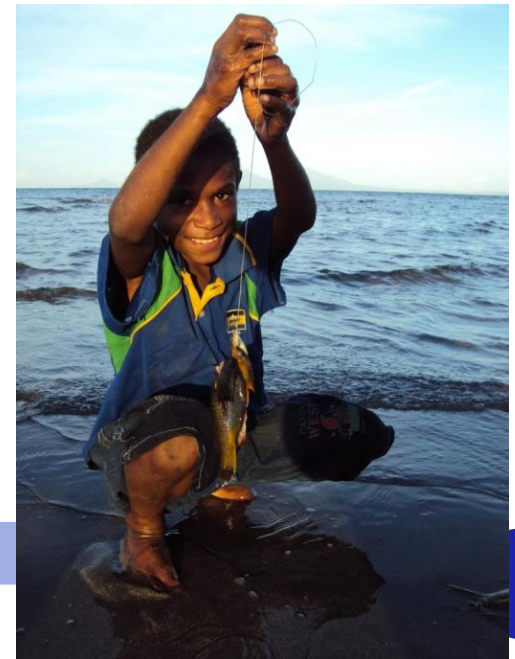
- General Use
- Conservation
- Habitat protection
- Preservation
- No Take



LMMA design

LMMAAs were designed based on:

- principles of reef resilience and habitat connectivity
- locally-agreed harvesting restrictions and management plans
- legislation developed under local government by-laws
- long-term efforts to build awareness and capacity
- user fees and fines as the financing mechanisms



So, are these LMMAs working?!

- “...local communities, government and NGOs [in Kimbe Bay] have teamed up to establish marine protected areas in an effort to reduce current pressures (for instance, from overfishing) while bolstering the reef’s coral diversity and thus its likely resilience to climate change”

(Jones et al., 2012; Nature)

Our observations in 2013 were:

- Not a single LMMMA is actively being managed;
- No fees or fines have been collected;
- Many reefs are damaged or bleached, crown of thorns persist, and fish sizes and populations are small



Objectives

1. To get the perspectives of local communities on the effectiveness and status of LMMAs
2. To assess the LMMAs in terms of:
 - a. their compatibility with local livelihoods and cultural practices
 - b. whether they include all relevant stakeholders and cross-scale threats
3. To identify possible interventions that would contribute to improving LMMA effectiveness and sustainability

Community meetings






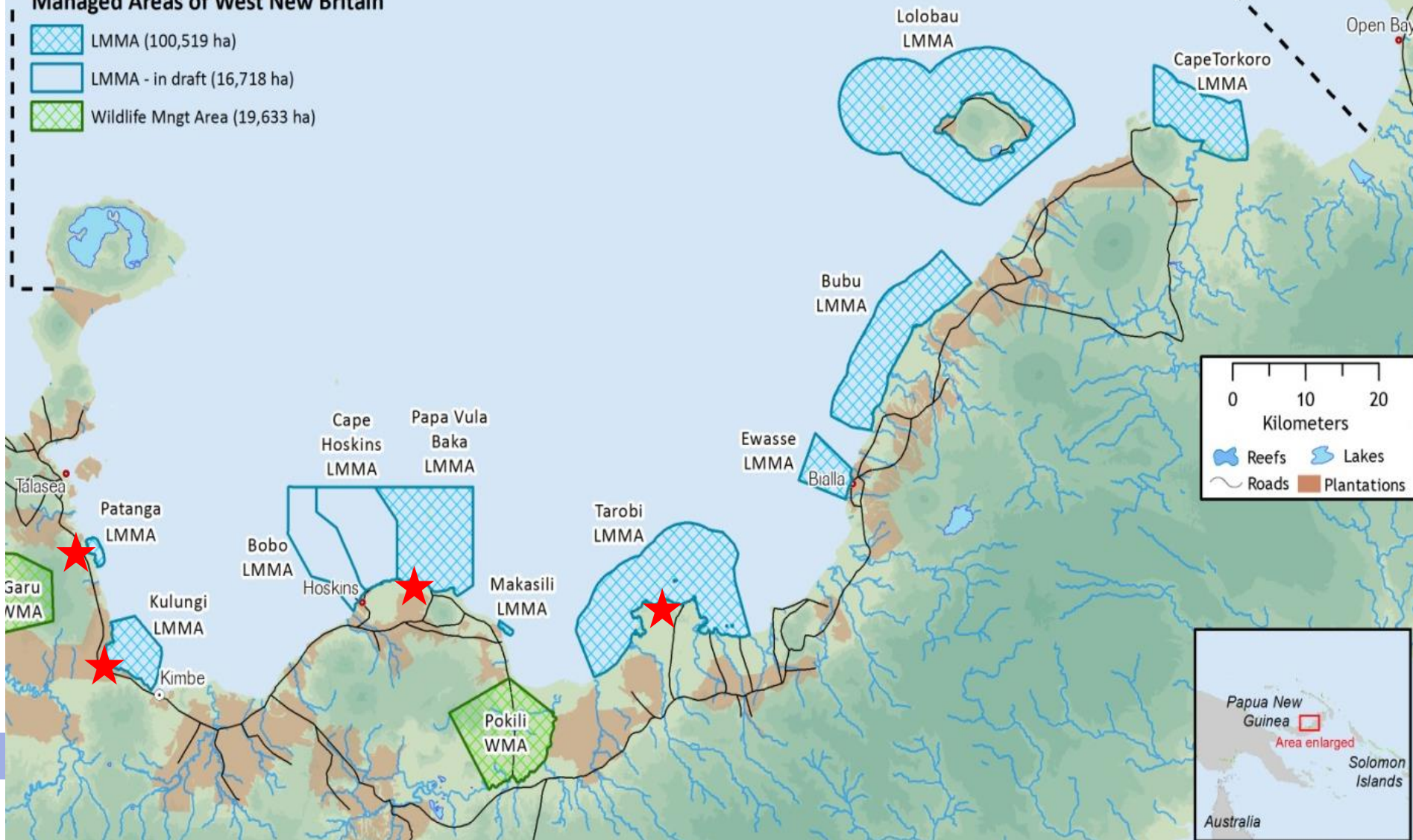
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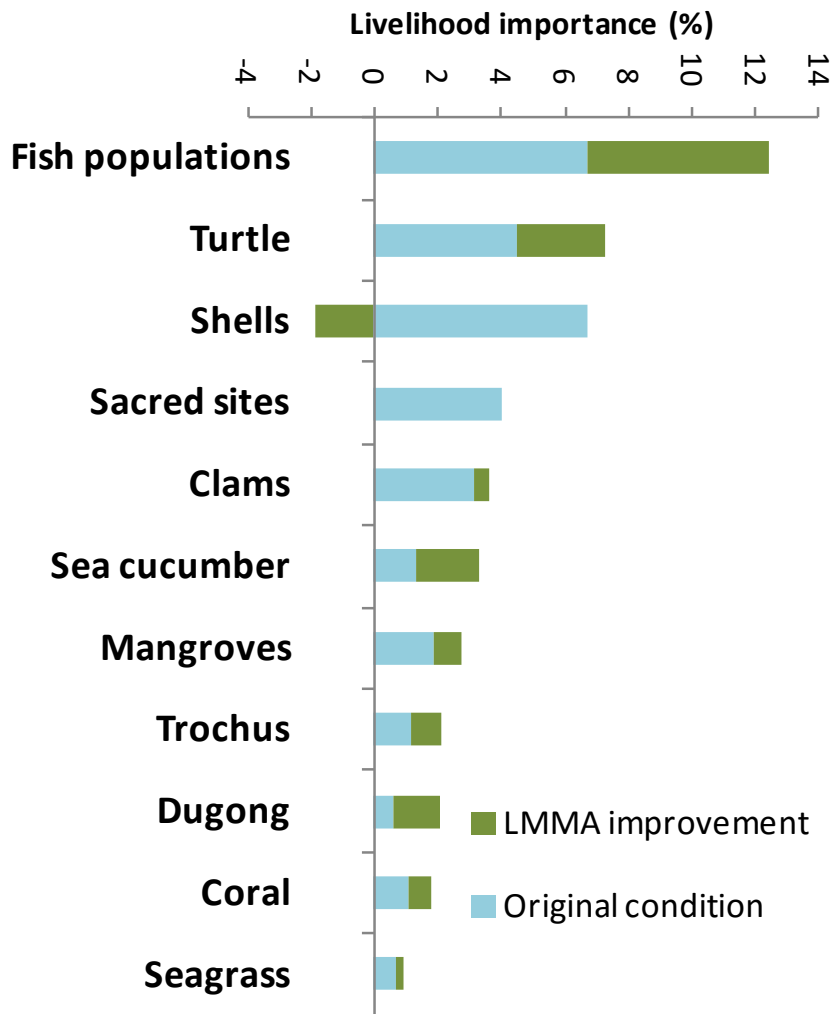
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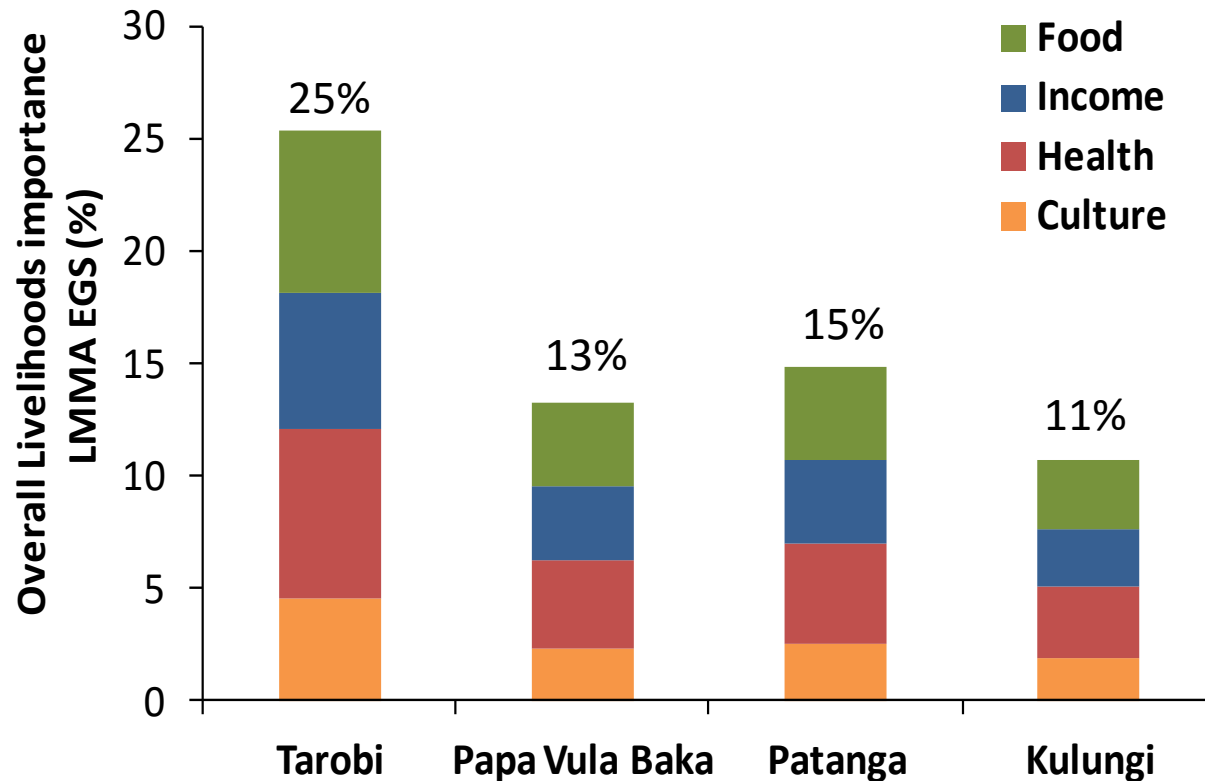
1. Local perspectives of LMMA effectiveness



Participants also highlighted a number of concerns:

1. Limited capacity
2. No fee-paying tourists and “can’t catch illegal harvesters”;
3. Increasing illegal harvesting and demands from growing populations;
4. Increasing run off from oil palm and forest clearing;
5. Rapidly waning enthusiasm since TNC left

2a. LMMA compatibility with livelihoods?



2a. LMMA compatibility with livelihoods?

LMMA management costs versus fishing Income

LMMA	TOTAL MANAGEMENT COST* (\$ PER YEAR)	TOTAL FISHING INCOME (\$ PER YEAR)
Tarobi	\$10,500	\$12,500
Papa Vula Baka	\$18,700	?
Patanga	\$1,950	\$9,750
Kulungi	\$14,500	\$26,000

*Management costs include labour and fuel for surveillance and monitoring

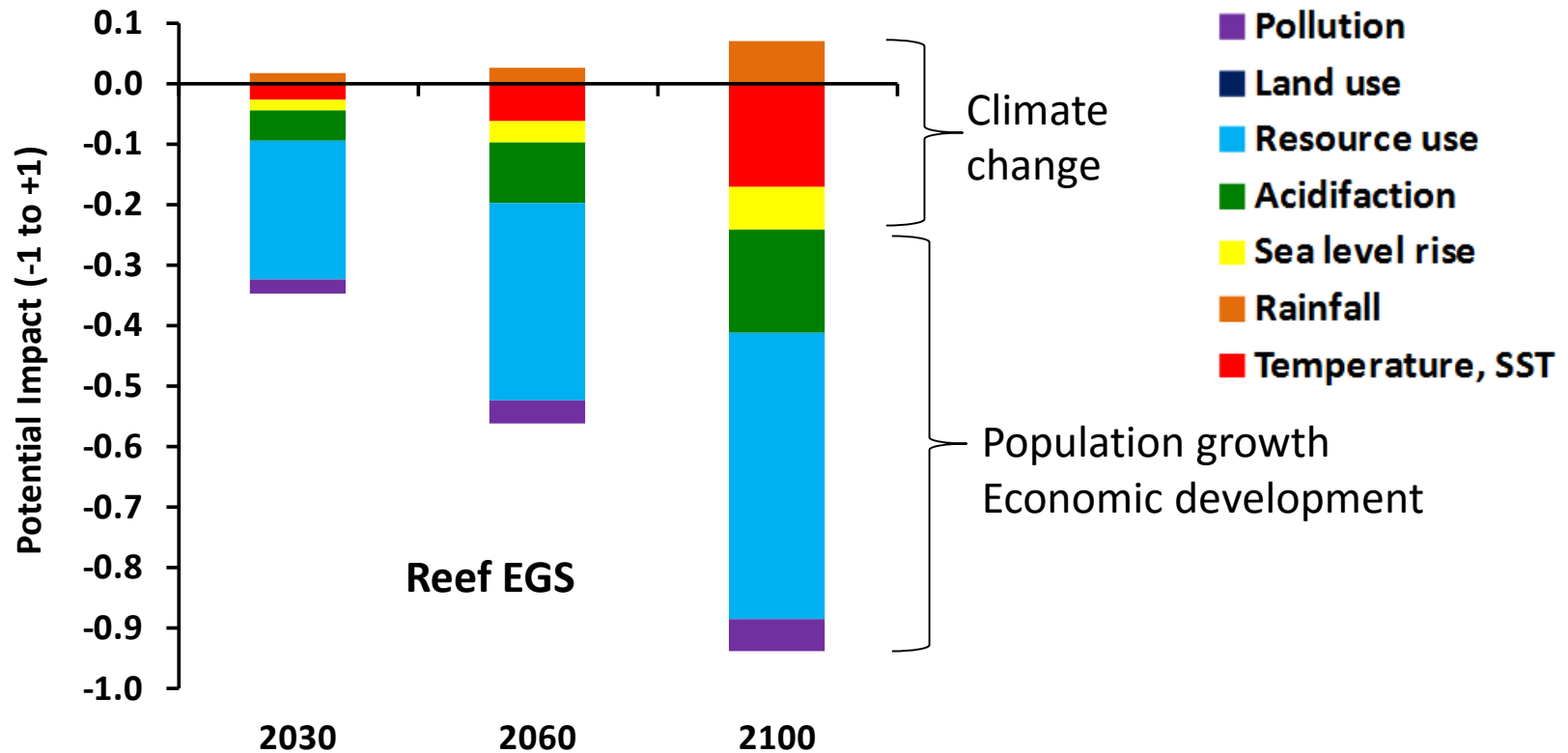
- Most, if not all, of this income is used to pay for health, education, mobile phones, staples such as rice, and energy

2b. LMMA's account for all stakeholders?

Beneficiaries of LMMAs

BENEFICIARY	BENEFITS				
	DIRECT USE	INDIRECT USE	DIRECT NON-USE	INDIRECT NON-USE	RELATIVE MAGNITUDE (0-5)
Local rural communities (resource owners)	Food; Income (fish, shellfish, beche-de-mer); Recreation	Nil	Tourism income; Cultural; Protection; Education	Existence; Option; Adaptation	4
Local rural communities (resource purchasers)	Recreation	Food (fish, shellfish)	Education	Cultural	2
Local urban community (resource purchasers)	Recreation	Food (fish, shellfish)	Education	Nil	1
Local urban community (resource poachers)	Food; Income (fish, shellfish, beche-de-mer); Recreation	Nil	Nil	Nil	2
National / international communities	Recreation (diving, snorkelling, fishing);	Food (fish, shellfish)	Aesthetic; Research; Education	Existence; Option	3

2b. LMMA's include cross scale threats?



Summary

1. LMMAs have led to ecosystem improvements but no longer managed
2. LMMAs are inappropriately designed as closed systems assuming:
 - resource owners have agency and influence
 - cross-scale effects are negligible or out of scope
3. The existing financing mechanisms are not working:
 - Communities will not fine each other for breaches of the rules
 - There are no fee-paying tourists
 - Incomes generated are insufficient to cover costs
4. The international community is a beneficiary contributes little directly to LMMAs

Recommendations

1. External interventions are needed that account for cross-scale influences on coastal ecosystems
2. Existing governance of LMMAs needs to include a wider set of actors and incentive mechanisms:

Actors	Incentive mechanism
<ul style="list-style-type: none">• Oil palm• Forestry	<ul style="list-style-type: none">• Corporate social responsibility• RSPO scope widened beyond farm gate• Pollution and sediment run-off charges
<ul style="list-style-type: none">• Global Agencies representing biodiversity values	<ul style="list-style-type: none">• PES-type programs• Targeted, local-scale funding
<ul style="list-style-type: none">• Higher-levels of government	<ul style="list-style-type: none">• Recognition for livelihoods benefits from coastal development, sustainable LMMAs, capacity building & population control



Photo by Tim Skewes



Photo from coraltriangleinitiative.org

Russ Wise
CSIRO Land & Water Business Unit

t +61 2 6246 4374
e russell.wise@csiro.au
w www.csiro.au/

Thank you

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CORAL TRIANGLE The Nature
INITIATIVE Conservancy
ON CORAL REEFS, FISHERIES AND FOOD SECURITY



WEST NEW BRITAIN

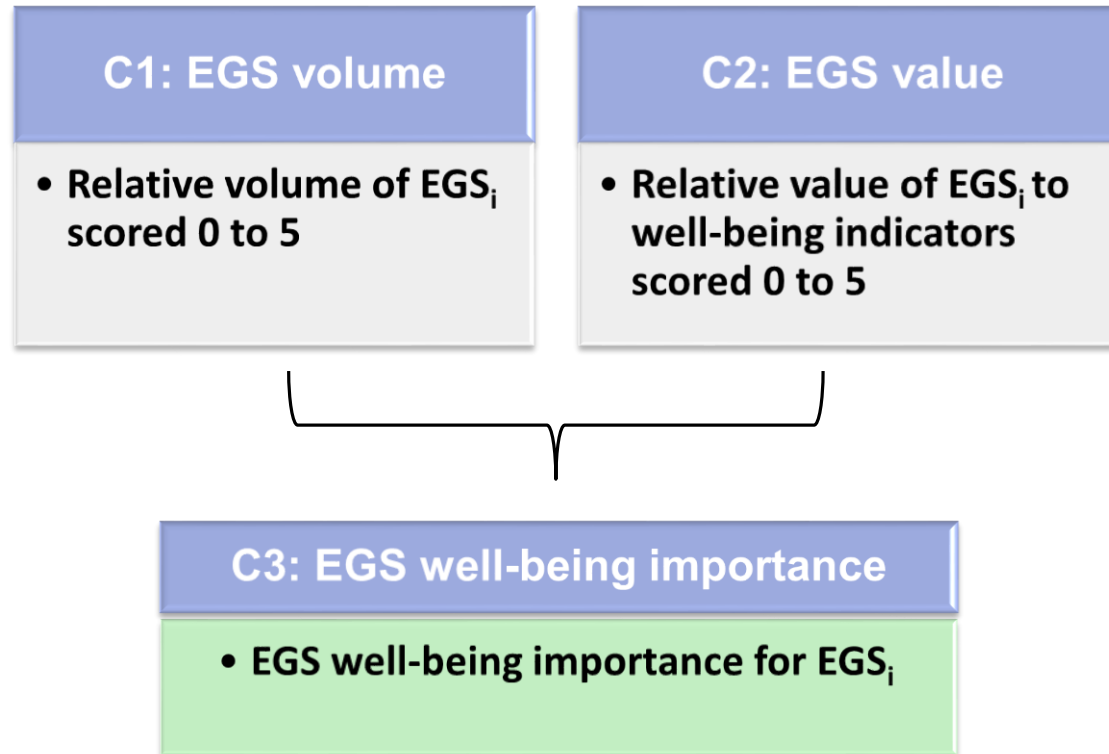


PROVINCIAL ADMINISTRATION



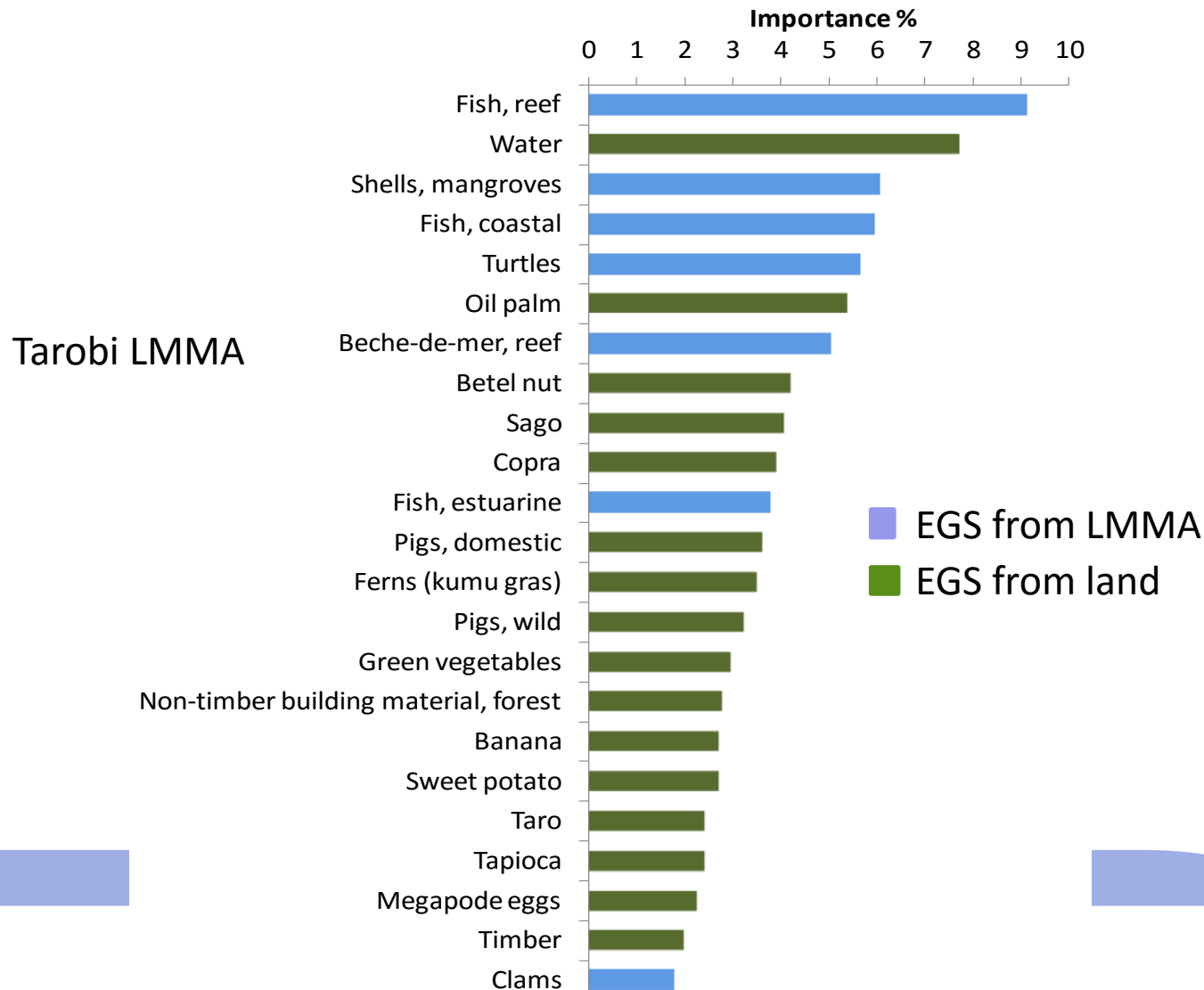
2a. LMMA compatibility with livelihoods

Local livelihoods' dependence on LMMAs ecosystem goods and services (EGS)?



2a. LMMA compatibility with livelihoods

Local livelihoods' dependence on LMMAs?



2b. LMMA's account for all stakeholders?

Future beneficiaries and values of LMMAs

Understanding of human preferences for an ecological feature tells us:

- the scarcer it is, the greater its value;
- the scarcer are substitutes, the greater its value;
- the more abundant are complements, the greater its value;
- the larger and better off the population benefiting, the greater its value;

DRIVERS OF CHANGE	BENEFICIARIES	DETERMINANTS AND INFLUENCE ON VALUE				NET EFFECT
		SCARCITY	SUBSTITUTES	COMPLEMENTS	WEALTH	
Economic development	Local	↑	↓	↑	↑	+++
	Non-local*	↑	↑	↑	↑	++++
Population growth	Local	↑	?	↑	↑	++
	Non-local*	↑	?	↑	?	+
Climate change	Local	↑	?	↑	↑	++
	Non-local*	↑	?	↑	?	+