PRESENTATION

Site Prioritization

JAMES SPURGEON
Ecosystem Valuation Specialist,
Sustain Value

Aim & Method

To select 'priority' sites from set of 'candidate' sites*

Comprehensive, systematic & transparent approach + stakeholder involvement

A Multi-criteria analysis

- Selected criteria (broad & mutually exclusive)
- 4 categories - 13 criteria
- Criteria scored 1 to 5 (+ evidence)
- Criteria weighted (5 or 10)
- Score x weight

B Workshop with stakeholders

- Presented MCA results
- Discussion with stakeholders
- Stakeholders decided on sites

**Except for the Solomon Islands – site pre-selected*

Category	Criteria
Risks	Flooding
	Wind
	Human Disturbances
Corals & biodiversity	Extent of corals
	Condition of coral
	Biodiversity value
Socio-economic value	Local population in area
	Coastal Protection
	Tourism
	Diving/ snorkelling
	Fisheries
Governance	Organisations potentially supporting implementation
	Protected area/coastal management status

Results

- 1 Municipality selected in Philippines
- 2 sites selected in Indonesia & Fiji for valuation
- Many other sites have good potential
  - There is no threshold score

Municipalities in Siargao, Philippines

Site	Ranking	Score
General Luna	1	330
Socorro	2	280
Dapa	3	275
Del Carmen	3	275
Pilar	5	263
Sta. Monica	6	225
San Isidro	7	220
San Benito	8	213
Burgos	9	210

Out of 400

Sites in Indonesia

Site	Ranking	Score
Nusa Penida	1	370
Rote Ndao	2	363
Raja Ampat	3	345
Wakatobi	4	343
Makassar City	5	338
Berau	6	328
Pandeglang	7	288

Out of 500

Sites in Fiji

Site	Ranking	Score
Denarau / Nadi (& Mamanuca islands)	1	334
Suva Reef / Navakavu	2	305
Sanasana / Natadola	3	288
Labasa (Great Sea Reef)	4	286
Laucala-Taveuni islands	5	237

Out of 500

PRESENTATION

SUSTAIN VALUE

Valuation and Cost Benefit Analysis

JAMES SPURGEON

Ecosystem Valuation Specialist,
Sustain Value

ADB Landell Mills Swiss Re gef global environment facility ACliFF BluePangolin WWF rare KONSERVASI INDONESIA

Aims

SUSTAIN VALUE

A) Valuation

- Estimate economic value of coral reefs at Priority sites
- Consider status and threats to corals
- Investigate current and potential management
- Identify key stakeholder beneficiaries
- Identify potential funding opportunities

B) Cost Benefit Analysis

- Assess economic viability of coral restoration
- Compare restoration benefits to costs

To inform business case for coral restoration, improved risk management & parametric insurance

Valuation methodologies applied

Ecosystem Service	Valuation approach	Core source
Fishing (direct & indirect)	Catch (tons) x price x % coral dependence	Gov Statistics & academic papers
Seaweed farm protection	Volume produced (tons) x market price	Gov Statistics
Coast protection	Replacement cost (Protection length x sea wall cost) OR ORRAA CRI tool (flood damages avoided)	GoogleEarth & literature OR CRI tool
Diving and snorkelling	Diver/snorkeler #s x local expenditure x % coral dependence	Interviews, questionnaire surveys & GoogleEarth
Surfing	Surfer #s x local expenditure x % coral dependence	Stakeholders/ Google Earth
Non-use	Adult population x US$ willing to pay/person/yr (or trip)	Survey or Value transfer

RESULTS

Philippines – General Luna

SUSTAIN VALUE

- USD 11.5 million per year
- 450 Ha coral
- WTP survey for tourism & non-use values
- Coast protection & surfing highest
- Values/m² highly 'activity-location' specific

Ecosystem service		Annual value (1000s USD/yr)
Fisheries		38
Coast protection		4,214
Tourism	Diving	649
	Snorkelling	1,766
	Surfing	3,951
Non-use/ Conservation	Foreign tourists	207
	Domestic tourists	615
	G.Luna Residents	13
Total value		11,453
	Exchange rate	1 USD = 58 PHP

Average USD/m2/yr	Based on activity area USD/m2/yr
0.01	0.01
0.9	1.9
0.1	12
0.4	11
0.9	61
0.0	0.7
0.1	2.2
0.0	0.05
	n/a

RESULTS

Indonesia – Nusa Penida

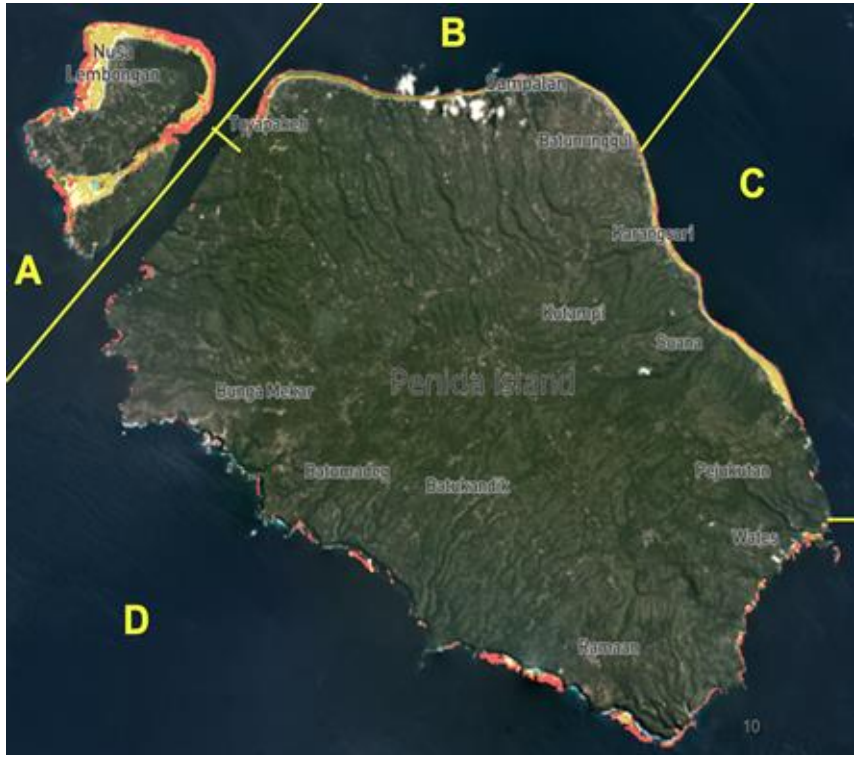
SUSTAIN VALUE

- USD 44.3 million per year
- 412 Ha coral
- Values vary a lot by Coastal Section (A – D)
- Diving & snorkelling highest

Ecosystem Service	A) Nusa Lembongan (1000s USD/yr)	B) North Penida (1000s USD/yr)	C) East Penida (1000s USD/yr)	D) West & South Penida (1000s USD/yr)	Total (1000s USD/yr)
Direct fishery	12	8	-	-	21
Indirect fishery	45	5	10	30	90
Seaweed farm protection	2,064	257	38	-	2,360
Coast protection	617	868	115	-	1,600
Diving & snorkelling	8,144	6,892	1,474	22,928	39,437
Surfing	739	-	-	-	739
Total value	11,622	8,030	1,637	22,958	44,247

Exchange rate 1 USD = 16,667 IDR

USD/m2/yr	5.4	16	4.4	20	11



RESULTS

Fiji – Denarau, Nadi & Mamanuca Islands

- USD 117 million per year
- 2,750 Ha corals
- Tourism & coast protection

Ecosystem Service	Annual value (1000s USD/yr)
Fishery	No data
Coast protection	6,600
Tourism	110,880
Non use/conservation	No data - but important
Total value	117,480

RESULTS

Solomon Islands – ACMP

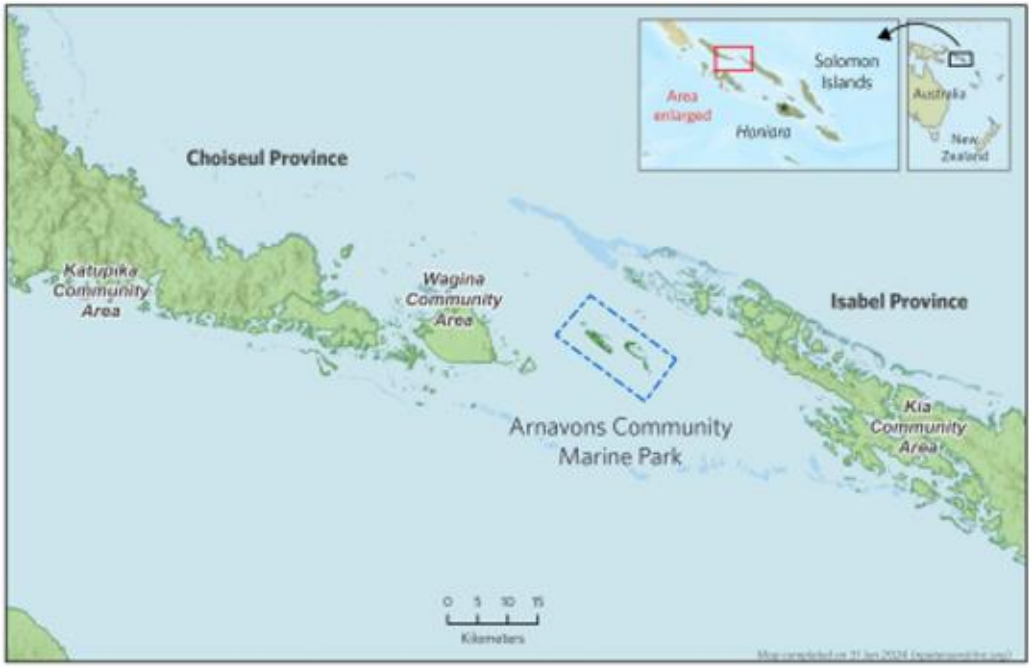
(Arnavons Community Marine Park)

- USD 3.9 million per year - ACMP
- 118 & 4,070 Ha coral
- Non-use highest for ACMP
- But highly 'indicative only'

Ecosystem service		ACMP (1000s USD/yr)	Wider Arnavon (1000s USD/yr)
Fishery		53	2,672
Seaweed farm protection		0	1,236
Coast protection		4	373
On Island tourism		38	1,189
Boat tourism		236	236
Non-use/ Conservation	Solomons residents	53	1
	International tourists	42	1
	Australians	1,372	7
	Global	2,052	2
Total		3,902	5,718

Exchange rate 1 USD = 8.49 SBD

ACMP (box in middle) and 'Wider Arnavon' (whole figure)



COST BENEFIT ANALYSIS

Method & Results

SUSTAIN VALUE

Method

- Restoration costs (pre- and post event) estimated over 5-year period
  - E.g. equipment, training, impact assessment, restoration, monitoring & spawning
- Restoration benefits = *Ecosystem service value (Rp/m²/year)* x *Area of hard corals restored (m²)* x *Difference in years of restoration plan vs natural recovery (years)*
- 'Present value' costs & benefits calculated - over natural recovery period
  - Applying 'discount rates' of 0, 5 and 10%
- If Benefit to Cost Ratio (BCR) >1 = economically viable

Results

Philippines	Indonesia	Fiji	Solomon Islands
1.3 to 55	1.1 to 83	1.6 to 2.4	1 to 1.6

- Restoration economically viable at all sites
- When values linked to location they occur!
- Restoring larger areas is more efficient.
- Prioritise restoration:
  = good restoration potential + higher BCR

Lessons learned

1. Coral values & restoration CBRs highly location specific - even within sites!
2. ORRAA's coast protection tool useful - but not always sufficiently accurate.
3. Non-use/conservation value can be highly significant - more studies should focus on it.
4. Tourist revenue collection could be vastly improved at some sites - to finance management.
5. Minor reef impacts should be continuously monitored - and corals re-attached/litter cleared.
6. Stakeholders should decide if worth buying coral insurance or self insuring to restore corals.