

Communities of Coral: An Ecological And Institutional Analysis of Ecosystem Services in Southeast Asia

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Tropical coastal seascape



Tropical coastal seascape



What types of policies and institutions can prevent degradation of tropical ecosystems and ecosystem services?



Main Takeaways:

- Community-based management institutions increase ecosystem services
- Socio-ecological systems approaches are necessary to determine what works
- Legitimacy, economic innovation, adaptive problem solving

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Site

Malaysia (top-down)

Resource Policy

1994 Marine Parks Order
of the Fisheries Act

Management Framework

centralized

Indonesia (bottom-up)

1997 *Reformasi* Policy
(devolved management)

co-management

Theoretical Frames:

Defining
analytic
constructs

Institutions

Building Blocks

Systematic Analysis

Establishing
independent
and dependent
variables

Socio-Ecological Systems

Uncertainty

Adaptive Capacity

Integrated Systems
Thinking

Projects & Operations

Community-Based Ecosystem Management Project

Community Based Natural Resource Management (CBNRM) for Capacity Building in Southern Africa



WORLD
RESOURCES
INSTITUTE

Jamaica: Community Based Adaptation

Keywords: **Adaptation** **SPA**

Country: **Jamaica**

Project Documents



Waiting for fishermen to bring a day's catch to the shore on lake Malawi.



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UN-REDD
PROGRAMME



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Adaptive Capacity

System-wide ability to respond to unplanned disturbances while maintaining key ecological, social, and economic processes.

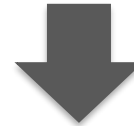
Malaysia

Adaptive capacity of
the centralized
management
institution



Indonesia

Adaptive capacity of
the Co-Management
Institution



ecological, social, economic processes that can
withstand disturbances

Socio-Ecological Systems



7 Independent Variables:

power sharing

collaborative
management

legitimacy

how institutions are
formed

social learning

trust

adaptive problem solving



Malaysia

Adaptive capacity of the
centralized management
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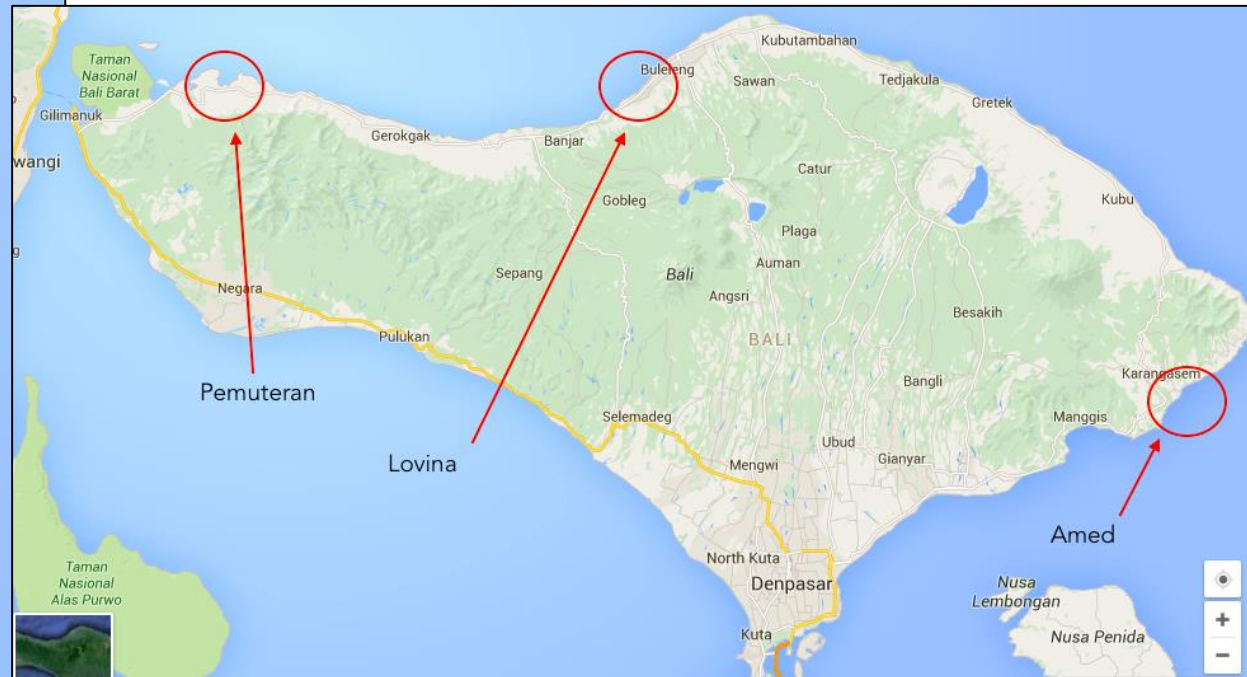
adaptive problem solving

legitimacy



ecological outcomes & stakeholder perceptions

Field Sites



Controlling for confounding variables

- development & economic patterns
- population sizes
- economic growth rates
- per capita income (\$1200 Indonesia, \$5900 Malaysia)
- middle income countries

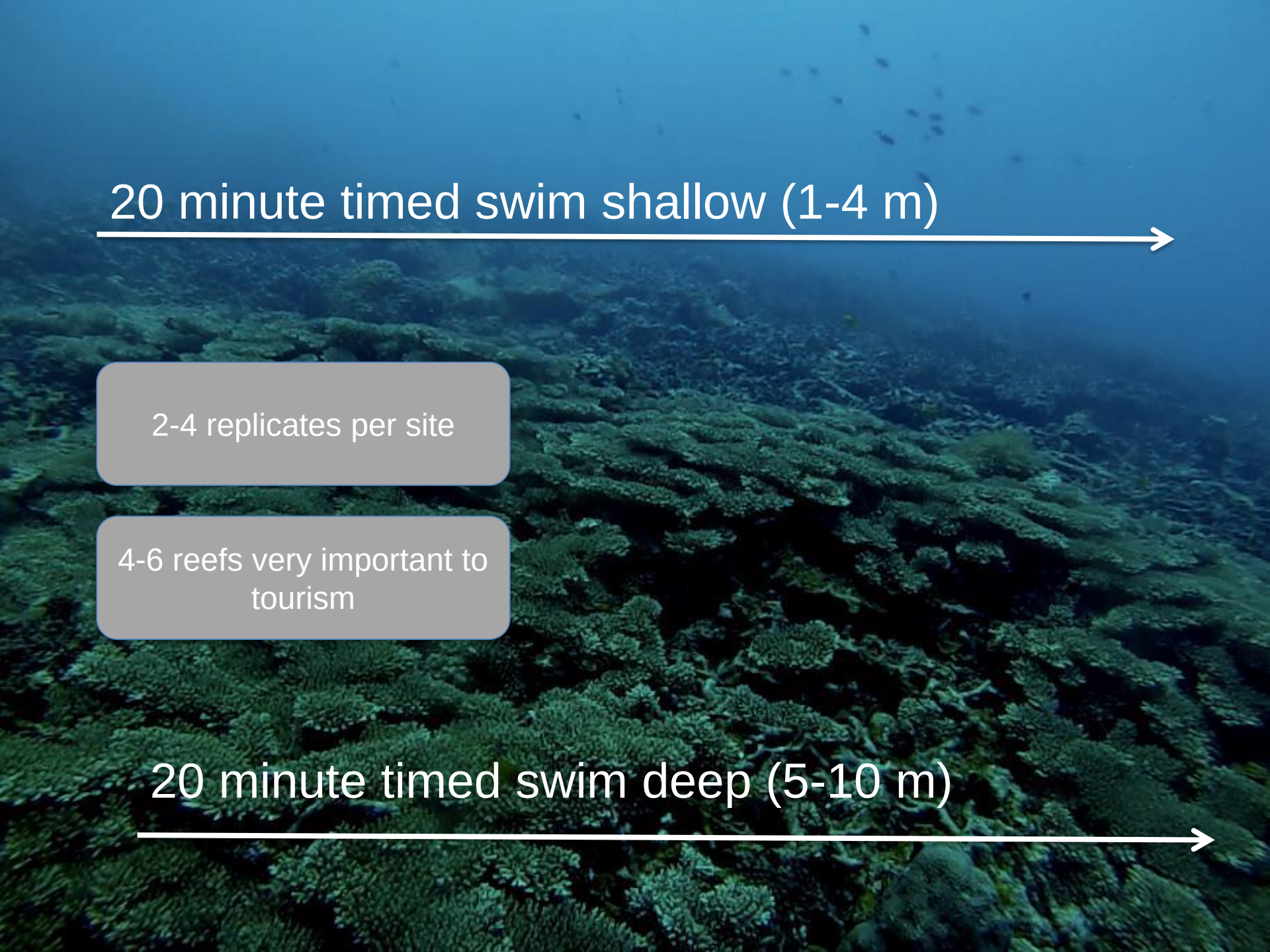
Methodology

Three phase design:

- 30-35 key informant **interviews** per site
- 50-60 stakeholder **surveys** per site
- 12-15 Living coral cover **ecological surveys** per field site







20 minute timed swim shallow (1-4 m)

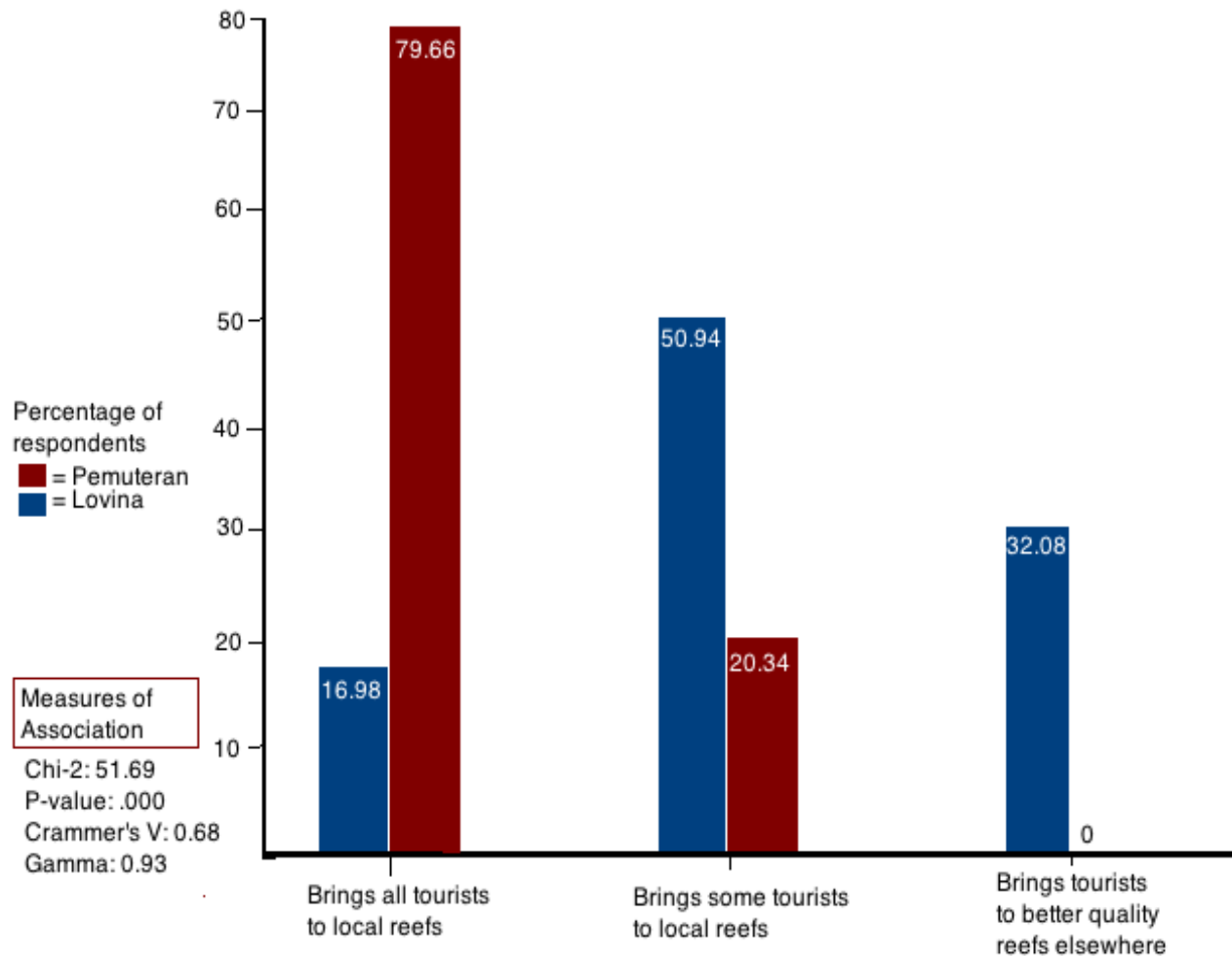
2-4 replicates per site

4-6 reefs very important to
tourism

20 minute timed swim deep (5-10 m)



Triangulation in analysis



Findings: coral cover

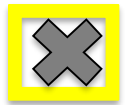


Indonesian sites: 37.46 %

n=7160



Good



Medium



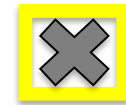
Poor

Malaysian sites: 44.47 %

n=4320



Good



Medium



Poor

Malaysian sites saw 48% of the visitors
compared to Indonesian sites



Findings: Stakeholder Perceptions on Adaptive Capacity

Legitimacy

Innovation

Adaptive Problem Solving



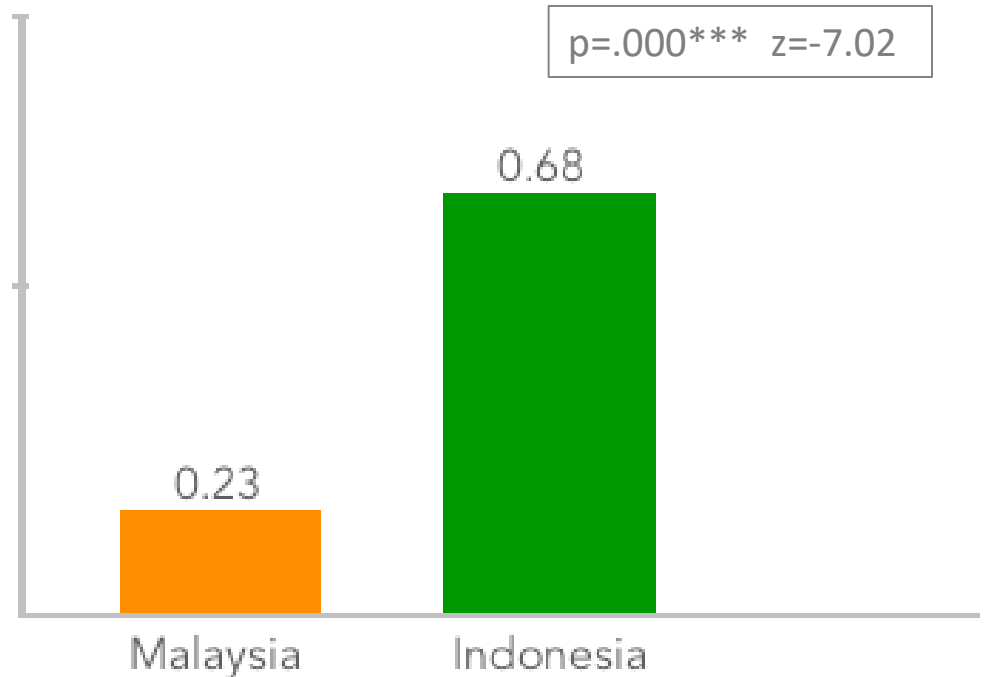
Findings: Adaptive Capacity

Legitimacy

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Does the reef management organization actually protect the reef? (yes)



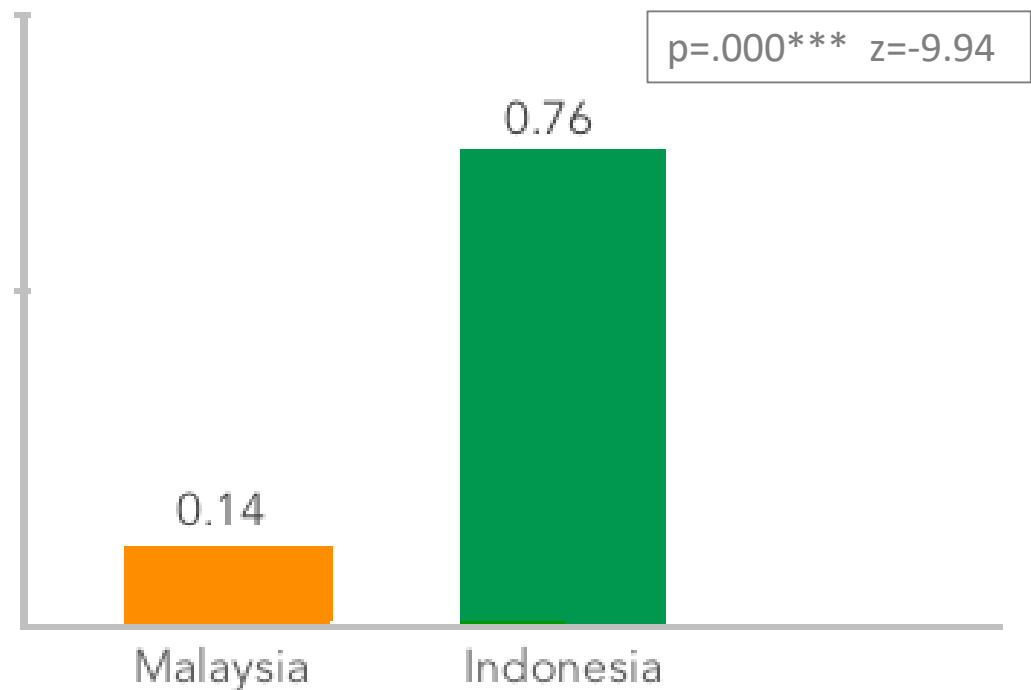
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Is the reef management institution something that you value and respect or does it not work?



PECALANG SEGARA



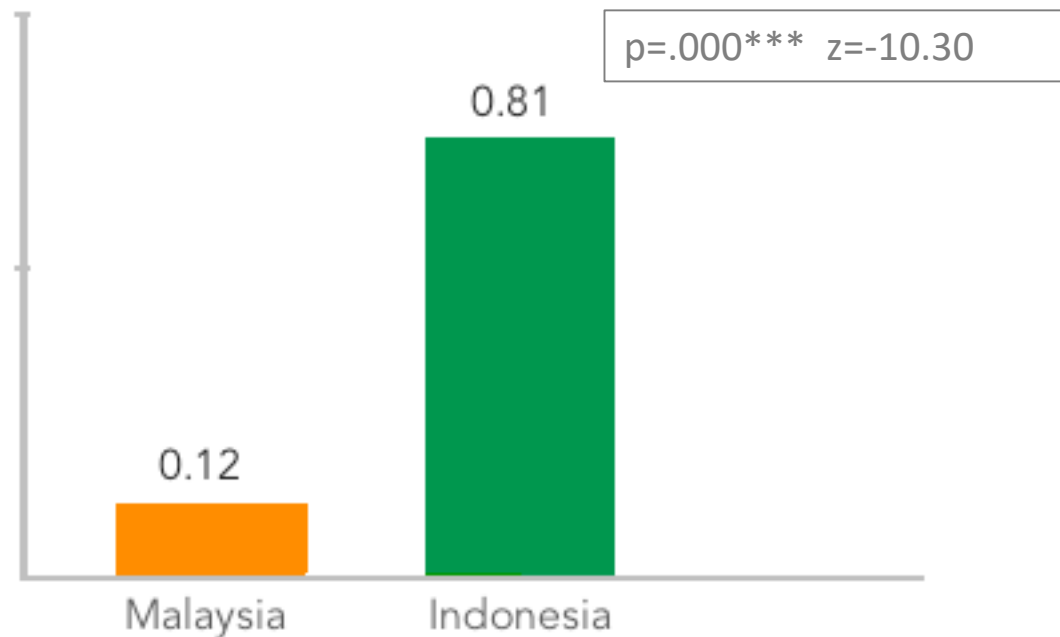
Findings: Adaptive Capacity

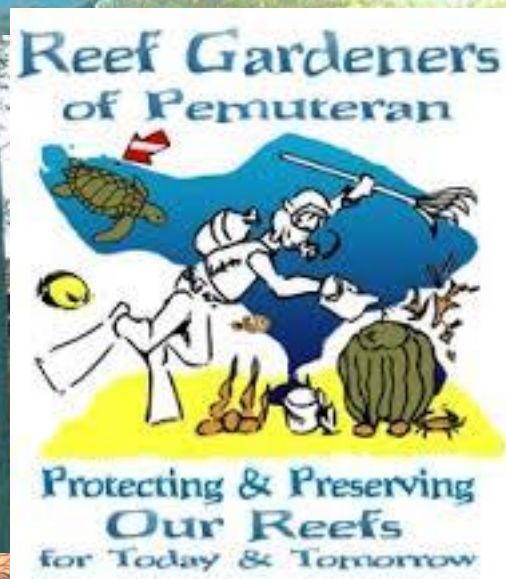
Legitimacy

Innovation

Adaptive Problem Solving

If you want to intervene for conservation are you able to, or are you not allowed?





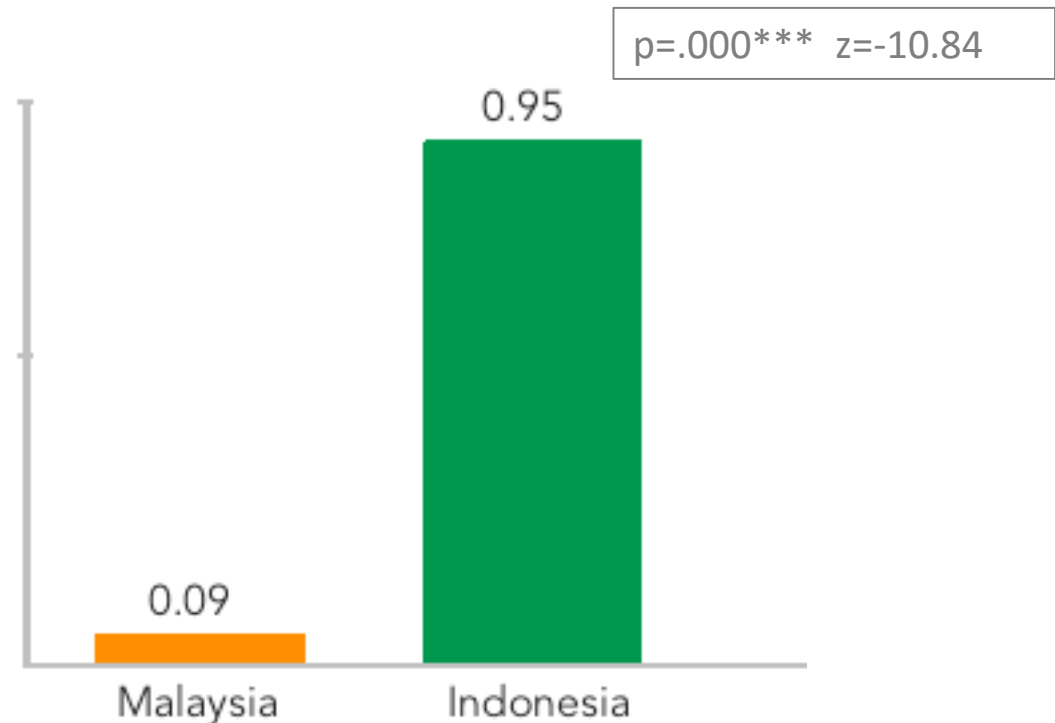
Findings: Adaptive Capacity

Legitimacy

Innovation

Adaptive Problem Solving

Can you easily change what you're doing to protect the reef if you observe that what you are currently doing is not working?





Main Takeaways:

- Co-management institutions increase ecosystem services
- Adaptive capacity, in the form of increased legitimacy, innovation, and adaptive problem solving, was greater in co-managed systems
- Socio-ecological systems approaches are necessary to determine what works in a comparative way

Policy Recommendations:

Qualitative management

- Information shortages
- fragmented program overload

Qualitative Management: no science in parks

Institutions dedicated to diversification and transitions

Co-managed systems at the village level

Greater role for provincial government (do your job)

Gradual devolution:

- “pockets of adaptive capacity”
- stakeholders vs. villagers