

Proceedings of Islands and Oceans Net
2nd General Meeting

6-7 December 2016
The Sasakawa Peace Foundation Building
Tokyo, Japan

Supported by
日本財団
THE NIPPON FOUNDATION

THE SASAKAWA PEACE FOUNDATION
THE OCEAN POLICY RESEARCH INSTITUTE

Islands and Oceans Net
2nd General Meeting
6th to 7th December 2016
net

ANCORS
AUSTRALIAN NATIONAL CENTRE FOR OCEAN RESOURCES & SECURITY

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Proceedings of Islands and Oceans Net 2nd General Meeting

March 2017

Ocean Policy Research Institute, The Sasakawa Peace Foundation
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Foreword

The oceans, which covers 70 per cent of the earth's surface, has in recent years been experiencing various changes. The small island countries dotting the oceans are of course significantly affected by such changes and are now struggling to deal with them. Furthermore, the sustainable development, use, conservation and management of small islands and their surrounding ocean areas are not problems restricted to the island states alone, but are also challenges facing the international community as a whole, an idea that has come to be shared worldwide since the adoption of Agenda 21 at the Rio Earth Summit in 1992.

OPRF, the forerunner of OPRI-SPF, recognizes these difficulties, and from 2009 began collaborating on research with ANCORS and experts from Pacific States that resulted in joint policy recommendations "For the Better Conservation and Management of Islands and Their Surrounding Ocean Areas", which we submitted as contributory papers to the Rio+20 Secretariat, the SIDS 2014 Preparatory Meetings and the Open Working Group for the SDGs. The Proposal focuses on three areas, namely (i) Conservation and Management of Islands, (ii) Management of the Surrounding Ocean Areas, and (iii) Response to Climate Change and Variability. Furthermore, based on the assessment and analysis of the current situations in each area and considering the issues identified, we also have made recommendations on Capacity Building and Institutional Strengthening to facilitate required measures effectively.

In September 2014, 21 Heads of State and about 3,500 delegates attended SIDS 2014 and adopted an international action plan entitled "Small Island Developing States Accelerated Modalities of Action [S.A.M.O.A.] Pathways." We were happy to see that many points of our recommendations were included in S.A.M.O.A. Pathways.

OPRI (then OPRF) organized jointly with ANCORS a side event in order to discuss concrete actions for policy implementation. We had the honour of His Excellency Tommy Remengesau, Jr., President of the Republic of Palau, attending along with about 80 persons from various countries, organisations and groups with an interest in these issues, to discuss concrete measures to implement our joint recommendations. On this occasion, OPRI proposed to establish the Islands and Oceans Net(IO-Net) as an international collaborative multi-partner network with the voluntary participation of international and regional organisations, governments, academia, businesses and individuals from civil society who are in agreement with the aims of our recommendations. Our proposal was unanimously supported by all the participants of the side event.

Pacific island States and international organizations, as well as universities, research institutes, and NGOs in the Pacific region have conveyed to us their keen interest in and support of the IO-Net. Organizations and individuals from the Japanese government, industry, academia, foundations and NGOs have also

expressed significant interest. Our task now is to articulate concrete steps to promote activities, as the varied organizations and individuals who have expressed interest voluntarily participate and coordinate their activities in the IO-Net, as "Partners". It is important that partners from a variety of sectors come together and that island states and the international community collaborate and coordinate their activities.

Following our 1st General Meeting held in May of 2015, we were pleased to convene the 2nd General Meeting from 6-7th December, 2016, participated by over 120 Partners from the Pacific region, Japan, and international society, from a variety of sectors, including governments, international and regional organizations, universities and research institutes, NGOs, and business sectors who are in agreement with the aims of the IO-Net.

It is our sincere hope that those "Partners" in attendance at the 2nd General Meeting make it the starting point for collaborative and cooperative use of their respective positions and capacities in work towards the sustainable development, use, appropriate conservation and management of islands and their surrounding ocean areas.

The Ocean Policy Research Institute, Sasakawa Peace Foundation

Islands and Oceans Net (IO Net) 2nd General Meeting Programme

Date: 6th – 7th December, 2016

Venue: 11 F International Conference Hall, The Sasakawa Peace Foundation Building, Tokyo, Japan

Tuesday, December 6th		
10:00-10:50	Opening Ceremony	Mr. Hiroshi Terashima, President, The Ocean Policy Research Institute, the Sasakawa Peace Foundation (OPRI-SPF)
		Prof. Stuart Kaye, The Australian National Centre for Ocean Resources and Security (ANCORS)
		Mr. Noriyuki Shikata, Deputy Director General, Asian and Oceanian Affairs Bureau, Ministry of Foreign Affairs, Japan
		Mr. Roger Cornforth, Deputy Director General, Secretariat of the Pacific Regional Environment Programme
		Dr. Braulio Ferreira de Souza Dias, Executive Secretary, Secretariat of the Convention on Biological Diversity (CBD) (Video Message)
	Photo Session	All Participants
10:50-11:00	Coffee Break	
11:00-12:30	The Development of International Joint Policy Recommendations and the History of the Islands and Oceans Net (IO Net)	OPRI-SPF (Secretariat)
	Session 1: Conservation and Management of Islands Moderators: Mr. Hiroshi Terashima, President, OPRI-SPF Mr. Roger Cornforth, Deputy Director General, SPREP	
	a. Development of Island Management Strategies	Dr. Keita Furukawa, Senior Research Fellow , OPRI-SPF "Implementation of the Ocean Policies in Japan"
		Ms. Lani Milne, Chief, Coastal, Land and Conservation Division, Marshall Environment Protection Authority
		Mr. Cyrille Barnerias, Senior Environmental Specialist, Global Environment Facility (GEF) "The Global Environment Facility International Waters Focal Area"
12:30-13:30	Lunch Break	
13:30-14:40	Session 1: Conservation and Management of Islands (Cont.) Moderators: Hiroshi Terashima, President, OPRI-SPF Mr. Roger Cornforth, Deputy Director General, SPREP	
	b. Increased Safety and Resilience of Island Communities	Prof. Hajime Kayanne, The University of Tokyo "Ecosystem-based Coastal Protection of Atoll Island Countries Against Sea Level Rise"
		Prof. Tomoya Shibayama, Professor, School of Creative Science and Engineering, Waseda University

		"Prevention of Natural Disasters under Climate Change: Integrated Coastal Zone Management for Mitigation of Disasters in the Independent State of Samoa"
		Mr. Faainu Latu, Head of Science Department, Senior Lecturer Environmental Science, The National University of Samoa
		Mr. Satoru Mimura, Deputy Director General, Global Environment Department, Japan International Cooperation Agency (JICA) "Disaster Risk Reduction in Small Island Developing States Based on International Frameworks"
14:40-15:00	Coffee Break	
15:00-17:25	Session 1: Conservation and Management of Islands (Cont.) Moderators: Mr. Hiroshi Terashima, President, OPRI-SPF Mr. Roger Cornforth, Deputy Director General, SPREP	
	c. Implementation of Waste Management	Dr. Mimpei Ito, Director, Environmental Management Division 1, Global Environment Department, Japan International Cooperation Agency, Japan International Cooperation Agency (JICA) "The Needs for the Waste Management in the Pacific Region and JICA's Assistance"
		Ms. Imogen Ingram, Secretary-Treasurer, Island Sustainability Alliance CIS Inc. (ISACI) Cook Islands "Development of Sustainable Waste Management in Pacific Small Island Developing States"/" Growth of Lagoon Algae in Rarotonga Caused by Poor Wastewater Management"
		Mr. Carl Bruch, Director, International Programs, Environmental Law Institute "Fighting Marine Litter: Legislative Options"
	d. Development of Renewable Energy	Ms. Frances Debra Brown, Assistant CEO, Environment Sector Coordination, Ministry of Natural Resources and Environment, Samoa "Better Conservation and Integrated Management of Islands and Their Surrounding Oceans"
	e. Conservation of Coral Reefs and Mangrove Forests	Dr. Keita Furukawa, Senior Research Fellow, OPRI-SPF "Coastal Ecosystem (Coral Reef, Mangrove Forests and Seagrass bed) Conservation Project using ICM Package"
		Mr. Andrew Benedict Foran, Head, IUCN Pacific Centre for Environmental Governance, IUCN Oceania Regional Office "Mangrove Conservation and Renewable Energy in the Pacific Islands"
		Dr. Yimnang Golbuu, Chief Executive Officer, Palau International Coral Reef Center
		Mr. Kenn Mondiai, Executive Director/Senior Forestry Officer, Partners With Melanesians Inc.
		Mr. Ricky Carl, Director, External Affairs, The Nature Conservancy-Micronesia Program
17:25-17:35	Wrap-up for the Day	
18:00-20:00	Reception	

Wednesday, December 7th		
09:00-11:20	Session 2: Management of the Surrounding Ocean Areas Moderators：Prof. Stuart Kaye, Director, ANCORS Mr. Michael Petterson, Director, Geoscience Division, Pacific Community (SOPAC/SPC)	
	a. Establishment of Baselines and Maritime Limits	Prof. Stuart Kaye, Director, ANCORS "Potential Impact of the South China Sea Arbitration on Maritime Jurisdiction in the Pacific"
		Mr. Yoshi Kawamura, Senior Coordinator for International Cooperation Planning Department, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) / Dr. Michiyo Shimamura, Coordinator, Innovation Promotion Office via Marine-Earth Science and Technology, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) "Effective Utilization of Research Vessel Transition"
	b. Implementation of Practical Fisheries Management Policies	Mr. Taratau Kirata, Senior Fisheries Officer, Ministry of Fisheries and Marine Resources Development, Kiribati "Implementation of Practical Fisheries Management Policies"
		Mr. Hisashi Endo, Executive Director, Japan Fisheries Research and Education Agency "Sustainable Fisheries Management -Conflict & Cooperation-"
		Mr. Makoto Suzuki, Fisheries Manager Japan, Marine Stewardship Council "Fisheries in the Pacific Island Countries and MSC certification"
	c. Maintenance and Securing of Shipping Services	Mr. Hiroaki Terashima, Management Advisor and Senior Consultant, IC Net Inc. "Sustainable Sea Transportation in the Pacific: Current Situation and Initiatives of the University of the South Pacific"
	d. Exploitation of Marine Mineral Resources and Preservation of Marine Environment	Mr. Michael Petterson, Director, Geoscience Division, Pacific Community "Deep Seabed Mineral Activities in the Pacific Islands Region"
		Dr. Hiroyuki Matsuda, Professor, Faculty of Environment and Information Sciences, Yokohama National University "Seabed Resource Development Reconciling with Marine Environment"
	e. Conservation and Sustainable Use of the Marine Environment and Marine Biodiversity	Ms. Imogen Ingram, Secretary-Treasurer, Island Sustainability Alliance CIS Inc. (ISACI) Cook Islands "Purse Seine Fishing versus National Marine Park"
11:20-11:35	Coffee Break	
11:35-13:15	Session 3: Response to Climate Change and Variability Moderators：Dr. Toshio Yamagata, Director, Application Laboratory, JAMSTEC Dr. Anjeela Jokhan, Dean, Faculty of Science, Technology & Environment, The University of South Pacific	
	a. Adaptation to Climate Change and Variability by Island Societies and Response to International Law Issues	Mr. Satoshi Wakasugi, Director, Pacific and Southeast Asia Division 6, Southeast Asia and Pacific Department, Japan International Cooperation Agency (JICA) "JICA and Climate Change in SIDS: JICA's Approach to Climate Change in the Pacific"
		Mr. Roger Cornforth, Deputy Director General, SPREP "SPREP's Response to Climate Change and Variability"
		Mr. Tomohiko Tsunoda, Senior Research Fellow, OPRI-SPF "Construction of Monitoring Platform on Ocean Acidification"
		Dr. Mikiyasu Nakayama, Professor, Department of International studies, Graduate School of Frontier Sciences, The University of Tokyo

		"Relocation and Livelihood Re-Establishment of Climate Refugees in the Pacific"
		Ms. Sofia Yazykova, Visiting Attorney, Environmental Law Institute "From Adaptation to Migration"
		Mrs. Gisa Fuatai Purcell, Regional Advisor, Pacific, The Commonwealth Telecommunication Organization "ICT4CC - Implementing SDG Policies"
13:15-14:15	Lunch Break	
14:15-15:30	Session 4: Capacity Building and Institutional Strengthening Moderators: Mr. Hiroshi Terashima, President, OPRI-SPF Mr. Roger Cornforth, Deputy Director General, SPREP	
	a. Capacity Building and Institutional Strengthening	Dr. Anjeela Jokhan, Dean, Faculty of Science, Technology & Environment, The University of the South Pacific "USP's Role in Capacity Building and Institutional Strengthening in the Pacific Region"
		Mr. Jonathan Gilman, Regional Development Coordinator, UN Environment Programme "Partnerships for a Resilient Low Carbon Pacific"
		Mr. Soichiro Kojima, Senior Coordinator, Development Assistance Policy Coordination Division, Ministry of Foreign Affairs, Japan "Capacity development -Implementation of Japan's ODA in the Pacific-"
		Mr. Shinichi Ichikawa, Head of the Ocean Education Team, OPRI-SPF "Human Resource Development and Network under the WMU Scholarship Programme by the Sasakawa Peace Foundation"
15:30-15:50	Coffee Break	
15:50-17:20	Discussions on the Development of Future Activity Plans and their Adoption Moderators: Mr. Hiroshi Terashima, President, OPRI-SPF Prof. Stuart Kaye, Director, ANCORS	
17:20-17:30	Closing Ceremony	Mr. Hiroshi Terashima, President, OPRI-SPF

Session1 :

Conservation and Management of Islands

THE SASAKAWA PEACE FOUNDATION
THE OCEAN POLICY RESEARCH INSTITUTE

Development of Island Management Strategies

Keita Furukawa, Dr.(Eng.)
Ocean Policy Research Institute, SPF

1

Ocean Governance

Back-Ground

- Dramatic rise of world's population
- Global Warming / Ocean Acidification
- Marine Pollution / Dead Zone
- Marine Litter, Plastics and Micro-Prastics
- Resource depletion and environmental degradation

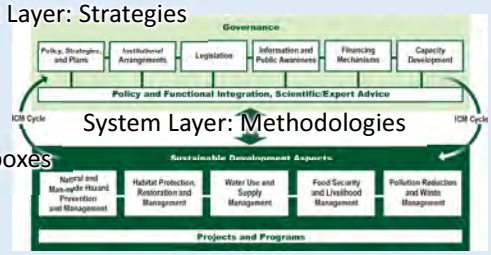
Flame-works

- 1982 Adoption of UNCLOS
- 1992 Agenda 21 / Rio summit
- 2002 Implementation Plan / WSSD
- 2012 The Future We Want / Rio+20
- 2015 SDG goal14 / The 2030 Agenda for SD
- 2015 Paris agreement / COP21, UNFCCC

2

Development of Island Management Strategies

Target Layer: Strategies



System Layer: Methodologies

Tool boxes

(after PEMSEA)

3

For Sustainable Development of Islands

Target Layer: Strategies

Safety and Security | *Sustainable Development* | *Human well-being*

System Layer: Methodologies

EBM | ICM | CBM

Tool boxes

Eco-Engineering | *Disaster Prevention* | *Scientific Research*

4

Integrated Coastal Management

Basic Act on Ocean Policy (2007)

Basic Plan on Ocean Policy (2008)

Headquarters for Ocean Policy

12 Basic Measures

5

Integrated Coastal Management

Basic Act on Ocean Policy (2007)

Basic Plan on Ocean Policy (2008)

Headquarters for Ocean Policy

1. Promotion of the development and use of marine resources

8. Promotion of Marine Industries and Strengthening International Competitiveness

6

Integrated Coastal Management

Basic Act on Ocean Policy (2007)

Basic Plan on Ocean Policy (2008)

Headquarters for Ocean Policy

Basic Plan on Ocean Policy (2013)

Implementing ICM, and offer assistance to regions making their own ICM Plan

7

For the better promotion of Local Coasts

- ICM Formulations

EBM Processes
- Diagnostic Assessments

CBM Processes
- 5 steps

Network of LG

Promotion of Local Community

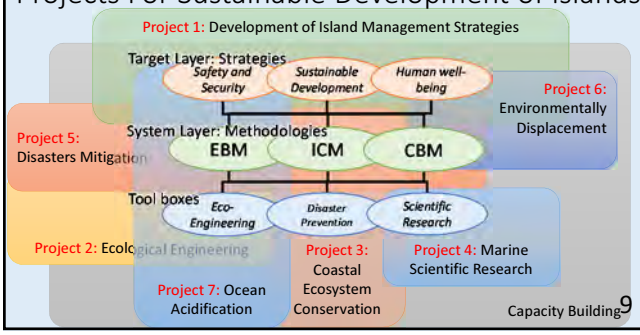
Supports
- Governments, Scientists

Institutional Arrangements

Ocean Education, Capacity Building

8

Projects For Sustainable Development of Islands



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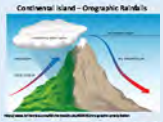
POTENTIAL PROJECT 1

2-1 Conservation and Management of Islands

Development of Island Management Strategies

Leading Organizations:
Kiribati, ORPI-SPF

Potential Partners:
International Organization (UNDP, CBD, IUCN etc.), Government of Island States (local and National), Research Institutions (ANCORS, SPREP, USP etc.)



Goal: To assist countries in the development of strategic planning and implementation of island-scale management decisions on their own, in accordance with UNCLOS and other international frameworks.

Development of Island Management Strategies(2-1.a)

10

POTENTIAL PROJECT 1

2-1 Conservation and Management of Islands

Development of Island Management Strategies

Proposed Steps of Action:

■ Ocean Policy Study Group
- Establishing common understanding and views on policy formation among multi-stakeholders

■ Institutional Arrangements
- Establishing a basic legal framework and mechanism to cope with the comprehensive management and sustainable development of Oceans
- Establishing a cross-sectoral authority to build up and implement the legal framework and policies

■ Basic Plans on Ocean Policy
- Establishing a basic plan built on the Institutional Arrangements subject to periodical reviews

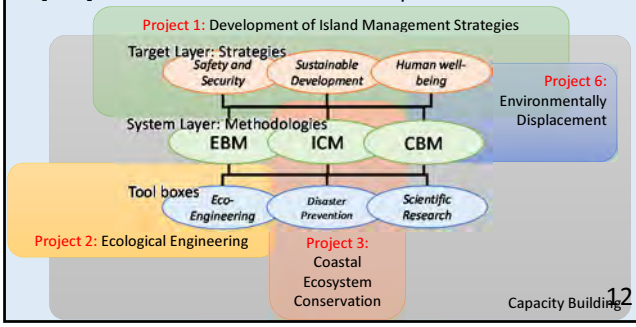
* Above steps should be followed taking into account each state's topographical, bio-physical and socio-economic characteristics.

Capacity-Building

Development of Island Management Strategies(2-1.a)

11

[ex.] For Sustainable Development of Kiribati



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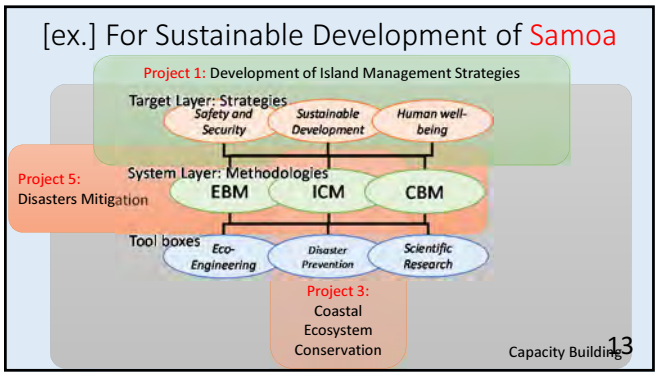
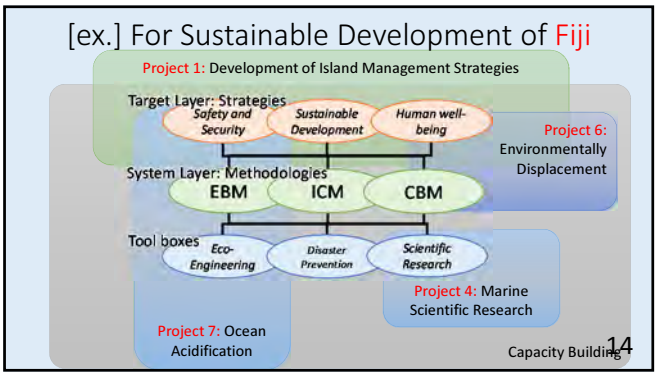

[ex.] For Sustainable Development of Samoa
Project 1: Development of Island Management Strategies
Target Layer: Strategies
Safety and Security
Sustainable Development
Human well-being
Project 5: Disasters Mitigation
System Layer: Methodologies
EBM
ICM
CBM
Tool boxes
Eco-Engineering
Disaster Prevention
Scientific Research
Project 3: Coastal Ecosystem Conservation
Capacity Building
13


[ex.] For Sustainable Development of Fiji
Project 1: Development of Island Management Strategies
Target Layer: Strategies
Safety and Security
Sustainable Development
Human well-being
Project 6: Environmentally Displacement
System Layer: Methodologies
EBM
ICM
CBM
Tool boxes
Eco-Engineering
Disaster Prevention
Scientific Research
Project 4: Marine Scientific Research
Project 7: Ocean Acidification
Capacity Building
14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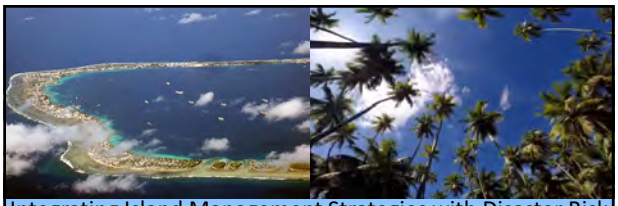
Development of Island Management Strategies
Thank you for your Attentions
15



Integrating Island Management Strategies with Disaster Risk Management to Protect Atoll Habitability

Lani Milne

RMI-Environmental Protection Authority

Island Management Strategies

- Coastal Management Framework
- Reimaanlok
- PAN Legislation
- Ridge to Reef Program (GEF)
- Disaster Risk Reduction

Coastal Management Framework

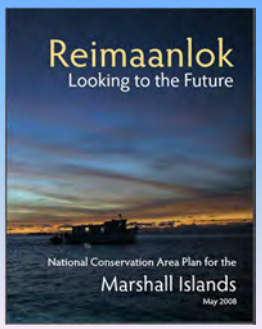
- Coastal Conservation Act 1988

- Recommend proposals for action and policy for the RMI to achieve sustainable future development and remedy past development in and around the coastal zone of the RMI.

-NEPA 1989
-Earthmoving Regulations 1989
- EIA Regulations 1994

Reimaanlok -*"Looking into the future"*

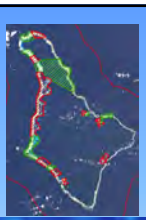
- National Conservation Area Plan for the Marshall Islands
  - May 2008
  - Outlines strategies to achieve the Micronesia Challenge by committing to effectively conserve 30% near shore marine areas and 20% terrestrial resources by 2020.
  - Threatened by increase pressure on fisheries, climate change and sea level rise, urbanization, and loss of traditional subsistence lifestyle.
  - 2 types of conservation: subsistence only and special reserves.
  - Reconnect the people to the environment, to ensure sustainable use of resources and food security.



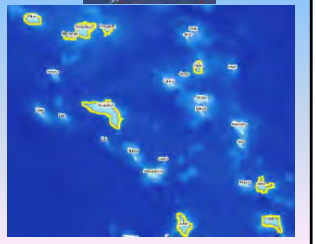
Reimaanlok Status by Atoll/Island

Pending	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Status of Reimaanlok Community-Based Resource Management Planning by Site – February 15, 2016								
Aur Jabat Utrik	Meloelap	Jemo	Rongelap	Wotho	Wotje	Majuro-Ebeye	Bikini	
Kwajalein	Mili	Arno	Ujae	Ebon	Majuro-Woja	Namdrik	Ailuk	
Ailinglaplap	Enewetak		Lae		Majuro-Rita/Delap		Jaluit	
Ediklub Ujelang	Namu		Lae		Majuro-Rita/Airport		Likiep	
Jemo Taka Rongerik	Kili		Mejit		Majuro-Laura			
Bokaak Bikar Ailinginae	Jaluit				Ailinginae			

Protected Area Network



- A Protected Areas Network (PAN) will allow the Marshall Islands to integrate all protected areas into a single system
  - Allows more effective monitoring and enforcement
  - Provides mechanism for funding distribution to protected areas
- Benefits priority issues
  - Biodiversity, CC Adaptation
  - Disaster risk management
  - Food security
- Parliament endorsement Sept 2015
- Operationalize and strengthen implementation of the Reimaanlok



Implication of PAN on Fisheries

- Strengthen community involvement in managing their marine resources
- Assist in providing resources to communities (technical and/or financial)
- Streamlines the process for communities and relevant CMAC partners
- Possible linkage with National Fisheries Revenues

Challenges & Constraints

- Reimaanlok & PAN
  - Geographic isolation & logistical challenges
  - Limited resources /capacity (human and finance)
  - Limited outreach to raise awareness on coastal issues
  - Limited alternative livelihoods & incentives
  - Lack of effective monitoring systems
  - Lack of baseline data to inform policy & practice
  - Lack of appropriate laws and enforcement capacity
  - Very weak climate lens in the process

Ridge 2 Reef (GEF 5)

Project title:
Reimaanlok: Strengthening natural resource management in atoll communities in the RMI, by employing integrated approaches

- Main components
  - Expanding and sustaining RMI PAN
  - Improve governance for integrated atoll management
  - Knowledge management

Url: http://www.sprep.org/biodiversity-ecosystems-management/bringing-lost-forests-back-to-life-in-the-solomon-islands

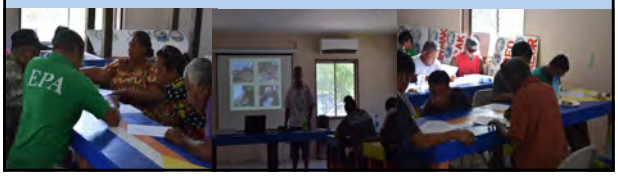
Recent projects for island and coastal management and disaster risk reduction

- EU Funded Global Climate Change Adaptation Project – Woja Causeway in the RMI. (Url: http://www.spc.int/en/media-releases/2278-coastal-protection-project-opened-in-ailinglaplap-marshall-islands.html)
  - Construction of a causeway in Woja Ailinglaplap, using locally available materials to promote a more ecological approach
  - Involving local communities for shoreline re-vegetation activities

Coastal area and causeway construction in Woja Ailinglaplap

Using local materials and vegetation with the ecosystem based approach

- Stakeholder dialogue workshops and surveys supported by Sasakawa Peace Foundation – Small Island Nations Fund for coastal and island resource management.
  - Observing the people's increased recognition on coastal erosion,
  - Noting terrestrial and marine resource depletion and alteration (exotic seaweed species)
  - Concern on limited capacity for managing local resources and diversifying resource use and livelihood management



- Jenrok Community Disaster Response Plan/Group
  - Pilot Project implemented by RMI Red Cross and the NDMO to develop National Communication Early Warning System.

- Technical guidelines for coastal protection
  - Funded by US DOI
  - Collaborative effort to develop more detailed guidance on technical aspects of implementing the various terrestrial and marine-based soft, hard, and hybrid options for coastal protection.
  - Address challenges and opportunities within the RMIEPA Earthmoving permit application and review process, as well as berm-building by the Min. of Public Works.

RMI Vision 2018

"…to become a country within an inter-dependent world, with an enhanced socio-economic self reliance, an educated, healthy, productive, law-abiding and God-loving people in which freedom and fundamental human rights are protected and culture and traditions are respected and development and environmental sustainability are in harmony." – RMI's Strategic Development Plan Framework 2003-2018

Goal 10: Environmental Sustainability :

i) Strengthening the relevant institutions and improve procedural mechanisms, so as to be able to secure the optimum support from both international and regional efforts, in minimizing the adverse impacts of Climate Change.

Objective 3: Enhance the level of awareness and commitment among all people in the community to contribute to minimizing of environmental degradation.

RMI-EPA's Mission:

i) Look after the natural environment of the Marshall Islands;

ii) Ensure sustainability of resources and ensure a balance between economic development and the environment; and

iii) Enhance the quality of life (public health and safety) of our people.

Calls for support to proposed projects

- Operationalizing the PAN in the field by reinforcing sustainable management of coastal resources and diversifying livelihood
- Demonstrating the models, measures and approaches for increasing resilience to climate change (drought, flood, temperature changes),
- Coastal Profiling for Majuro, Ebeye, Jaluit and Wotje (or most populated islands in the RMI)
- Community adaption and building resilience frameworks for coastal communities (Upgrade Reimaanlok Steps/Process)
- Enhancing institutional and policy capacity for implementation and monitoring,
- Developing human resources for addressing SIDS challenges and promoting sustainability with increased policy and science interface and international partnership

Additional Information/Links

- Woja Causeway Project Video
  - (https://youtu.be/rmFJ3fHVbZ0)
  - (https://www.youtube.com/watch?v=AunhShf0E5o)

Session 1 a.

The Global Environment Facility International Waters Focal Area

2nd Islands and Oceans Net General Meeting

Tokyo, Japan – December 2016

Cyrille Barnérias
Senior Environmental Specialist
GEF International Waters
cbarnerias@thegef.org

www.theGEF.org

Concerns of International Waters & People, Ecosystems, and Development

- Transboundary Pollution: → Water unusable, diseases
- Wasteful Water Use: → Droughts, floods conflicts
- Groundwater quality & quantity → drinking water, food shortages
- Overfishing/Depleted Oceans → Diminishing catches Livelihoods & $
  100 billion in annual trade in jeopardy
- Habitat loss: → coastal blue forests; invasive species, local livelihoods

Regional Stability, Security, Resilience and Economic opportunity at risk

www.theGEF.org

GEF International Waters Focal Area

International Waters (IW) includes transboundary rivers, lakes, and groundwater basins; also oceans, coasts, Large Marine Ecosystems and connected river basins

www.theGEF.org

GEF International Waters Portfolio

GEF is largest investor in multi-country collective management of transboundary water systems: $1.6 billion GEF/$10.3 billion co-financing totaling more than 230 projects since 1995.

170 GEF recipient countries are cooperating with 23 non-recipient countries on their particular shared water systems.

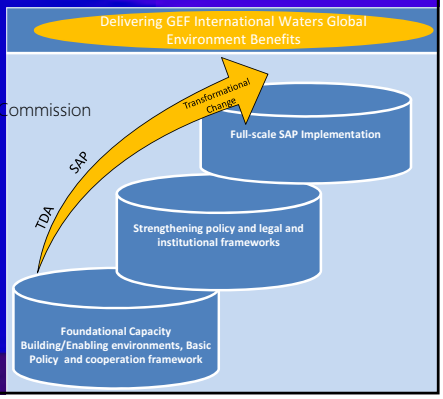
In working to reverse fisheries depletion, reduce water pollution, and balance conflicting water uses through IWRM, GEF contributes to water, environment, and community security as well as regional stability.

Simplistic ill. on GEF IW investment modalities

- Pacific islands SAP
- Benguela Current Commission

30 SAPs

36 TDAs



www.theGEF.org

Western and Central Pacific Tuna Fisheries (GEF/UNDP)

- Tuna >10% of regional GDP
- Brought together 15 SIDS to regulate and manage tuna fisheries
- Built up every Means of Implementation
  - Partnerships, financing, capacity building, technology, trade, and data and statistics + *policy*
- In 7 countries surveyed, GDP contribution of fishing increased 50-1,000%

www.theGEF.org

Pacific Ridge to Reef Program

- 14 Countries
- 1 Regional Project,
- 13 (14) National Projects
- Addressing environmental pressures from Ridge to Reef

www.theGEF.org

Pacific R2R

- $91millions of GEF grants+$330millions of co-financing. UNDP, FAO, UNEP + Pacific community + countries
- Guiding principles: inter-connections, community to cabinet approach, gender mainstreaming, supporting planning …
- Fostering resilience: secure livelihoods, food security, drought/flood preparedness, enhance benefits from fishing.

www.theGEF.org

Pacific R2R

www.theGEF.org

Other marine projects in the pacific

- PROP: Pacific Islands Regional Oceanscape Program
- The Dugong and Seagrass Conservation Project
- Implementation of the Arafura and Timor Seas Regional and National Strategic Action Programs

www.theGEF.org

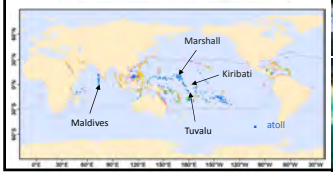
Thank you!

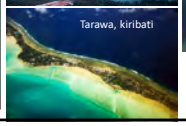
www.theGEF.org

Distribution of atolls

Number of atolls					
Pacific Ocean	392				
Micronesia	88	Polynesia	107	Melanesia	29
SE Asia	114	Australia	54		
Indian Ocean	67				
Central	41	West	25	Middle East	1
Atlantic Ocean	23				
N. Caribbean	4	W. Caribbean	15	E. Caribbean	4
計	482				

	Number of atolls	Population (10 thousand)
Pacific Ocean		
Federated States of Micronesia	30(29)	13.3
Republic of the Marshall Islands	28(20)	6.8
Tuvalu	6(5)	1.1
Republic of Kiribati	26(14)	9.2
Cook Islands	8(6)	2
French Polynesia	79(43)	24.9
Indian Ocean		
Republic of Maldives	22(22)	30.1
Total		87.4





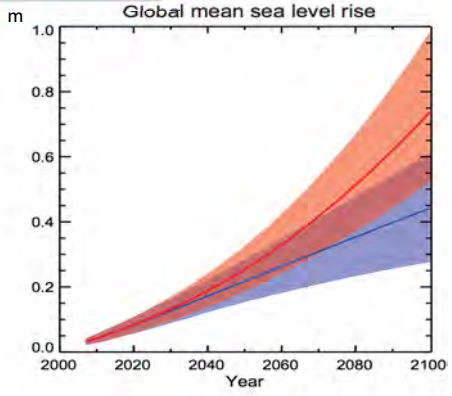
Coastal erosion, wave over-topping and inland inundation in small island countries during storms and spring high tide.

Nukutoa,Takuu Atoll, PNG

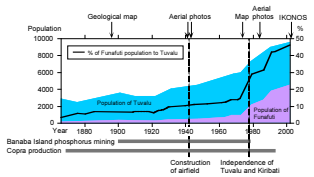
Batio, Tarawa Atoll, Kiribati

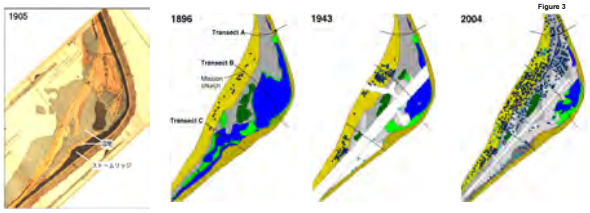
Global threats

IPCC AR5 (2013)



Land use: expansion of residential area to vulnerable low land





Fongafale Is, Funafuti, Tuvalu

Yamano et al. (2007)

サンゴ礁 coral reef

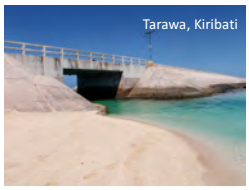
サンゴ礫 coral gravels

有孔虫砂
foraminifer sand

Constructions against natural process

Vertical sea walls prevent sand sedimentation at their foots.

Causeways prevent sand transportation



from ocean to lagoon

or release to deep ocean through boat channel.

Hard structure measures (grey technology) intercept land and sea, and sometimes counteract with ecosystem-based coastal processes.

Ecosystem-based coastal protection

Beach nourishments
(not vertical seawalls)

Fongafale Is, Funafuti, Tuvalu

JICA technical cooperation project
(photos by Nippon Koei)

Sewage treatment by bacteria and seawater

(Fujita 2016)

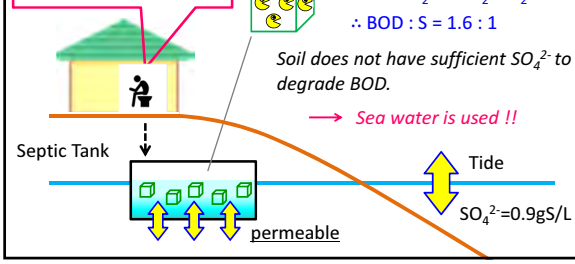
Organic matter
= 18gBOD/PE/d
SO_4^{2-} = 0.4gS/PE/d
∴ BOD : S = 45 : 1

Immobilization carrier of
Sulfate-reducing bacteria

$BOD + SO_4^{2-} \rightarrow H_2S + CO_2 + H_2O$
∴ BOD : S = 1.6 : 1

Soil does not have sufficient SO_4^{2-} to degrade BOD.

→ *Sea water is used !!*



11

Production

Improvement of coastal eivironment is required bofore or in parallel with any ecosystem rehabilitation challenges.

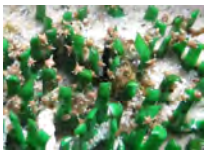
Then we can adopt ecotechnology.

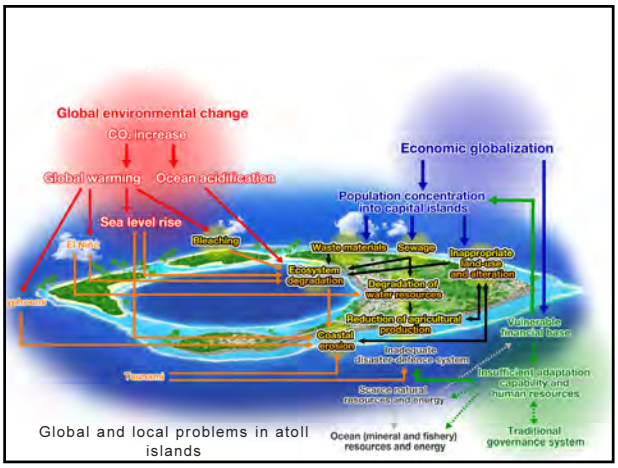
Coral culture and transplantation

Okinotorishima

Foram culture

Tuvalu





Global and local problems in atoll islands

Ecosystem-based management (green (blue) technology) and grey (concrete) technology

- Only ecosystem-based management cannot save small island countries from rising sea level.
- Any grey countermeasure works must NOT coflict with, and should enhance natural ecological process which forms the island and coast.
- Combined grey and green technologies are necessary.

For ecosystem-based management to be implemented in small island countries.

- Basic data (elevation, land-use, habitat) are necessary, which most small island countires do not have.
- Understanding by local people and government.
- Planning and continuing management by local people and government.

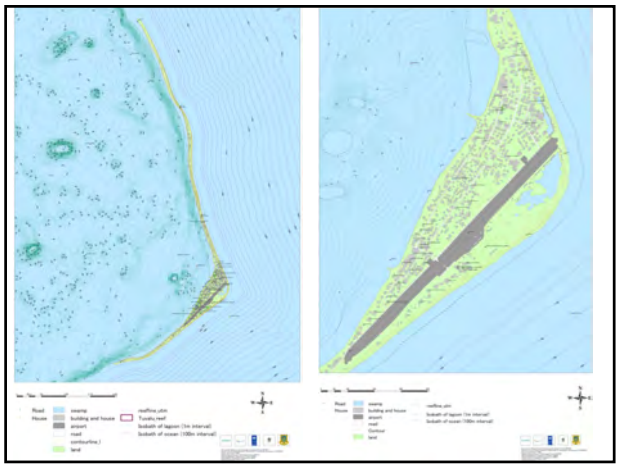
Cardboard diorama

UNITAR Women's Ledership in Tsunami-based DRR Training Programme, Sendai (2016.11.1)

Assembling island landform from the parts subdivided by elevation.

Cardboard diorama
- needs basic data of elevation, land-use and habitat
- enhances understanding,
- help planning and management.


FONGAFALE 1:5,000
TV- Vk -



The 2nd General Meeting of the Islands and Oceans Net
December 6, 2016

Prevention of Natural Disasters under Climate Change

Integrated Coastal Zone Management for Mitigation of Disasters in the Independent State of Samoa

Tomoya Shibayama
Waseda University

Cooperation between
National University of Samoa and
Waseda University

Integrated Coastal Zone Management:

Disasters + Global Warming + Coral Lagoon + Environment

Natural Disasters over the World:

Tsunami, Storm Surge, High Wave (Coastal Erosion), Earthquake, Fire, Flood, Liquefaction, Drought, Landslide, Volcanic Eruption

Basic Approach

① Field Survey＋Numerical Simulation＋Hydraulic Experiment
Creation of Real Image of Disaster
Common Images with Local Residents

② Variety of different scenarios of disasters in local conditions
It is necessary to decipher the social context of disasters,
to prepare disaster reduction scenarios, and
to work with local government staffs and local residents.

2

International Platform for Disaster Research

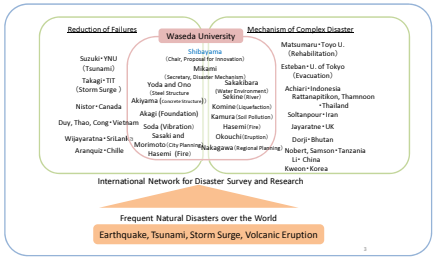


Figure: Study Team

Members of WAYCEM
Chair: Prof. Tomoya Shibayama, Waseda University
Dr. Nguyen Ngoc An: Department Chair, HoChiMinh City University of Technology
Dr. Winyu Rattanapitikon : Associate Professor, SIIT, Thammasat University
Dr. Michael Kabiling: Taylor Eng. Inc.
Dr. Nguyen The Duy : Senior Lecturer, HoChiMinh City University of Technology
Dr. Wudhipong Kittitanasuan: Wishakorn Consultants
Dr. Ioan Nistor: Associate Professor, University of Ottawa
Dr. Nimal Wijayaratna: Senior Lecturer, Moratuwa University
Prof. Li Shaowu: Professor, Tianjin University
Dr. Mohsen Soltanpour: Associate Professor, K.N. Toorsi University of Technology
Dr. Masimin: Senior Lecturer, Syah Kuala University
Dr. Kweon Hyuck Min: Associate Professor, Kyonju University.
Dr. Jayaratne Ravindra, Senior Lecturer, Univ. of East London
Dr. Le Trung Tuan: Vise Director, Vietnamese Institute of Water Resources
Dr. Le Van Cong: Senior Researcher, Vietnamese Science Academy.
Dr. Joel Nobert: Assistant Professor, University of Dar Es Salaam
Dr. Miguel Esteban: Project Associate Professor, Univ. of Tokyo
Dr. Hendra Achiari: Lecturer, Bandung Institute of Technology
Dr. Nguyen Danh Thao: Director, HoChiMinh City University of Technology
Dr. Thamnoon Rasmeemasmuang: Lecturer, Burapha University
Dr. Matico Samson: Lecturer, University of Dar Es Salaam
Dr. Cheki Dorji: Principal, Royal Polytechnic University of Bhutan
Dr. Rafael Aranguiz, Lecturer, Cathric University of Concepcion

Japanese Members: Dr. Hiroyuki Katayama (Penta Ocean) Dr. Manabu Shimaya (Penta Ocean) Dr. Takayuki Suzuki (YNU) Dr. Hiroshi Takagi (TIT) Dr. Ryo Matsumaru (Toyo) Dr. Takahito Mikami (Waseda)

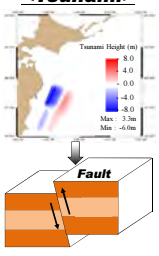
4

Frequent Attacks of Tsunamis and Storm Surges "un-predicted" and "far greater than predicted"
Recent Field Surveys of my own

Number of Losses and Unknowns

2004 Indian Ocean Tsunami Sri Lanka, Indonesia,Thailand 220,000
2005 Storm Surge by Hurricane Katrina, USA 1,200
2006 Java Tsunami, Indonesia 668
2007 Storm Surge by Cyclone Sidr, Bangladesh 5,100
1970: 400,000 1991: 140,000 (Construction of Cyclone Shelters)
2008 Storm Surge by Cyclone Nargis, Myanmar 138,000
2009 **Tsunami in Samoa Islands**, Samoa 183
2010 Chile Tsunami, Chile 500
2010 Tsunami in Mentawai islands, Indonesia 500
2011 Tohoku Tsunami, Japan Death15,782 Unknown 4,086
2012 Storm Surge by Hurricane Sandy, USA (New York City) 170 (USA80)
2013 Storm Surge by Typhoon Yolanda, Phillipines4,011+1,602
2014 Storm Surge in Nemuro, Hokkaido Island, Japan, 0

<Tsunami>



<Storm Surge>

6

Methodology 1

The Paradigm of Newtonian Mechanics and Ecosystem Model

1. Derive Equations

Physical Phenomena → Mathematical Equations

Time or Special Changes → d/dx, d/dt

Differential Equations

2. Solve the Equation Set and Get Solutions

1) linearization

2) perturbation power series $y=a_0+a_1x+a_2x^2+a_3x^3+\ldots$

3) Numerical solutions

3. Compare the solutions with laboratory or field data to evaluate accuracies

Examples: Tsunami Propagation Model Ecosystem Model

Meteorology Based Storm Surge Model

Turbulence Model for Structure Failure

7

First Step to Tsunami Simulation

- Initial Displacement -

An Example of Genroku Earthquake

Date	Place	Magnitude	Tsunami Height(m)	Death
1703. 12. 31	Near Bouso peninsula	7.9~8.2	8~20	5230

Conditions for Genroku Earthquake

Position at center		Length (m)	Width (km)	Φ (°)	θ (°)	δ (°)	Hd	Dd	Dr
Long.	Lat.								
139.8N	34.7N	65	70	N45E	N44W	30	0	3	6

Governing Equations for tsunami propagation

Mass conservation

$$\frac{\partial \eta}{\partial t}+\frac{\partial M}{\partial x}+\frac{\partial N}{\partial y}=0$$

Momentum conservation

$$\frac{\partial M}{\partial t}+\frac{\partial}{\partial x}\left(\frac{M^2}{D}\right)+\frac{\partial}{\partial y}\left(\frac{MN}{D}\right)+gD\frac{\partial \eta}{\partial x}+\frac{gn^2}{D^{7/3}}M\sqrt{M^2+N^2}=0$$

$$\frac{\partial N}{\partial t}+\frac{\partial}{\partial x}\left(\frac{MN}{D}\right)+\frac{\partial}{\partial y}\left(\frac{N^2}{D}\right)+gD\frac{\partial \eta}{\partial y}+\frac{gn^2}{D^{7/3}}N\sqrt{M^2+N^2}=0$$

Finite Difference Theme

Leap-frog Method

Methodology 2

Field Survey + Regional Study

Comparative Study of Regional Preparedness
From the views of
Prediction + Prevention + Correspondence

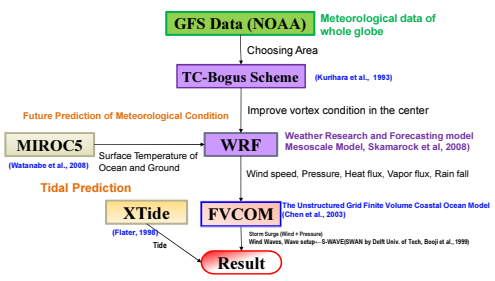
Survey Results over the world +
Long History and Experiences in Japan

It is necessary to know the different levels of preparedness based on Regional Social Structures.

10

COUPLED WEATHER-STORM SURGE-WAVE-TIDE MODEL

WRF-FVCOM-XTIDE-MIROC5



11

METHODOLOGY:

WRF : Weather Research and Forecasting model)
Skamarock et al, 2008)

Momentum Conservation

$$\frac{\partial U}{\partial t}+m^2\left[\frac{\partial}{\partial x}(Uu)+\frac{\partial}{\partial y}(Vu)\right]+\frac{\partial}{\partial \eta}(\dot{\Omega}u)+\left(\mu_d\alpha\frac{\partial p'}{\partial x}+\mu_d\alpha'\frac{\partial \overline{p}}{\partial x}\right)+\left(\frac{\alpha}{\alpha_d}\right)\left(\mu_d\frac{\partial \overline{\phi}}{\partial x}+\frac{\partial p'}{\partial \eta}\frac{\partial \overline{\phi}}{\partial x}-\mu_d\frac{\partial \overline{\phi}}{\partial x}\right)=F_U$$

$$\frac{\partial V}{\partial t}+m^2\left[\frac{\partial}{\partial x}(Uv)+\frac{\partial}{\partial y}(Vv)\right]+\frac{\partial}{\partial \eta}(\dot{\Omega}v)+\left(\mu_d\alpha\frac{\partial p'}{\partial y}+\mu_d\alpha'\frac{\partial \overline{p}}{\partial y}\right)+\left(\frac{\alpha}{\alpha_d}\right)\left(\mu_d\frac{\partial \overline{\phi}}{\partial y}+\frac{\partial p'}{\partial \eta}\frac{\partial \overline{\phi}}{\partial y}-\mu_d\frac{\partial \overline{\phi}}{\partial y}\right)=F_V$$

$$\frac{\partial W}{\partial t}+m^2\left[\frac{\partial}{\partial x}(Uw)+\frac{\partial}{\partial y}(Vw)\right]+\frac{\partial}{\partial \eta}(\dot{\Omega}w)-m^2g\left(\frac{\alpha}{\alpha_d}\right)\left[\frac{\partial p'}{\partial \eta}-\overline{\mu}_d(q_v+q_c+q_r)\right]+m^2\mu_d'g=F_W$$

Mass Conservation

$$\frac{\partial \mu_d'}{\partial t}+m^2\left[\frac{\partial U}{\partial x}+\frac{\partial V}{\partial y}\right]+m\frac{\partial \dot{\Omega}}{\partial \eta}=0$$

Scaler Conservation

$$\frac{\partial Q_m}{\partial t}+m^2\left[\frac{\partial}{\partial x}(Uq_m)+\frac{\partial}{\partial y}(Vq_m)\right]+m\frac{\partial}{\partial \eta}(\dot{\Omega}q_m)=F_{Q_m}$$

Potential Temperature

$$\frac{\partial \Theta}{\partial t}+m^2\left[\frac{\partial}{\partial x}(U\theta)+\frac{\partial}{\partial y}(V\theta)\right]+m\frac{\partial}{\partial \eta}(\dot{\Omega}\theta)=F_\Theta$$

State Law

$$p=p_0\left(R_d\theta_m/p_0\alpha_d\right)^\gamma$$

Geo-Potential

$$\frac{\partial \phi'}{\partial t}+\mu_d^{-1}\left[m^2\left(U\phi_x+V\phi_y\right)+mU\phi_\eta-gW\right]=0$$

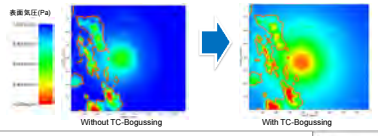
12

METHODOLOGY: WRF

TC-Bogussing Scheme

◆Using artificial Rankin vortex for initial conditions

(Kurihara et al. 1993)



Rankin Vortex $v = A[z]F[r]$

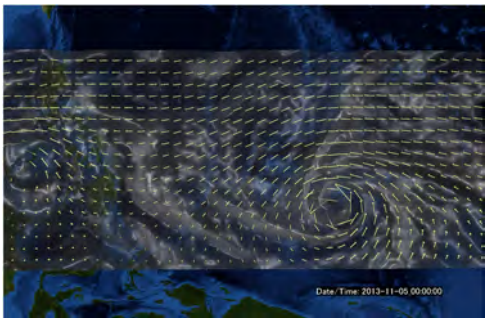
$$F(r) = \frac{v_m}{r_m} r \quad (r \le r_m)$$

$$F(r) = \frac{v_m}{r_m^{\alpha}} r^{\alpha} \quad (r > r_m)$$

v : Wind speed
v_m : Maximum velocity at the Max velocity diameter r_m
α : $Constant (\alpha = -0.75)$
$A[z]$: *Scale Factor depending on each typhoon,* 0.90 *for this case.*


Concept of Rankin vortex

13



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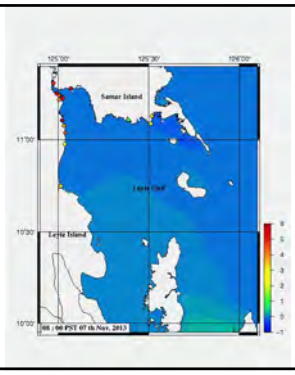

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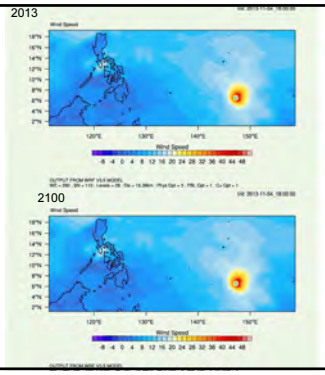

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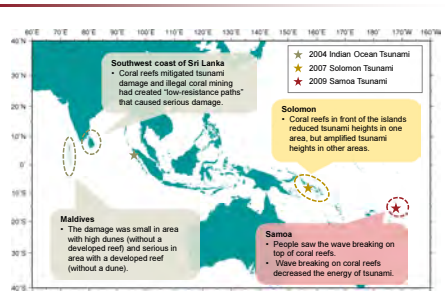
Coral reef and tsunami



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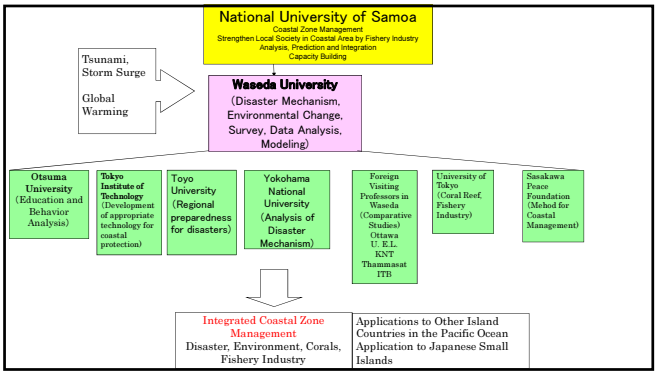


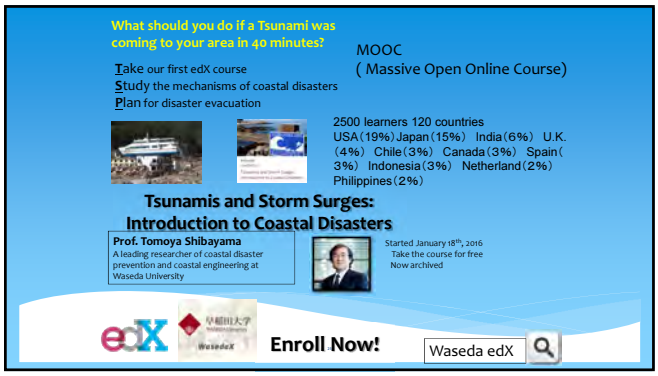
Global Warming results;

Typhoon Attacks: More Frequently and Stronger
Storm Surge, High Waves, Coastal Erosion

Tsunami

Environmental Issue in Coral Lagoon;
Water Quality
Local Society, Local Fishery

1. A detailed study of tsunami disaster in 2009 and analysis of the rehabilitation process will be performed.
2. A detailed study of the coastal lagoon ecosystem will be undertaken to identify the main sources of stress on the local biodiversity.
3. Coastal monitoring systems will be enhanced, by developing the capacity at both the institutional and personal level.
4. An integrated coastal management system including sand management will be implemented.
5. The impact of future climate change will be assessed.
6. The personal and institutional capacity of Samoa National University will be dramatically enhanced.
7. Improvement of the warning and evacuation systems for local Society.
8. As part of the evacuation and relief system, the coastal road around the island will be strengthened against coastal erosion.



Disastrous Experiences in Samoa

Faainuseiamalie Latu
Senior Lecturer Environmental Science
National University of Samoa

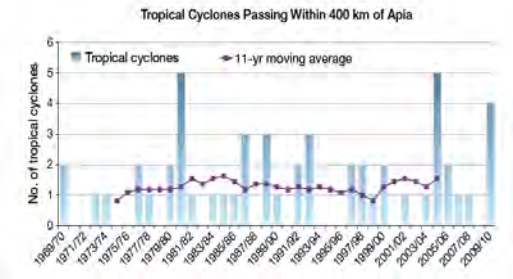
The Factors that make Samoa Vulnerable

- Small Land Masses : total land area of of approx 2,935 sq km with an EEZ of 120,00 sq km
- Small population : about 192,000 people
- 80% of the population live on coastal areas
- Small Economy, vulnerable especially to external shocks
- Limited Capacities

The Two Events That Made Disastrous Impacts in Recent Years

- 2009 Earthquake and Tsunami
- September 2009, 8.0 magnitude earthquake 200 km south of the Tonga trench produced a tsunami which caused 143 deaths in Samoa and affected 2.5% of the total population
- Future tropical and earthquake (and tsunamis) impact projections for both direct losses and emergency losses exceeds US $130 million and casualties of up to 325 people in any 50 year period
- 2009 tsunami photos

Tropical Cyclones in the South Pacific



Tropical Cyclones in Samoa

- Samoa is exposed to a number of natural hazards, including tropical cyclones, floods, earthquakes, tsunamis and drought. According to the World Bank, Samoa is ranked 30th of countries most exposed to three or more hazards
- Samoa's cyclone risk is rated as "extreme", the worst cyclones to impact Samoa in recent times are Ofa in 1990 and Val in 1991 combined these caused 21 fatalities with total economic loss of US$500 million or 4 times the countries Gross Domestic Product

2012 Cyclone Evans

- Considered the worst TC to impact Samoa since 1991
- TC Evan's made landfall on December 13, 2012 and caused widespread damage across Samoa killing 5 people and displacing more than 4,763 people
- The extent and magnitude on the economy of the effects of TC Evans were substantial : the value of damage and loss is equivalent to 29% of the countries GDP
- Total estimated value of damage and loss (physical assets, production costs) is SAT 465 million or US $203.9 million
- Video and Photos

Summary of Damage and Losses

- Productive Sectors :
- Agriculture, Livestock, Fisheries, Manufacturing, Commerce, Tourism
- Social sectors :
- Education, Health, Housing
- Infrastructure :
- Electricity, Water and Sanitation and Transport
- Cross Sectoral :
- Environment

Resilience in Different Sectors

- Agriculture : To improve preparedness, there is an urgent need to prepare and widely disseminate information to farmers e.g farmers to regularly clear tree close to fences (one main damage input), move livestock to higher grounds
- Manufacturing and Commerce :
- Recovery : cash grants for micro enterprise working capital recovery
- Reconstruction : cash grants for micro enterprise reconstruction
- Tourism : To resilience and capacity by promoting and support urgent and immediate climate change adaptation action for tourism sector
- Build and increase resilience of tourist facilities and infrastructure against adverse impacts of Climate Change

Resilience in Different Sectors cont'd

- Tourism cont'd : promote, develop and support policies aimed at reduction of risks to tourism infrastructure and facilities
- Raise awareness at national, sector and community levels on the need to promote and support Climate Change adaptation measures
- Secure additional and sustainable financing mechanisms in support of tourism Climate Change adaptation actions nation wide level
- Health : Increased capacity in preparedness, response and recovery in reducing risks associated with natural disasters. Community preparedness emphasizing an all hazards approach, construction of cyclone resistant infrastructure to prevent future flooding/damage and first aid training in the communities

Resilience in Different Sectors cont'd

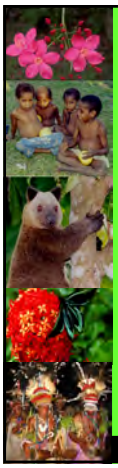
- Education : School buildings designs to be developed so that class rooms are resilient to strong winds and rain.
- Disaster Resilience in the Power Sector
- Need to cut or trim hazardous trees
- Updating and improving EPC's standard design for construction (loading, compaction, line sagging etc)
- Develop and follow strict procedures for adding extra poles
- Improve asset management database

Environment

- Immediate Priorities : conservation of remaining wildlife habitats must be recognized as highly important to ensure the continued survival of native species and habitats
- Medium Term Priorities : promotion of refuge areas with native forests still standing
- Conservation of high Bio diversity value
- Conservation of undamaged or minimally damaged areas
- Long term Priorities : survey of all key lowland and upland sites recommended for conservation in national surveys

Summary

- The total financial requirements for post disaster economic recovery, reconstruction and disaster risk reduction in connection with TC Evan has been estimated for all sectors ($403 million Tala about $206 million US)
- $43 million US to ensure economic recovery in all sectors affected
- $122 million US to finance disaster resilient reconstruction of assets that were destroyed
- $40.6 million to finance Disaster Risk Reduction schemes



Partners With Melanesians Inc.
PAPUA NEW GUINEA

Islands and Oceans Net (IO Net)
2nd General Meeting

Land based development and its impact on people's livelihood on coastal communities Manus Province - PNG

Kenn Mondiai

6 – 8 December 2016

Sasakawa Peace Foundation

Main Conference Hall

"Maintaining the Dance"

Partners With Melanesians
Who are We ? & What we Do ?

- Registered National Not for Profit Conservation & Community Development NGO (32 years)
- Work with local, national and international partners in PNG + Pacific implementing project activities **(Our 8 Programs)**

- Biodiversity Conservation
- Rainforest Literacy
- Capacity Building for local partners
- Consensus Building
- Climate Change & SFM – Reforestation/Mangrove
- Appropriate Technology
- Sustainable Livelihood Activities
- Participatory 3 Dimensional Modelling – Land use Planning (P3DM)

Where are we now from 2015 ?

- Proposal IONet/SPF needed some improvements.
- Working toward getting the Provincial and National Government to come in as partners.
- Engagement with Government from a NGO level is difficult.

4 Main Issues in Manus

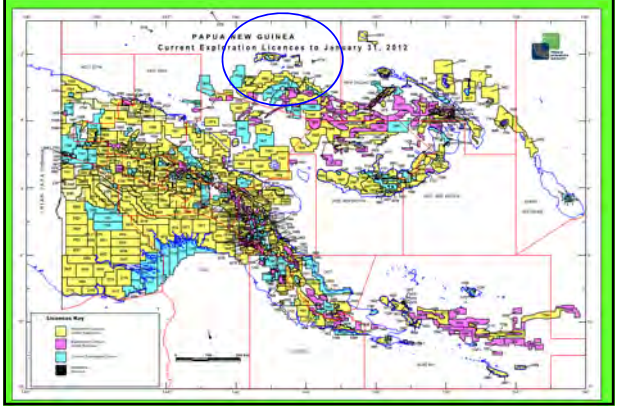
DEEP SEA MINING (DSM)
Planned, but serious danger ??

URBAN HOUSEHOLD WASTE DUMPING

COASTAL & ISLAND COMMUNITIES DISPLACED

Area of Concern

Undersea Mining Tenements and Leases



Land Based Activities => Linkage => Marine-Coastal Ecosystem Issues

- Large Scale Logging
- Oil Palm/Rubber Plantations
- Shifting Cultivation
- Small scale forest business
- Forest fire
- Mining exploration, but in some areas actual mining
- Soil erosion
- Reef destruction from silts
- Marine ecosystem destroyed
- Mangrove dieback

Forest Management on an Island and coastal areas, is a very big challenge and protect, rehabilitate or management.

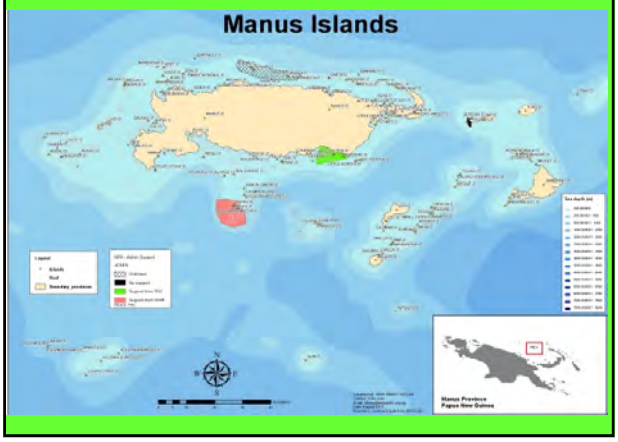
We developed community approaches to deal with land and local communities in heavily populated areas where the issue of landownership is sensitives.
We believe with the same approached with some modification, we can successfully work on Manus (Island community) with degraded forest replanting and mangrove rehabilitation

IMPACTS ON COASTAL COMMUNITIES

- DUE TO SURGING SEA LEVEL AND STORMS MANGROVES ARE DESTROYED
- COASTAL LAND ERODED AWAY FROM WAVES AND KING TIDES
- FISH CATCH REDUCED DUE TO MANGROVES DYING FROM SALT WATER INTRUSION AND FUEL WOOD HARVESTING
- POPULATION GROWTH
- FLOATING URBAN HOUSEHOLD WASTES ALL OVER THE ISLANDS AND INTO MANGROVES AND ON REEFS
- MARINE ANIMALS DIE FROM EATING PLASTICS
- DISPLACED COMMUNITIES FROM CLIMATE CHANGE IMPACTS … RELOCATION/LAND SOCIAL ISSUES ETC

POLICY DEVELOPMENTS IN PNG MINING, OCEANS ETC..

1. PNG GOVERNMENT HAS NOW DEVELOPED A POLICY ON DEEP SEA MINING. (NOT OUT YET)
2. RATIFIED THE INTERNATIONAL LAW OF THE SEAS
3. ENTER INTO NEW AGREEMENT WITH USA WITH REGARD TO FISHERIES
4. TRADE ISSUES WITH PHILLIPINES REGARDING TUNA CATCH FROM PNG WATERS FOR CANARIES IN PHILLIPINES.



Conclusion

From 2015 to now, we see working in partnership is crucial to address regional, national and local issues faced by PEOPLE in the Islands and Ocean; however this is based on VOLUNTARY COLLABORATIVE INVOLVEMENT, so the need to reach-out to Government Agencies and Bodies must be emphasised here .

Thank you very much !

2nd IO Net Meeting
Tokyo Japan
December 5-6, 2016

Overview:

- Micronesia Challenge Update
- Coastal Fishery Conservation/Development Efforts
- Electornic Monitoring Project

Scope and Commitment

The governments of Federated States of Micronesia, Guam, Marshall Islands, Northern Mariana Islands, and Palau

Agree to effectively conserve at least **30%** of the near-shore marine resources and **20%** of the terrestrial resources across Micronesia by **2020**

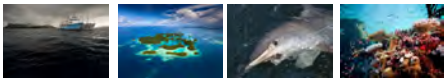
Sustaining the Challenge

- Strengthened / established 150+ managed areas, over >680,000 hectares
- Total endowment target of **~$56M** (endowment currently stands at over $18,000,000)
- Implementation of local income generating mechanisms (e.g. Palau's "Green Fee" generates ~$1.5M per year)

Coastal Fishery Conservation/Development Efforts

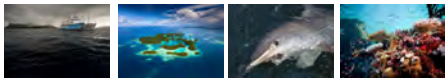
- Palau
  - 80% EEZ under Protection
- FSM
  - Considering 12miles industrial fishing ban across all islands
- RMI
  - Declaration of archipelagic status across RMI island chains.
  - Currently ban industrial fishing with 50 miles around Majuro, Arno and Ebeye.

© Trina Leberer



EM Project Goal

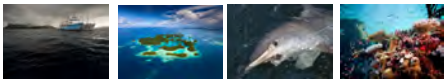
Develop the institutional capacity of Pacific Island fisheries management authorities to integrate EM systems into national and regional observer and MCS programs.



Project Objectives

(i) demonstrate how EM system can help scale up coverage rates (e.g., 5% regional observer coverage goal and beyond);

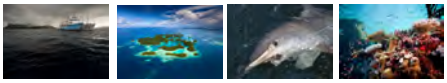
(ii) determine the initial and annual costs for establishing and ongoing implementation of the EM systems, including data review/analysis, and explore potentials for cost recovery;



Project Objectives

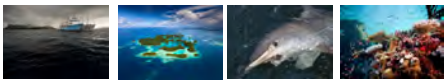
(iii) develop cost effective data review protocols to provide accountability and utility for science, management, and MCS purposes.

(iv) Incentivize technical opportunities to improve EM systems, including data collection innovations and data analysis automation, to enhance precision/accuracy and reduce costs.



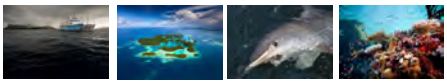
Project Partners

- Domestic Fisheries Authorities
  - BMR Palau
  - NORMA FSM
  - MIMR RMI
  - MFMR Solomon Islands
- Regional Fisheries Authorities
  - PNA
  - WCPFC
  - SPC
  - FFA



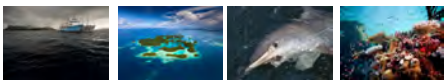
Project Partners

- Industry
  - Lienchang Fishing Ventures, China
  - Kinkatsuyo LLA., Okinawa, Japan
  - Tri-Marine, U.S.
  - KFC, PITI (Liancheng affiliates)
  - NORPAK, U.S.
  - ANOVA, U.S.
- NGOs
  - ISSF (International Sustainable Seafood Foundation)
  - PEW
  - WWF



Geographies/Scale

- Palau
  - 4 fresh LL vessels, Koror-based (installs completed)
  - 3 fresh LL vessels, Tomari, Okinawa-based (installs scheduled mid November)
- FSM
  - 5 frozen LL vessels, Pohnpei-based (installs scheduled early November)
- RMI
  - (# fresh LL vessels & install schedule TBD, Majuro-based, target 6)
- Solomon Islands
  - (# fresh LL vessels & install schedule TBD, Honiara and Noro-based, range 6-10)



Deliverables

- Install EM systems & train staff
  - Local technicians on the ground
- Establish In-country SVM Data Review Centers
  - SPC RFRO & TUBs database linkage
  - Recruit and train observers and supervisory staff
    - Palau
    - FSM
    - Solomon Islands?
- Prepare final report with recommendations
  - Data standards
  - Scaling up/increase regional EM coverage
  - Legislative/regulatory hurdles

Thank You

Session2 :

Management of the Surrounding Ocean Areas

Session 2 a.

Potential Impact of the South China Sea Arbitration on Maritime Jurisdiction in the Pacific

Professor Stuart Kaye

Islands and Oceans Net (IO Net) 2nd General Meeting
6–7 December 2016

Islands

- South China Sea Arbitration
  - Detailed consideration of the definition of an island under Article 121
  - Failure to recognise any features in the South China Sea as anything more than a rock
    - No features generate an EEZ or continental shelf

Itu Aba Island

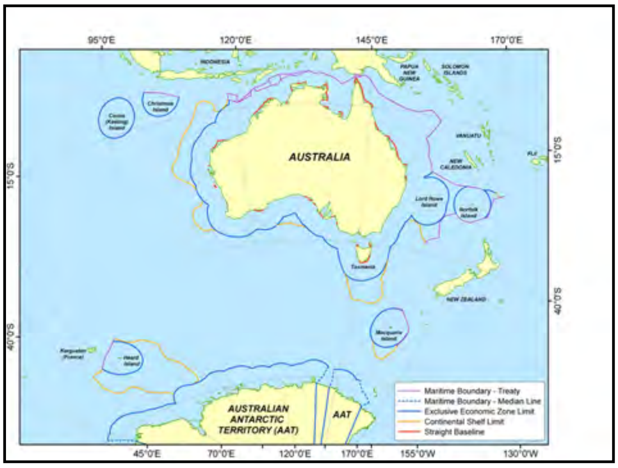
Itu Aba Island

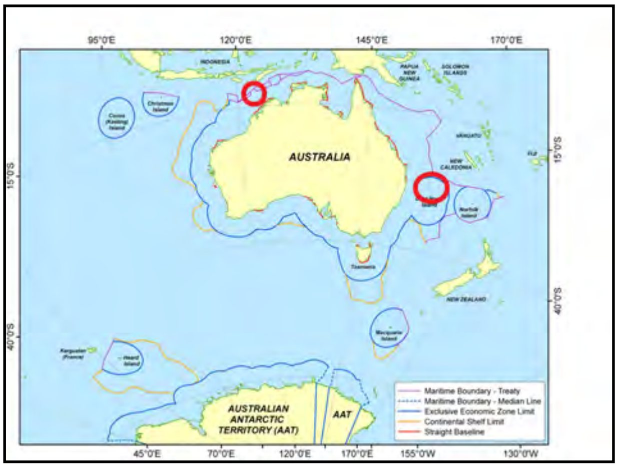
Itu Aba Island

- 46 hectares in area
- 1200 metre runway
- Population of around 600 personnel
- Photovoltaic power station and storage facility
- Reported to possess 4 fresh water wells, capable of producing over 65 metric tonnes of fresh water per day and fruit trees

Impact on the Pacific

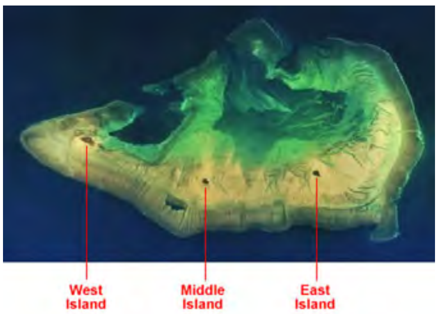
- What will be the impacts on the EEZs of coastal States in the Pacific?
- Will the proscribing of EEZ limits by States such as the Marshall Islands and Kiribati be effective?
- What will be the impact of the threat of prompt release through ITLOS on State behaviour?





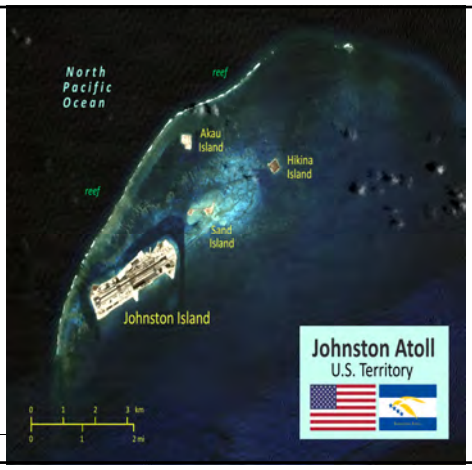
Elizabeth & Middleton

Ashmore

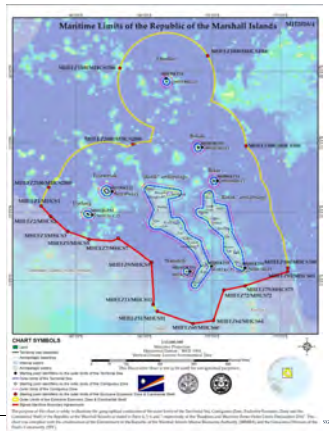


Johnston Atoll

Johnston Atoll



Marshall Islands



Article 73

1. The coastal State may, in the exercise of its sovereign rights to explore, exploit, conserve and manage the living resources in the exclusive economic zone, take such measures, including boarding, inspection, arrest and judicial proceedings, as may be necessary to ensure compliance with the laws and regulations adopted by it in conformity with this Convention.

2. Arrested vessels and their crews shall be promptly released upon the posting of reasonable bond or other security.

3. Coastal State penalties for violations of fisheries laws and regulations in the exclusive economic zone may not include imprisonment, in the absence of agreements to the contrary by the States concerned, or any other form of corporal punishment.

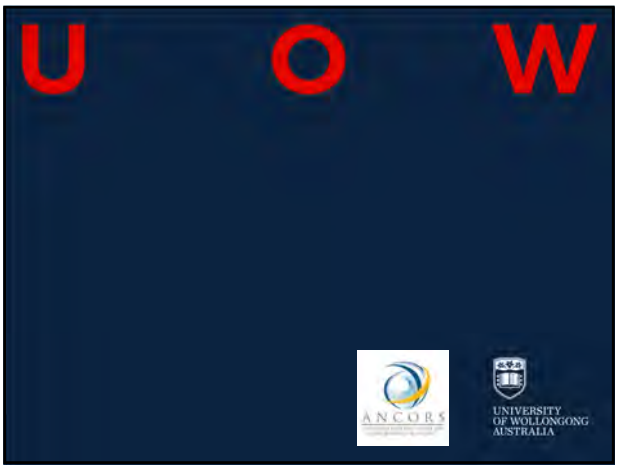
4. In cases of arrest or detention of foreign vessels the coastal State shall promptly notify the flag State, through appropriate channels, of the action taken and of any penalties subsequently imposed.

Article 292(1)

- Where the authorities of a State Party have detained a vessel flying the flag of another State Party and it is alleged that the detaining State has not complied with the provisions of this Convention for the prompt release of the vessel or its crew upon the posting of a reasonable bond or other financial security, the question of release from detention may be submitted to any court or tribunal agreed upon by the parties or, failing such agreement within 10 days from the time of detention, to a court or tribunal accepted by the detaining State under article 287 or to the International Tribunal for the Law of the Sea, unless the parties otherwise agree.

Project

- Identify features in the Pacific that may be analogous to the South China Sea Arbitration findings on Article 121 and the generation of an EEZ
- Examine national legislation for responses
- Suggest courses of action to mitigate against a challenge



Session 2. a

2nd Meeting of the "Islands and Oceans Net"

Effective Utilization of Research Vessel Transition

Yoshi KAWAMURA, Michiyo SHIMAMURA

Japan Agency for Marine-Earth Science and Technology

JAMSTEC 国立研究開発法人 海洋研究開発機構 Japan Agency for Marine-Earth Science and Technology

16/Dec/07

Contents

Introduction of JAMSTEC - our missions -

R&D targets during FY2014 – 2019

We set and address the following seven research and development issues based on the national and social needs.

- R&D Submarine Resources
- Promotion of integrated ocean drilling science
- R&D Ocean and Global Climate Change
- The leading-edge fusion information science
- R&D Seismogenic Zone
- R&D Marine Bioscience
- Construction of research base to spawn the ocean frontier

Introduction of JAMSTEC - our vessels -

GT: Gross tonnage

R/V YOKOSUKA GT 4,439 t
Support vessel for "SHINKAI6500"

R/V MIRAI GT 8,687 t
Large vessel able to perform observation over wide areas

R/V KAIREI GT 4,517 t
Surveys the structure of sub-bottoms mainly with MCS

R/V KAIMEI G 5,747t
Multipurpose research vessel for wide-area seabed research

R/V HAKUHOMARU GT 3,991 t
Multipurpose research vessel with long-term cruise

R/V SHINSEIMARU GT 1,629 t
Multipurpose R/V focusing on the survey off the coast of Tohoku region

D/V CHIKYU GT 56,752 t
Drilling vessel with world-class scientific drilling capacity

- JAMSTEC has seven fleets.
- Each vessel has different capability.
- We used it for different purposes in according to research objectives.

Introduction of JAMSTEC - underwater vehicles -

Deep Submergence Vehicle

Shinkai6500 — Deep-diving manned submersible

AUV

URASHIMA — Large AUV capable of long-distance dives

YUMEIRUKA — High-performance motion control advanced acoustic observation

Deep Tow

Deep Tow — Operation with high-sensitivity camera and manipulators

JINBEI — High cruising capability Equipped with chemical sensors

OTOHIME — AUV equipped with manipulators

ROV

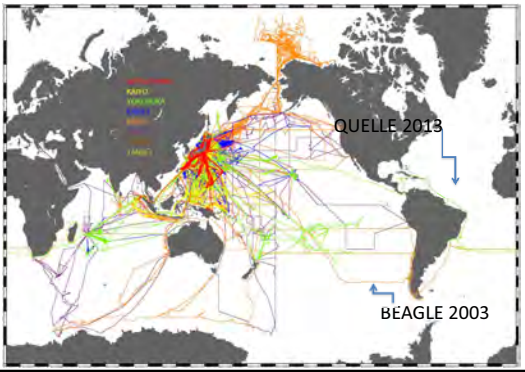
HYPER-DOLPHIN — Operation with high-sensitivity camera and manipulators

KAIKO 7000 II — Capable of diving up to a maximum depth of 7,000 m

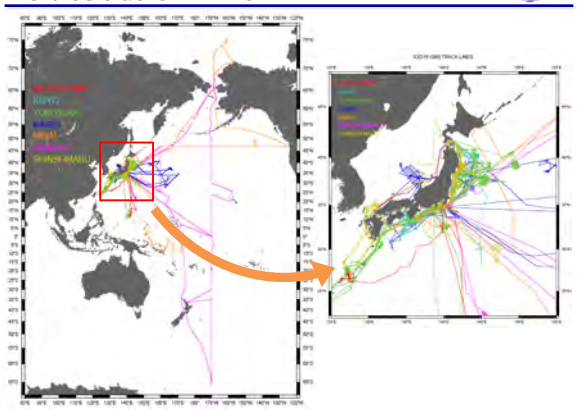
KAIKO Mk-IV — The new over 7,000m-class ROV for heavy duty work

Introduction of JAMSTEC - research cruises -

Cruise tracks for 15 years (FY2000 – FY2014)



Cruise tracks in FY2014



Introduction of JAMSTEC - DARWIN -

"DARWIN"

Data Research System for Whole Cruise Information in JAMSTEC

You can "Search, Download, Visualizing" data.

- Data since: 1998-
- Ship Cruising & Submersible Diving records
- Observation Data:
  - Bathymetry, Gravity, Magnetic field,
  - Sub Bottom Profile etc...
- Sample Information, Video and Still Image

Available at:
http://www.godac.jamstec.go.jp/darwin/e

Cooperation with Island Countries

- Case introduction of the collaborative survey in Federated States of Micronesia -

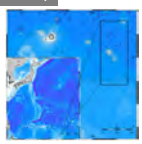
Background

FSM: Submission to the Commission on the limits of the Continental Shelf
→ Seeking an additional data.

JAMSTEC R/V: Passing near the target area during transition

Collaborative Survey between FSM and JAMSTEC

Bathymetric Survey



Date: 2016.Mar.02- 04

Area: FSM off the east coast of Pohnpei Is.

Acquisition Data:
1) Bathymetry, Sub-Bottom Profile
2) Gravity and Magnetic
3) Seawater temperature vertical distribution

Opportunity

KEY TO FUTURE COLLABORATIONS

- Open Data
  ex: DARWIN
- Effective utilizations of R/V transition → cost down
  ex: bilateral, multinational
- Capacity Building
  ex: marine technicians, engineers, ship crew and ocean scientists

Contact to: kawamuray@jamstec.go.jp
michiyo@jamstec.go.jp

Thank you for your attention

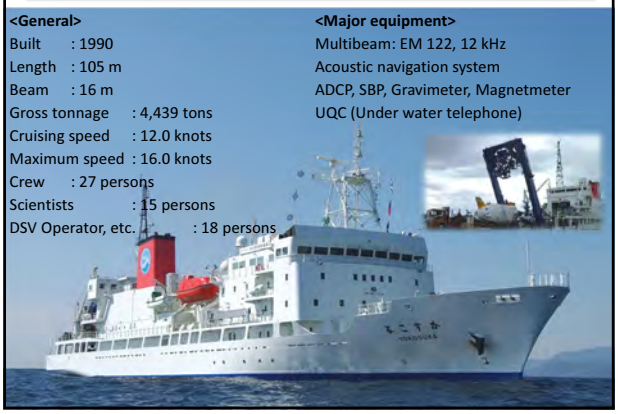
Appendix: Details of JAMSTEC Vehicles

R/V HAKUHO MARU

<General>
Built : 1989
Length : 100 m
Beam : 16 m
Gross tonnage : 3,991 tons
Cruising speed : 12.0 knots
Maximum speed : 16.0 knots
Crew : 54 persons
Scientists : 35 persons

<Major equipment>
Multibeam: SEABEAM 2120, 20 kHz
Acoustic navigation system
ADCP, SBP, Quantitative echo sounder, Gravimeter, Magnetmeter,
CTD/water sampler, Meteorological equipment, 6 Observation Winches

R/V YOKOSUKA



<General>
Built : 1990
Length : 105 m
Beam : 16 m
Gross tonnage : 4,439 tons
Cruising speed : 12.0 knots
Maximum speed : 16.0 knots
Crew : 27 persons
Scientists : 15 persons
DSV Operator, etc. : 18 persons

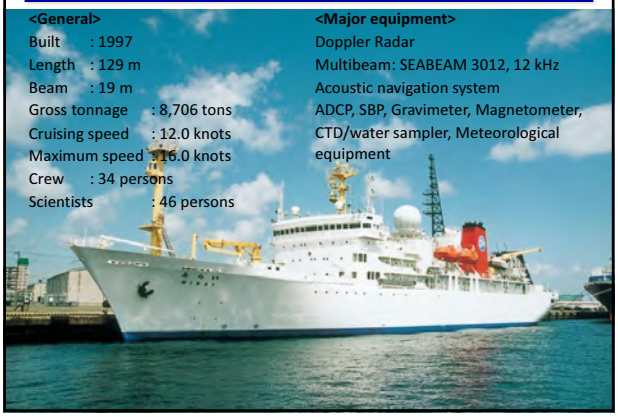
<Major equipment>
Multibeam: EM 122, 12 kHz
Acoustic navigation system
ADCP, SBP, Gravimeter, Magnetmeter
UQC (Under water telephone)

R/V KAIREI

<General>
Built : 1997
Length : 106 m
Beam : 16 m
Gross tonnage : 4,517 tons
Cruising speed : 12.0 knots
Maximum speed : 16.0 knots
Crew : 27 persons
Scientists : 22 persons
ROV Operator, etc. : 11 persons

<Major equipment>
Multibeam: SEABEAM 3012, 12 kHz
Acoustic navigation system
ADCP, SBP, Gravimeter, Magnetmeter
MCS

R/V MIRAI



<General>
Built : 1997
Length : 129 m
Beam : 19 m
Gross tonnage : 8,706 tons
Cruising speed : 12.0 knots
Maximum speed : 16.0 knots
Crew : 34 persons
Scientists : 46 persons

<Major equipment>
Doppler Radar
Multibeam: SEABEAM 3012, 12 kHz
Acoustic navigation system
ADCP, SBP, Gravimeter, Magnetometer,
CTD/water sampler, Meteorological equipment

R/V SHINSEI MARU

<General>
Built : 2013
Length : 66 m
Beam : 13 m
Gross tonnage : 1,629 tons
Cruising speed : 11.0 knots
Maximum speed : 13.0 knots
Crew : 26 persons
Scientists : 15 persons

<Major equipment>
DPS
Multibeam: SEABEAM 3020, 20 kHz
& Seabat 7125 SV2, 200 & 400kHz
Acoustic navigation system, Quantitative echo sounder, ADCP, SBP, Gravimeter, Magnetometer, CTD/water sampler,
5 Observation winches

R/V KAIMEI

D/V CHIKYU Specification

OWNER and BUILDER	
Owner	JAMSTEC
Built Year	2005
Builder	MHI/MES
MAIN DIMENTIONS	
Length overall	210.0 m
Breadth overall	38.0 m
Depth	16.2 m
Operational draft	9.2 m
Gross Tonnage	56,752 tons
Helicopter deck	Capable for EH101
DESIGN CRITERIA	
Cruising speed	11.45 knots
Max. operating water depth	2,500m
Max. drill string length	10,000m
ClassNK	
• NS*, Mobile Offshore Drilling Unit • DPS Class B • Ice Strengthening Class IB • MNS*, (M0)	
Accommodation	
Max.	200 persons
STORAGE CAPACITIES (actual)	
Fuel oil	9,006 m³
Drill water	2,554 m³
Potable water	369 m³
Active mud	408 m³
Reserve mud	1,445 m³
Bulk mud	696 m³
Bulk cement	464 m³
VARIABLE LOAD	
Variable load	25,500 tons

Deep Submergence Vehicle "SHINKAI 6500"

Built : 1989
Length : 9.5 m
Beam : 2.7 m
Height : 3.2m
Weight (in air) : 26 tons
Pressure hull dia. : 2.0m
Normal dive duration : 8 hours
Life support : 129 hours
Payload : 200kg (in air)
Hull material : Titanium Alloy
<Major equipment>
2 CCD TV cameras
Digital still camera
STDV sensor
Manipulator and Grabber
Observation sonar
Seawater thermometer
Sample basket

3500m class AUV "URASHIMA"

Length : 10.6 m
Beam : 1.3 m
Height : 1.5 m
Weight (in air) : 7 tons
Speed : Max 4 knots
Endurance : 24 hours

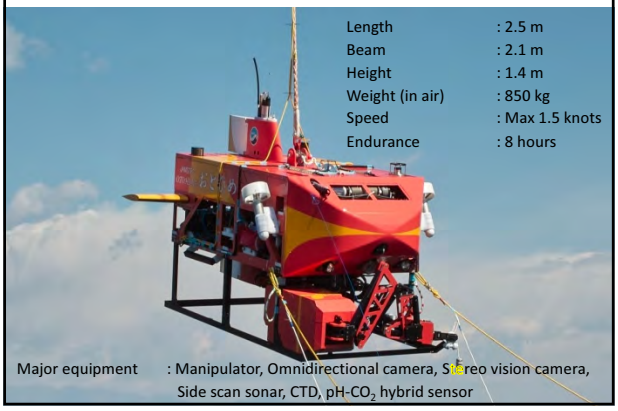
Major equipment : Side scan sonar, MBES, SBP, CTD-DO
Payload : 33kg (in water), L:900 mm, B:760 mm, H:1100 mm

3000m class AUV "JINBEI"

Length : 4.0 m
Beam : 1.1 m
Height : 1.0 m
Weight (in air) : 1.7 tons
Speed : Max 2 knots
Endurance : 10 hours

Major equipment : CTD, pH-CO_2 hybrid sensor, Fluorescent turbidimeter-DO, Side scan sonar or MBES

3000m class AUV "OTOHIME"



Length : 2.5 m
Beam : 2.1 m
Height : 1.4 m
Weight (in air) : 850 kg
Speed : Max 1.5 knots
Endurance : 8 hours

Major equipment : Manipulator, Omnidirectional camera, Stereo vision camera, Side scan sonar, CTD, pH-CO_2 hybrid sensor

3000m class AUV "YUMEIRUKA"

Length : 5.0 m
Beam : 1.2 m
Height : 1.2 m
Weight (in air) : 2.7 tons
Speed : Max 3 knots
Endurance : 16 hours

Major equipment : Interferometry synthetic aperture sonar, SBP, CTD, pH sensor

(2) Fisheries Re-vitalization Plan in Japan (浜の活力再生プラン)

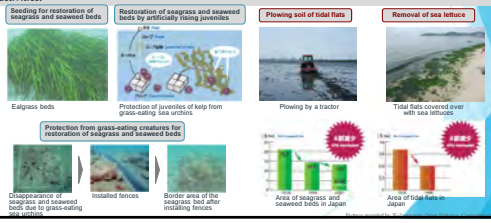
- A specific plan for each local fishing-village area will be developed by each local fishers' group itself, which clarifies what the future fisheries should be for the area and what should be done for the future.
- The groups/areas with such plans will be given priority to receive Governmental assistance.
- Over 570 plans have been developed around Japan.
- Wide range plans have also been developed (over 70), which involve several fishing-village areas.

(3) Protection and Restoration of Seagrass/Seaweed Beds and Tidal Flats

Seagrass and seaweed beds are called "woods of the sea" and have some types. They grow many coastal areas in Japan, and provide important nursery and spawning areas for a variety of creatures.

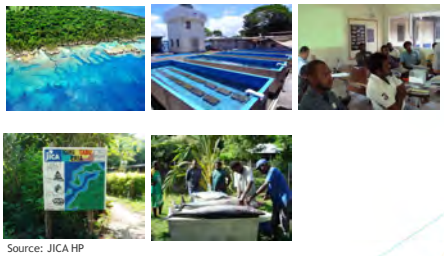
Tidal flats are places for recreation, rest and relaxation for people as well as for nursery and spawning areas for fishes, shellfishes, crustaceans and rare species. Also, many migratory birds fly there for rest and feeding.

In order to protect such seagrass and seaweed beds and tidal flats of coastal area, fishers themselves have been conducting various activities.



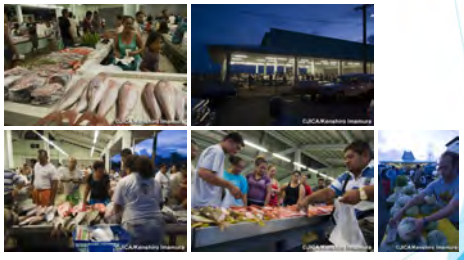
(4) Promotion of Fisheries in Coastal Areas (Japan's Assistance)

- Example 1: The Project for Promotion of the Grace of the Sea in Coastal Villages (Vanuatu)



- Source: JICA HP

- Example 2: The Project for the Renovation and Extension of Apia Fisheries Wharf and Related Facilities (Samoa)



- Source: JICA HP

- Example 3: The Project for Construction of Fish Market Center at Majuro (The Marshall Islands)

- Source: JICA HP

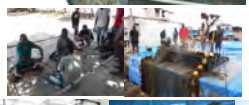
- Example 4: The Project for Construction of Wewak Market and Jetty (PNG)

- Source: JICA HP

- Example 5: Cooperation of Overseas Fishery Cooperation Foundation of Japan (OFCF)

- Promotion of Aquaculture of Giant clam (Palau)

- Research on the Set-net Fisheries (PNG)



- Pilot Project on Management of Sea cucumber Resources (Solomon Islands)

- Source: OFCF

2. Elimination of IUU Fishing

(1) Case -1: Patrol(1)

- Since 2014, patrol vessels of Fisheries Agency of Japan (FAJ) have been dispatched to waters around Palau, including its EEZ, as one of cooperation between Palau and Japan on fisheries management.

(2) Case -2: Patrol(2)

- OFCF supported patrol activities of Palauan Government within its EEZ, by providing a part of fuel cost of patrol vessels, in 2015 and 2016.

IUU purse seine vessel with no name, no call sign or nationality, found within EEZ of Palau

Another IUU mothership with no call sign or nationality, found within EEZ of Palau

Source: Fisheries Agency of Japan

IUU mothership with no call sign or nationality, found within territorial water of Palau

Source: Fisheries Agency of Japan

(3) Case -3: Trade Measures

- Trade Measures have been developed or under consideration in the framework of Regional Fisheries Management Organizations (RMFOs) or unilaterally.

- RFMOs' Catch Documentation Scheme (CDS) under Operation
  - International Commission for the Conservation of Atlantic Tunas (ICCAT):
    - Western and eastern stocks of Atlantic bluefin tuna
  - Commission for the Conservation of Southern Bluefin Tuna (CCSBT):
    - Southern bluefin tuna
  - Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR):
    - Patagonian and Antarctic toothfish (2 species)

- Unilateral Measures
  - EU IUU Regulation and the "Catch Certification Scheme" (under operation)
  - US "Catch Documentation and Traceability" system (being considered)

(3) Case -3: Trade Measures (continues)

Trade Measures to Combat IUU Fishing:
Comparative Analysis of Unilateral and Multilateral Approaches

Gilles Hosch
Independent Fisheries Expert

October 2016
Published by International Centre for Trade and Sustainable Development (ICTSD) International Environment House 2 7 Chemin de Balexert, 1219 Geneva, Switzerland

(3) Case -3: Trade Measures (continues)

- EXECUTIVE SUMMARY

.....

- Unilateral CDS are inherently difficult to enforce since fisheries products may circulate through most of the supply chain without being covered by certificates. Most importantly, multilateral systems cover and protect entire fish stocks, while unilateral systems only partially cover many stocks. The potential for direct positive impact of multilateral systems on the sustainable management of individual stocks is therefore greater.

.....

- RFMOs should be supported and strengthened so that they can continue to deliver and expand multilateral solutions to the problem of IUU fishing in shared fisheries. Unilateral end-market CDS may protect markets from sourcing a wide range of illegally harvested products, but because they close off only one market to IUU products, they may have limited overall impact on IUU fishing and the sustainable management of individual fish stocks.

.....

(3) Case -3: Trade Measures (continues)

- Western Central Pacific Fisheries Commission (WCPFC)
- CATCH DOCUMENTATION SCHEME INTERSESSIONAL WORKING GROUP (CDS-IWG)

  (Three meetings have been held to date.)
- Draft workplan for CDS-IWG 2015/16

  (source: Attachment C, WCPFC-TCC-2015-21)
  - CDS Standards development
    - Adoption of Revised draft Standards — Dec 2016 (WCPFC 13)
  - CMM development (CDS for tunas)
    - Development of draft CMM — Jan-July 2017
    - Review draft CMM — Sept 2017 (CDS-IWG, TCC12)
    - Adoption of CMM — Dec 2017 (WCPFC13)

3. Conservation & Management through WCPFC

"The WCPFC Convention seeks to address problems in the management of high seas fisheries resulting from

unregulated fishing,

over-capitalization,

excessive fleet capacity,

vessel re-flagging to escape controls,

insufficiently selective gear,

unreliable databases and

insufficient multilateral cooperation in respect to conservation and management of highly migratory fish stocks."

(From HP of WCPFC)

CONVENTION ON THE CONSERVATION AND MANAGEMENT OF HIGHLY MIGRATORY FISH STOCKS IN THE WESTERN AND CENTRAL PACIFIC OCEAN *(Extract)*

.....

Acknowledging that compatible, effective and binding conservation and management measures can be achieved only through cooperation between coastal States and States fishing in the region,

.....

Article 10 Functions of the Commission

1. Without prejudice to the sovereign rights of coastal States for the purpose of exploring and exploiting, conserving and managing highly migratory fish stocks within areas under national jurisdiction, the functions of the Commission shall be to:

   (a) determine the total allowable catch or total level of fishing effort within the Convention Area for such highly migratory fish stocks as the Commission may decide and adopt such other conservation and management measures and recommendations as may be necessary to ensure the long-term sustainability of such stocks;

   (b) promote cooperation and coordination between members of the Commission to ensure that conservation and management measures for highly migratory fish stocks in areas under national jurisdiction and measures for the same stocks on the high seas are compatible;

Article 12 Functions of the Scientific Committee

1. The Scientific Committee is established to ensure that the Commission obtains for its consideration the best scientific information available.
2. The functions of the Committee shall be to:

   (a) recommend to the Commission a research plan, including specific issues and items to be addressed by the scientific experts or by other organizations or individuals, as appropriate, and identify data needs and coordinate activities that meet those needs;

   (b) review the assessments, analyses, other work and recommendations prepared for the Commission by the scientific experts prior to consideration of such recommendations by the Commission and provide information, advice and comments thereon, as necessary;

   (c) encourage and promote cooperation in scientific research, taking into account the provisions of article 246 of the 1982 Convention, in order to improve information on highly migratory fish stocks, non-target species, and species belonging to the same ecosystem or associated with or dependent upon such stocks in the Convention Area;

   .....

Article 30 Recognition of the special requirements of developing States

1. The Commission shall give full recognition to the special requirements of developing States Parties to this Convention, in particular small island developing States, and of territories and possessions, in relation to conservation and management of highly migratory fish stocks in the Convention Area and development of fisheries for such stocks.
2. In giving effect to the duty to cooperate in the establishment of conservation and management measures for highly migratory fish stocks, the Commission shall take into account the special requirements of developing States Parties, in particular small island developing States, and of territories and possessions, in particular:

   (a) the vulnerability of developing States Parties, in particular small island developing States, which are dependent on the exploitation of marine living resources, including for meeting the nutritional requirements of their populations or parts thereof;

   (b) the need to avoid adverse impacts on, and ensure access to fisheries by, subsistence, small-scale and artisanal fishers and fishworkers, as well as indigenous people in developing States Parties, particularly small island developing States Parties, and territories and possessions; and

   (c) the need to ensure that such measures do not result in transferring, directly or indirectly, a disproportionate burden of conservation action onto developing States Parties, and territories and possessions.

Article 30 Recognition of the special requirements of developing States (continues)

3. The Commission shall establish a fund to facilitate the effective participation of developing States Parties, particularly small island developing States, and, where appropriate, territories and possessions, in the work of the Commission, including its meetings and those of its subsidiary bodies. The financial regulations of the Commission shall include guidelines for the administration of the fund and criteria for eligibility for assistance.

4. Cooperation with developing States, and territories and possessions, for the purposes set out in this article may include the provision of financial assistance, assistance relating to human resources development, technical assistance, transfer of technology, including through joint venture arrangements, and advisory and consultative services. Such assistance shall, inter alia, be directed towards:

(a) improved conservation and management of highly migratory fish stocks through collection, reporting, verification, exchange and analysis of fisheries data and related information;

(b) stock assessment and scientific research; and

(c) monitoring, control, surveillance, compliance and enforcement, including training and capacity building at the local level, development and funding of national and regional observer programmes and access to technology and equipment.

.....

WCPFC Members 26 nations/entities

- 16 nations: FFA members (Australia, NZ, Island nations (including 8 PNA members))
- 8 nations/entities: Fishing nations (Japan, ROK, China, Taiwan, USA, EU, Indonesia, Philippines)
- 2 nations: France, Canada

Various Groups of Interest

- High seas fishing nations vs. Coastal states
- Purse seine fishing vs. Longline fishing
- Developing nations vs. Others
- Tropical nations vs. Marginal nations

WCPFC Decision Making Mechanism (Article 20 of the Convention)

- As a general rule: Consensus
- When consensus is not possible: Voting
  - Questions of procedure: Majority
  - Questions of substance: ¾ of FFA members & ¾ of non-FFA members

Conflicts & Cooperation

- Bigeye tuna Management
- FADs restriction
- Management framework: VDS
- Stock Assessment of Skipjack

THE BEST ENVIRONMENTAL CHOICE IN SEAFOOD

Marine Stewardship Council

Fisheries in the Pacific Island Countries and MSC certification

Makoto Suzuki – MSC Japan

Today's topic

1. What is the MSC?
2. MSC Fisheries Certification
   – assessment and improvement -
3. PNA fishery and improvement

MSC at a glance

- International not-for-profit organisation
- Marine Stewardship Council was founded by WWF & Unilever in the late 90s
- Technically a standard setting and ecolabelling body
- Developed and maintains two standards
  - Environmental standard for well managed sustainable Fisheries
  - Traceability standard, Chain of Custody

Vision Mission

MSC Vision: Of the world's oceans teeming with life, and seafood supplies safeguarded for this and future generations.

MSC Mission: To use our ecolabel and fishery certification programme to

- contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices,
- influencing the choices people make when buying seafood,
- working with our partners to transform the seafood market to a sustainable basis.

How the program works

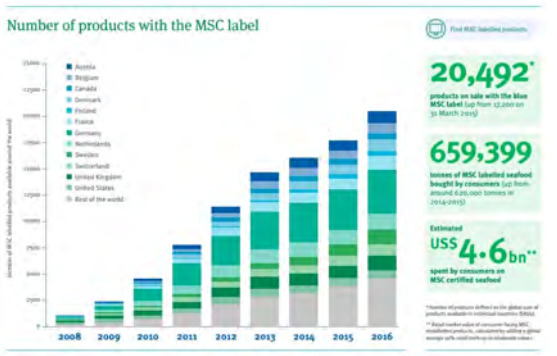
- Fisheries apply for certification on a voluntary basis;
- Assessed against the MSC Standard by 3rd party independent certifiers;
- Fish from successfully certified fisheries can then be marketed with MSC ecolabel;
- MSC and its partners encourage businesses and consumers to choose MSC labelled products;
- Leads to commercial advantages for certified fishers; and
- Creates incentives for other fishers.

Fishery Participation

- 391 fisheries in program = 10 million metric tonnes
- 315 certified
- 76 under assessment

12% of wild caught seafood globally is now certified or in full assessment

20,492 MSC products in the world



Progress to date on the Demand Side

- Major global buyers have made strong commitments to source their wild-capture fish from MSC-certified fisheries
- Global market for MSC products over $3 billion annually
- Growing interest from food service sector

Commercial Support

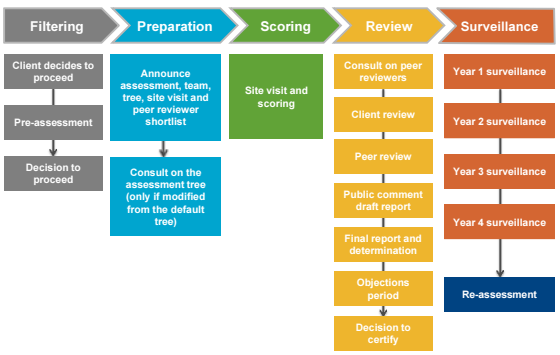
Walmart, Marks & Spencer, Globus, Loblaws, Sainsbury's, Whole Foods, Tesco, Aeon, coles, Metro Group, Seiyu, Ahold, Blackmores, Co-op, John West, Woolworths, Aldi, Migros, Edeka, McDonald's, Young's, Asda, Quick, Sealord, Pacific West, Talley's

Marine Stewardship Council

MSC Fisheries certification

Who is Involved?

What is the Fishery Assessment Process?



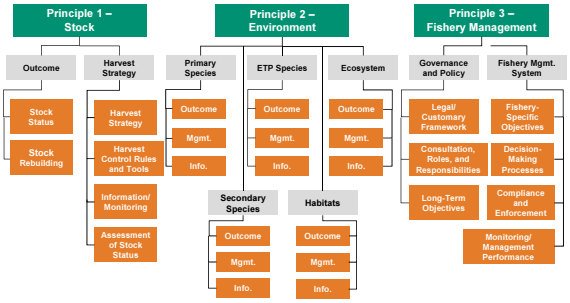
The MSC Standard – Three Core Principles

1: Health of the target fish stock

2: Impact of the fishery on the environment

3: Effective management to ensure future sustainability

The MSC Standard – Default Assessment Tree



Now 28 Performance Indicators (PIs) in FCR v2.0

Scoring Guideposts in Assessment Tree

Component	PI	Scoring issues	SG60	SG80	SG100
Outcome	Stock status 1.1.1 The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing.	(a) Stock status relative to recruitment impairment	It is **likely** that the stock is above the point where recruitment would be impaired (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree of certainty** that the stock is above the PRI.
		(b) Stock status in relation to achievement of Maximum Sustainable Yield (MSY)		The stock is at or fluctuating around a level consistent with MSY.	There is a **high degree of certainty** that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.

Each PI has three scoring guideposts (SGs) – 60, 80, and 100 – these are the benchmark levels of performance.

Scoring PIs and Principles

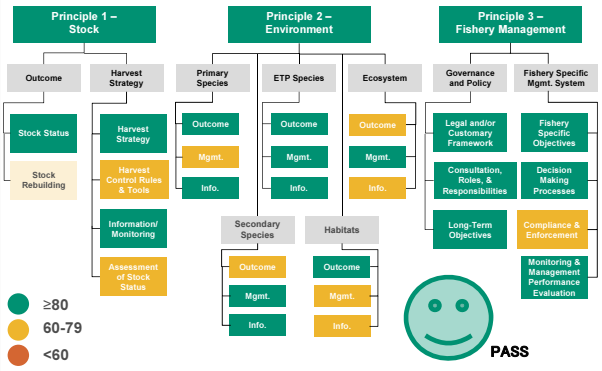
Performance Indicators (PIs):

- Each PI must score ≥60, or the fishery fails.
- Any PI that scores ≥60 but <80 is given a condition.
- Any PI that scores ≥80 gets an unconditional pass.
- PIs are normally scored to the nearest five units (60, 65, 70, etc.).

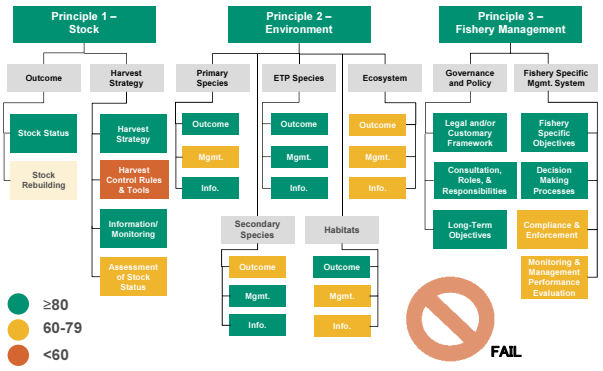
Principles:

- Each Principle must score ≥80 as the weighted average across the PIs within that Principle, or the fishery fails.
- Principle scores are given to the nearest 0.1 units (e.g., 83.2).

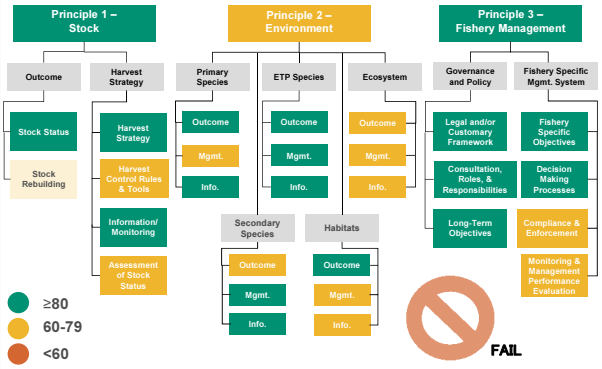
Assessment Tree Scoring Example



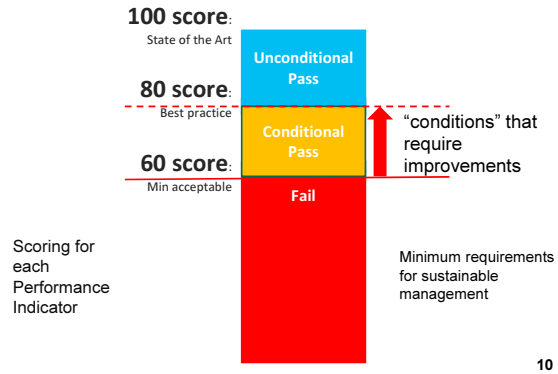
Assessment Tree Scoring Example



Assessment Tree Scoring Example



Conditions and the MSC Theory of Change



10

MSC and improvement

- Better data for population dynamics (Normandy and Jersey)
- New measures to reduce bycatch and discards of non-target fish (Scotland)
- Reduced number of seabirds mortality (southern Indian Ocean)

THE BEST ENVIRONMENTAL CHOICE IN SEAFOOD

Marine Stewardship Council

PNA fisheries and improvement

The Parties to the Nauru Agreement (PNA)

PNA – 8 island nations in an area 40% bigger than the EU

PNA EEZ purse seine tuna fishery

- Purse seine fishery
- Unassociated (Free school / non-FAD)
- Skipjack Fishery certified in Dec 2011
- Skipjack – 616,410MT
- Yellowfin Fishery certified in Feb 2016
- Yellowfin – 136,453MT
- Enter re-assessment Aug 2016

PNA Vessel Day Scheme (Since 2006)

VDS
Limits how many days fisheries can fish within PNA waters

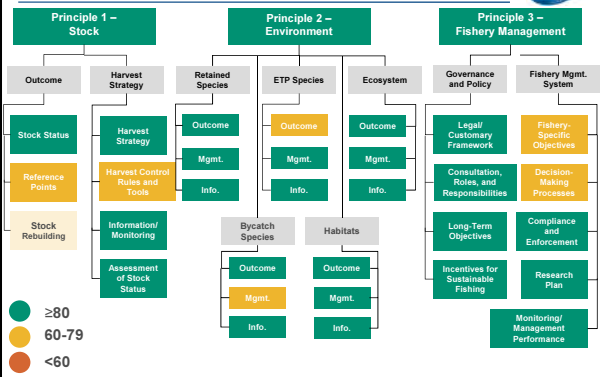
5 key rules about how to fish

1. No High Seas fishing
2. Keep all tuna catch on board
3. No setting on whale sharks
4. Do not use FADs
   July 1 – September 30
5. Support and assist PNA observers

PNA Observer Demonstration Video

26

PNA skipjack – Initial certification (2011)



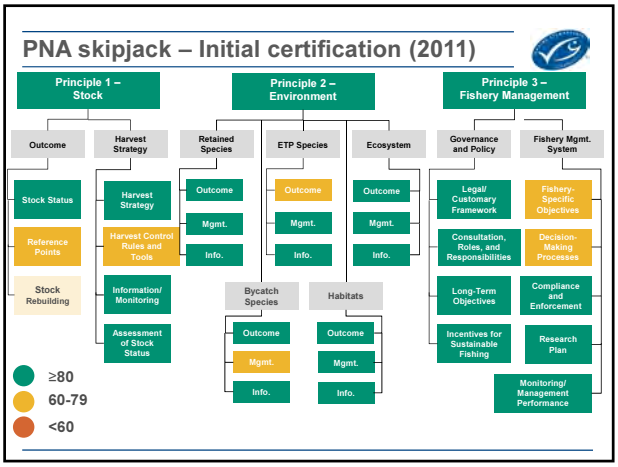
Conditions

1. **Target and limit reference points are implemented**
2. **Well defined harvest control rules shall be in place**
3. **Strategy for managing bycatch**
4. **Protection of whale shark**
5. **Short and long term objective of the fisheries specific**
6. **Develop effective decision-making process**

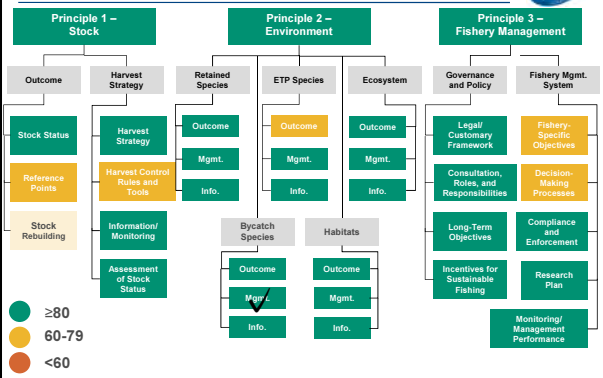
PNA certification conditions & improvements

- Whale shark sets identified as an issue during pre-assessment which led to a ban on these sets by PNA through Implementing Arrangement. Followed by WCPFC CMM.
- Setting of Target and Limit RPs used within in PNA management.
- Vessel Day Scheme within PNA EEZ
- Increased transparency of the decision making processes
- Requirement to have 100% observer coverage on all PS vessels fishing in PNA EEZ
- TRP adopted in 2015 at 0.5 $SB_{F=0}$ for WCPFC area

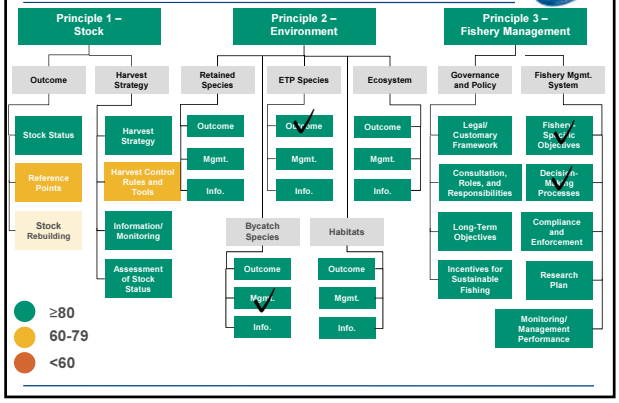
PNA skipjack – Initial certification (2011)



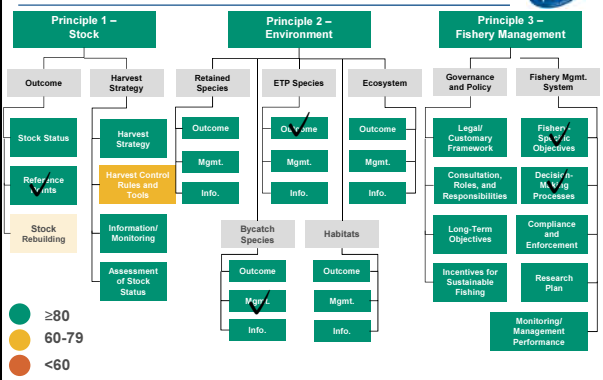
PNA skipjack – 1st Surveillance (2012)



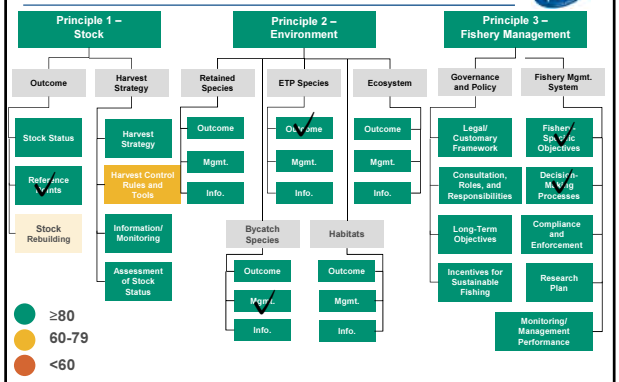
PNA skipjack – 2nd Surveillance (2013)



PNA skipjack – 3rd Surveillance (2014)



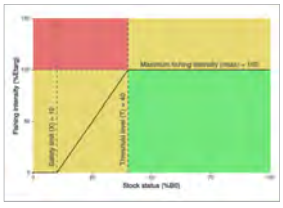
PNA skipjack – 4th Surveillance (2016)



PNA Conditions of certification – Status 2016

Remaining condition: PI1.2.2 - There are well defined and effective harvest control rules in place.

- In 2016 the PNA Office have requested SPC to develop two options
- These were presented at the 35th Annual PNA Meeting held in Kiribati in April
- Further development, testing and evaluation being done by SPC was presented by the PNA at the SC meeting in 2016
- Skipjack HCR CMM to be presented at the Annual Tuna Commission meeting in December 2016



HCR for skipjack tuna in Indian Ocean

PNA has been a champion for marine conservation and management

Actions to conserve overfished bigeye tuna in the Western and Central Pacific Ocean

- Including closures of high seas pockets,
- seasonal bans on use of Fish Aggregating Devices (FAD),
- satellite tracking of boats,
- in port transshipment,
- 100 percent observer coverage of purse seiners,
- closed areas for conservation,
- mesh size regulations,
- tuna catch retention requirements,
- hard limits on fishing effort,
- prohibitions against targeting whale sharks,
- shark action plans

MSC fisheries in the Pacific Ocean

- New Zealand albacore tuna (2011)
- PNA skipjack and albacore tuna (2011)
- Fiji albacore tuna (2012)
- Solomon Islands skipjack and yellowfin tuna (2013)
- Cook Islands albacore tuna (2015)
- Australia albacore and yellowfin tuna (2015)
- Tri Marine skipjack and yellowfin tuna (2016)
- Japan skipjack and albacore tuna (2016)

Japanese fisheries and MSC

- Kyoto flathead flounder (2008)
- Hokkaido scallop (2013)

Meiho Fishery Co., Ltd.
宮城県　明豊漁業(株)

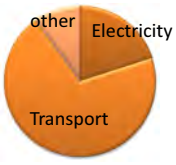
Thank you very much!

Current situation in Sustainable Sea Transportation in the Pacific Island Countries

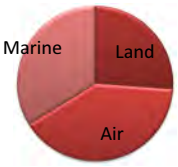
The Transport/Climate Change Nexus: Pacific Leaders consistently identify two critical barriers to sustainable development

1. **Climate Change – "no more than 1.5^{O}C"**
2. **Extreme regional imported fossil fuel dependency**

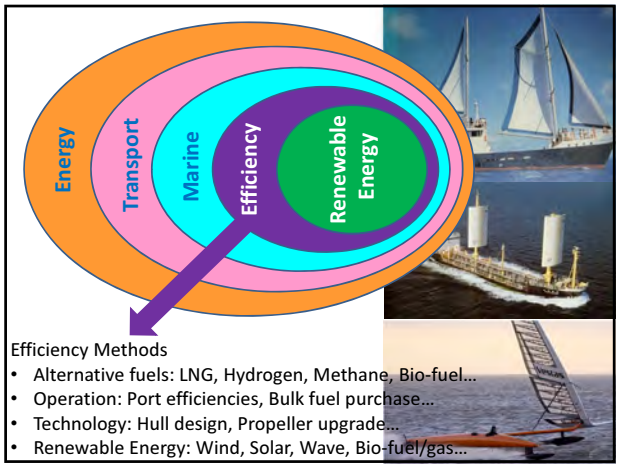
Transport is critically linked to both



Pacific Islands Regional Fossil Fuel Use by Sector



Transport Fuel by Sector (Fiji)



Efficiency Methods
- Alternative fuels: LNG, Hydrogen, Methane, Bio-fuel…
- Operation: Port efficiencies, Bulk fuel purchase…
- Technology: Hull design, Propeller upgrade…
- Renewable Energy: Wind, Solar, Wave, Bio-fuel/gas…

Current Situation of Sustainable Sea Transportation: Perspectives of Pacific Island Countries

- ◆ Climate Change
- ◆ National Economy
- ◆ Sustainable Livelihoods and Sustainable Development
  - ✓ Concentration of population in urban centres and declining population in the remote islands
  - ✓ Cost of transportation make remote island products unreasonably high
  - ✓ Holistic approach with economic sustainability and job creation in mind

Frequency of Shipping (uneconomical routes)

	Route	Frequency
1	Northern Lau I	Fortnightly
2	Northern Lau II	Fortnightly
3	Upper Southern Lau	Monthly
4	Lower Southern Lau	Monthly
5	Yasayasa Moala	Fortnightly
6	Rotuma	Monthly
7	Kadavu (Babaceva)	Fortnightly
8	Lomaiviti I	Fortnightly
9	Lomaiviti II	Fortnightly
10	Yasawa-Malolo	Monthly

If it is not scheduled, how do you know when the ferry is coming?

スライド 6

1 The scheduled time of departure for my trip was delayed by one day due to inclement weather. The shipping company is responsible for informing all passengers, but the system in place is still very rudimentary.
Taylor Searcy, 2015/05/14

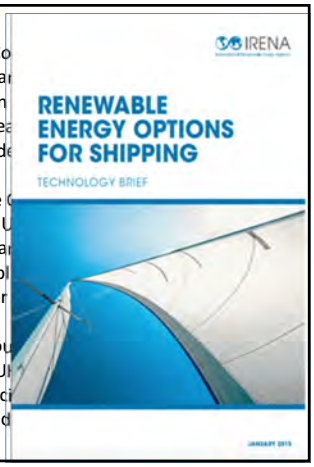
USP's Sustainable Sea Transport Research Programme

- USP is owned by 12 PICs
- Sustainable sea transport research since 2012
- Pacific islands region is the most dependent region in the world on imported fossil fuels – transport biggest user
- Sea transport is the lifeline to PICs and communities

Red stars show location of the University of the South Pacific member countries – there are campuses in each country

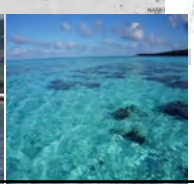
Brief summary of key outputs:

- ✓ Sustainable Sea Transportation Co
- ✓ Development of a Regional Resea Pacific to transition to low carbon
- ✓ Postgraduate (MSc and PhD) rese
- ✓ Development and delivery of und in sea transport and shipping.
- ✓ Establishment and hosting of the Transport (OCST) webpage with IU
- ✓ Republic of the Marshall Islands a Micronesian Center for Sustainabl
- ✓ Development of online Toolkit for sea transport for UNCTAD.
- ✓ Numerous presentations to variou Switzerland, Holland, Germany, U Australia as well as across the Pac leading academic journals and ind technology brief).



Research proposal in South Lomaiviti (Gau, Batiki and Nairai islands)

✓ Sustainable Sea Transport and its Socio-economic implications



Gau Island
90km East of Fiji's Capital Suva
Population 3,000

Research proposal in South Lomaiviti (Gau, Batiki and Nairai islands)

✓ Sustainable Sea Transport and its Socio-economic implications

1. Builds on past projects
2. Focus on effect of sustainable sea transport on livelihoods and island economies
3. Survey of current sea transport use:
   - Basic human needs (education, food, health)
   - Economic activities (sending fish, crops and other products to Suva; bringing fuel and other products to the islands; tourists)
4. Survey on "balance and preference" on costs, time, frequency, comfort, safety, etc.

Hypothesis: Low cost/low fuel use vessels will provide more benefit to islanders than current high cost/high fuel use vessels

Feasibility study: hire of hybrid wind-powered vessel to sail between Southern Lomaiviti islands and Suva for 1 year to prove the hypothesis

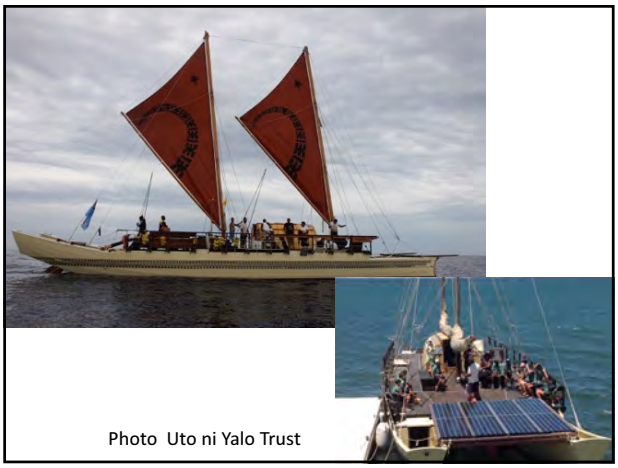


Photo Uto ni Yalo Trust

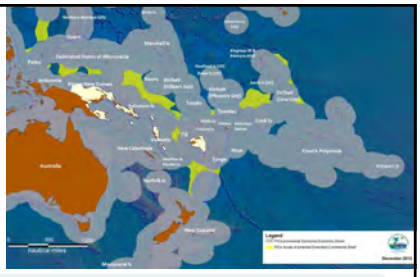
Session 2 d.

Deep Seabed Mineral Activities in the Pacific Islands Region

2nd IO Net General Meeting
Tokyo Japan

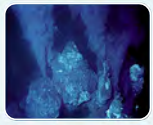
Mike Petterson
Director – Geoscience Division
Pacific Community

National Jurisdictions of PICTs



Sea Area	• A total area of 27.8 million km^2 of EEZ
Land Area	• About 531,000 km^2 (a ratio of 52:1)
Extended Continental Shelf	• An additional 2.0 million km^2

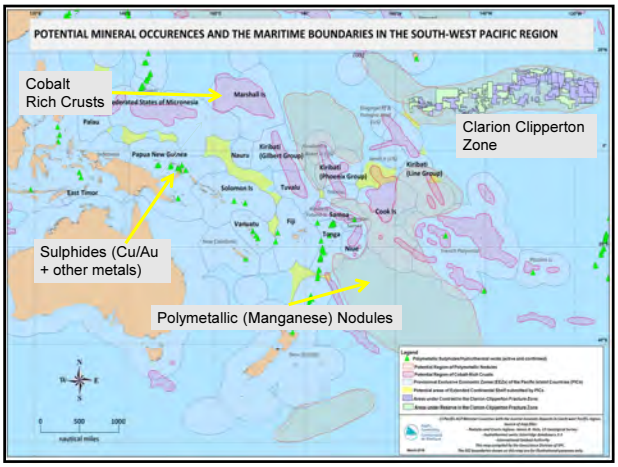
Deep Seabed Minerals Potential



Seafloor Massive Sulphides:
- PNG
- Tonga
- Solomon Islands
- Vanuatu
- Fiji

Manganese Nodules:
- Cook Islands
- Kiribati

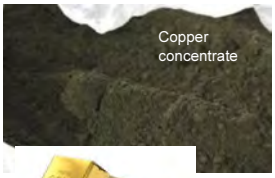
Cobalt-rich Crusts:
- Republic of the Marshall Islands
- Federated States of Micronesia
- Kiribati



Drivers of Marine Minerals Development

- Increasing global demand for metals;
- High metal prices;
- Decreasing metal concentration in terrestrial mineral deposits;
- High concentration of certain metals in offshore mineral deposits;
- Significant improvement in marine mining technologies;
- Increasing demand for non-traditional metals such as REE.

Economic Issues

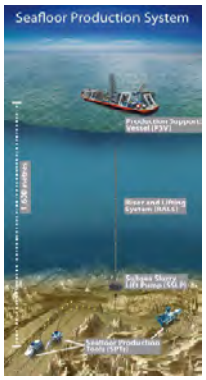


- SMS deposits are higher in mineral content than on-land deposits:
- Typical value of a tonne of land based ore: US$50-200.
- Typical value of a tonne of SMS ore: US$500-1500.
- One full mining operation could produce export revenues of up to US$500m pa and taxes & royalty of up to US$50m pa.

Exploration Interest in "the Area"

Foreign Partners	• **Nauru** – Nauru Ocean Resources Inc • **Tonga** – Tonga Offshore Mining Ltd
State Owned Enterprises	• **Kiribati** – Marawa Research and Exploration Ltd • **Cook Islands** – Cook Islands Investment Corporation
Other Interested Countries	• Fiji and Tuvalu

Recent DSM Activities

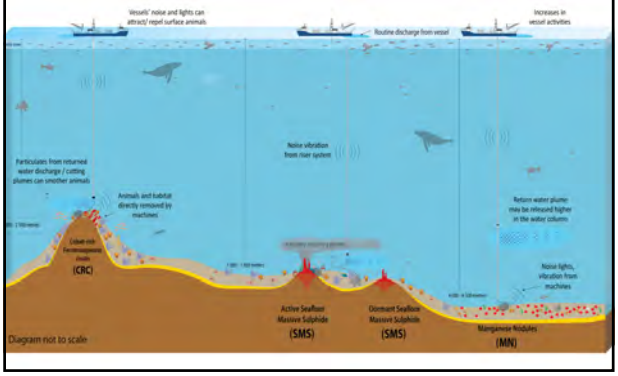


- Exploration licenses issued in PNG, Tonga, Solomon Islands, Fiji and Vanuatu;
- KIOST will be undertaking DSM exploration in Fiji in late 2016;
- Mining License granted by PNG to Nautilus Minerals in 2011.
- Mining Technology: construction expected to be completed by end of 2017;
- Mining scheduledto commence at the Solwara 1 site in 2018.

Update on the Solwara 1 Project PNG

- Company restructuring plan:
  - completing the construction of the mining equipment,
  - reducing company staff number, and
  - bridge financing of USD 20million secured allowing the company to attract additional financing and joint ventures
  - project schedule delayed and mining forecasted to commence in 2019, depending on availability of funds.

Potential Impacts from DSM Mining



Deep Sea Mining: Some Knowns Many Unknowns

Key to understanding the potential of deep sea mining is:

- Understanding the extent and quality of mineral resources.
- Identifying the value of the minerals given varying prices and the technology available.
- Deducting the capital and operating costs.
- Determining the social and environmental impacts.
- Understanding how possible returns could be shared among stakeholders.

More information is needed before speculating on the cost structure and profitability of deep sea mining at this stage

Learning should be expected across both operational efficiencies and regulatory compliance monitoring.

Full appraisal of net economic benefits must incorporate environmental and social risks

SPC-EU Deep Sea Minerals Project

Objective: to strengthen the system of governance and capacity of Pacific ACP States in the management of DSM through:

(i) development and implementation of sound and regionally integrated legal frameworks;

(ii) improved human and technical capacity, and

(iii) effective environmental monitoring systems.

SPC-EU Deep Sea Minerals Project
Pacific ACP States

EUROPEAN UNION

Pacific Community
Communauté du Pacifique

DSM Policy and Legislation in PICs

Country	DSM Policy	DSM Legislation	National Offshore Minerals Committee Established
Cook Islands	✓	✓	✓
FSM		presented to Congress	
Fiji	under review	✓	✓
Kiribati	under consultation	(draft)	✓
RMI	under consultation	under consultation	✓
Nauru		✓	✓
Niue	(draft)	(draft)	
Palau			
PNG	under consultation	under review	✓
Samoa			✓
Solomon Is.	(draft)		
Timor Leste			
Tonga		✓	✓
Tuvalu	under consultation	✓	
Vanuatu	under consultation		✓

Cost-Benefit Analysis of Deep Seabed Mining

- A CBA of Deep Sea Mining in the Pacific conducted in 2015.
- Results indicate that DSM mining has the potential to make the people of PNG & CI better off.
- In contrast, given current technology and commodity prices, the mining of Cobalt rich crusts is unlikely to improve the well-being of RMI's residents.

Development of Regional DSM Frameworks

4 Regional DSM Frameworks developed:

(1) Regional Legislative and Regulatory Framework;

(2) Regional Financial Framework;

(3) Regional Environmental Management Framework;

(4) Regional Scientific Research Guidelines.

Assistance provided by SPC

National DSM Committees	National Consultation	National DSM Policy	National DSM Law
Awareness Raising Events	Publications	Regional Guidelines / Frameworks	Regional Workshops
Data Management	Cost Benefit Analysis	Contracts and Negotiations	DSM Documentaries / Information Brochures
Technical Training	Internships	Attendance at International Events	Regional DSM Treaty

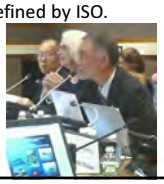
Project Partners

- Our donor partner – the European Union
- UNEP/GRID-Arendal
- Pacific Finance Technical Assistance Centre
- National Institute of Water and Atmospheric Research, NZ
- US Geological Survey

Seabed Resource Development Reconciling with Marine Environment

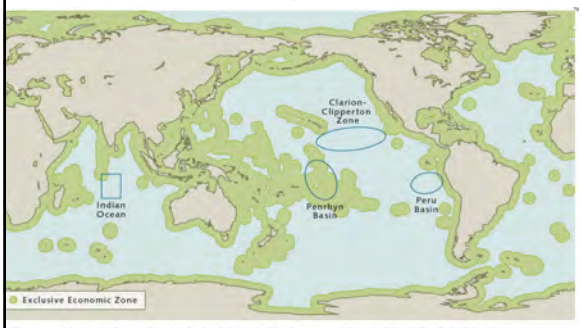
1. Ocean floors may have rich undeveloped resources. Biodiversity in the deep sea
2. Environmental Impact of seabed resource exploration
3. Marine Environmental Impact Assessment
4. Next-Generation Technology for Ocean Resources Exploration
5. UN seeks Internationally Legal Binding Instruments for BBNJ
6. We seek a standard defined by ISO.

松田裕之 Hiroyuki Matsuda
Yokohama National University



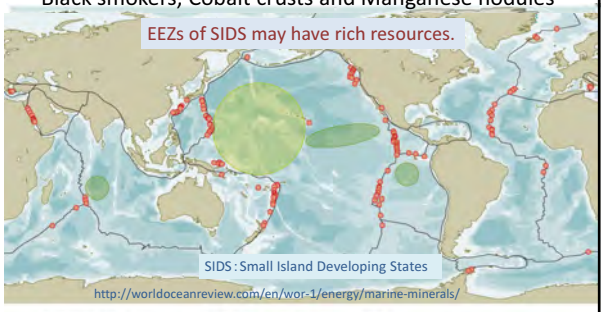
Thanks to Prof. Shirayama and members of OPRI & 海のジパング

EEZs and rich manganese nodules areas



http://worldoceanreview.com/en/wor-3-overview/mineral-resources/manganese-nodules/

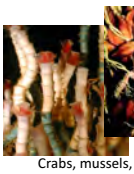
Ocean floor = Treasure house of undeveloped resources? Black smokers, Cobalt crusts and Manganese nodules

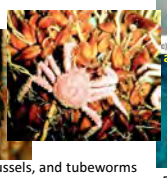


http://worldoceanreview.com/en/wor-1/energy/marine-minerals/

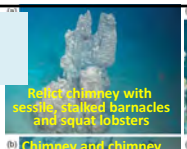
http://worldoceanreview.com/en/wor-3-overview/mineral-resources/cobalt-crusts/

Biodiversity near hydrothermal vents

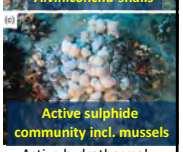




Crabs, mussels, and tubeworms are found in hydrothermal vent environments on the seafloor.
http://www.waterencyclopedia.com/

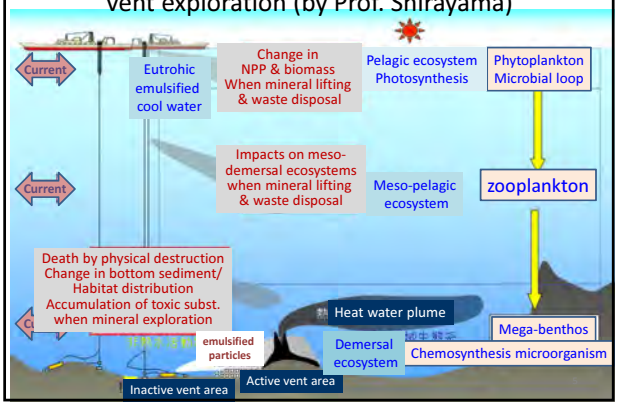


Fauna of inactive sulphide deposits, Manus Basin.
(Van Dover 2010 ICES J)



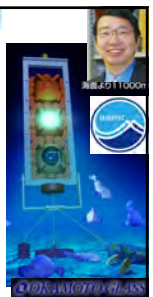
Active hydrothermal vents, Manus Basin
(Van Dover 2010 ICES J)

Possible environmental risk by hydrothermal vent exploration (by Prof. Shirayama)



SIP:Next-Generation Technology for Ocean Resources Exploration (2014-2018)

- Japan needs to draw up a legal framework to the international community. This system should provide a new model for comprehensive governance of the oceans.
- Accordingly, this project will aim to expand and improve the existing system and propose a method for turning the marine environment observing and monitoring techniques developed by Japan.



http://www.cosie-sip.ynu.ac.jp/en_links

UN seek International Legally Bind Instrument (ILBI)

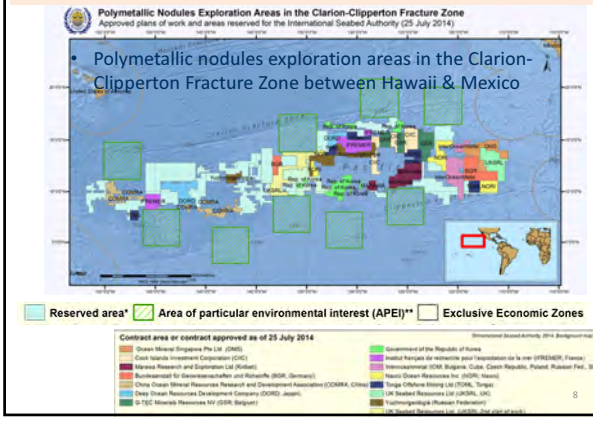
- Currently, the UN is considering drawing up a new system for managing the ABNJ, which would include the Area and high seas, focusing on marine genetic resources, area-based management tools including MPAs, EIAs, and capacity-building and the transfer of marine technology.
- Regarding ABNJ, Japan urgently needs to develop a type of ocean governance structure in harmony with environmental protection.

MPA = Marine Protected Area
EIA = Environmental Impact Assessment

ABNJ = Areas Beyond National Jurisdiction

7

Defining MPAs for manganese nodule exploration (Nov. 2012)



- Polymetallic nodules exploration areas in the Clarion-Clipperton Fracture Zone between Hawaii & Mexico

8

Nautilus Increases Mineral Resources in Papua New Guinea, but…

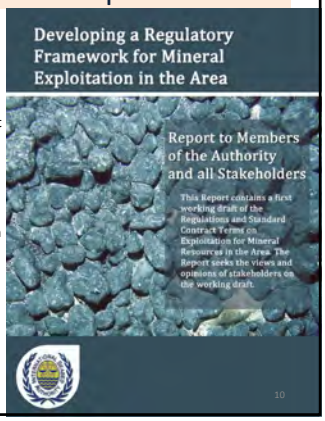
- The Solwara 1 Field was first identified by Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) in 1996, while Solwara 4 was discovered in 1991. Extensive research campaigns between 1993 and 1997 formed the base line knowledge for what would become more intensive commercial development activities. Solwara, means "salt water" in Tok Pisin. Since 2006, Nautilus has used the term 'Solwara' to describe it's PNG exploration projects and prospects during its reconnaissance and drilling campaigns.
- Nautilus was granted its first Mining Lease in January 2011 for Solwara 1, and the Environmental Permit for Solwara 1 was awarded in December 2009. The Solwara 1 deposit, which sits on the seafloor at a water depth of some 1600 metres, contains a copper grade of approximately 7%. That compares with land-based copper mines, where the copper grade today averages 0.6%. In addition, gold grades of well over 20 g/tonne have been recorded in some intercepts at Solwara 1 and the average grade is approximately 6 g/tonne.
- "the actual impact of any SMS (Seafloor Massive Sulfide) mining operations on the environment has yet to be determined". *(May 17, 2016 - Papua New Guinea Mine Watch)*

http://www.nautilusminerals.com/irm/content/png.aspx?RID=258

9

ISA Code for mineral exploitation

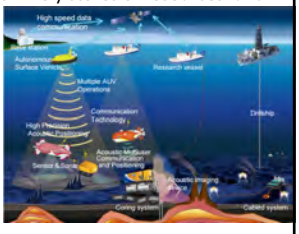
a) management of the resources with conservation & no unnecessary waste;
c) to allocate rights to exploit resources in the Area
g) to facilitate the adoption and development of risk assessment and management and others to measure, monitor and mitigate environmental and occupational health and safety…
j) to promote a robust, stable, predictable and cost-effective regulatory mechanism;
k) to develop the resources of the Area with reasonable regard to the rights and legitimate interests of other users of the marine environment;
l) to the prevention, reduction and control of pollution and other hazards to the marine environment,
m) to promote the safety of life and property at sea;



10

SIP:Next-Generation Technology for Ocean Resources Exploration (2014-2018)

1. Conduct scientific research related to the origins of oceanic phenomena –Collect and analyze ocean resource samples to explain the origins of ocean floor minerals and ore deposits; narrow down potential regions with likely stores of resources. and ecology.
2. Develop efficient ocean resource survey technologies to make a several-fold leap ahead in seabed mineral and other information collection efficiency.
3. Develop methods to forecast ecological changes based on the impact of ocean resource development



http://www8.cao.go.jp/cstp/panhu/sip_english/26-29.pdf

11

YNU-DEEPS "Deep-sea resource Exploration and Environment Protection Study"

- We will formulate a global standard for marine EIAs, assuming the standardization by ISO, and examine the applicability of existing legislation related to sustainable resource exploration and exploitation while taking deep-sea biodiversity into consideration. We will also propose an EIAs that can serve as a model for the global standard.
- ISO/TC8/SC13 has agreed to establish WG4 "Marine EIA" in Sep. 2016.

ISO = International Organization for Standardization
TC8 = Ship and marine technology technical committee
SC13 = Marine Technology subcommittee

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YNU-DEEPS

17 principles for the environmental management on marine activities (1)

1. Adopt the idea of Strategic Environmental Assessment (SEA) at the stage of the project planning
2. Involve various stakeholders' opinions at the stage of "scoping"
3. Include Social Impact Assessment (SIA) implementation in SEA
4. Possibility to adopt Environmental Assessment (EA) based on the project size and/or content
5. Environment monitoring and adaptive management during and after the EIA procedure, taking into the account of uncertainty
6. The Judgment project permission and/or EIA are based on various points of view, not only scientific aspect but also social acceptability among stakeholders
7. EIA before starting until after ending of the project
8. Include EIA assuming accidental conditions

15

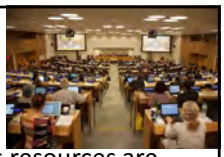
YNU-DEEPS

17 principles for the environmental management on marine activities (2)

9. Consider Transfer EIA (TEIA)
10. Adopt the Ecosystem approach
11. Adopt the Precautionary approach
12. Seek the best environmental practices
13. Emphasize the environmental baseline data in the EIA
14. Consider the Evidence-based EIA
15. Consider climate change mitigation and/or adaption
16. Return some part of profits to the activities for biodiversity conservation
17. Monitoring marine illicit activities such as IUU (Illegal, Unreported & Unregulated)

16

Article 136 of the UNCLOS…



- states "The Area [Ocean Floor and its subsoil in ABNJ] and its resources are the CHM". This provision states the principle of the Global Commons, and means that various stakeholders should strive toward the wise use and sustainable development of the Area and its resources, under the premise of the true Global Commons.

UNCLOS =United Nations Convention on the Law of the Sea
ABNJ = Areas Beyond National Jurisdiction
CHM = Common Heritage of Mankind

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JAMSTEC YNU 横浜国立大学 横浜市立大学

YNU-DEEPS "Deep-sea resource Exploration and Environment Protection Study"

1. Expansion & improvement of EIAs for marine development
   - A) Assessment of the importance of ecosystems and its preservation
   - B) Overall assessment of the EIA system for domestic seas
   - C) clarification of the EIA system for international organizations (ISA etc.)
   - D) Compilation of the guideline "Marine EIAs" as a model for Asian-Pacific
2. Deliberations for coordinating various activities in seabed on
   - E) the ideal method taking into account risk management
   - F) seabed marine resources and international management governance
   - G) marine spatial planning, mainly using MPAs
   - H) law enforcement activities in the EEZ and continental shelf
   - I) Compilation of "Ocean Governance Guide-lines" as a model for Asian-Pacific countries

ISA = International Seabed Authority
EEZ = Exclusive Economic Zone
MPA = Marine Protected Area
EIA = Environmental Impact Assessment

How to avoid the Tragedy of the Commons

1. To be divided into private property or EEZ of nations.
2. Forcing global policy (international legally binding instrument)
3. Co-management, Bottom-up approach in global commons*
   - CBD Aichi Biodiversity Target and UNFCCC Paris Agreement
4. Incentive by Carbon Credit in climate change, and Cap and Trade (ITQ) in fisheries management

*Global commons = resource domains or areas that lie outside of the political reach of any one nation State. (def. by UNEP)
ITQ = Individual Transferrable quota in fisheries

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PURSE SEINE FISHING VERSUS NATIONAL MARINE PARK

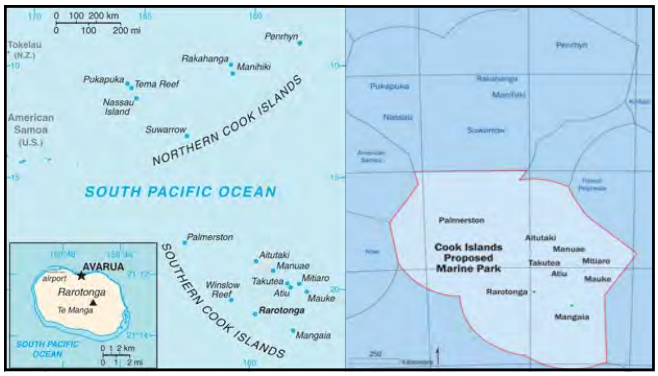
Session 2 c.

PRESENTATION AT SECOND GENERAL MEETING OF ISLANDS & OCEANS NETWORK
6-7 DECEMBER 2016 AT INTERNATIONAL CONFERENCE HALL, OCEAN POLICY RESEARCH INSTITUTE, SASAKAWA PEACE FOUNDATION, TOKYO
BY: MS IMOGEN INGRAM
FROM: ISLAND SUSTAINABILITY ALLIANCE CIS INC ("ISACI")
RAROTONGA, COOK ISLANDS
e: islandsustainabilityalliance@gmail.com

Cook Islands
AS SOLID AS THE ISLANDS W

COOK ISLANDS MARINE PARK ("MARAE MOANA")

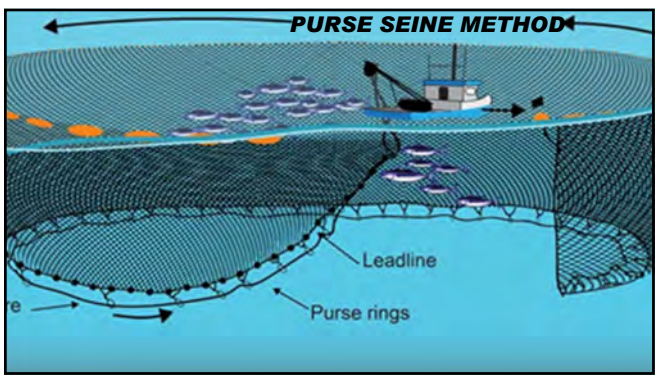
- In mid 2012, Cook Islands' Prime Minister Henry Puna established a 1.1 million square kilometer marine park in the Southern Cooks, simultaneously outlining a vision for the sustainable management of the nation's large exclusive economic zone (EEZ).
- He had previously established a marine park Steering Committee [comprised of representatives of civil society, traditional leaders and government agencies] to help shape the establishment and designation of the park.
- Oceans 5 set up funding for three years beginning in 2013 through the Marae Moana Establishment Trust, a local organization of respected community environmentalists. Project activities will focus on consultations with traditional leaders and outer island communities; developing appropriate administrative and legal frameworks; and designing communications strategies to engage Cook Island residents.



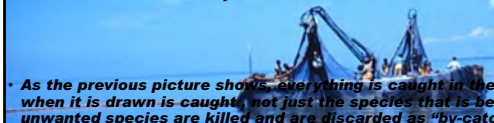
MOST FISH IN NORTHERN ISLANDS, EXCLUDED FROM MARINE PARK

- Prime Minister Puna took care to include the traditional leaders as custodians of natural resources.
- As can be seen by the two maps shown together, the Cook Islands Marine Park boundaries are in the southern Cook Islands.
- Most tuna are equatorial, found in the northern Cook Islands, which are excluded from the Cook Islands Marine Park.
- Fishermen in those northern Cook Islands are reporting significantly lower catches than normal. This is a serious threat to their food security, because there are not stores where they can go to buy other food to eat.

PURSE SEINE METHOD



PURSE SEINE CONSIDERED WASTEFUL, NOT SUSTAINABLE, WAY TO FISH



- As the previous picture shows, everything is caught in the purse seine net when it is drawn up, not just the species that is being targeted. The unwanted species are killed and are discarded as "by-catch".
- This method kills the breeding fish which would normally provide the next generation. Last week, EU representatives would not quantify the volume of discarded by-catch but thought it might be about 3%.
- For the past three years there have been public demonstrations against signing agreements for purse seining.
- A petition of 3,000 signatures (50% of the voting population) was delivered to Parliament, but ignored. There have also been several public protests.

EU PARTNERSHIP AGREEMENT FOR PURSE SEINE FISHING

- In January 2013, the public were advised that the Cook Islands Government had signed purse-seine fishing agreements with the EU, South Korea and the U.S.
- During 2014 a record NZD$14 million was received for fish exports, mainly caught using purse-seine fishing.
- In 2015, a petition objecting to purse-seine fishing as an unsustainable fishing practice was signed by 3,000 Cook Islanders, about 50% of registered voters.
- Last week, Cook Islands traditional leaders publicly objected to purse-seine fishing in a traditional challenge before a public meeting on the EU Partnership Agreement on purse-seine fishing. They were not permitted to speak against it at the public meeting but were offered a private meeting with the EU representatives.

INCONSISTENT STANCE OF COOK ISLANDS GOVERNMENT WITH REGARD TO TRADITIONAL LEADERS

- With regard to the Cook Islands Marine Park, the stance of the Cook Islands Government is inclusion of traditional leaders and recognition of their role in stewardship of natural resources.
- With regard to the purse-seine fishing issue, the stance of the Cook Islands Government is the reverse, despite considerable public protest about unsustainable fishing and what it means for the future.

TRADITIONAL LEADERS OR "ARONGA MANA" ARE PURSUING COURT ACTION AGAINST THE COOK ISLANDS GOVERNMENT

- Using a clause in the Cook Islands Constitution that states the opinion of traditional leaders should be taken account of, traditional leaders are asserting that they are experts in marine protected areas.
- On that basis have asked for a judicial review with the intention of overturning the EU Partnership Agreement for purse-seine fishing on the grounds of insufficient consultation with local experts.

Session3 :

Response to Climate Change and Variability

JICA and Climate Change in SIDs

JICA's Approach to Climate Change in the Pacific

December, 7th 2016 @ OPRI-SPF

WAKASUGI, Satoshi
Director,
Pacific and Southeast Asia Division 6,
Southeast Asia and Pacific Department
JICA

Japan International Cooperation Agency

Contents

1. PALM7 and Climate Change

PALM7's 7 Pillars and JICA's Areas for Cooperation with PICs

PALM7 Commitment: 55 billion Japanese Yen in Next 3 Years
Approx. 540 million USD (as of 12Aug,2016)

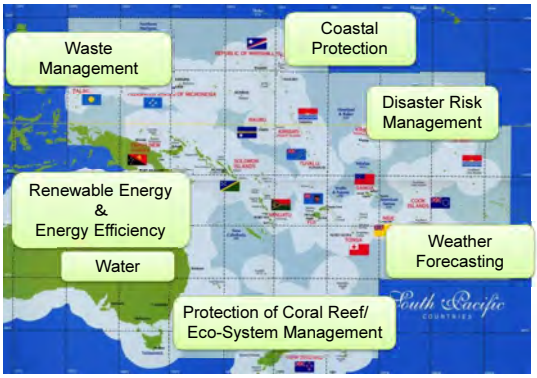
Disaster Risk Reduction	Climate Change	Environment	People-to-People Exchange	Sustainable Development	Oceans: Maritime Issues and Fisheries	Trade, Investment and Tourism

JICA's Cooperation to the PICs:
Continuation of 4 Areas in JICA Country Analysis Paper (Pacific)

Disaster Risk Management	Environment	Improvement of Social Services	Strengthening Base of Economic Activities / Ensuring Lifelines

1. PALM7 and Climate Change

JICA's Climate Change related projects and approaches



1. PALM7 and Climate Change

PALM7 "Addressing together climate change and environment problems"

✓Strengthening capacity to address climate change intensively in 14 PICs
Green Climate Fund (GCF) : out of pledged 10.2billionUSD, aims to allocate a quarter (1/4) to vulnerable PICs.

✓Comprehensive assistance in the area of climate change in cooperation with SPREP

2. with SPREP

PALM7 "Comprehensive assistance in the area of Climate Change in cooperation with SPREP"

SPREP Secretariat of the Pacific Regional Environment Programme

JICA

Regional hub for **Actions!!**

Establishment of Pacific Climate Change Centre (PCCC) at SPREP

Image of Bird's Eye View of the Proposed Building

M/D signing May, 2016

2. with SPREP- JICA's approach

"To overcome vulnerability of PICs and communities through capacity building of policy makers of the Government of PICs"

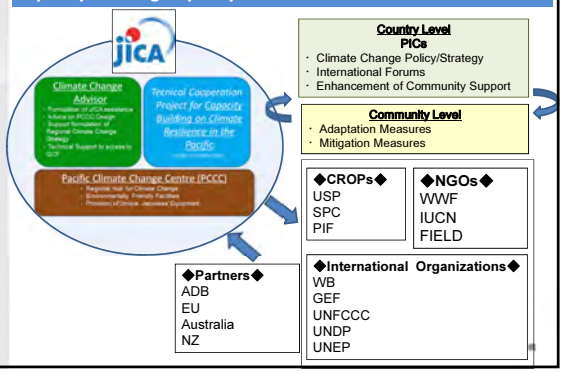
Climate Change Advisor
- Formulation of JICA assistance
- Advice on PCCC Design
- Support formulation of Regional Climate Change Strategy
- Technical Support to access to GCF

Tecnical Cooperation Project for Capacity Building on Climate Resilience in the Pacific
- Under consideration

Pacific Climate Change Centre (PCCC)
- Regional Hub for Climate Change
- Environmentally Friendly Facilities
- Provision of Unique Japanese Equipment

2. with SPREP- in colloboration with,,,

"To overcome vulnerability of PICs and communities through capacity building of policy makers of the Government of PICs"



Pacific Climate Change Centre (PCCC) at SPREP

Image of North Side

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3. other CC related JICA projects

COASTAL EROSION

T/C Gravel Beach Nourishment Pilot Project (Tuvalu)

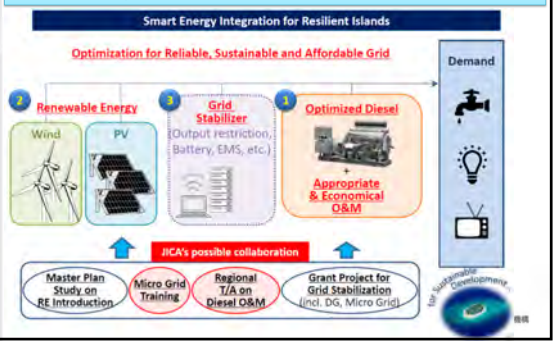
- Use of local resources and environmentally friendly approach
- Community ownership to maintain and sustain newly nourished beach

3. other CC related JICA projects

CO2/ENERGY COSUMPTION

Hybrid Island Program (in many of PICs)

- Smart Energy Integration for Resilient Islands
- Technical Cooperation to be started in 5 PICs



3. other CC related JICA projects

METEOROLOGY

T/C Reinforcing Meteorological Training Function of FMS

- To strengthen the training capabilities of Fiji Meteorological Service
- To develop capacity in participating countries through group training course, in-country training, and OJT

- **The 4-year T/C project was launched in December 2014**
- **Japanese governemnt/JICA supporting FMS, also a Regional Specialized Meteorological Centre (RSMC), since 1996 through grant aid (new facilities and equipment), third-country training for the PICs, etc.**

Project Area

3. other CC related JICA projects

CORAL

T/C Sustainable Management of Coral Reef and Island Ecosystems: Responding to the Threat of Climate Change (Palau / SATREPS)

2000: Japanese Grant Aid
Palau International Coral Reef Center established
2000-2012: JICA Technical Cooperation
- Institutional and Human resources Development
- Monitoring Scheme for Marine Protected Areas Network

2013-2018: JICA-JST Science and technology cooperation "Sustainable Management of Coral Reef and Island Ecosystems: Responding to the Threat of Climate Change"
- **Partnership with University the Ryukyus (Okinawa)**
- **Protection and management of coral reef in Micronesia region**
- **Policy proposals on adaptive reef management, based on responses studies against multiple stresses**

Thank you

Japan International Cooperation Agency

Session 3 a.

SPREP's Response to Climate Change and Variability

Islands and Oceans Net 2nd General Meeting

7 December, 2016

The Sasakawa Peace Foundation

Tokyo, Japan

SPREP's Climate Change Activities

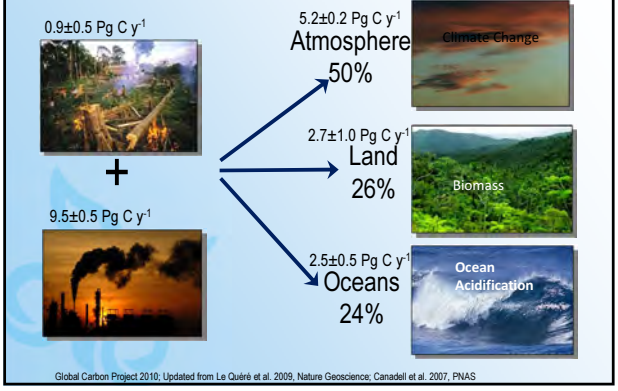
- Regional mandate on climate change from the Pacific Island Leaders
- Supporting the region on issues related to
  - Adaptation – National adaptation planning, adaptation projects
  - Mitigation – SIDS Dock, access to renewable energy
  - Policy and Science – UNFCCC obligations, DRR, knowledge management
  - Access to Climate Finance – Accredited as a Regional Implementing Entity for the Green Climate Fund and Adaptation Fund, assisting countries with project design and execution
  - Design and promotion of ecosystem based adaption measures and integrated coastal management

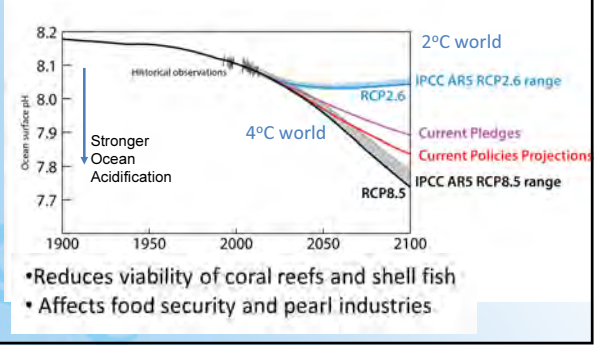
SPREP's Climate Change Activities

- Framework for Resilient Development in the Pacific
  - Regional integrated framework to address climate change and disaster risk management
- Pacific Climate Change Centre
  - Being designed with support from JICA and the Government of Samoa, construction to begin in 2017
  - A regional hub for inclusive collaboration and coordination to meet the adaptation and mitigation priorities for the Pacific

Climate Change and Ocean Priorities

- Ocean Acidification (and warming oceans)
- Sea Level Rise
- Increasing Storm Severity
- Invasive Species





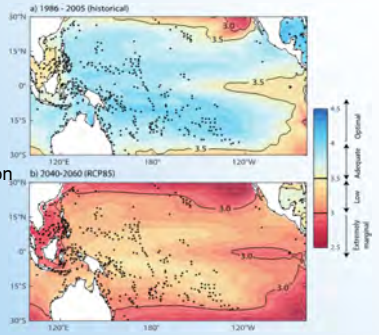
Ocean Acidification in the Pacific Islands

The Pacific Islands are particularly vulnerable to the impacts of ocean acidification due to the high reliance on the ecosystem services provided by coral reefs:

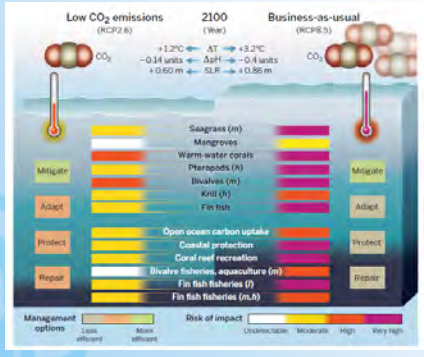
- Coastal fisheries are account for ~USD200 million in subsistence value and an additional ~USD165 million in commercial value
- Communities in the region derive most of their dietary protein from fish
- Coral reefs provide a buffer from storm surges
- Coral reefs are a major tourism attraction

Ocean Acidification projections for the Pacific

- Current ocean pH 8.1
- Decline of 0.3 units by 2050 (RCP8.5)
- Aragonite saturation decline to 3 – 3.5
- Marginal for calcification
- Significant biological implications



Coral Bleaching in American Samoa



Gattuso et al. *Science* 2015

Current Priority Areas

- Research and Monitoring
  - Current conditions and natural variability
  - Local species diversity and vulnerabilities
  - Down-scaled future projections
  - Information for informed decision making
- Practical Adaptation Options
  - Locally owned and driven interventions
  - Looking to build resilience to ocean acidification through the reduction of other local stressors such as over fishing, land-based sources of pollution, etc
- Communications and Capacity Building
  - Raising awareness of the ecosystem services provided by coastal ecosystems and how to effectively manage them

Current activities

- NZ Pacific Partnership on Ocean Acidification
  - Pilot sites in Fiji, Kiribati, Tokelau, and Kiribati, focusing on monitoring, implementing practical adaptation options, and capacity building
- Coastal Ecosystem Resilience program
  - GCF thematic program, also developing it as a full program of work with other partners
  - Considering all stressors on coastal ecosystems, and addressing them in a comprehensive manner
- Building partnerships to increase support to our members

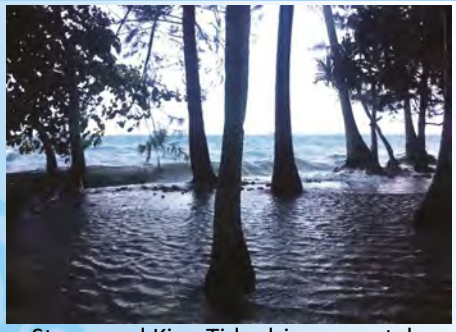
Sea Level Rise and Increased Storm Severity in the Pacific Islands

- Some Pacific island countries experience up to four times higher sea-level rise than the global average.
  - Global average of 3.2 mm sea-level rise per year
  - 12 mm sea-level rise per year in the tropical Western Pacific (Micronesia)
- Atoll nations in particular are at risk
  - Many have a maximum elevation of only 2-3 meters above sea level
  - Increased risk to storm surge, especially if coral reefs are not healthy
  - This risk is compounded by the expected future increase in severe storm severity

Sea Level Rise and Increased Storm Severity in the Pacific Islands

- While easy to visualise, the image of "islands under water" is a disservice in many ways
  - Fresh water is always a limited commodity and sea level rise is further constraining fresh-water lenses
  - Sea level rise also limits the amount of farmable land and increases susceptibility to storm surges
- The risks posed by sea level rise and climate change has prompted Kiribati's former president to call for a "migration with dignity" rather than waiting for islands to become uninhabitable
  - The implications of migration due to climate change have not been fully agreed upon by the UNFCC and UNCLOS

Storm and King Tide driven coastal inundation in Majuro, Oct 2016



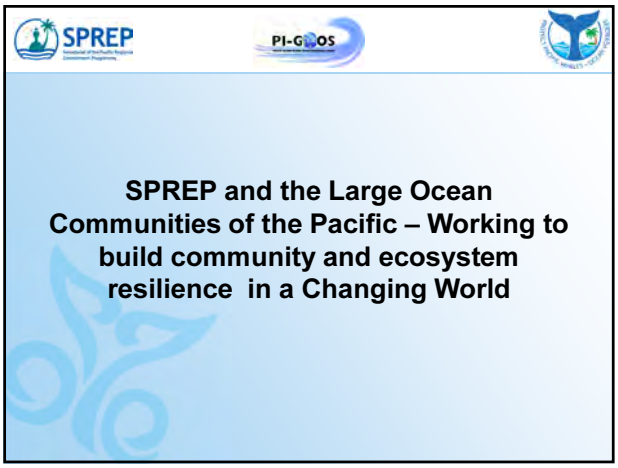
Storm and King Tide driven coastal inundation in Majuro, Oct 2016

Sea Level Rise and Increased Storm Severity in the Pacific Islands

- In addition to increasing risk to coastal communities due to inundation and storm surge, increased storm severity poses a risk to coastal ecosystems
- Major storms are highly devastating to coral reefs and seagrasses, which can take years to recovers. The loss of these also leads to decreased food security and increased vulnerability to future storms

Climate Change and Invasive Species

- In the Mediterranean and parts of Australia tropical fish species have been observed in formerly temperate waters, displacing local fish and altering fisheries
- Increased temperatures also puts corals at greater risk for disease
- The Pacific Islands are particularly vulnerable to invasive species due to their remoteness and high dependence on imported goods – many marine invasive species can be transported in ballast water and due to fouling on ships
- Poorly regulated Talipia aquaculture has also led to their introduction to the region


SPREP
PI-GOOS
SPREP and the Large Ocean Communities of the Pacific – Working to build community and ecosystem resilience in a Changing World

Session 3 a.

THE SASAKAWA PEACE FOUNDATION

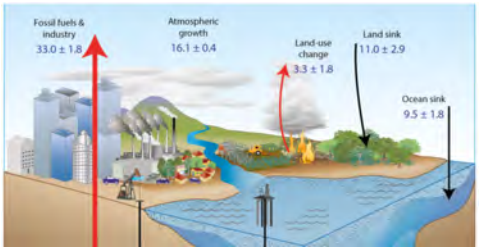
THE OCEAN POLICY RESEARCH INSTITUTE

Construction of Monitoring Platform on Ocean Acidification

Tomohiko Tsunoda
OPRI-SPF
Ocean Policy Research Institute,
The Sasakawa Peace Foundation

Ocean acidification is directly caused by the increase of carbon dioxide (CO2) levels in the atmosphere. When CO2 enters the ocean it rapidly goes through a series of chemical reactions which increase the acidity of the surface seawater (lowering its pH). The ocean has already removed about 30% of anthropogenic CO2 over the last 250 years, decreasing pH at a rate not seen for around 60 million years.

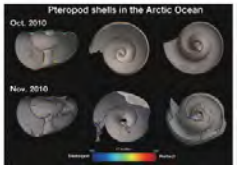
This effect can be considered beneficial since it has slowed the accumulation of CO2 in the atmosphere and the rate of global warming; without this ocean sink, atmospheric CO2 levels would already be greater than 450 ppm.



Source: CDIAC; NOAA-ESRL; Le Quere et al.,2015

Global CO2 budget (2005-2014)

However, the continuation of rapid change to ocean chemistry is likely to be bad news for life in the sea; it will not only cause problems for organisms with calcium carbonate skeletons or shells (such as oysters, mussels, corals and some planktonic species) but could also impact many other organisms, ecosystems.

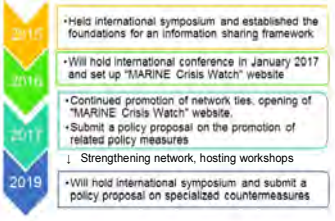


"Shell degradation of Pteropods in the Arctic" (K.Kimoto, JAMSTEC)

As the IPCC 5th report points out the risks to marine ecosystems, global warming as well as ocean acidification are becoming major subjects that must be addressed. Though actions are being taken in Europe and the US, along with discussions such as CBD and RIO+20, research in Japan is still insufficient due to a lack of understanding by policy-makers and the general public.

Development of Communication Tools on Ocean Acidification

OPRI-SPF has launched a 5-year program of research to observe and analyze the changing situation. Through this program, we aim to raise awareness regarding ocean risks and develop policy recommendations in order to fill the perception gaps between the serious situation and current levels of understanding.



Targeting:
- **Platform for Integration of Scientific Knowledge / Prediction with Data Management Systems**
- **Public awareness/Capacity Building**
- **Ocean Policy Making on Global Scale**

Activities of FY 2015

Workshop

Nov.2015

Feb, 2016

Members (1st workshop)
-Dr. Yoshihisa Shirayama (Chair, JAMSTEC)
-Dr. Yukihiro Nojiri (Hirosaki Univ.)
-Dr. Masahiko Fujii (Hokkaido Univ.)
-Dr. Naomi Harada (JAMSTEC)
-Dr. Yasumasa Miyazawa (JAMSTEC)
-Dr. Tsuneo Ono (FRA, Japan Fisheries Research and Education Agency)

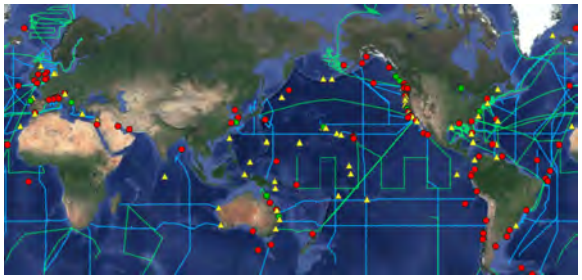
Members (2nd workshop)
Dr. Biliana Cicin-Sain (University of Delaware)
Dr. Jean-Pierre Gattuso (CNRS), Dr. Toshio Yamagata (JAMSTEC)
Dr. Naomi Harada, Dr. Yasumasa Miyazawa, Dr. Tsuneo Ono, Dr. Makiko Kubo (UT) , Dr. Masahiko Fujii, Dr. Masao Ishii (MRI), Dr. Atsushi Suzuki (AIST), Mr. Tetsuji Ida (Kyodo Press) etc.

International Symposium (Feb, 2016)

OPRI-SPF held an international symposium, "Ocean Warming and Acidification - Current State and Countermeasures" to share information with the 130 participants on both the domestic and international situations, to discuss what areas of the problems Japan should engage with and what countermeasures may be pursued.

Speakers; Dr. Shirayama, Dr. Cicin-Sain, Dr. Gattuso, Mr. Miyahara (President, FRA), Mr. Ida, Dr. Yamagata

There is a critical need for long-term monitoring of ocean acidification in the Pacific Islands region as current monitoring is insufficient and atoll nations such as Kiribati, Tuvalu and parts of Fiji are under direct threat from sea-level rise and degradation of coral reefs and associated fisheries from climate change and ocean acidification. Accurate and consistent time-series for ocean acidification and other key parameters of the oceanic carbonate system would be crucial for informed climate predictions and decision-making in the region and filling gaps of global ocean acidification monitoring network.



Ocean Acidification(OA) monitoring stations etc.(Source:GOA-ON)

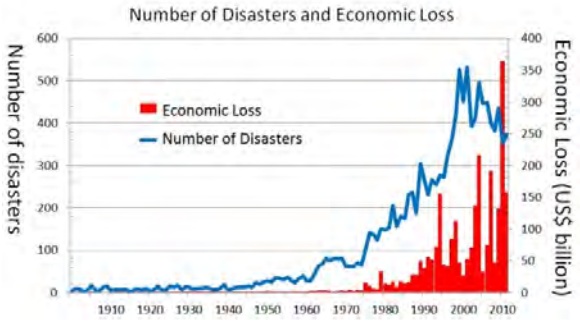
Disaster Risk Reduction in Small Island Development States based on International Frameworks

2016.12.6
Satoru Mimura
Deputy Director General, Global Environment Department
Senior Researcher, JICA Research Institute
Japan International Cooperation Agency

Contents

1. Increase in Natural Disasters

Increase in Natural Disasters



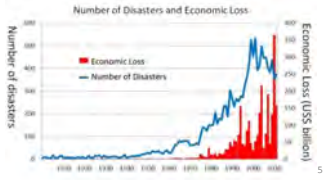
Source: EM-DAT

Why do disasters increase?

Climate Change

Urbanization
Population Explosion

Environmental Disruption



Natural Disaster and Disaster Risk Reduction

- **After the year 2000, 1 million were killed, 3 billion were affected by natural disasters.**
- **90% of victims lived in developing countries.**
- **US$ 1.68 trillion economic losses were caused by the major intensive global disasters from 2001 to 2011.**
- **Amid increase in natural disaster, "Disaster Risk Reduction" is inevitable for sustainable development.**

Tsunami in the Indian Ocean

Photo:JICA

Cyclone in Myanmar

Photo:MLIT

Great flood in Thailand

Photo:JICA

Haiti earthquake

Photo:JICA

2. Vulnerability of the Small Islands

7

World Risk Index (2014)

Disaster Vulnerable Countries

1. Vanuatu
2. Philippines
3. Tonga
4. Guatemala
5. Bangladesh
6. Solomon Islands
7. Costa Rica
8. El Salvador
9. Cambodia
10. Papua New Guinea
11. Timor-Leste
12. Brunei
13. Nicaragua
14. Mauritius
15. Guinea Bissau

8

Typhoon and Cyclone, Storm Surge, Flood, Drought and Tsunami in the Pacific

Disadvantages of Small Islands

Smallness

Dispersion

Isolation

Long coastal line
Low lying islands
Distance from neighbor countries
Limitation of administrative capacity

High Disaster Risk, Low Coping Capacity

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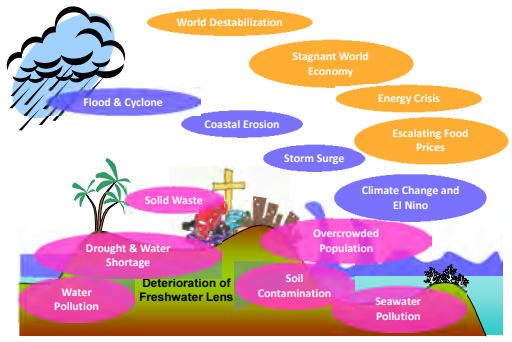
Vulnerability of Small Islands

Need to sustain Small Islands Economically, Socially and Environmentally



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3. Disasters in the Pacific

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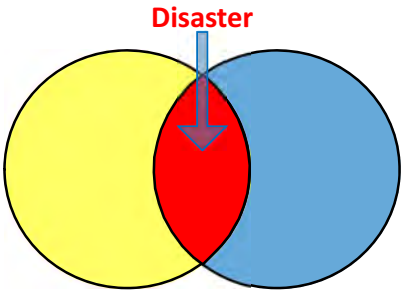
Cyclone PAM

March 2015, Vanuatu

Earthquake and Tsunami

2013 Solomon Islands, 2009 Tonga and Samoa, 1998 PNG

Hazard and Vulnerability - determinants of disaster



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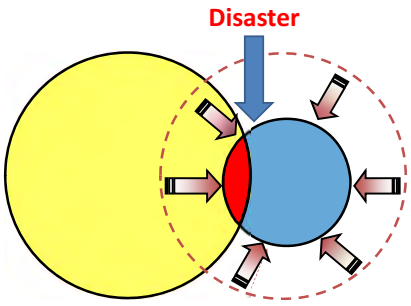
Decrease impact of Disasters



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4. Framework for Disaster Risk Reduction

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Sendai Framework for Disaster Risk Reduction 2015-2030

The 3rd UN World Conference on Disaster Risk Reduction
Sendai, 14-18 March, 2015

The Framework was adopted as the guiding policy for Disaster Risk Reduction by 180 countries

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Sendai Framework for Disaster Risk Reduction 2015-2030

Priorities for Action

1. Understanding disaster risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

Before Disasters — After Disasters
Prevention and Mitigation >>> Response and Recovery

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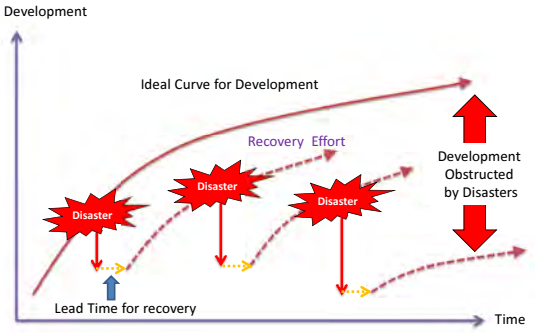
Disasters Obstruct Development



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Guiding principles of Sendai Framework

- SIDS are recognized as countries facing specific disaster risk challenges that need special attention and support from International Society.
- Central Government of all countries including SIDS are primarily responsible for Disaster Risk Reduction in their countries.
  - ✓*CBDR (common but different responsibility) principle should not be applied for Disaster Risk Reduction*

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5. Disaster Risk Reduction in Small Islands

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Strengthening Capacity of Governments

Comprehensive DRR Training for administrators

Capacity

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Technical transfers to meteorological services in the Pacific

Training course for Met Service staff in the Pacific

Technology

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Community Based Disaster Risk Management

Water Level Gauge and Warning System operated by the community

Inclusiveness

Improvement of village path

Community Center (Shelter)

Volunteer working for Disaster Management Office

26

Grant Aid and Concessional Loans

Weather observation station

Dyke and break water

Investment

Port Project taking CC into account

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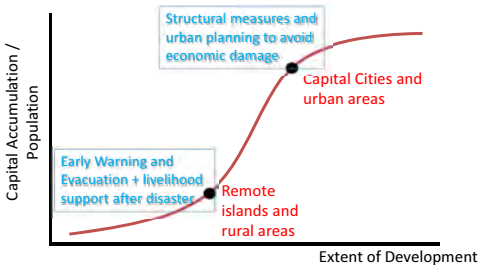
No One-Size Fits All



Tailored Solution is required

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Necessary measures for Disaster Risk Reduction in SIDS

- Capital Cities and Urban Areas
  - Structural measures and urban planning to prevent disaster loss
- Remote Islands and Rural Areas
  - Early warning until the last mile and awareness to save life
  - Livelihood support for quick recovery from disasters
- Capacity Development to support DRR strategies

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To make islands resilient

- Consecutive program from observation, early warning and accumulation of scientific data
- Programs taking disaster risk and impact of climate change into account
- Awareness, inclusiveness and community empowerment to reduce social vulnerability
- Capacity Development of Central and Local Governments

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Thank you for your attention.

Session 1 c.

The Needs for the Waste Management in the Pacific Region and JICA's Assistance

December 6, 2016
Environmental Management Department, JICA
Mimpei ITO

Japan International Cooperation Agency

TODAY'S TOPICS

1. Features of the **P**acific **I**sland **C**ountries(PICs)
2. Challenges on Waste Management in PICs
3. JICA's cooperation to PICs
（Overall perspective and "J-PRISM"）
4. Introduction of J-PRISM Phase II

1. Geographical features of PICs

1. Basic fact data of PICs

Area	Country	km²	Population (10,000)	Population density (person/km²)	GNI per capita (US dollar)	Economic growth rate
Polynesia	Samoa	2,830	19	6.7	4,060	1.2%
	Tonga	720	11	14.7	4,260	2.1%
Micronesia	Palau	488	2	4.3	11,110	8.0%
	FSM	700	10	14.9	3,200	-3.4%
	Marshall	180	5	29.4	4,390	-1.0%
Melanesia	Fiji	18,270	89	4.9	4,870	4.3%
	PNG	462,000	746	1.6	2,240	8.5%
	Solomon	28,900	57	2.0	1,830	4.5%
	Vanuatu	12,190	26	2.1	3,160	2.3%

Source：the data is from World Bank report, 2014, except for population data

Name of city in Japan	Area (km²)	Population (10,000)	Population density (person/km²)	Note
Tsushima city,Nagasaki Prf.	709	3	4.5	One of the island in Japan and its size is almost same with Tonga and Micronesia(FSM) although the population density of Tsushima is one third compared to those countries.
Shibushi city,Kagoshima Prf.	209	3	15.3	The city is well-known for the 3R promotion.Population density is almost the same with Tonga and FSM.

1. Specific features of PICs

- ✓ **Remoteness of the islands**
  => Far from the international markets
  => Inconvenience of access
- ✓ **Narrowness of the lands**
  => Limitation of the size of the lands
  => Smallness of the size of domestic markets
- ✓ **Difficulty with economical independence**
  => Budget support from development partners
  => Lots of imported products

➢ Environmental problems are tend to become tangible/obvious.

2. Challenges on Waste Management

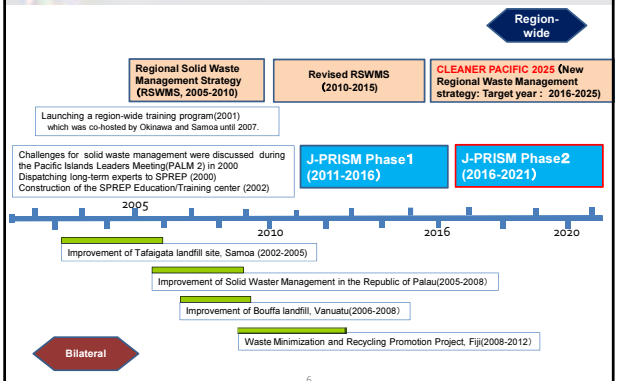
Wastes increased and diversified due to market economy, changes of life style, rapid population flow into the capital city, etc.

Difficulties in securing land for final disposal

Wastes tend to remain in island because of remoteness and lack of appropriate recycling.

Inappropriate management of final disposal sites and hazardous wastes may cause **huge negative impact** on coral reefs and mangrove forests in the region.

3.JICA's cooperation to PICs (history)



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3． JICA's technical cooperation

" J-PRISM "

Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries

Phase I : From 2011 to 2016
Phase II : From 2017 to 2022

7

Outcomes of J-PRISM Phase I

【Project purpose】 "Human and institutional capacity base for sustainable Solid Waste Management in the Pacific Region is strengthened through the implementation of RS 2010"
【Cooperation period】 From Feb 2011 to Feb 2016(Five years)
【Partner and CPs】 Regional level- SPREP
Country level- Waste management section of target countries

【Major outcomes】

- Local experts on waste management and 3R were fostered and information related to those human resources were stored in PIDOC.(**P**acific **I**sland **D**atabase **o**f **C**apacity development activities)
- Improvement of management of waste collection and landfill site, introduction of CDL , promotion of environmental education, etc. Also Concept of waste segregation and waste minimization were shared in many countries (3R+ Return).
- Good lessons learnt and experiences in waste management were shared in region wide.
- Contribution for the establishment of **C**lean **P**acific **R**oundtable (CPR) and Cleaner Pacific 2025.

8

Examples of Outcomes

Pacific **I**sland **D**atabase **o**f **C**apacity development activities

Local trainer's information are stored and will also be developed in Phase II.

Improvement of the final disposal site by making full use of **the Fukuoka Method, semi-aerobic landfill site**

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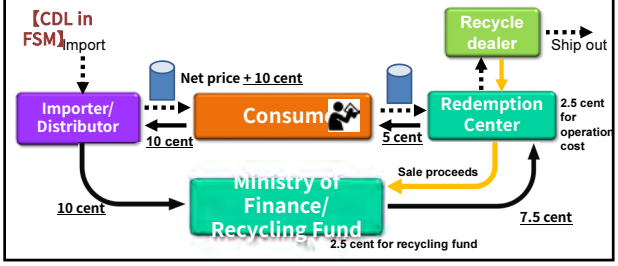
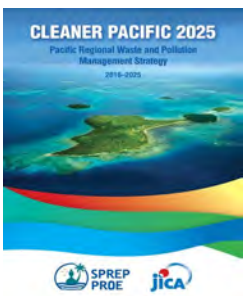
Outcomes of J-PRISM Phase I
【Container Deposit Legislation（CDL）】

- Deposit is included in the price of the product, and redeemed if the container is returned to designated collection center. It increases container collection rate, and prevent littering.
- In small island countries, containers need to be "returned". For sustainable CDL system, the mechanism that involves importers and create management fund for collection center are crucial.



Outcomes of J-PRISM Phase I
【"Cleaner Pacific 2025"】

Pacific Regional Waste and Pollution Management Strategy 2016-2025 (Cleaner Pacific 2025)



- **SPREP developed the "Cleaner Pacific 2025" with assistance from JICA**
- **Long term comprehensive strategy of sustainable waste management and pollution control in the Pacific region until 2025**
- **Priority Areas: SWM by local gov., asbestos, E-waste, healthcare waste, used oil, marine litter, disaster waste, and liquid waste**
- **J-PRISM Phase II deals with SWM areas in the "Cleaner Pacific 2025"**

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Outcomes of J-PRISM Phase I
【3R（＋Return)】

Reduce: Discharge control of waste
Reuse: Continuous use of items
Recycle: Material recycle

Recycling is difficult in small island countries!

Return ① Export of recyclable waste
② Return organic waste to soil by composting

【Good Practices of R Cooperation】


Compressed aluminum cans waiting for export（FSM）

Republic of Indonesia: The Project for Capacity Development of Central and Local Government for 3R and Domestic Solid Waste Management System（Nov. 2013 - Nov. 2017）
(Summary of cooperation) Preparation of necessary ministerial regulations, capacity development of local gov. on 3R and waste management in target cities (Palembang City and Balikpapan City)
(Output)
・Draft ministerial regulations on 3R and domestic solid waste management are prepared in Ministry of Environment
・Solid waste management plans are prepared in the target cities
・Implement 3R related pilot projects (waste segregation, intermediate treatment center construction)
・Waste management capacity in the target cities are strengthened through the pilot project.


Collection activity of recyclables in a target community

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4. Introduction of J-PRISM Phase II

【Project Purpose】 Human and institutional capacity base for sustainable solid waste management in the pacific region is strengthened through implementation of the “Cleaner Pacific 2025”
【Period of Project】 Feb. 2016 - Feb. 2021

⇒①Strengthening waste management capacity of 9 target countries, ②Promoting regional cooperation for sustainability, ③Highlighting 3R+Return initiative as an important activity

(1) Regional cooperation（with SPREP）
・Develop a monitoring system to grasp the progress of the “Cleaner Pacific 2025”
・Develop a feasible training plan and financial mechanism that PICs counterparts participate to the training（including practical use of expert searching database (PIDOC)）
・Develop a regional guideline of disaster waste management
・Conduct baseline studies on recycling practices in the target countries, and study on 3R+Return system in the pacific region.

(2) Bilateral cooperation
・Establishment of solid waste management system
・Development of practical solid waste management strategy and strengthening of waste management capacity through concrete activities for the implementation of the strategy
・Support to country specific waste issues

4. Introduction of J-PRISM Phase II
(Priority issues of “Cleaner Pacific 2025” and cooperation of J-PRISM Phase II)

Priority issues of “Cleaner Pacific 2025”			Target Countries										
			Regional cooperation	Samoa	Tonga	Palau	FSM	RMI	Fiji	PNG	Solomon	Vanuatu
A	Strengthen institutional capacity	Develop and enforce strategies, plans and legislation, and strengthen institutional arrangements	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
B	Promote PPP	Develop new PPP	○			○					○	○
C	Implement sustainable best practices	Resource recovery programme	◎			◎			○	○	◎	◎
		Improve infrastructure and support sustainable O&M			◎	◎	◎		◎	◎		
D	Develop human capacity	Implement sustainable human capacity development programmes	◎	○	○	○	○	○	○	○	○	○
E	Dissemination of outcomes and experiences in WCP management	Education and behavioural change campaigns	◎	○	○	○	○	○	○	○	○	○
F	Promote regional and national cooperation	Strengthen national and regional cooperation and coordination	◎			◎	◎	◎	○	◎	◎	○

◎: Direct support, ○: Indirect support, PPP: Public-private partnership, WCP: Waste, Chemicals and Pollutants

⇒PPP, awareness improvement, hazardous waste management（healthcare waste, E-waste, used oil, battery cell, asbestos）are not included in J-PRISM Phase II. We welcome your active participation!!

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Thank you for your attention!

Please contact at : Ito.Mimpei@jica.go.jp

Japan International Cooperation Agency

Session 1 c

IMPACT ON PACIFIC SIDS OF OCEAN POLLUTION BY MARINE PLASTIC LITTER
SECTION ON IMPLEMENTATION OF WASTE MANAGEMENT
C-4 DEVELOPMENT OF SUSTAINABLE WASTE MANAGEMENT IN
PACIFIC SMALL ISLAND DEVELOPING STATES

PRESENTATION AT SECOND GENERAL MEETING OF ISLANDS & OCEANS NETWORK
6-7 DECEMBER 2016 AT INTERNATIONAL CONFERENCE HALL, OCEAN POLICY RESEARCH INSTITUTE, SASAKAWA PEACE FOUNDATION, TOKYO

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WHY THE CONCERN ABOUT PLASTICS? INTRODUCTION

Plastics contain heavy metals and other hazardous substances e.g. POPs, EDCs, lead colourants, PFCs

Producers keep finding new ways to use plastics, especially plastic packaging, and production plastics has increased rapidly to meet demand

There is a corresponding rapid increase in waste plastics

Land-based activities contribute most (83%) to marine plastic pollution, so there has also been a corresponding rapid increase in marine plastic litter

Plastics in the oceans is a growing concern because of the threat that such waste poses in terms of contamination of marine food webs, marine life and biodiversity

The First World Ocean Assessment shows that marine litter will be transported by ocean currents and will tend to accumulate in a limited number of subtropical convergence zones, or gyres. Gyres are where two important ocean currents meet.

For island & coastal communities, environmentally sound disposal of recovered marine plastic litter is important, to avoid recycling of pollutants. Non-combustion methods, such as Gas Phase Chemical Reduction, are preferred, to avoid re-emission of pollutants .

UN DECISIONS ON PLASTIC MARINE LITTER

In 2012, the outcome report for the Rio+20 Conference, entitled "The Future We Want" reported the adverse effects on oceans and marine biodiversity of marine pollution including marine litter (especially plastic)…… The Global Partnership on Marine Litter was launched as part of the Global Programme of Action.

In August 2014 at the 3rd International Conference on SIDS ("SIDS-3") held in Samoa, conservation & sustainable use of the oceans was identified as critical to the future of SIDS. The Global Oceans Commission summarized that proposals to address the degradation of the high seas and advance high seas recovery, including actions to: modernize high seas governance and establish an implementing agreement under the UN Convention on the Law of the Sea (UNCLOS); combat illegal, unregulated and unreported (IUU) fishing; curb plastics pollution in the ocean; and eliminate fuel subsidies to high sea's fishing fleets.

DECISIONS BY UN ENVIRONMENTAL ASSEMBLY ("UNEA") ON PLASTIC MARINE LITTER

In May 2014 at the first meeting of the UN Environmental Assembly ("UNEA-1) Resolution 1/6 mandated a report on levels, sources, negative effects and possible measures to reduce marine plastic debris and microplastics.

In May 2016 at UNEA-2, UNEP presented a report entitled "Marine Plastic Debris & Microplastics : global lessons & research to inspire action & guide policy change" for adoption.

In September 2016, UNEP called for nominations for the Advisory Group on Marine Plastic Litter & Microplastics who will work towards an assessment for presentation to UNEA-3. The aim is to assess the effectiveness of international, regional & subregional strategies, approaches & legal frameworks, identify gaps and develop options to address those gaps

UNEP TOOLKIT RELEASED SEPTEMBER 2016

The UN Environment Programme (UNEP) has released a toolkit, titled 'Marine Litter Legislation: A Toolkit for Policymakers,' which describes legislation used by countries to address marine litter. The toolkit recommends reducing the overall production of marine litter through a circular economy approach that prevents the generation of waste products.

The toolkit suggests that a circular economy approach can stop the production of plastic and other sources of marine litter at its source. The toolkit states that a circular economy can design durable products that can be repaired, recovered or recycled at the end of their productive use, therefore preventing waste generation and preventing litter from entering the marine environment. The toolkit also highlights the concept of a "waste hierarchy" that suggests preferred orders of action to prevent, reduce and manage waste, explaining that the European Union (EU) and its Member States use both a circular economy and a waste hierarchy to address marine litter and other waste challenges.

In my opinion, unless the cooperation of business & Industry is obtained, very little will change.

FIRST WORLD OCEAN ASSESSMENT 2015 BY DOALOS, A DIVISION WITHIN THE UN CONVENTION ON LAW OF THE SEA

In December 2015, the First Global Integrated Marine Assessment, also known as the 'First World Ocean Assessment' was completed. This assessment is expected to provide a scientific basis for consideration of ocean issues, including Sustainable Development Goal (SDG-14) -To Conserve and sustainably use the oceans, seas and marine resources for sustainable development in the 2030 Development Agenda.

The First World Ocean Assessment noted with concern that the plastics & microplastics may be transported by rivers & found in all compartments of the marine environment; that their input is rapidly increasing; that the plastics in the marine environment degrade very slowly and that they adsorb & emit toxics such as POPs; they contribute to the distribution & spread of harmful organisms.

All this has adverse effects on local societies & economies, as well as marine life, ecosystems & ecosystems services such as fisheries, maritime transport, recreation & tourism.

Concentrations of marine debris in the North Atlantic & Caribbean Oceans were highest where two or more ocean currents converged. The majority (80%) of marine debris comes from land-based sources Plastic makes up 60-80% of all marine debris and it continues to accumulate in all our oceans.

FIRST WORLD OCEAN ASSESSMENT 2015 BY DOALOS, UN CONVENTION ON LAW OF THE SEA – CONT'D

The First World Ocean Assessment further noted the emerging issue of the smallest nano-sized microplastic particles & expressed concern about how these particles might enter marine food chains and the potential risk to human health and the environment.

Nanoparticles are a form of marine debris with dimensions of 1-100 nanometres. (A nanometre is one-millionth of a millimetre.)

A large part of marine nanoparticles are natural, but nanoparticles deriving from two anthropogenic sources are concerning. These are:

- Intentionally-created nanoparticles for industrial or cosmetic use; and

- Unintentionally-created nanoparticles which originate from the breakdown of plastics in marine debris; from fibres of manmade fabrics discharged in wastewater ; and in leachate from land-based waste sites.

WHERE TO FROM HERE?

For the Small Island Developing States of the Pacific it is of particular importance for the UN as a global body to encourage the large corporate producers of plastics to adopt a more responsible extended corporate responsibility for the full-life cycle of all plastic products, especially packaging,. Further the principle of "polluter pays" should be invoked with regard to the environmentally sound disposal of such plastics which may become marine plastic litter.

For SIDS and other developing countries, it is important to recognize the assymetric power relationship which favours developed countries, where most corporates are headquartered. Changing the behaviour of global corporate businesses that produce plastics so that they are responsible for the full life cycle of plastics (especially environmentally sound disposal) would be the most effective way to reduce and/or eliminate marine plastic litter.

Pacific SIDS governments which use green procurement policies can do much to change the outcomes of imported products with plastic components that become marine plastic litter.

GEF FUNDING AVAILABLE

During Stockholm COP-5, several developing countries called for monitoring of fish for the presence of toxics and endocrine-disrupting chemicals. Under the Mercury Convention, the Minamata Initial Assessment ("MIA") can be used to conduct fish monitoring, together with other monitoring of biota (including sediment & soil tests). More studies are needed to fill knowledge gaps for Pacific SIDS and least-developed countries which depend so much on ocean resources for food security and national GDP.

The Global Environment Facility (GEF), in coordination with UNEP, identified ocean plastic pollution as one of its priorities. The GEF 51st meeting, which concluded in October 2016, laid the basis for the next funding replenishment ("GEF-7") . A multinational programme is to tackle the "continuing degradation" of the coasts and shallow waters of the Mediterranean. Its aim is to reduce pollution, secure freshwater supplies in critical areas, monitor trends and improve the management and financial sustainability of protected areas, in a highly innovative integrated way.

Replication of this project in the Pacific Oean would guidance for policymakers for those who depend on marine resources for their nutrition and livelihoods.

UN HIGH-LEVEL CONFERENCE IN JUNE 2017 ON IMPLEMENTATION OF SDG-14

"CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT."

UN Conference to Support the Implementation of SDG 14 will be held from 5-19 June 2017. The high-level UN Conference will be co-hosted by the Governments of Fiji and Sweden, and will take place in New York, USA.

UN General Assembly President has announced co-chairs (Portugal & Singapore) who will ensure intergovernmental negotiations are concluded in the period up to May 2017 on the outcome document of the Conference entitled "Call for Action".

For many SIDS & coastal communities in least developed countries, our main source of protein is threatened by toxics in the marine food web, such as POPs and methylmercury transferred by global deposition. These toxic substances biomagnify through successive predators and pose a threat to human health of anybody who eats seafood. This includes consumers in the countries to which Pacific fish is exported.

Strong interventions need to be prepared by SIDS & developing countries with coastal communities so they can ensure their needs are included in this outcome document on Marine Litter & Microplastics .

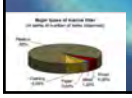
CONCLUDING THOUGHTS

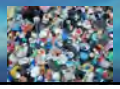
Proper implementation of the UN Conventions on Chemicals & Wastes needs strong global actions to reduce pollution of the oceans & seas by marine plastic litter.

Multinational Corporations need to eliminate production of plastics that cannot be recycled, in particular single-use items like sachets. Corporate leadership in re-design and re-use of plastics is essential for an effective outcome.

We need to reduce pollution of the oceans & seas from land-based activities; and we need to collect marine plastic litter in strategic locations.

But then we need to use environmentally sound processes to dispose of what marine plastic litter is collected so that we may ALL eat seafoods safely





Session 1 c.

GROWTH OF LAGOON ALGAE IN RAROTONGA CAUSED BY POOR WASTEWATER MANAGEMENT

PRESENTATION AT SECOND GENERAL MEETING OF ISLANDS & OCEANS NETWORK
6 DECEMBER 2016 AT INTERNATIONAL CONFERENCE HALL, OCEAN POLICY RESEARCH INSTITUTE, SASAKAWA PEACE FOUNDATION, TOKYO
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Cook Islands NEWS

UNEP RECOMMENDS VALUATION OF COST OF INACTION & TO CONSIDER VALUE OF TAKING ACTION

- In 2015 a UNEP report, titled 'Economic Valuation of Wastewater: The Cost of Action and the Cost of No Action,' finds that wastewater collection, treatment, disposal or safe use – for example, for irrigation – can provide environmental and health benefits. It proposed a methodology to provide an estimation of the value of these benefits, comparing the financial costs of collection and treatment, with the environmental and health costs of releasing untreated wastewater

Cook Islands NEWS

PUT A VALUE ON BENEFITS OF AVOIDING THREATS TO HUMAN HEALTH & ENVIRONMENT

- The 20151 UNEP authors note that the environmental and health costs to society of releasing untreated wastewater include diarrhea-related diseases, skin problems and cancer, while the environmental costs can include disruption of aquatic ecosystems, loss of recreational opportunities in polluted areas, and increased greenhouse gas emissions. Excess phosphorus and nitrogen in waterways can stimulate the growth of algae, causing eutrophication and reducing biodiversity.
- Yet, managing wastewater is typically perceived only as a cost.
- The authors considered the financial costs of investing in wastewater treatment, including the construction costs of pipelines, and of annual operating costs of treatment systems

Cook Islands NEWS

RECOMMENDATIONS BY UNEP REPORT

- The UNEP Report concludes that valuation of the benefits of wastewater treatment is necessary to justify the substantial investment that will be needed to address the challenge.
- It recommends: collecting domestic sewage and storm water in separate networks; encouraging water reuse; considering technologies with lower investment and maintenance costs in developing countries; and continuing to quantify (i.e. calculate the cost of) the externalities associated with wastewater treatment and reuse.

Cook Islands NEWS

DECEMBER 2004 ALGAL BLOOM

- In December 2004, algae started to grow on the floor of iconic Muri Lagoon in Rarotonga. Not only was it unattractive to look at, but it smelt bad. All hotel owners could do was rake the beach every day.
- The prevailing theory for the cause was that there nutrients going into the lagoon from wastewater (leaking septic tanks); laundry detergents containing phosphorus; wastewater from piggeries; and pesticide run-off from agricultural activities.

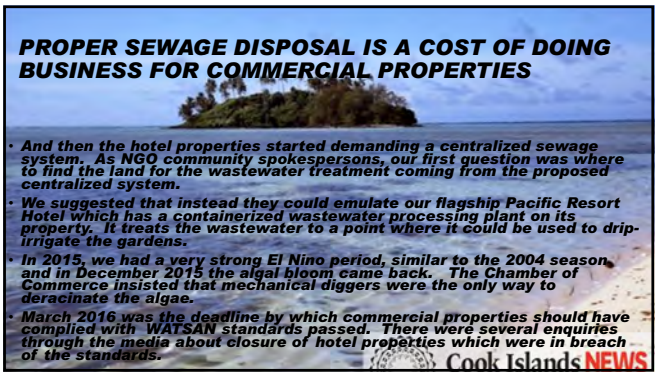
Cook Islands NEWS

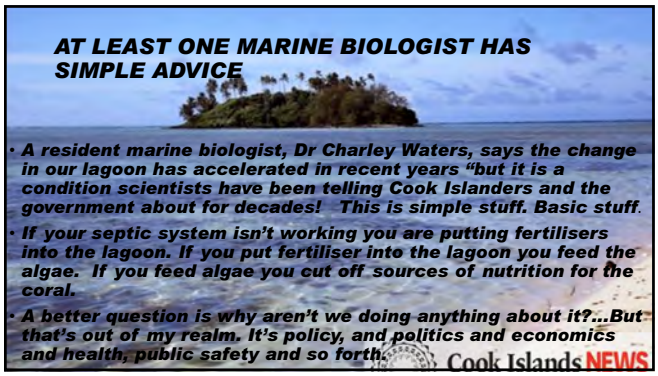
CAUSES & SOLUTIONS WERE IDENTIFIED

- NGO's took samples of the algae and got them analysed in Australia. Radio New Zealand reported on the results; we had to face an angry crowd of hoteliers & tour operators.
- We told them that we could attribute the algal bloom to the very strong El Nino, but that suspect wastewater systems would have to be remedied to avoid future recurrence and permanent damage to tourism.
- In February 2005, we had five cyclones in one month, and the associated rough seas flushed the lagoon & deracinated the algae; the problem ceased.

Cook Islands NEWS


EU WATSAN PROJECT TO CLEAN UP LAGOON
• In about 2009, the EU-funded Water & Sanitation ("WATSAN") project started.
• I was one of the NGO community spokespeople on the Project Steering Committee. The project plan was first to require designated domestic installations to convert to composting toilets and then after two years would deal with commercial properties. NGO's queried why we were not starting with the commercial properties, since their greater volume of wastewater had greater impacts on the lagoon. We were ignored.
• After two years, each designated household had paid NZ$1,500 to comply and lagoon water quality monitoring showed modest improvements..
Cook Islands NEWS


PROPER SEWAGE DISPOSAL IS A COST OF DOING BUSINESS FOR COMMERCIAL PROPERTIES
• And then the hotel properties started demanding a centralized sewage system. As NGO community spokespersons, our first question was where to find the land for the wastewater treatment coming from the proposed centralized system.
• We suggested that instead they could emulate our flagship Pacific Resort Hotel which has a containerized wastewater processing plant on its property. It treats the wastewater to a point where it could be used to drip-irrigate the gardens.
• In 2015, we had a very strong El Nino period, similar to the 2004 season, and in December 2015 the algal bloom came back. The Chamber of Commerce insisted that mechanical diggers were the only way to deracinate the algae.
• March 2016 was the deadline by which commercial properties should have complied with WATSAN standards passed. There were several enquiries through the media about closure of hotel properties which were in breach of the standards.
Cook Islands NEWS


AT LEAST ONE MARINE BIOLOGIST HAS SIMPLE ADVICE
• A resident marine biologist, Dr Charley Waters, says the change in our lagoon has accelerated in recent years "but it is a condition scientists have been telling Cook Islanders and the government about for decades! This is simple stuff. Basic stuff.
• If your septic system isn't working you are putting fertilisers into the lagoon. If you put fertiliser into the lagoon you feed the algae. If you feed algae you cut off sources of nutrition for the coral.
• A better question is why aren't we doing anything about it?...But that's out of my realm. It's policy, and politics and economics and health, public safety and so forth.
Cook Islands NEWS


WILL SWIFT ACTION NOW FIX THE PROBLEM?
• The Cook Islands News asked Dr Waters if our lagoon water is cleaned up within two years is there is a chance of saving it?
• The answer is maybe. Between now and those two years it may reach a point where it is no longer recoverable.
Cook Islands NEWS

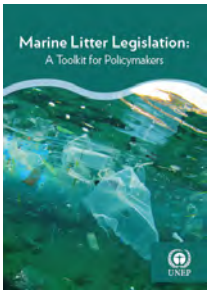
Fighting Marine Litter: Legislative Options

Session 1 c.

Carl Bruch
Tokyo, Japan
Dec. 6, 2016

Overview

Introduction
Comprehensive legislation and policies
Laws governing production and use of land-based materials
Managing waste disposal into the marine environment
Cross-cutting issues
Conclusions



The Problem of Marine Litter

- ***Marine litter***: Any persistent, manufactured, or processed solid material that is discarded, disposed of, or abandoned in the marine and coastal environment
- Estimated 13,000-18,000 pieces of marine litter per square kilometer of ocean
  - Most of it plastic
  - Most from land-based sources
  - Difficult and expensive to remove → focus on prevention

International Law

- **United Nations Convention on the Law of the Sea**
- **MARPOL**
- **Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter** (London Convention)

Comprehensive National Laws and Policies

- Japan: Law for the Promotion of Marine Litter Disposal (LPMLD)
- South Korea: Marine Environmental Management Act of 2009 (MEM Act)
- European Union: EU Marine Strategy Framework Directive (MSFD)
- Countries usually address marine litter problems by inclusion of relevant provisions within broader legislation

Production and Use of Land-Based Materials: Plastic Bag Bans and Microbead Regulation

- **Plastic bags** harm sea turtles and other marine animals which mistake them for food; they also clog municipal drains which exacerbates flooding
- **Bangladesh** was the first country to ban plastic bags
  - A fine and up to ten years imprisonment for those who "manufacture, market or import" plastic bags
  - Up to six months imprisonment for those who "sell, exhibit for sale, stock, commercially transport or commercially use" them
  - Many other jurisdictions have followed suit, banning thin plastic bags
- **Microbeads**: Mild abrasive plastic particles that have been intentionally added to home and personal care products
- **United States**: Seven states adopted legislation restricting the use of microbeads in personal care products
  - Maryland, Illinois, Maine, New Jersey, Colorado, Indiana, and California.

Production and Use of Land-Based Materials: Nurdles

- Nurdles are tiny pellets of plastic resin, the raw materials that are melted or melded to produce plastic goods
  - Cheap and do not biodegrade
  - Long-lasting
- Regulating Nurdles
  - California: law requires best management practices for companies that manufacture, handle, and transport nurdles.
  - Voluntary nurdle management efforts in the United States, Spain, Portugal, Mexico and Japan

Prohibiting and Disincentivizing Retail Use of Plastics

- **Plastic bag bans**: many countries and subnational jurisdictions
  - Laws governing the thickness of plastic bags
- **Bans on stirrers, utensils, cups:** India
- **Taxes or levies** on plastic bags
- **Banning so-called "biodegradable" plastics**
- **Bans on polystyrene**

Managing Waste Disposal into the Marine Environment

- Legislation governing waste disposal into the marine environment:
  - (1) land-based disposal
  - (2) cleanup of land-based waste
  - (3) abandoned, lost, and discarded fishing gear; and
  - (4) litter from ships

Land-Based Disposal and Cleanup

- **Restrictions on siting of landfills** (e.g., in flood plains and wetlands)
  - U.S. Resource Conservation and Recovery Act
- **Prohibiting open dumps**
  - Philippines Ecological Solid Waste Management Act of 2000

Abandoned, Lost, and Discarded Fishing Gear

- Abandoned, lost, and discarded fishing gear (ALDFG):
  - crab pots, nets, or fishing line may be lost or intentionally discarded by fishers while at sea
- **Prohibitions on use of plastic gear**
  - St. Kitts and Nevis
- **Prohibitions on leaving ALDFG**
  - Namibia
- **Financial incentives and education**
  - South Korea

Marine Litter from Ships

- Based on MARPOL
- Grenada: Created specially protected marine zones under its Marine Protected Areas Law
  - Prohibits the discharge of waste in marine protected areas, including the discharge of "any refuse…or any other item harmful to animals or plants, or any unsightly item, or substance which does or is likely to destroy or reduce amenities of the area"

Artificial Reefs

- Artificial reefs are created for:
  - (1) fish stock enhancement and fishery management
  - (2) conservation, research, recreation, and restoration of the marine habitat
  - BUT can release pollution into the marine environment
- Australia:
  - Commonwealth Environment Protection (Sea Dumping) Act 1981 governs the construction and permitting of artificial reefs.

Managing Waste in the Marine Environment

Research, Monitoring, and EIA

- United States: Marine Debris Research, Prevention, & Reduction Act (MDRPR):
- **Environmental Impact Assessment:**
  - Almost all countries have EIA legislation
  - assess the potential for waste and debris to enter the marine environment
  - identify preventive and mitigating measures
  - create legally binding obligations to prevent and reduce marine litter from the project

Public and Private Engagement

- Mandate often provided in legislation (but not a requirement)
- Addressing the global problem of marine litter requires public education and engagement
  - Marine Litter Watch (MLW) in the European Union
- Engagement of the private sector is one of the top priorities in the global effort to combat marine litter

Conclusions

- Needed to fight the problem of Marine Litter:
  - More government funding and action, along with community involvement (instead of privatizing) for cleanups
  - More funding to educate coastal communities about marine litter and proper disposal
  - Governments should invest in research for alternative solutions for reduction and prevention
  - Penalties should be clear and enforced

SAMOA

Better Conservation and Integrated Management of Islands and Their Surrounding Oceans

POWERED BY DEEP GREEN 100% RENEWABLE

Better Conservation and Integrated Management of Islands and Their Surrounding Oceans

Conservation and Management of Islands

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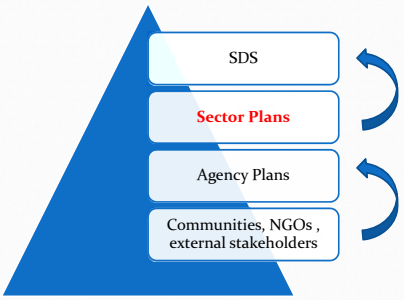
National Planning Framework



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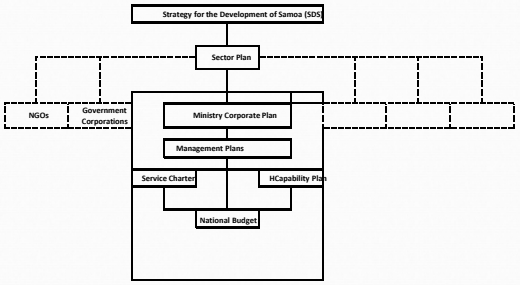
Sector Planning Reforms

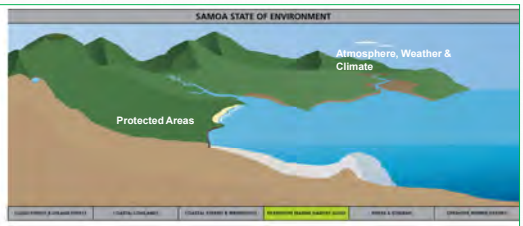
- Sector wide and cross sectoral programmes
- 14 Sectors identified
- Environment Sector recently recognised as a Sector
- Strengthen coordination of common goals / objectives, optimise the use of limited and available resources (horizontal and vertical integration)
- Strengthen the sharing of information

SECTOR PLANNING REFORMS



THE ENVIRONMENT SECTOR

The Environment Sector - From Ridge to Reef



Sector Domain

- Upland habitats and cloud forests
- Lowlands
- Coastal habitats
- Inshore & Offshore Marine habitats
- Rural and Urban Built environment
- Rivers and Streams
- Protected areas
- Atmosphere, Weather and Climate.

Sector Policy Strategy

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  - Air Quality
  - Infrastructure – Building, Transport
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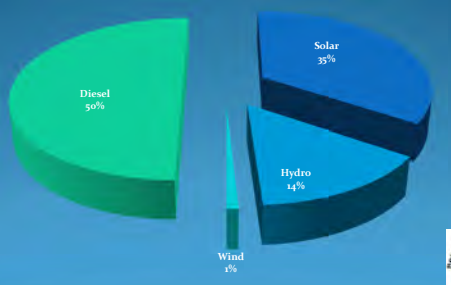
Current Electricity Generation on Upolu Island



Current Electricity Generation on Savaii Island

Issues and Challenges

- Grid stability
  - Intermittent supply of RE sources
- No electricity storage
  - Storage options such as batteries, water storage, flywheels, etc
- Land Issues
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Recommendations at the Sector level

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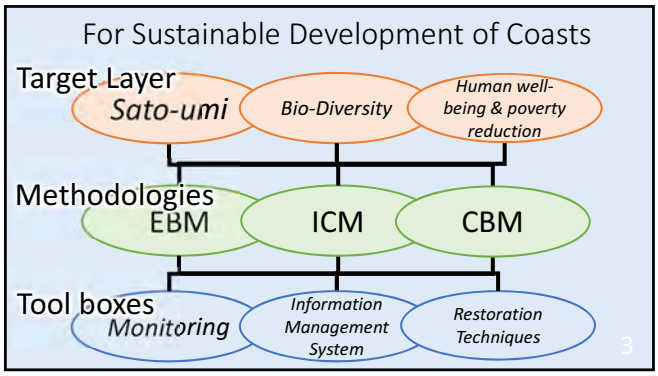

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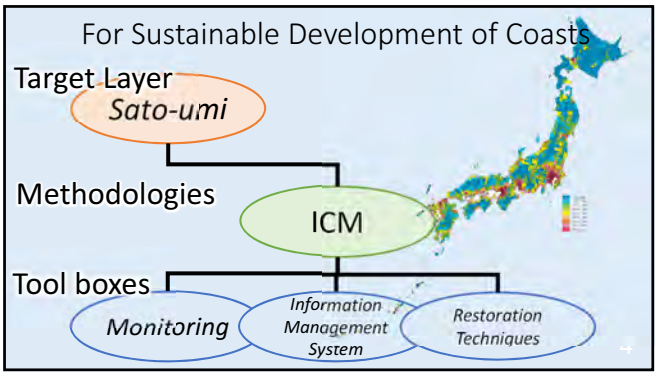

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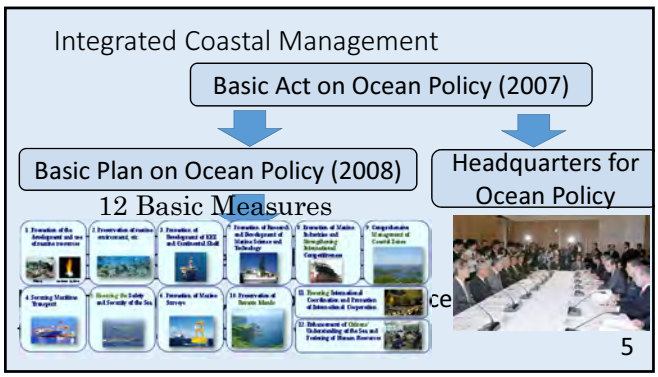

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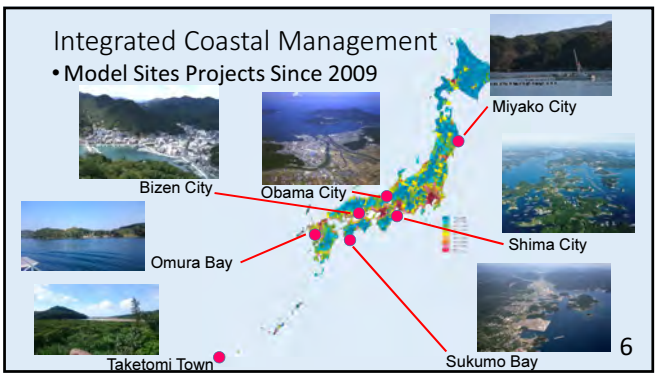

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Artificial Reefs

- Artificial reefs are created for:
  - (1) fish stock enhancement and fishery management
  - (2) conservation, research, recreation, and restoration of the marine habitat
  - BUT can release pollution into the marine environment
- Australia:
  - Commonwealth Environment Protection (Sea Dumping) Act 1981 governs the construction and permitting of artificial reefs.

Managing Waste in the Marine Environment

Research, Monitoring, and EIA

- United States: Marine Debris Research, Prevention, & Reduction Act (MDRPR):
- **Environmental Impact Assessment:**
  - Almost all countries have EIA legislation
  - assess the potential for waste and debris to enter the marine environment
  - identify preventive and mitigating measures
  - create legally binding obligations to prevent and reduce marine litter from the project

Public and Private Engagement

- Mandate often provided in legislation (but not a requirement)
- Addressing the global problem of marine litter requires public education and engagement
  - Marine Litter Watch (MLW) in the European Union
- Engagement of the private sector is one of the top priorities in the global effort to combat marine litter

Conclusions

- Needed to fight the problem of Marine Litter:
  - More government funding and action, along with community involvement (instead of privatizing) for cleanups
  - More funding to educate coastal communities about marine litter and proper disposal
  - Governments should invest in research for alternative solutions for reduction and prevention
  - Penalties should be clear and enforced

SAMOA

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POWERED BY DEEP GREEN 100% RENEWABLE

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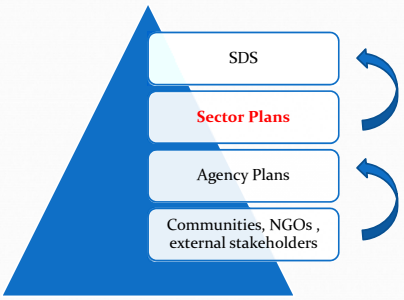

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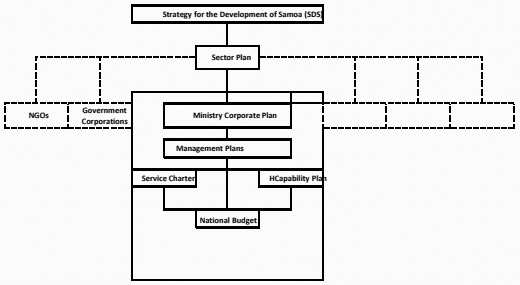

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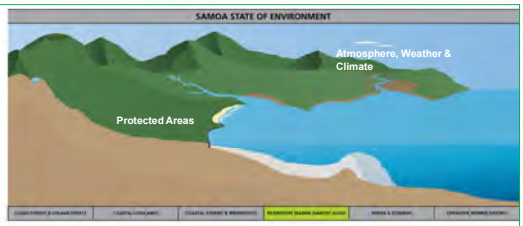

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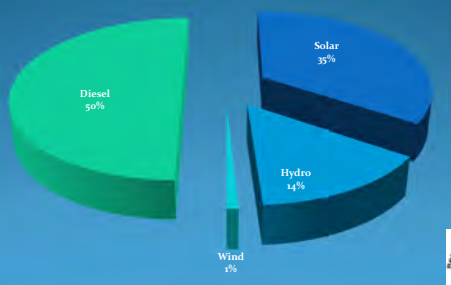

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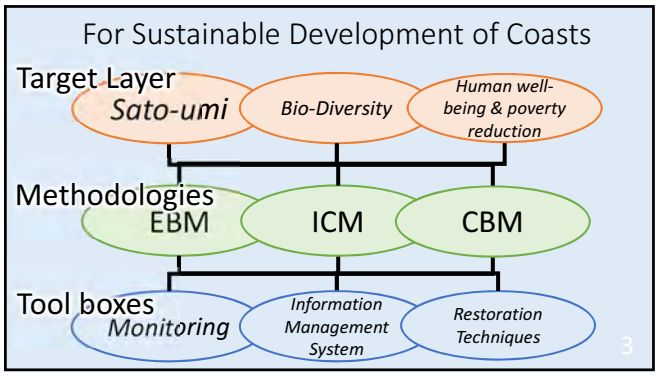

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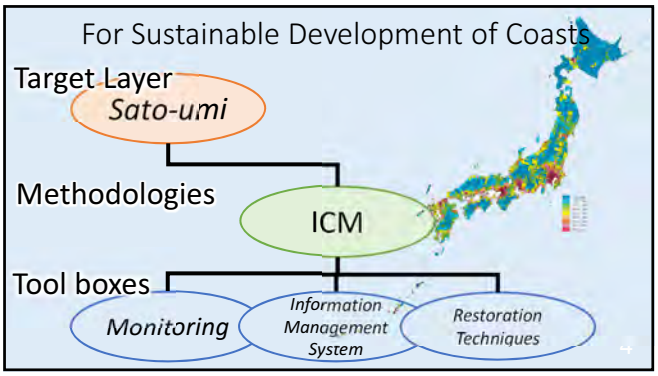

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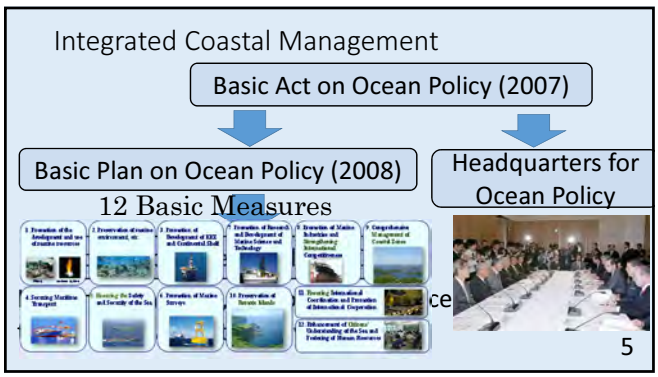

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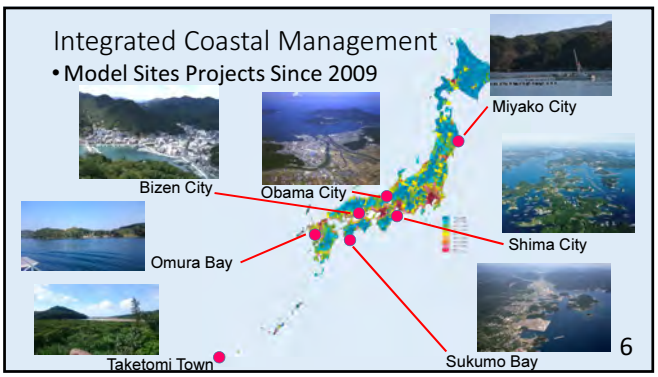

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Integrated Coastal Management

• Policy Proposal for ICM Implementation in 2015

General Proposal
Implementation and supporting mechanisms are urgent needs.
Proposal 1.
Local governments *should implement ICM*
Proposal 2.
National governments should supports
Proposal 3.
Sea area into local gov.'s jurisdiction 7

Integrated Coastal Management

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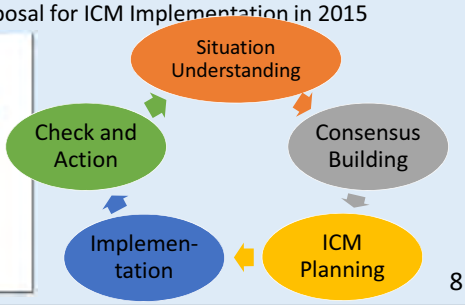


8

Ocean Health Check
First Diagnostics;
- Use Existing Data
- Quick Observation on Stability of Bio Diversity and Material Cycling

Second Diagnostics;
- Do Specific Monitoring
- Check Dominant Processes and Make Action Plan for Measures

Situation Understanding

Material Cycling and Bio Diversity as Indicators of Coastal Area 9

Consensus Building

Situation Understanding

Material Cycling and Bio Diversity as Indicators of Coastal Area 10

Shima City Satoumi Creation Basic Plan
(Shima City ICM Basic Plan)

ICM Plan

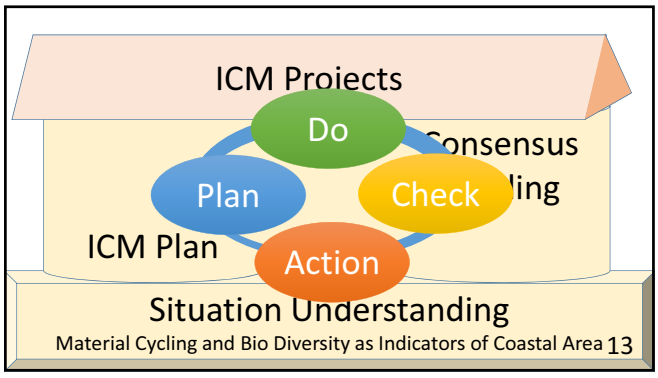
Situation Understanding

Material Cycling and Bio Diversity as Indicators of Coastal Area 11

ICM Projects

Situation Understanding

Material Cycling and Bio Diversity as Indicators of Coastal Area 12


ICM Projects
Do
Plan
Check
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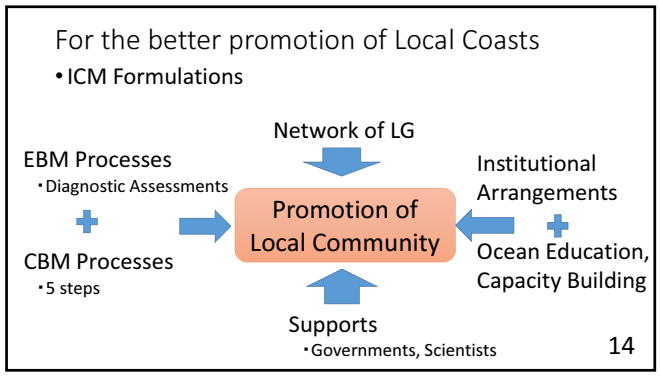
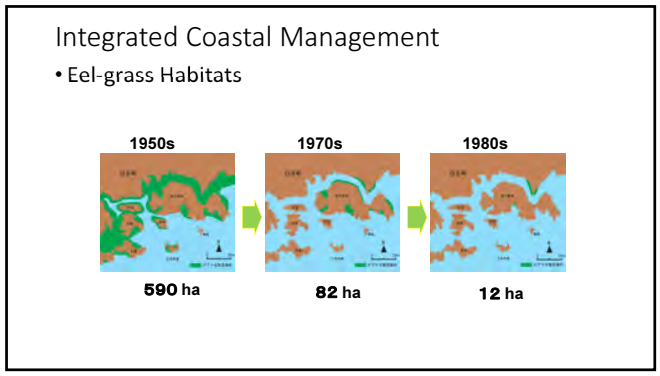
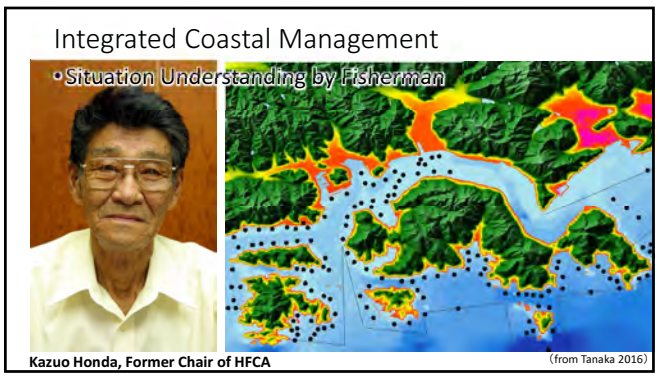

For the better promotion of Local Coasts
• ICM Formulations
Network of LG
EBM Processes
・Diagnostic Assessments
Institutional Arrangements
Promotion of Local Community
CBM Processes
・5 steps
Ocean Education, Capacity Building
Supports
・Governments, Scientists
14


Integrated Coastal Management
• Example of Hinase Area, Bizen City
Shimane
Okayama
Hinase, Bizen City
Hiroshima
Kagawa
Okayama Pref.


Integrated Coastal Management
• Eel-grass Habitats
1950s
1970s
1980s
590 ha
82 ha
12 ha


Integrated Coastal Management
• Situation Understanding by Fisherman
Kazuo Honda, Former Chair of HFCA
(from Tanaka 2016)


Integrated Coastal Management
• Implementation by HFCA
• Supported by Prefectural Fisheries Institute
r)
4. Sowing (Autumn)