

The case for decarbonizing Pacific shipping now



Pacific Blue Shipping Partnership

MICRONESIAN CENTER
FOR SUSTAINABLE
TRANSPORTATION



A joint collaboration
between RMI Government
and USP



Dr Peter Nuttall
Scientific and Technical Advisor

Pacific Blue Shipping Partnership

“Fiji, with Marshall Islands, Samoa, Vanuatu, Solomon Islands and Tuvalu, have agreed to work together to reduce fossil fuel use in our marine transportation by up to 40% by 2030 and 100% by 2050.

This demands a transformation of our maritime sectors which will require new kinds of financial partnerships with bilateral and multilateral assistance.”





NEWS



Science & Environment

Global shipping in 'historic' climate deal



13 April 2018

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GETTY IMAGES

The global shipping industry has for the first time agreed to cut its emissions of greenhouse gases.

PACIFIC Pacific at forefront of shipping industry emissions reductions

From Dateline Pacific, 3:05 pm on 16 April 2018

Pacific Island nations have been central to efforts to get the international shipping industry to commit to reducing greenhouse gas emissions.

More than 170 countries have struck a deal at the International Maritime Organization, or IMO, to halve emissions by 50 percent by 2050 compared to 2008 levels.

It's the first time the industry has committed to such a target.

CLIMATE HOME NEWS

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Pacific islanders: Shipping must comply with Paris climate goals

Published on 03/07/2017, 11:26am

Representatives of four Pacific island nations join today at the IMO in London to ask the shipping industry to do its part to cut carbon emissions

Pacific states call for emission reduction from shipping at M
 At the IMO MEPC 71 being held in London this week, a joint coalition of Pacific Island ministers addressed a global urge to the shipping industry to cut greenhouse gas emissions. The call was an urge towards IMO member states to limit global warming to 1.5 degrees celsius above pre-industrial levels.

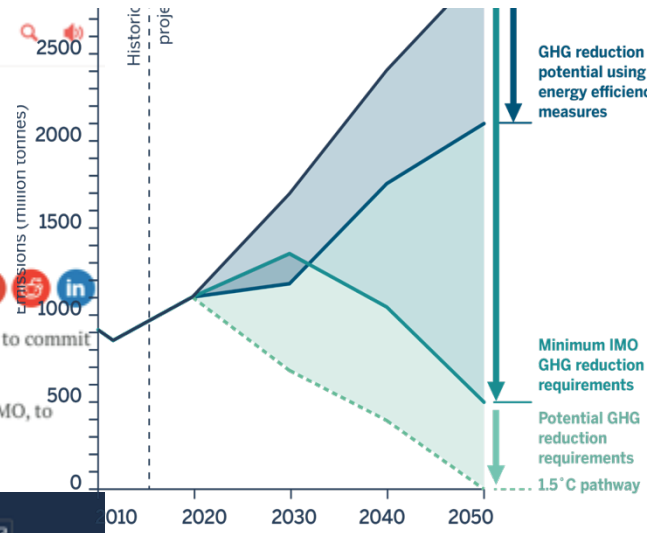
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Carbon dioxide from ships at sea to be regulated for first time

Shipping firms to halve greenhouse gas emissions by 2050 as part of historic agreement



Typical ship operational lifespan 20-30 yrs

PACIFIC / FIJI Pacific must lead discussions on climate and ocean change

6:37 pm on 3 October 2019

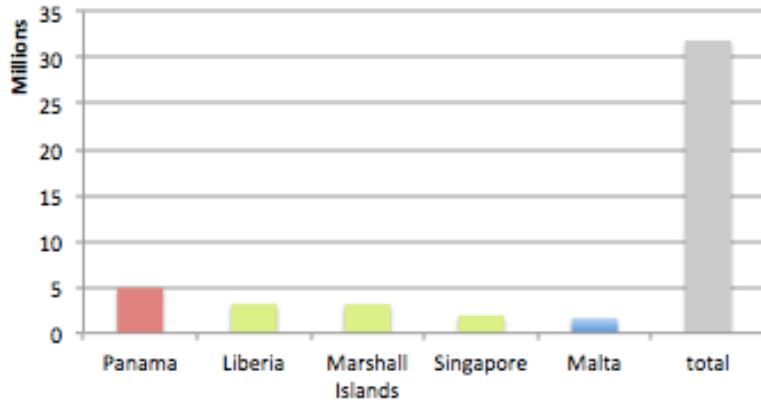
The United Nations Special Envoy for the Ocean wants the Pacific to use its 'unique moral authority and leadership' to lead global discussions on climate and ocean change.



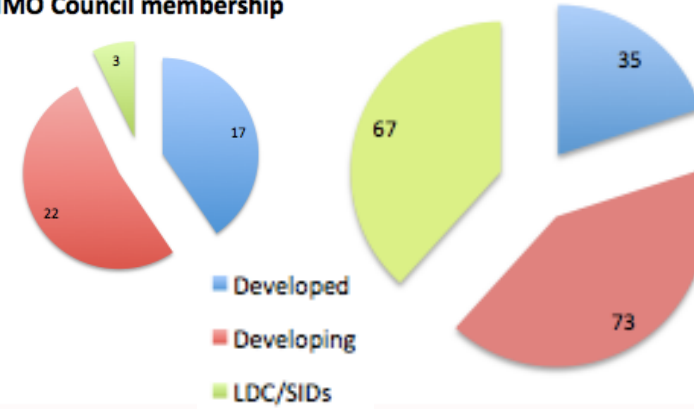
The Level Playing Field? Who decides GHG measures at IMO?

IMO Assembly Membership

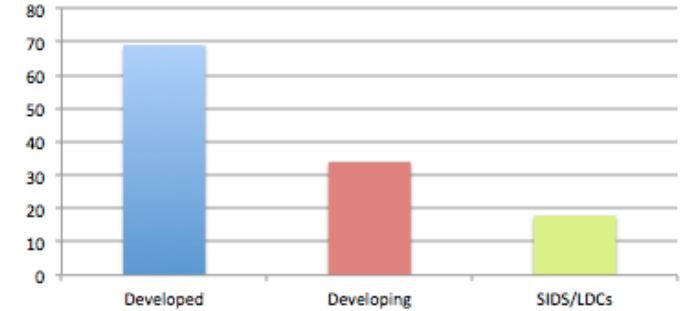
IMO Assessed Member Contributions in £ (top 5) 2018



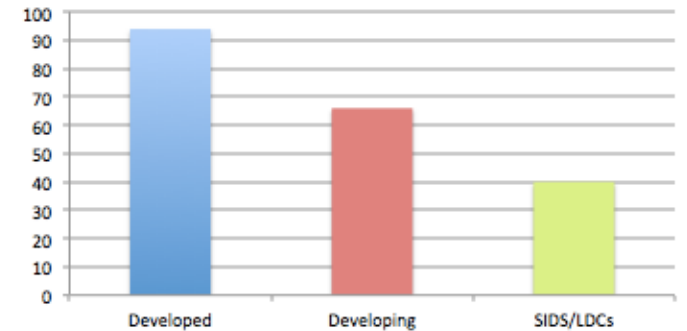
IMO Council membership



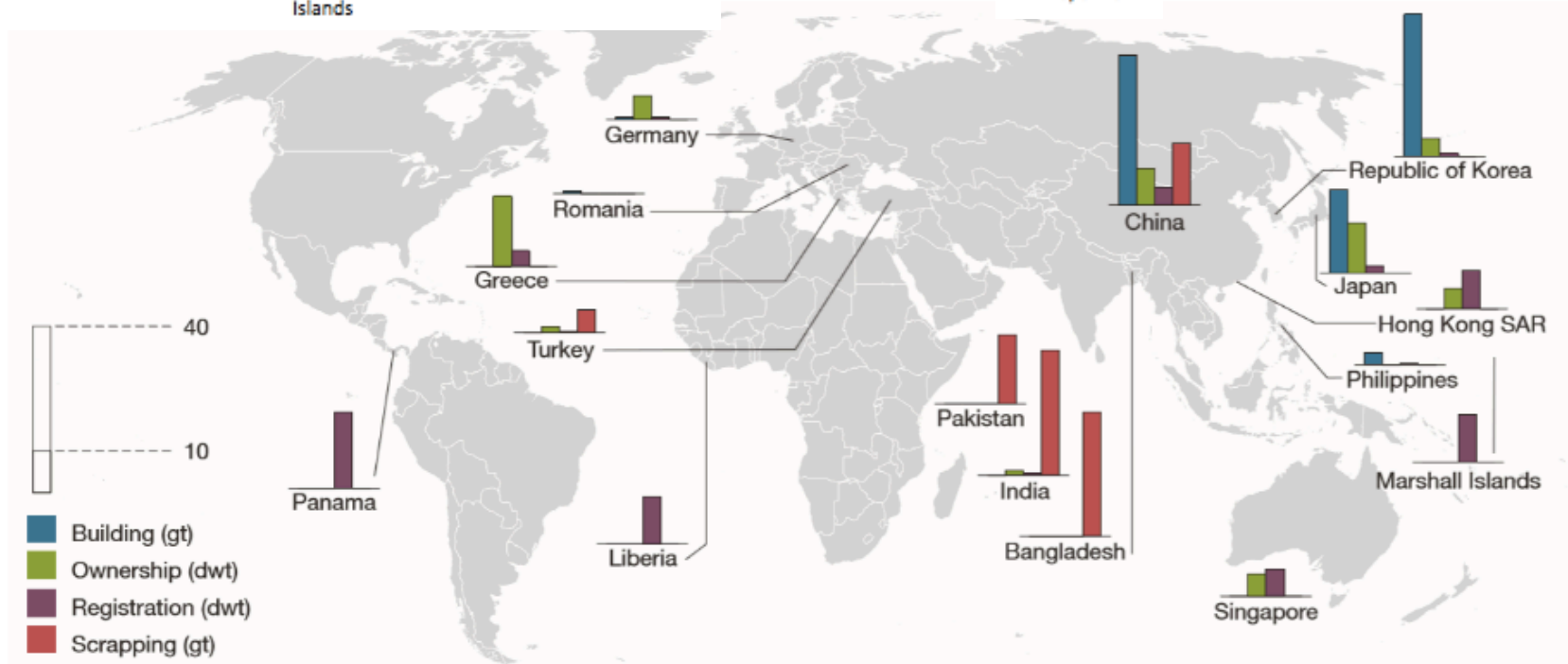
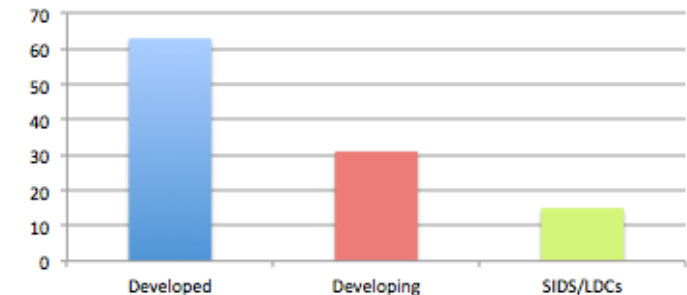
% of members participating in ISWG GHG 6



% of members participating in MEPC 74



% of members participating in MEPC 74 GHG working group



Sources: UNCTADstat (UNCTAD, 2018a), Clarksons Research.

Note: Top five countries in each segment are shown. Building and scrapping are estimated deliveries and demolitions during 2017. Registration and ownership are end-of-year figures.



MCST Framework

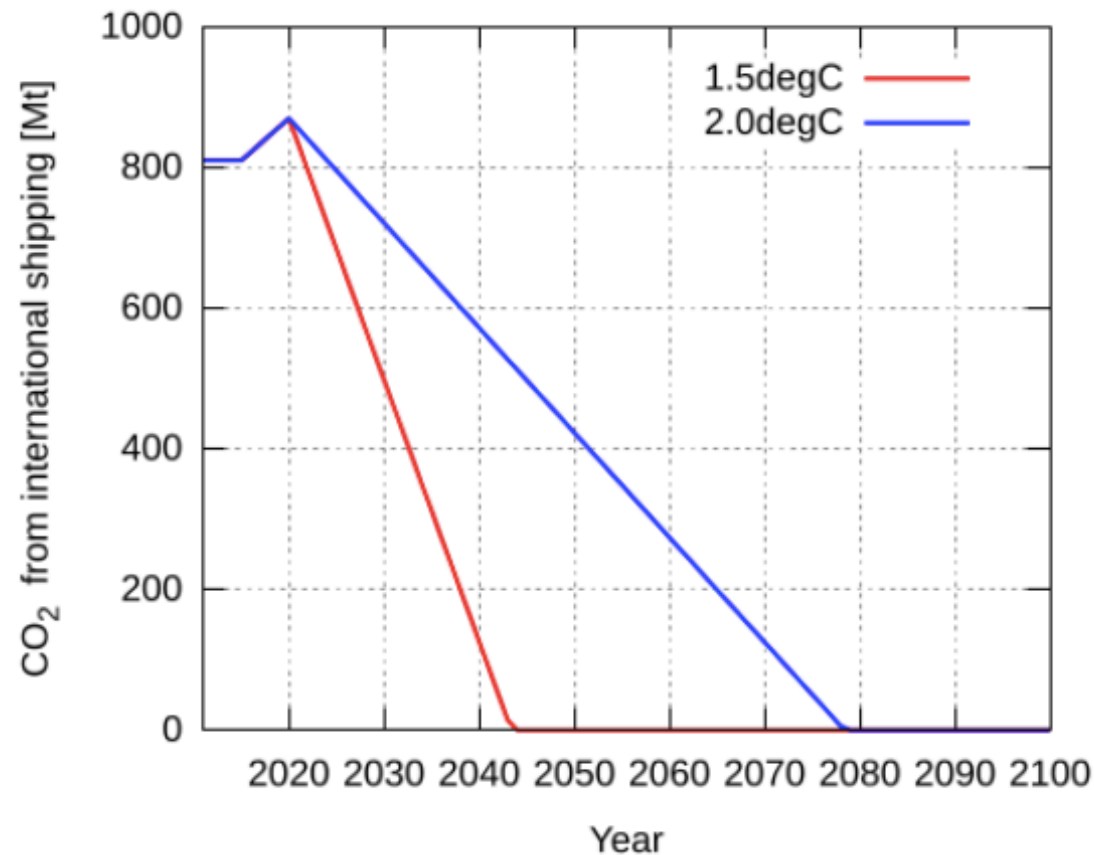
- “All willing partners” approach
- Top down & Bottom up



Internationally

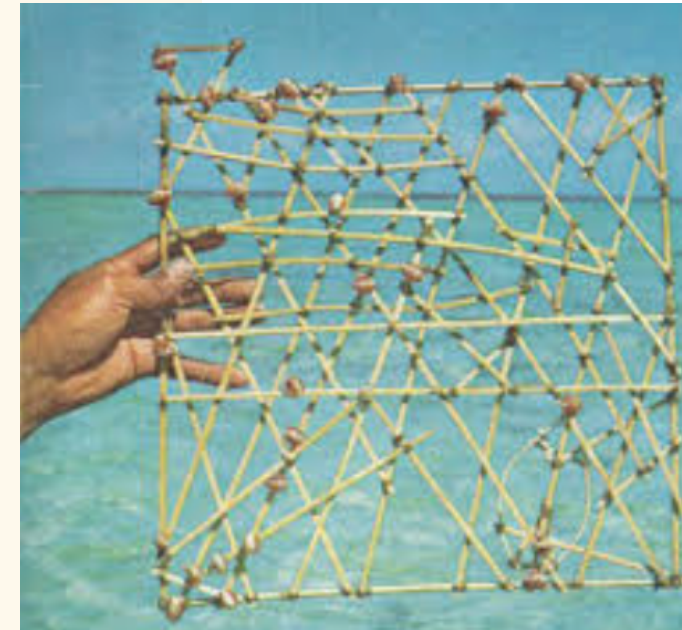


At home



Shipping Decarbonisation needed to meet Paris Temperature Goal

- Country-driven, regional asset
- Catalyst for change
- *Rebbelib* – Framework for transition



Transitioning to Low Carbon Shipping Module – Sustainable Sea Transport Solutions for SIDS: Pacific Island Countries Case Studies

Home > UNCTAD Sustainable Freight Transport and Finance Toolkit > Transitioning to Low Carbon Shipping Module – Sustainable Sea Transport Solutions for SIDS: Pacific Island Countries Case Studies

This module has been prepared to provide background and lessons learnt from the reef of experience for decision and policy makers developing strategies for Small Island Developing States (SIDS), seeking to transition their sea transport to low carbon options. We have focused on the situation as it exists for Pacific Island Countries but the information in this module has direct relevance to all SIDS and many Less Developed Countries (LDCs).

PRINT

This module contains eight chapters, each covering a separate theme. There are additional resource materials including PowerPoint presentations for each section, fact sheets which summarize key information and provide case examples, a glossary and list of acronyms, a reference list and bibliography, and links to useful websites.

You can access all chapters including additional resource materials by clicking on the chapters below. Alternatively, you can download the full module and the full appendix further down.



A review of sustainable sea-transport for Oceania: Providing context for renewable energy shipping for the Pacific

Nuttall Peter^{a,*}, Newell Alison^a, Prasad Biman^b, Veitayaki Joel^c, Holland Elisabeth^d

^a University of the South Pacific and Sailing for Sustainability Trust, School of Economics, Laucala Bay, Suva, Fiji
^b School of Economics, University of the South Pacific, Laucala Bay, Suva, Fiji

frontiers in MARINE SCIENCE

REVIEW ARTICLE published: 15 July 2014 doi: 10.3389/fmars.2014.00020

Policy and financing—why is sea transport currently invisible in the search for a low carbon future for Pacific Island Countries?

Peter R. Nuttall^{1*}, Alison Newell¹, Amelia Bola¹, John Kaitu'u¹ and Biman Prasad²

¹ Sustainable Sea Transport Research Programme, The University of the South Pacific, Suva, Fiji

Article Full-text available

The Magnus Effect and the Flettner Rotor: Potential Application for Future Oceanic Shipping

January 2016

Project: [Low carbon sea transport](#)

Peter Nuttall · John Kaitu

Keywords: financing, policy, sea transport, Pacific, renewable energy, fossil fuel reduction

Marine Policy 81 (2017) 80–90

King Canute muses in the South Seas: Why aren't Pacific Islands transitioning to low carbon sea transport futures?

Avnita Goundar^{a,*}, Alison Newell^{b,1}, Peter Nuttall^{b,1}, Isabelle Rojon^{c,2}, Jale Samuwai^{d,1}

Climate governance, policy entrepreneurs and small states: explaining policy change at the International Maritime Organisation

Jack Corbett, Mélodie Ruwet, Yi-Chong Xu & Patrick Weller



RENEWABLE ENERGY OPTIONS FOR SHIPPING

TECHNOLOGY BRIEF

d-powered shipping

work of the commercial, regulatory and technical affecting uptake of wind-assisted propulsion

Shipping technology

- LNG-assisted
- Methanol
- Gas turbine
- Wind power
- Hybrid prop
- Biofuels
- Fuel cells
- Hydrogen
- Solar
- Other techs

STEAM

DIESEL

PACIFIC ISLANDS TRANSPORT FORUM & EXPO



SAVE THE DATE

6-11 November, 2018
 USP Laucala Campus, Suva, Fiji

PACIFIC ISLANDS TRANSPORT FORUM & EXPO
 Turning the Tide: decarbonizing Pacific transport



Transport is the very lifeline of Pacific Islands societies. Across the region, the need for clean, affordable, appropriate and safe air, land and sea transport is essential for all socio-economic development and well-being. It affects every facet of connectivity – be it economic activity, government service delivery, disaster response, climate change adaptation and mitigation. Transport is the region's largest fossil fuel user, the largest GHG emitting sector and bears the greatest cost from natural disasters. In a world that must urgently decarbonize to combat climate change, what are the solutions, what are the challenges and how do we get there? The Pacific has urged the world to take urgent action on climate change. Now is the time to agree a plan for how we decarbonize at home.

Hosted by the Governments of Fiji and the Marshall Islands and The University of the South Pacific, the Ministerial Forum (8-10 Nov) and Expo (6-11 Nov) seek to:

- Prioritise transport decarbonisation as key to climate change adaptation and mitigation
- Showcase the latest science and technology available
- Set clear pathways for national action plans under a coordinated regional transition programme
- Bring together stakeholders and actors from the village to the global, from governments, industry, civil society and academics



50 UNCTAD 1975 PROSPERITY FOR ALL

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REVIEW OF MARITIME TRANSPORT

2014



COLUMBIA LAW SCHOOL

CENTER FOR CLIMATE CHANGE LAW

AUTHORITY OF PACIFIC ISLAND STATES TO REGULATE GREENHOUSE GASES FROM THE INTERNATIONAL SHIPPING SECTOR

BY MEREDITH WILENSKY
 mwilensky@law.columbia.edu




Photo Credit: NOAA

FEBRUARY 3, 2014

Webinar



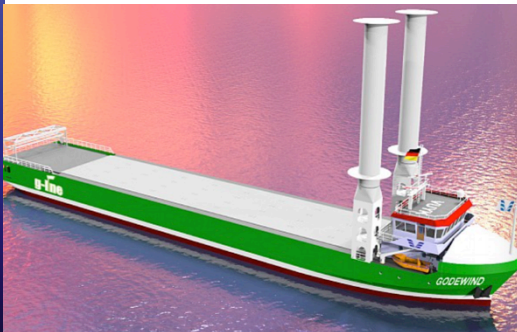
WEBINAR

Pacific Islands Development Forum

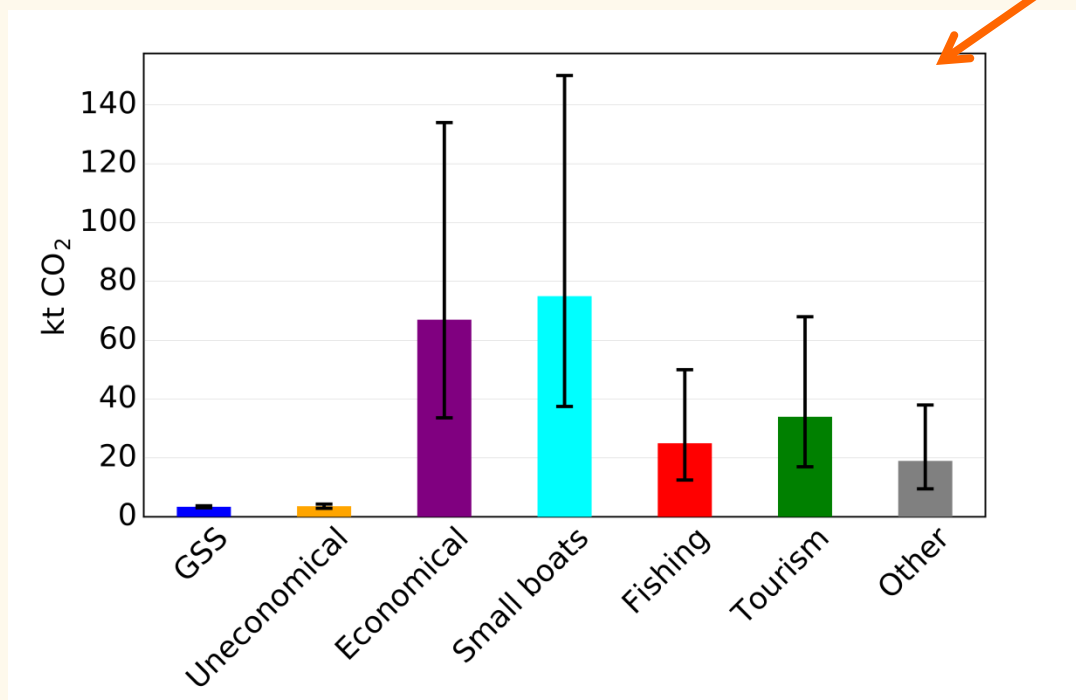
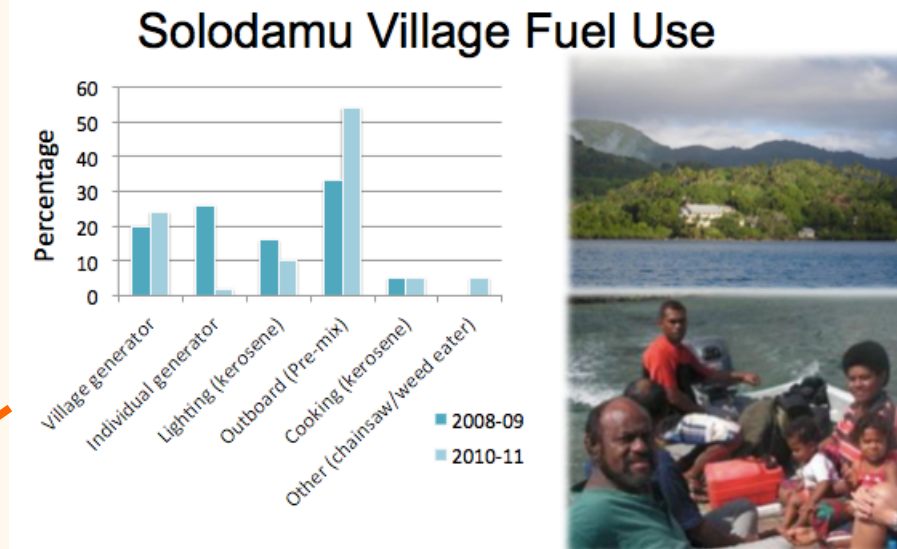
Join us via free to air Livestream:
<http://www.usp.ac.fj/live>

MAINTAINING A 1.5°C COURSE TO DECARBONIZE PACIFIC SHIPPING

On 8-10 November, Pacific transport leaders meet in Suva to balance the immediate need to set clear decarbonisation routes for this sector at the international, regional and national level. This webinar by leading experts presents the science from a range of perspectives to support this critical Pacific debate.



- Research is having policy impact
- Data – on-going challenge
- Time – is running out



Fiji shipping sector GHG emissions
 Total estimated at 227kt CO₂



Preliminary designs for Flettner rotor and Indo-rig for RMI Government ship and estimated savings

Flettner-Max

Type:	Flettner-Rotor
Number of Rotors:	2
Height:	12 m
Diameter:	2 m
Diameter-Endplate:	4 m
Projected Area (P_A):	24 m ²
AR (rel. to P_A):	6:1
Total Rotor Area (P_A):	48 m ²
Total Surface Area (S_A):	150,8m ²
CE_{sail} :	x = 32,15 m

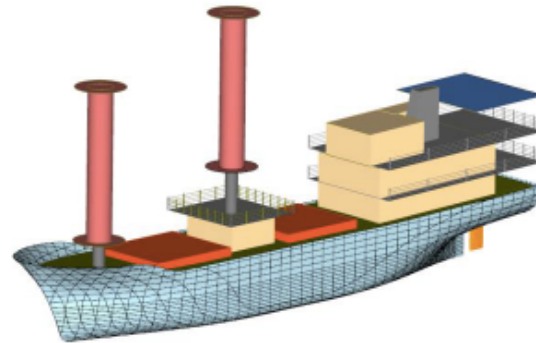


Figure 59: Retrofit option 'Flettner-Max'

IndoSail-Max

Type:	IndoSail-3R- Rig
Sail area:	
Jib:	109,2 m ²
Main 01:	193,8 m ²
Main 02:	193,8 m ²
Mizzen:	62,8 m ²
Total:	559,5 m ²
CE_{sail} :	x = 28,8 m

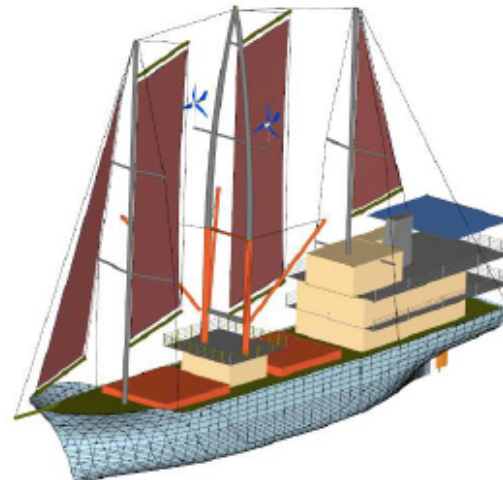
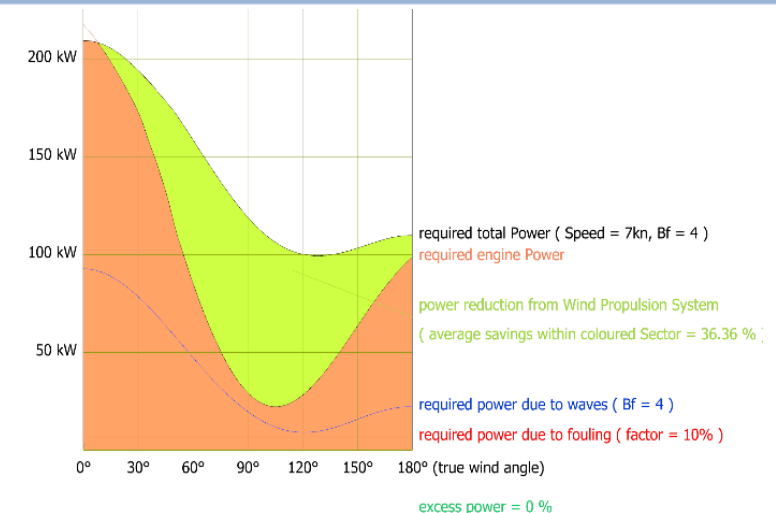


Figure 65: Retrofit option IndoSail 3-masts (IndoSail-Max)

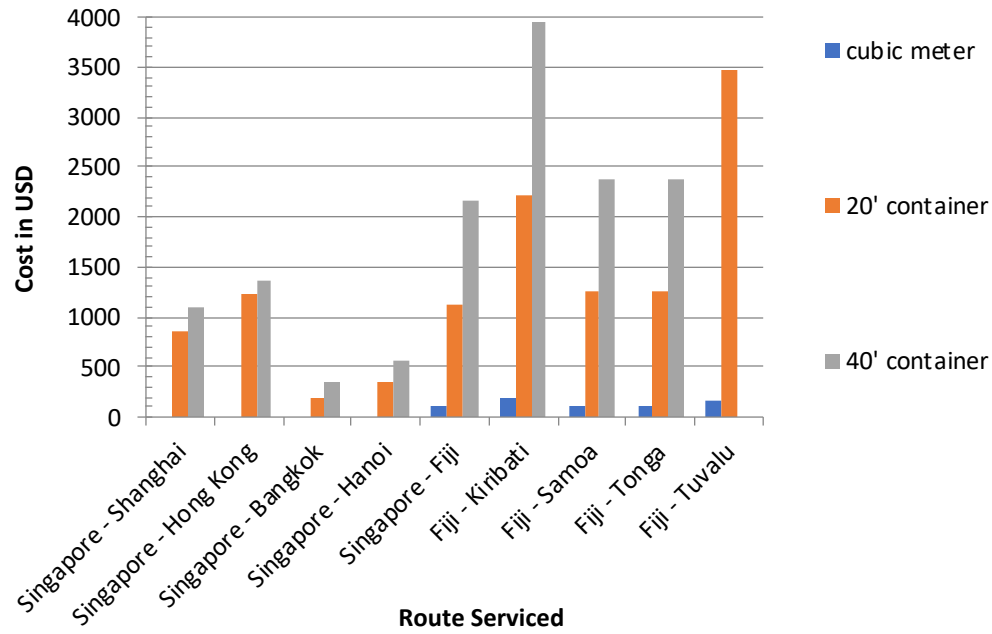
Table 1: Summary of options structured in groups

Operational measures	Technical measures	WASP Retrofit	Auxiliary energy	Newbuilding examples
Slow steaming	Hull cleaning	Flettner rotor	Efficiency improvements	Kwai-similar
Voyage and route optimization	Drive train adaption	IndoSail System	Photovoltaics	Greenheart-Project /
Navigation	Engine efficiency improvements	Traditional rig Kwai-like tripod rig	Wind turbines	Maruta Jaya (IndoSail project) similar
Cargo hold efficiency	Diesel-electric (ready for hybrid)		Increased battery capacity	Fast multihull

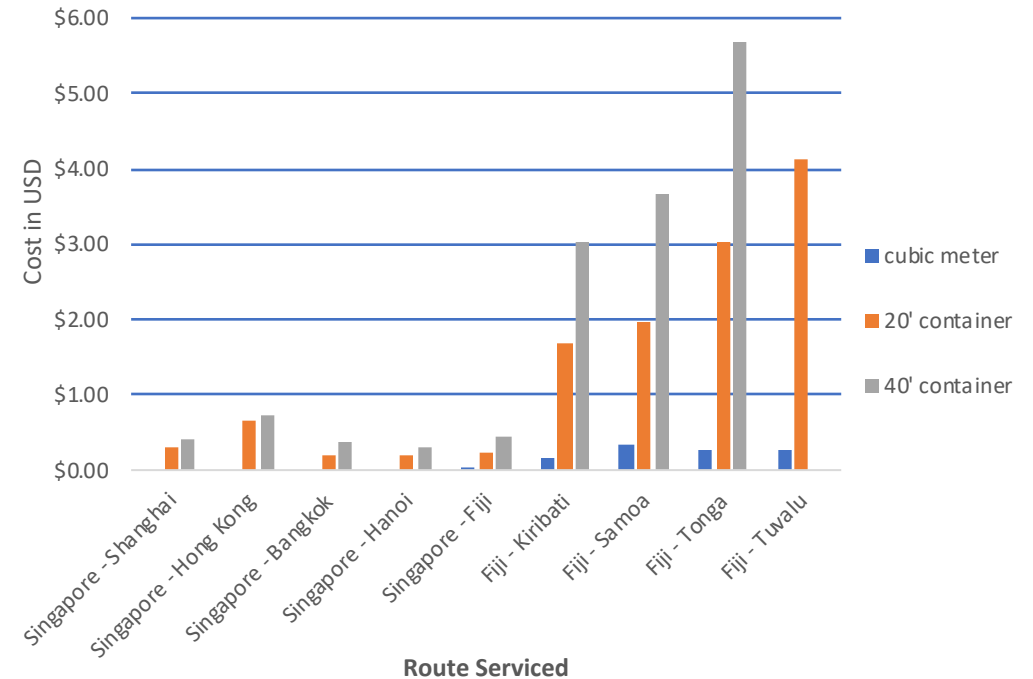


A COMPARISON OF ASIA/PACIFIC FREIGHT COSTS (source: Zay, L et al, in prep)

Average Cost per Shipping Unit



Average Cost per Nautical Mile



Pacific IMO Member States GHG Emissions Reduction Training E-learning Menu

From Global to the Village

*Presented by: Dr. Tristan Smith
University College London*

With the financial support of:



EUROPEAN UNION

With the technical support of:



Pacific IMO Member States GHG Emissions Reduction Training E-learning Menu

*Preparing the Pacific to negotiate MBMs
Prepared by: Dr Peter Nuttall
August 2020*

With the financial support of:



EUROPEAN UNION

With the technical support of:



CARBON TAX OPTIONS FOR INTERNATIONAL SHIPPING

CARBON PRICING, MBM



MCST has completed initial research of carbon pricing options under the IMO GHG emissions reduction Roadmap to provide guidance to Pacific high ambition delegations participating in these negotiations. This is the first such analysis undertaken through a Pacific lens.

[Read More](#)

PACIFIC BLUE SHIPPING PARTNERSHIP

TECHNICAL WORKING PAPER #3

Pacific IMO Member States GHG Emissions Reduction Training E-learning Menu

*Pacific Islands domestic shipping decarbonisation options
Presented by: Prof. Capt. Michael Vahs
Hochschule Emden-Leer*

With the financial support of:



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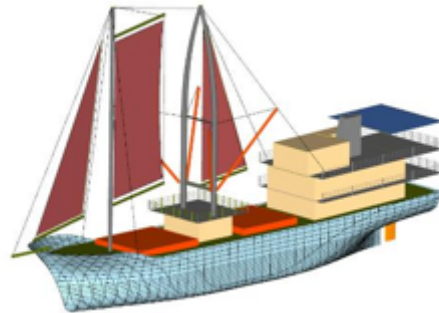
With the technical support of:





Pacific Blue Shipping Partnership

*"When it comes to climate change,
we are all in the same canoe"*





Pacific Blue Shipping Partnership

*“When it comes to climate change,
we are all in the same canoe”*



ASSUMPTIONS – Domestic Transition

- an immediate blended finance investment at size and scale.
- coordinated country-owned and driven program
- a bespoke Pacific solution.
- affordable and appropriate ship financing and insurance underwriting
- demonstration trials of Pacific scale technological solutions
- new fuels required for a 100% transition.
- whole of sector approach is essential
- climate facing presents a unique opportunity to transition Pacific domestic fleets

Sea transport infrastructure development and deployment	\$100m (grants + loans)	Business and entrepreneurship finance facility	\$250m (loans)
<ul style="list-style-type: none"> • proof of concept phase (5 years) and pilot project phase (5 years) with a holistic ‘whole of sector’ focus • coordinated portfolio of country-driven projects aligned with national priorities 		<ul style="list-style-type: none"> • loans, guarantees, and equity investment in SMEs and large-scale enterprises located in PICs, for aligned commercial activity 	
Regional Research Innovation and Capacity Building Hub for Sustainable Sea Transport	\$100m (grants + loans)	Policy incentives, implementation and governance capacity programme	\$30m (grants)
<ul style="list-style-type: none"> • locally-relevant research and technology development • development and delivery of education, training and implementation programmes • creation of opportunities for women and marginalised groups 		<ul style="list-style-type: none"> • Review, co-development and implementation of policy frameworks for sustainable and low-carbon sea transport 	
Secretariat Function including staffing, training, and input from international technical support group			\$20m (grants)

Regional Investment in RE
\$2billion+ (2013 -17)



**Regional investment in
ship decarbonisation
2012-19 < \$20m**

