HEADS OF MARITIME

GMN | The Global MTCC Network
A global network for energy-efficient shipping

GMN introduction and status Update

Anton Rhodes| Suva, Fiji, Dec 2017

The Global MTCC Network (GMN) project is funded by the European Union and implemented by IMO
The views expressed in this presentation can in no way be taken to reflect the views of the European Union

GMN | The Global MTCC Network
A global network for energy-efficient shipping

IMO's path to promote tech. transfer and capacity building

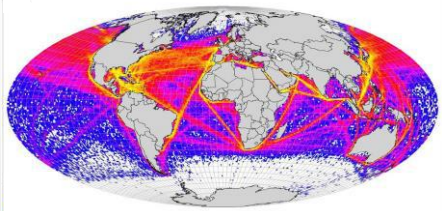
GMN Project

- Res. 23 -MARPOL Annex VI (2013), MEPC Resolution on TT and CB,
- ITCP: Awareness raising and capacity building tools
- Major Projects: Capacity building & private sector partnerships
- Global network to promote technology cooperation and transfer
- Institutionalize capacity building and tech. transfer support at regional level for sustainable impact

IMO INTERNATIONAL MARITIME ORGANIZATION

Project funded by the EUROPEAN UNION

Initiation of a Network through GMN Project



- Focus on regions with large number of LDCs and SIDS (Africa, Asia, Caribbean, Latin America and Pacific)

GMN | The Global MTCC Network
A global network for energy-efficient shipping

5

GMN overview

- An initiative funded by EU and implemented by IMO
- Total Funding Euro 10,000,000
- Jan, 2016 – Dec, 2019 (4 Years)
- During the project, 5 MTCCs to become fully operational
- Beyond the project, the MTCCs will become financially self-sustained

Overall Objective:

- Build capacity – Improve energy efficiency – Reduce GHG emissions – Contribute to fight against climate change

6

GMN - Specific objectives

1. Establish 5 MTCCs
2. Improve human and instiutional capacities in maritime administrations and relevant stakeholders
3. Promote the uptake of low carbon technologies and operations
4. Establish pilot voluntary data collection and reporting systems
5. Communicate and disseminate information

GMN | The Global MTCC Network
A global network for energy-efficient shipping

Objective 1 - All MTCCs are established and operational

MTCC CARIBBEAN
Maritime Technology Cooperation Centre

University of Trinidad & Tobago

MTCC AFRICA
Maritime Technology Cooperation Centre

Jomo Kenyatta University of Agriculture & Technology, Kenya

MTCC ASIA
Maritime Technology Cooperation Centre

Shanghai Maritime university, China

MTCC PACIFIC
Maritime Technology Cooperation Centre

Pacific Community (SPC), Fiji

MTCC LATIN AMERICA
Maritime Technology Cooperation Centre

International Maritime University of Panama, Panama

GMN | The Global MTCC Network
A global network for energy-efficient shipping

11

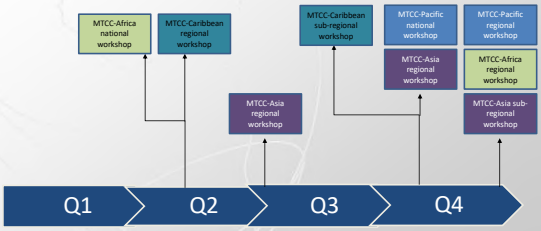
Launch of Global MTCCs Network

IMO HQ, London, 4 December

7

Objective 2 - Capacity building

MTCC capacity building activities in 2017



8

Objective 3 - Low Carbon technologies

- MTCC Africa - Establish on-shore power supply at Port of Mombasa (Cold Ironing)
- MTCC Asia - Update the ship trim optimization management system
- MTCC Caribbean - Capture the current baseline on the use of ship energy efficient technology within the region
- MTCC Pacific - Conduct energy audits in maritime ports
- MTCC Latin America - TBC

9

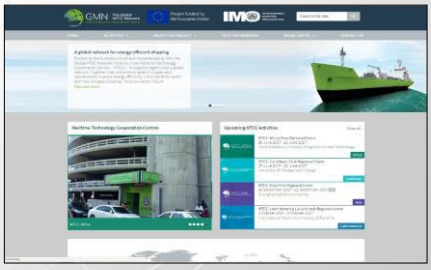
Objective 4 - Data collection

- **Caribbean** - collection of data
- **Pacific** – data templates developed
- **Africa** – Staff training on-board target vessels
- **Asia** – Data collection seminar – Role of key stakeholders confirmed

10

Objective 5 - Communication and dissemination

- Launch of GMN and MTCC websites



11

Objective 5 - Communication and dissemination

- GMN and MTCC newsletters, articles and social media

12

Objective 5 - Communication and dissemination

- International and regional events

13

Overview of GMN deliverables

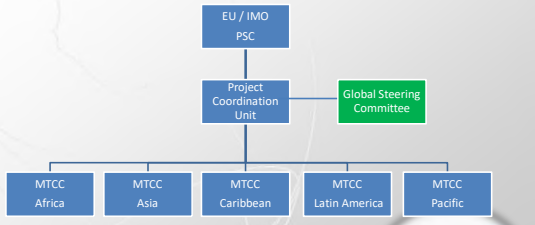
2016
- Established PCU
- Completed international tender process

2017
- MTCCs established and operational
- MTCC Launch Events and Regional Workshops
- Established MTCC network
- Established GSC

2018
- Develop pilot projects
- Deliver national and sub-regional workshops
- Develop sustainability plans

2019
- Complete Pilot Projects
- Deliver regional conferences
- Finalize sustainability plans

GMN MANAGEMENT STRUCTURE



GMN | The Global MTCC Network

15

Thank you for your attention!
http://gmn.imo.org/

GMN | The Global MTCC Network

16

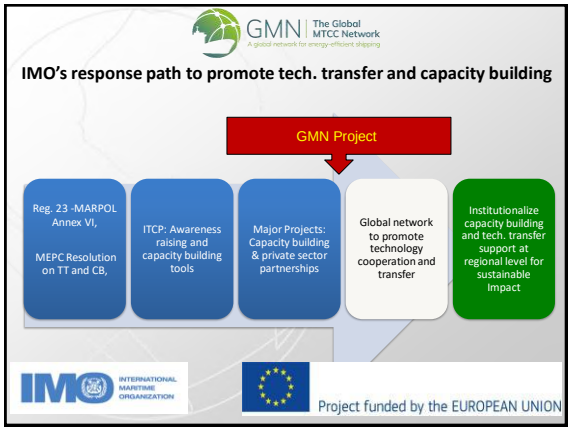
Roadmap for developing a comprehensive IMO Strategy on reduction Of GHG emissions from ships

January 2019	- Start of Phase 1: Data collection (Ships to collect data)
Spring 2019 (MEPC 74)	- Discussion continues - Initiation of Fourth IMO GHG Study using data from 2012-2018
Summer 2020	- Data for 2019 to be reported to IMO
Autumn 2020 (MEPC 76)	- Start of Phase 2: data analysis (no later than autumn 2020) - Discussion continues - Publication of Fourth IMO GHG Study for consideration by MEPC 76[3]
Spring 2021 (MEPC 77)	- Initiation of work for adjustments on Initial IMO Strategy, based on DCS data - Secretariat report summarizing the 2019 data pursuant to regulation 22A.10
Summer 2021	- Data for 2020 to be reported to IMO
Spring 2022 (MEPC 78)	- Phase 3: Decision step - Discussion continues - Secretariat report summarizing the 2020 data pursuant to regulation 22A.10
Summer 2022	- Data for 2021 to be reported to IMO
Spring 2023 (MEPC 80)	- Adoption of Revised IMO Strategy, including short-, mid- and long-term further measure(s), as required, with implementation schedules - Secretariat report summarizing the 2021 data pursuant to regulation 22A.10

MARPOL Annex VI & Technical Cooperation

Regulation 23 of MARPOL Annex VI, Chapter 4: "Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships"

IMO INTERNATIONAL MARITIME ORGANIZATION


GMN
The Global MTCC Network
A global network for energy-efficient shipping
IMO's response path to promote tech. transfer and capacity building
GMN Project
Reg. 23 -MARPOL Annex VI,
MEPC Resolution on TT and CB,
ITCP: Awareness raising and capacity building tools
Major Projects: Capacity building & private sector partnerships
Global network to promote technology cooperation and transfer
Institutionalize capacity building and tech. transfer support at regional level for sustainable impact
IMO INTERNATIONAL MARITIME ORGANIZATION
Project funded by the EUROPEAN UNION

GloMEEP Project Components
Legal, Policy and Institutional Reforms (LPIR)
Capacity building and knowledge sharing
Public-private partnerships
IMO INTERNATIONAL MARITIME ORGANIZATION
gef
UNDP
GloMEEP

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

Recommendations for Low Carbon Maritime Transport in the Pacific

Workshop for Heads of Maritime
Suva Fiji, 12th December 2017

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

PLCMT Consultation

Three workshops and a submission:

- Regional Workshop on Energy Efficiency in Maritime Transport (RWMTEE)- Vanuatu December 2016;
- Port Energy Management (PEM)- Auckland New Zealand August 2017;
- National Workshop on Ship Energy Efficient Operations (SEEO)- Suva Fiji October 2017;
- Expert submission from Solomon Islands Maritime Safety Administration (SIMSA)- Acting Director Capt. Tim Harris.

D-N-B-A Matrix Drivers-Needs-Barriers-Action

- MTCC-Pacific Report- Recommendations for Low Carbon Maritime Transport in the Pacific (PLCMT) to be Submitted to IMO by Dec 2017;
- Aim- to implement Transport Ministers' Resolution;
- Headings- International and National Frameworks, Climate Financing, Costs and Profitability, Pilot-Projects, Reputation and Standards.
- Actions- Short (<5yr), Medium (5-10yr) and Long-term (>10yr)

PLCMT Strategy PICTs Recommendations

International Framework:

Drivers:

International framework and negotiations on climate change

Participation/contribution to international negotiations to defend SIDS/LDCs special circumstances

Recommendations:

Facilitate communication between all stakeholders to coordinate the drafting and submission of regular cosponsored regional documents to IMO and secure funding to attend meetings.

Identify and train suitable maritime personnel to attend and become long term representatives to international meetings.

PLCMT Strategy PICTs Recommendations

National Framework:

Drivers:

National initiatives/plans e.g. Green Growth frameworks, GHG emissions targets supported by regional frameworks and declarations including 2013 Majuro Declaration, FRDP Goal 2 on low carbon development, FATS Theme 5

Recommendations:

Draft model laws and instructions to MSAs, ratify laws and National MT Policies to address SEE in MTI aligned with international obligations.

Adopt data collection systems to determine GHGEs and meet MT NDCs.

Develop Regional Strategy for low carbon MT in Pacific.

PLCMT Strategy PICTs Recommendations

Climate Financing:

Drivers:

Climate financing and available expertise with international and regional partners

Recommendations:

Seek Green Funds and Donors, Develop Capacity and Proposals to access.

Enhance country financial systems to utilise green funds.

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO

PLCMT Strategy PICTs Recommendations

Pilot-Projects:

Drivers:

Lead by example to reduce GHG emissions from maritime transport in the Pacific under regional frameworks

Recommendations:

Develop training, tools, research capacity and qualifications, and implement small-scale pilot-projects for SEE operations and technologies.

Implement Green Ports and Shipping Programs.

Implement vessel replacement and green infrastructure in ports.

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

PLCMT Strategy PICTs Recommendations

Costs:

Drivers:

Cost of Energy

Recommendations:

Conduct annual audits and implement short-term energy savings projects.

Develop integrated solutions for Green Port-Shipping-Supply chain.

Implement SEEMP and start plans for vessel replacement.

CBA of long-term savings for port infrastructure (OPS) and bio-fuels.

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

PLCMT Strategy PICTs Recommendations

Profitability:

Drivers:

Improve profitability of ships and reliability and efficiency of domestic shipping and competitive advantage of ports

Recommendations:

Review government franchise schemes (GFS) to support SEE and profitable services to reduce costs, fuel and GHGEs.

CBA of new technologies on board smaller vessels (<50m).

Government support for training crews on SEE Operations, improved infrastructure, technology transfer and competitive operations.

Assist GFS operators on uneconomic routes with SEE measures and GHGE reduction.

Assist with new technologies and safety equipment for smaller vessels.

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

PLCMT Strategy PICTs Recommendations

Reputation:

Drivers:

Good Reputation

Recommendations:

Regular success stories published.

Support Ship Owners Associations to promote Green Ports & Ships.

Develop Green Awards for Ports & Ships.

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

PLCMT Strategy PICTs Recommendations

Standards:

Drivers:

Improved standards of MTI including safety, training, pollution prevention and energy efficiency

Recommendations:

Develop short training courses for SEE, standards, technologies and green port infrastructure.

Review government incentives for SEE technologies, ship building and maintenance, and safety equipment.

Review incentives for installing minimum electronic safety & SEE equipment.

Review Port & SEE, Operational & Environmental Systems to International standards.

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

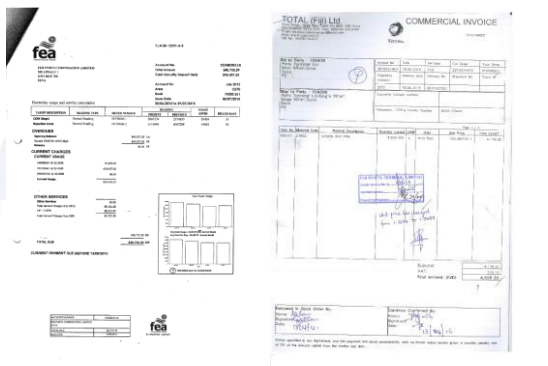
CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

Energy Management in Ports

Methods and Tools

Suva, 12 December 2017

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.



Energy management

Benefits

- ❑Reduced operating costs.
- ❑Reduced emissions (both CO_2-e and local air pollution).
- ❑Lowered maintenance expenses, and reduced downtime due to equipment failure.
- ❑Improved comfort and safety.
- ❑Improved company reputation.
- ❑Greater employee retention.
- ❑An edge when it comes to recruitment.

Examples

- Logistics company, Linfox, operating trucks and warehouses, reduced its carbon intensity by 47% over a 8 year period. https://www.youtube.com/watch?v=DSO3dV-HIQU

http://www.linfox.com/about-us/sustainability.htm

Methods

2 general approaches

Energy Management
- Sets targets
- Has a policy
- Allocates responsibility, sets KPIs
- Has an annual plan
- Ongoing measurement of energy use and carbon emissions
- Allocates Resources

Ad-hoc, opportunistic
- Undertakes an energy audit (maybe)
- Implements one or two measures to save energy
- No ongoing measurement
- No ongoing resourcing

Benefits of the EM approach

$

- "Organizations that set a reduction **goal**, **analyze** energy data frequently, add internal or external **resources**, and use external financing were found to implement four times as many improvement measures as those who did none" Fifth Annual Global Energy Efficiency Survey, June 2011

Tools

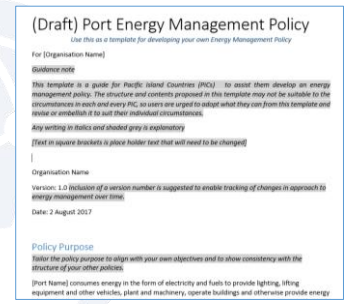
Developed by MTCC Pacific to help Pacific Ports save money and reduce emissions

Tools overview

- EM Policy Template
- EM Measurement and tracking spreadsheet
- EM Plan Template
- Port Energy Management Guide and accompanying spreadsheet

Policy

- Commitment
- Targets
- Links to other policies
- Communication



(Draft) Port Energy Management Policy

Use this as a template for developing your own Energy Management Policy

For [Organisation Name]

Guidance note

This template is a guide for Pacific Island Countries (PICs) to assist them develop an energy management policy. The structure and contents proposed in this template may not be suitable to the circumstances in each and every PIC, so users are urged to adopt what they can from this template and revise or embellish it to suit their individual circumstances.

Any writing in italics and shaded grey is explanatory

[Text in square brackets is place holder text that will need to be changed]

Organisation Name

Version: 1.0 *Inclusion of a version number is suggested to enable tracking of changes in approach to energy management over time.*

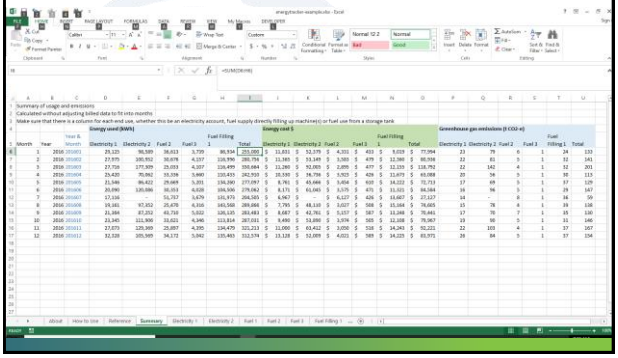
Date: 2 August 2017

Policy Purpose

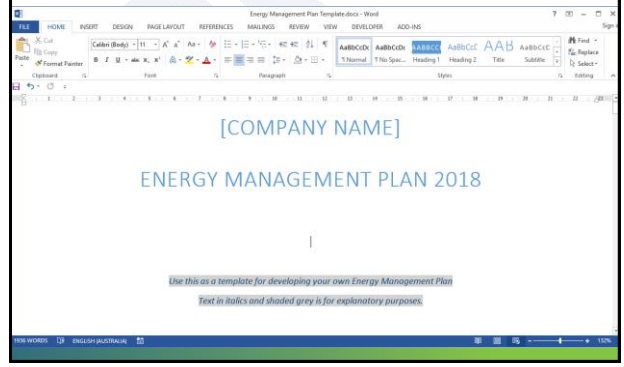
Tailor the policy purpose to align with your own objectives and to show consistency with the structure of your other policies.

[Port Name] consumes energy in the form of electricity and fuels to provide lighting, lifting equipment and other vehicles, plant and machinery, operate buildings and otherwise provide energy

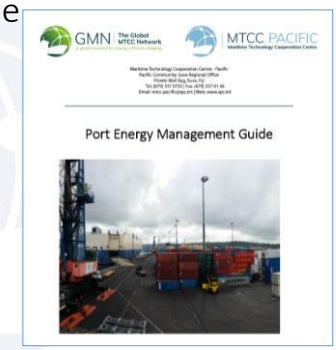
Measurement



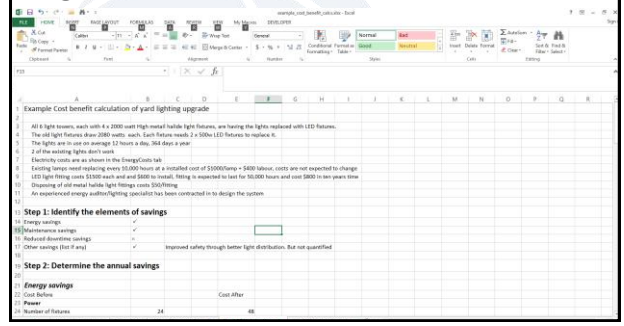
Annual Action Plan



Port EM Guide



Spreadsheet accompanying the guide



Summary

- Energy management: what's involved, benefits
- Method: Energy Management achieves much more than an ad-hoc approach:
  - Sets targets
  - Has a policy
  - Allocates responsibility, sets KPIs
  - Has an annual plan
  - Ongoing measurement of energy use and carbon emissions
  - Allocates Resources
- MTCC Pacific tools developed to assist ports:
  - Energy Policy Template
  - Measurement spreadsheet
  - Energy Management Plan
  - EM Guide and opportunity spreadsheet

On Thursday…

- Presenting Activities and Results in Pacific Ports

Thank you

Bruce Rowse, 8020Green Pty Ltd
Port Energy Management Consultant to MTCC-Pacific
bruce@8020green.com

2nd STEERING COMMITTEE MEETING

IMO Work to Address Energy Efficiency and Greenhouse Gas Emissions

Dr. Leigh Mazany| GMN Consultant
MTCC-Pacific 1st Regional Workshop | 12-15 December 2017 | Suva, Fiji

The Global MTCC Network (GMN) project
is funded by the European Union and implemented by IMO
The views expressed in this presentation
can in no way be taken to reflect the views of the European Union

Content

1. Estimating GHG Emissions from International Shipping
2. Marine Environment Protection Committee Work
3. Data Collection System
4. Roadmap for an IMO Strategy

Estimating Greenhouse Gas (GHG) Emissions from International Shipping

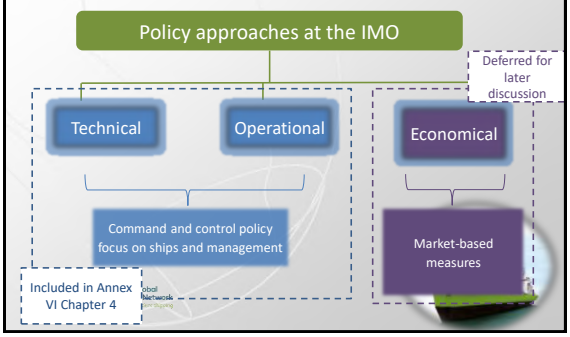
IMO GHG studies

- Three major studies have been undertaken over the last 15 years
  - First IMO GHG Study 2000
  - Second IMO GHG Study 2009
  - Third IMO GHG Study 2014
- Studies looked at both GHG emissions and air pollutant emissions
- IMO Roadmap calls for a fourth study in 2019

2nd IMO GHG Study 2009

- Introduction to shipping and its legislative framework
- Emissions from shipping 1990–2007
- Technological and operational potential for reduction of emissions
- Policy options for reductions of GHG emissions scenarios for forecast of future shipping emissions
- Climate impact
- Comparison of emissions of CO_2 from ships with emissions from other modes of transport

2nd GHG Study: Policy approaches to reduce GHG emissions



2nd GHG Study: Main Findings

- Shipping was estimated to have emitted 3.3% of the global emissions during 2007
- International shipping was estimated to have emitted 870 million tonnes, or about 2.7% of the global emissions in 2007
- Carbon dioxide is the most important GHG emitted by ships
- A significant potential for reduction of GHG emissions through technical and operational measures was identified
- Energy efficiency of ships could potentially be 25% to 75% below the then current levels
- A number of policies to reduce GHG emissions from ships were conceivable
- Shipping was shown, in general, to be an energy-efficient means of transportation compared to other modes

3rd IMO GHG Study 2014

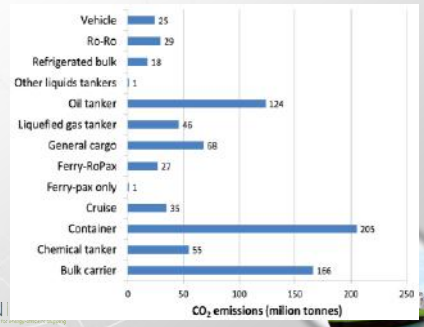
- The Third IMO GHG Study 2014 aimed to update the 2nd IMO GHG Study 2009
- The main objective was to focus on the following topics:
  - Development of the inventories of CO_2 emissions from international shipping for 2007–2012
  - Development of the inventories of other air emissions from international shipping for 2007–2012
  - Development of future shipping scenarios and projection of shipping emissions for 2012–2050

3rd IMO GHG study findings: Shipping share of global CO_2 emissions

			IMO GHG Study 2014 CO_2		
Year	Global CO_2[1]	Total shipping	Percent of global	International shipping	Percent of global
2007	31,409	1,100	3.5%	885	2.8%
2008	32,204	1,135	3.5%	921	2.9%
2009	32,047	978	3.1%	855	2.7%
2010	33,612	915	2.7%	771	2.3%
2011	34,723	1,022	2.9%	850	2.4%
2012	35,640	938	2.6%	796	2.2%
Average	33,273	1,015	3.1%	846	2.6%

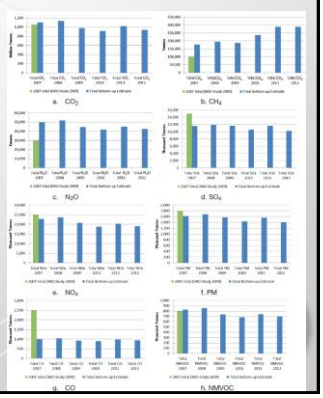
International shipping share of total global GHG emissions was 2.2% in 2012

3rd GHG Study findings: GHG emissions per ship type for 2012



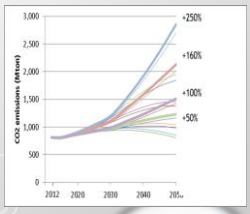
3rd GHG Study findings: Emissions estimates

- Emissions estimates for all shipping for period 2007 to 2012
- Green bar represents the 2nd IMO GHG Study 2009 estimate



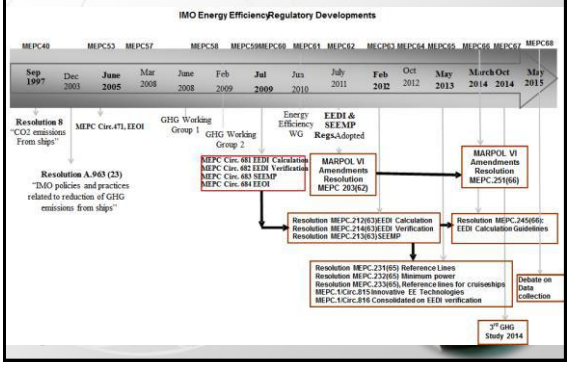
3rd IMO GHG Study: CO_2 emissions projections

- Various scenarios modelled
- An estimated average increase of 50% to up to 250% in shipping emissions by 2050
- This study, plus a number of other studies, all point to an increase in future shipping GHG emissions
- Regulators aim to stabilise or reduce future emissions



Marine Environment Protection Committee Work

Work leading to Chapter 4 of MARPOL Annex VI



Data Collection System

IMO Data Collection System for Fuel Oil Consumption of Ships

- **Resolution MEPC.278(70)** adopted on 28 October 2016 amending MARPOL Annex VI
- New regulation 22A on «Collection and reporting of ship fuel oil consumption data»
  - SEEMP part II (Data Collection Plan)
  - Applies to ships 5,000 GT and above
  - Ship to report data to its Administration on an annual basis
  - Data to be transferred to the IMO database
  - Parties to MARPOL Annex VI shall have access to anonymized data for their analysis and consideration
  - Based on reported data, the Secretary-General shall produce an annual report to the MEPC

16

IMO Data Collection System for Fuel Oil Consumption of Ships in MARPOL Annex VI

17

IMO Data Collection System for Fuel Oil Consumption of Ships

- Information to be submitted to the IMO Ship Fuel Oil Consumption Database
  - IMO number of the ship
  - Start date - End date
  - Ship type
  - GT - NT
  - DWT (if applicable)
  - Power output of main and auxiliary engines over 130 kW
  - EEDI (if applicable)
  - Ice class (if applicable)
  - Fuel oil consumption, by fuel oil type, in metric tonnes
  - Methods used for collecting fuel oil consumption data
  - Distance travelled
  - Hours underway

18

IMO Data Collection System Guidelines and Database

- Guidelines on development of a ship energy efficiency management plan (SEEMP) – Resolution MEPC.282(70) adopted 28 October 2016
- Guidelines for Administration verification of ship fuel oil consumption data – Resolution MEPC.292(71) adopted 7 July 2017
- Guidelines on development and management of IMO ship fuel oil consumption data base – Resolution MEPC.293(71) adopted on 7 July 2017
- Development of the IMO Ship Fuel Oil Consumption Database
  - GISIS model user interface
  - Extensible Markup Language (XML) format
  - IMO Web Accounts system of permissioning

GMN | The Global MTCC Network

19

Submission of data from a State non-Party to MARPOL Annex VI

- **Circular MEPC.1/Circ.871** approved by MEPC 71 and issued on 4 September 2017
- Provides measures for voluntary submission of data from non-Party States
- Provisions for recognized organizations
- As of 8 November 2017, MARPOL Annex VI had 88 contracting States representing 96.16% of the world fleet

GMN | The Global MTCC Network

20

Roadmap for an IMO Strategy

GMN | The Global MTCC Network

Comprehensive IMO strategy on reduction of GHG emissions

MEPC 70 (October 2016)

- MEPC approved a Roadmap for developing a comprehensive IMO strategy on reduction of GHG emissions from ships, which foresees an initial GHG reduction strategy to be adopted in 2018.
- It contains a list of activities, including further IMO GHG studies and significant intersessional work, with relevant timelines and provides for alignment of those new activities with the ongoing work by the MEPC on the three-step approach to ship energy efficiency improvements.
  - This alignment provides a way forward to the adoption of a revised strategy in 2023 to include short-, mid-, and long-term further measures, as required, including implementation schedules.
- The Committee also agreed to hold intersessional working group meetings on reduction of GHG emissions from ships.

GMN | The Global MTCC Network

Development of an IMO Strategy on reduction of GHG emissions from ships

Outcome of MEPC 71 (July 2017) & ISWG-GHG 2 (October 2017)

- Draft outline of the structure of the initial IMO GHG Strategy (following the Roadmap for developing a comprehensive IMO Strategy agreed at MEPC 70)
  1. Preamble/introduction/context/objectives including emission scenarios
  2. Vision
  3. Levels of ambition
     Guiding principles
  4. List of candidate short-, mid- and long-term further measures with possible timelines and their impacts on States
  5. Barriers and supportive measures; capacity building and technical cooperation; R&D
  6. Follow-up actions towards the development of the revised Strategy
  7. Periodic review of the Strategy
- ISWG-GHG 3 planned for April 2018

GMN | The Global MTCC Network

Latest progress made in developing GHG Strategy for international shipping

Outcome of ISWG-GHG 2 (23-27 October 2017)

- ISWG-GHG 2 has made progress in starting to shape a draft initial IMO GHG Strategy including refining the **vision** for IMO, which will express IMO's further commitment to reducing GHG emissions from international shipping.
- While the structure of the Strategy has been largely agreed, the detailed text to be included is still under discussion.
- The group agreed that candidate short-term measures could be finalized and agreed by the Marine Environment Protection Committee (MEPC) between 2018 and 2023; candidate mid-term measures could be measures finalized and agreed by the MEPC between 2023 and 2030; and candidate long-term measures could be measures finalized and agreed by the MEPC beyond 2030.
- Dates of entry into force and when the measure can effectively start to reduce GHG emissions would be defined for each measure individually.
- The group supported the need for early action.

GMN | The Global MTCC Network

Thank you for your attention!
http://gmn.imo.org/

GMN | The Global MTCC Network
A global network for energy-efficient shipping

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-Pacific Progress Report

Second MTCC-Pacific Steering Committee Meeting
Suva, Fiji, 12 December 2017

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Result 1: Establishment & Operations

IR1.1 MTCC established in the office of SPC

- SPC-IMO contract signed on 12 May 2017 - Project ending on 31 December 2019
- A closed office is allocated by SPC at the third floor of Lotus Building at its Regional Office in Suva, Fiji
- Website published at www.mtccpacific.spc.int

IR1.2 Appoint qualified staff to MTCC

- 2 October 2017: all MTCC-Pacific staff appointed
  - ✓ Head of MTCC-Pacific
  - ✓ Transport GHG Adviser
  - ✓ Administration and Information Assistant
  - ✓ Maritime Industry Energy Efficiency Officer
- SPC Project Kick-off Team de-established

Result 1: Establishment & Operations

IR1.4 Project workplan implementation

- 7 Project Monthly Meetings have been completed: 18 May, 28 June, 19 July, 24 august, 28 September, 12 October and 1 November
- First Quarterly Progress Report submitted and approved by IMO
- Second Quaterly Report submitted and approved by IMO
- Participated at COP23 GMN side-event
- Participated at the MTCCs Technical Workshop at IMO in December – MTCCs MoU signed and MTCCs Coordinating Committee established.

IR1.5 Partnerships implementation

- MTCC-Pacific Partners' Meeting on 27 June attended by EU delegation, FNU, FMA, PIDF, PIFS, USP
- First Steering Committee Meeting 16-17 August – ToR adopted
- Second Steering Committee Meeting 12 December

Result 2: capacity-building activities

Fiji National Workshop on Energy Efficient Operations of Ships

- Date: 24-27 October in Suva, Fiji
- Representatives from
  - Fiji Ministry of Infrastructure and Transport (MoIT)
  - Maritime Safety Authority of Fiji (MSAF)
  - Fiji Port Corporation Limited (FCPL)
  - Fiji Ships and Heavy Industry Limited (FSHIL)
  - Pacific Islands Development Forum (PIDF)
  - Patterson Shipping/Searoad Shipping
  - Seaquest Fiji Ltd/Sealand Processors
  - Inter Link Shipping Line Ltd
  - Government Shipping Services
  - Tokalau Shipping, All Barging and Marine (Fiji) Limited
  - Billett Wright & Associates (Fiji) Limited
  - Solander Pacific Limited.
- The objective of the National Workshop was to inform the participants on new energy efficient technologies, tools and methods
- This workshop elicited great interest in improved ship propulsion efficiency, especially in Energy Saving Devices (ESD).

Result 3: pilot-projects on energy efficiency

- Pilot-project on Energy Efficiency approved on 19 July by IMO
- Guide for Energy Management in Port and tools developed
- Port Energy audits completed:
  - In August in Samoa and Solomon Islands
  - In Fiji in September for trials, 2nd week of December and scheduled last visit in March
- Ship Energy Management visit in Kiribati in November

Result 4: Pilot-project on Data Collection

- The pilot-project on Energy Efficiency was approved by IMO on 19 July
- SPC visit in Vanuatu in July under the Pacific Islands Domestic Ship Safety (PIDSS) programme
- MTCC-Pacific visit in Kiribati in November in conjunction with PIDSS
- All shipowners provided with data collection templates – awaiting for on-board training

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO

Result 5: communication and visibility

IR5.1 Communication and visibility plan designed and approved

- MTCC-Pacific C&V Plan approved by IMO on 26 June

IR5.2 Communication and Visibility materials

- All communication and visibility materials delivered on 31 July

IR5.3 Dedicated website for the MTCC-Pacific designed and launched

- Website published

IR5.5 Progress communicated

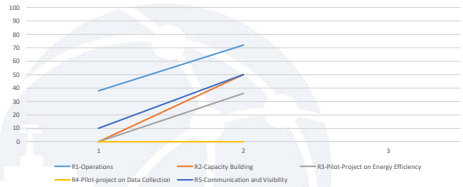
- GMN Project and MTCC-Pacific presented at SPC CRGA (with booth) in July and at September SPREP meeting

IR5.6 Relevant publications

- Article in August *Pacific Maritime Watch* and in next December issue

This Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

2017 Worplan implementation Progress



- As of 12 November, 72% of the Result 1 activities for 2017 completed - on track
- 50% of the Capacity-building activities, rest Regional Conference – on track
- 36 % of the pilot-project on Energy Efficiency activities have been completed – behind schedule for Fiji Port work and legal review that is postponed early 2018
- 0% Result 4 shows 0% completion as the indicators for 2017 activities are related to the dissemination of templates which will happen at the Regional Conference in December
- 50% of the communication and visibility activities – rest is website and dissemination of all template developed (completed this week) – on track

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

THE GLOBAL MTCC NETWORK (GMN) PROJECT

Fundraising Strategy

Second MTCC-Pacific Steering Committee Meeting
Suva, Fiji, 12 December 2017

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Vision, Mission and Values

Vision: *A low-carbon Pacific maritime transport that contribute to global climate mitigation efforts and reduction of greenhouse gas emissions*

Mission: *To be the Pacific regional centre of excellence in the Global MTCC Network to build capacity, transfer technology and knowledge for climate mitigation in the Pacific maritime industry through the uptake of low-carbon technologies and operations*

SPC's Values which are :

- *We treasure the rich and diverse cultures, traditions and environments of the people of the Pacific, and our sustainable solutions are based on a sound understanding of their strengths and needs, and of the challenges they face*
- *We are committed to adding value to the scientific and technical capacities of our members, in pursuing transformational development*
- *We are committed to the principles of good governance, to the defence and promotion of gender equality and human rights, and to ensuring that the needs of the most vulnerable in our societies are at the forefront of our work*
- *We work collaboratively with existing partners and build new relationships so that the collective strength of all can be harnessed for the interests of our members.*
- *We are committed to developing an organisational culture that enables our staff to continually improve their effectiveness in working for the people of the Pacific.*

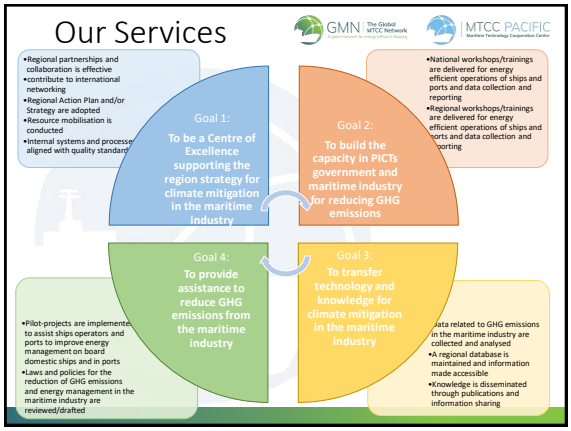
Beneficiaries

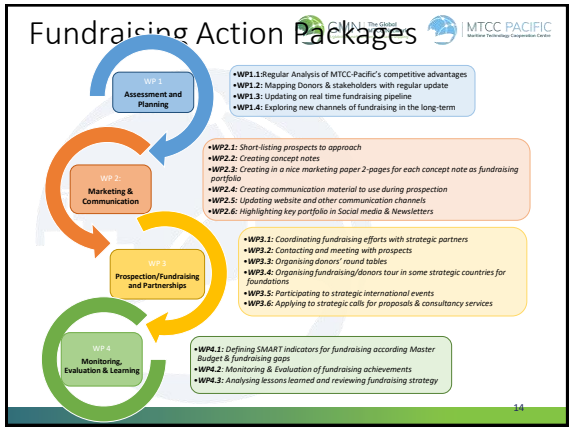
- Direct beneficiaries:
  - Pacific domestic ships and international and domestic ports operators – MTCC-Pacific assist them in reducing the energy consumption and identifying and implementing short- and long-term technical solutions for low-carbon futures
  - Pacific Islands countries governments that will progress towards their NDCs' targets and show their leadership in the global efforts
- Indirect beneficiaries:
  - Pacific people that will enjoy maritime transport services that reduce their carbon footprint while providing the necessary safe, reliable and affordable services to remote communities

SWOT analysis

	Helpful	*Harmful*
Internal	**Strength** • Integrated to SPC organisational, management and financial structure • Overall and specific objectives, results and activities guided and supported by a project funded in 2017-2019 • Technical expertise provided by the International Maritime Organization (IMO) • Part of an international network • Additional technical expertise on climate change issues and support is provided by SPREP • Expert staff dedicated full time and embedded within SPC maritime and oceans • Lump-sum service contract with IMO based on deliverables (encouraging results-based approach)	**Weakness** • End of funding at the end of the project date (31 December 2019) • Dedicated staff contracts aligned with the end of project date (31 December 2019) • Deliverables and reporting process strictly determined by contract between IMO and SPC (less flexibility) • No physical representation in other countries than Fiji in the Pacific • Lack of awareness from international donors and partners on MTCC-Pacific role
External	**Opportunities** • Pacific Leaders are strong advocates to reducing GHG emissions • Shipping GHG emissions identified as one of the main issues and priorities in climate change negotiations • IMO is working on a long-term Strategy to address GHG emissions from shipping that should further support technical cooperation in the future • Several donors are in support to ambitious GHG reduction targets • Climate financing opportunities could benefit MTCC as well	**Threats** • Lack of capacity and awareness in Pacific Islands countries that prevent from prioritising energy efficiency in maritime transport • Technology not readily available in the Pacific • Small Pacific ports and shipping companies operating old infrastructure and equipment • In conflict with other priorities at the national level • Climate financing requires long and complicated process • Technical solutions requiring combination of innovative systems that would not be affordable

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO





Budget Master Plan

MTCC-Pacific Master Business Plan Budget January 2018 to December 2021 (4 years)	Jan - Dec 2018 (Y1)	Jan - Dec 2019 (Y2)	Jan - Dec 2020 (Y3)	Jan - Dec 2021 (Y4)	TOTAL 2018-2021 (4 years)	Funding Plan 2018 (EUR)	Funding Plan 2019 (EUR)	Funding Plan 2020 (EUR)	Funding Plan 2021 (EUR)
	EUR	EUR	EUR	EUR	EUR	Unfunded / To Fundraise	Unfunded / To Fundraise	Unfunded / To Fundraise	Unfunded / To Fundraise
HUMAN RESOURCES	486,287	510,601	536,131	562,937	2,095,956	129,044	135,523	134,118	142,537
TECHNICAL SPECIALISTS	429,293	450,664	473,196	496,856	1,849,918	105,688	110,967	473,196	496,856
Maritime Technical Specialists	422,092	443,197	465,357	488,625	1,819,271	98,572	103,500	465,357	488,625
Cross-Cutting Technical Specialists	7,111	7,466	7,840	8,232	30,648	7,116	7,466	7,840	8,232
SUPPORT STAFF	64,180	46,394	48,714	51,156	190,443	23,285	24,554	48,714	51,156
OPERATIONAL COSTS	89,508	101,566	101,709	101,855	394,638	19,214	24,489	101,709	101,855
PROGRAMME ACTIVITIES COSTS	361,626	297,714	186,626	71,268	917,234	163,144	141,449	186,626	71,268
Goal 1: Be a Centre of Excellence	24,944	153,289	24,944	24,944	184,222	24,144	134,393	24,944	24,944
R1.1: Regional partnerships and collaboration is effective	15,500	15,500	15,500	15,500	61,000	12,000	13,800	15,500	15,500
R1.2: Contribute to international networking	5,988	39,888	5,988	5,988	57,660	5,988	20,499	5,988	5,988
R1.3: Regional Action Plan and/or Strategy are adopted	0	186,665	0	0	186,665	0	63,543	0	0
R1.4: Resource mobilisation is conducted	5,456	5,456	5,456	5,456	21,824	5,456	5,456	5,456	5,456
R1.5: Internal systems and processes aligned with quality standards	756	6,756	756	756	7,500	756	6,756	756	756
Goal 2: Build capacity	125,018		125,018		250,037	71,344		125,018	
R2.1: National Workshops/Trainings are delivered for energy efficient operations of ships and ports and data collection and reporting	93,670	0	93,670	0	187,341	0	0	93,670	0
R2.2: Regional Workshops/trainings are delivered for energy efficient operations of ships and ports and data collection and reporting	71,348	0	71,348	0	142,696	71,348	0	71,348	0
Goal 3: Transfer technology and knowledge	34,756	9,756	9,756	9,756	64,024	34,756	9,756	9,756	9,756
R3.1: Data related to GHG emissions in the maritime industry are collected and analysed	25,000	0	0	0	25,000	25,000	0	0	0
R3.2: A regional database is maintained and information made accessible	4,756	4,756	4,756	4,756	19,024	4,756	4,756	4,756	4,756
R3.3: Knowledge is disseminated through publications and information sharing	5,000	5,000	5,000	5,000	20,000	5,000	5,000	5,000	5,000
Goal 4: Provide assistance to reduce GHG emissions	174,914	34,374	24,914	34,574	268,976	24,914	4,754	24,914	34,574
R4.1: Pilot-projects are implemented to assist ships operators and ports to improve energy management on board domestic ships and in ports	170,160	29,804	20,160	29,804	249,972	20,160		20,160	29,804
R4.2: Laws and policies for the reduction of GHG emissions and energy management in the maritime industry are reviewed/drafted	4,754	4,754	4,754	4,754	19,024	4,754	4,754	4,754	4,754
TOTAL Direct Costs	937,421	909,881	824,465	736,060	3,407,828	311,836	301,494	824,446	736,060
Monitoring, Evaluation and Learning (MEL)	37,497	6,381	32,974	29,445	136,213	37,497	16,381	32,974	29,445
Programme Management Fees (PMF)	146,236	145,041	28,617	114,825	531,623	146,236	79,241	128,617	114,825
TOTAL PROGRAMME COSTS	1,121,155	1,088,218	986,063	880,328	4,075,762	497,569	397,116	986,037	880,330

15

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO

IMO Work to Address Energy Efficiency and Greenhouse Gas Emissions

Dr. Leigh Mazany| GMN Consultant
MTCC-Pacific 1st Regional Workshop | 12-15 December 2017 | Suva, Fiji

The Global MTCC Network (GMN) project
is funded by the European Union and implemented by IMO
The views expressed in this presentation
can in no way be taken to reflect the views of the European Union

Content

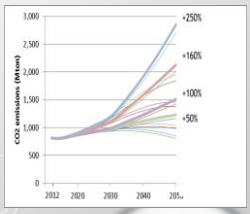
1. Marine Environment Protection Committee Work
2. Data Collection System
3. Roadmap for an IMO Strategy

2nd GHG Study (2009): Policy approaches to reduce GHG emissions

- Policy approaches at the IMO
  - Technical
  - Operational
    - Command and control policy focus on ships and management
  - Economical
    - Market-based measures
- Deferred for later discussion
- Included in Annex VI Chapter 4

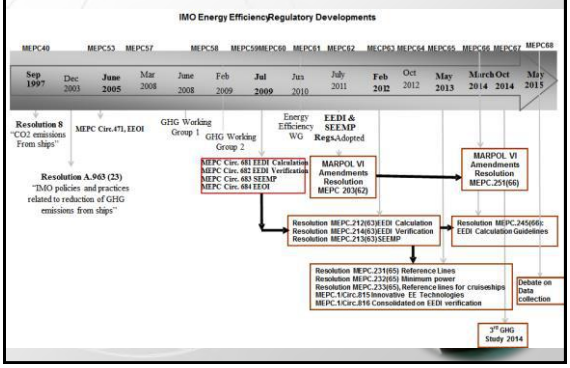
3rd IMO GHG Study (2014): CO_2 emissions projections

- Various scenarios modelled
- An estimated average increase of 50% to up to 250% in shipping emissions by 2050
- This study, plus a number of other studies, all point to an increase in future shipping GHG emissions
- Regulators aim to stabilise or reduce future emissions



Marine Environment Protection Committee Work

Work leading to Chapter 4 of MARPOL Annex VI



Data Collection System

IMO Data Collection System for Fuel Oil Consumption of Ships

- **Resolution MEPC.278(70)** adopted on 28 October 2016 amending MARPOL Annex VI
- New regulation 22A on «Collection and reporting of ship fuel oil consumption data»
  - SEEMP part II (Data Collection Plan)
  - Applies to ships 5,000 GT and above
  - Ship to report data to its Administration on an annual basis
  - Data to be transferred to the IMO database
  - Parties to MARPOL Annex VI shall have access to anonymized data for their analysis and consideration
  - Based on reported data, the Secretary-General shall produce an annual report to the MEPC

8

IMO Data Collection System for Fuel Oil Consumption of Ships in MARPOL Annex VI

01/03/18 Entry into force

31/12/18 SEEMP shall include a Data Collection Plan Confirmation of Compliance issued by the Administration

01/04/20 Ship to Administration reporting

01/06/20 Issuance of Statement of Compliance

01/08/20 Administration to IMO reporting

31/05/21 End of validity Statement of Compliance

9

IMO Data Collection System for Fuel Oil Consumption of Ships

- Information to be submitted to the IMO Ship Fuel Oil Consumption Database
  - IMO number of the ship
  - Start date - End date
  - Ship type
  - GT - NT
  - DWT (if applicable)
  - Power output of main and auxiliary engines over 130 kW
  - EEDI (if applicable)
  - Ice class (if applicable)
  - Fuel oil consumption, by fuel oil type, in metric tonnes
  - Methods used for collecting fuel oil consumption data
  - Distance travelled
  - Hours underway

10

IMO Data Collection System Guidelines and Database

- Guidelines on development of a ship energy efficiency management plan (SEEMP) – Resolution MEPC.282(70) adopted 28 October 2016
- Guidelines for Administration verification of ship fuel oil consumption data – Resolution MEPC.292(71) adopted 7 July 2017
- Guidelines on development and management of IMO ship fuel oil consumption data base – Resolution MEPC.293(71) adopted on 7 July 2017
- Development of the IMO Ship Fuel Oil Consumption Database
  - GISIS model user interface
  - Extensible Markup Language (XML) format
  - IMO Web Accounts system of permissioning

11

Submission of data from a State non-Party to MARPOL Annex VI

- **Circular MEPC.1/Circ.871** approved by MEPC 71 and issued on 4 September 2017
- Provides measures for voluntary submission of data from non-Party States
- Provisions for recognized organizations
- As of 8 November 2017, MARPOL Annex VI had 88 contracting States representing 96.16% of the world fleet

12

Roadmap for an IMO Strategy

Comprehensive IMO strategy on reduction of GHG emissions

MEPC 70 (October 2016)

- MEPC approved a Roadmap for developing a comprehensive IMO strategy on reduction of GHG emissions from ships, which foresees an initial GHG reduction strategy to be adopted in 2018.
- It contains a list of activities, including further IMO GHG studies and significant intersessional work, with relevant timelines and provides for alignment of those new activities with the ongoing work by the MEPC on the three-step approach to ship energy efficiency improvements.
  - This alignment provides a way forward to the adoption of a revised strategy in 2023 to include short-, mid-, and long-term further measures, as required, including implementation schedules.
- The Committee also agreed to hold intersessional working group meetings on reduction of GHG emissions from ships.

Development of an IMO Strategy on reduction of GHG emissions from ships

Outcome of MEPC 71 (July 2017) & ISWG-GHG 2 (October 2017)

- Draft outline of the structure of the initial IMO GHG Strategy (following the Roadmap for developing a comprehensive IMO Strategy agreed at MEPC 70)
  1. Preamble/introduction/context/objectives including emission scenarios
  2. Vision
  3. Levels of ambition
     Guiding principles
  4. List of candidate short-, mid- and long-term further measures with possible timelines and their impacts on States
  5. Barriers and supportive measures; capacity building and technical cooperation; R&D
  6. Follow-up actions towards the development of the revised Strategy
  7. Periodic review of the Strategy
- ISWG-GHG 3 planned for April 2018

Latest progress made in developing GHG Strategy for international shipping

Outcome of ISWG-GHG 2 (23-27 October 2017)

- ISWG-GHG 2 has made progress in starting to shape a draft initial IMO GHG Strategy including refining the **vision** for IMO, which will express IMO's further commitment to reducing GHG emissions from international shipping.
- While the structure of the Strategy has been largely agreed, the detailed text to be included is still under discussion.
- The group agreed that candidate short-term measures could be finalized and agreed by the Marine Environment Protection Committee (MEPC) between 2018 and 2023; candidate mid-term measures could be measures finalized and agreed by the MEPC between 2023 and 2030; and candidate long-term measures could be measures finalized and agreed by the MEPC beyond 2030.
- Dates of entry into force and when the measure can effectively start to reduce GHG emissions would be defined for each measure individually.
- The group supported the need for early action.

Thank you for your attention!
http://gmn.imo.org/

REGIONAL CONFERENCE AND OFFICIAL LAUNCH

GMN | The Global MTCC Network
A global network for energy-efficient shipping

GMN introduction and status Update

Anton Rhodes| Suva, Fiji, Dec 2017

The Global MTCC Network (GMN) project is funded by the European Union and implemented by IMO
The views expressed in this presentation can in no way be taken to reflect the views of the European Union

GMN | The Global MTCC Network
A global network for energy-efficient shipping

IMO's path to promote tech. transfer and capacity building

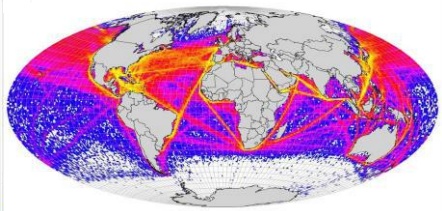
GMN Project

- Res. 23 -MARPOL Annex VI (2013), MEPC Resolution on TT and CB,
- ITCP: Awareness raising and capacity building tools
- Major Projects: Capacity building & private sector partnerships
- Global network to promote technology cooperation and transfer
- Institutionalize capacity building and tech. transfer support at regional level for sustainable impact

IMO INTERNATIONAL MARITIME ORGANIZATION

Project funded by the EUROPEAN UNION

Initiation of a Network through GMN Project



- Focus on regions with large number of LDCs and SIDS (Africa, Asia, Caribbean, Latin America and Pacific)

GMN | The Global MTCC Network
A global network for energy-efficient shipping

5

GMN overview

- An initiative funded by EU and implemented by IMO
- Total Funding Euro 10,000,000
- Jan, 2016 – Dec, 2019 (4 Years)
- During the project, 5 MTCCs to become fully operational
- Beyond the project, the MTCCs will become financially self-sustained

Overall Objective:

- Build capacity – Improve energy efficiency – Reduce GHG emissions – Contribute to fight against climate change

6

GMN - Specific objectives

1. Establish 5 MTCCs
2. Improve human and instiutional capacities in maritime administrations and relevant stakeholders
3. Promote the uptake of low carbon technologies and operations
4. Establish pilot voluntary data collection and reporting systems
5. Communicate and disseminate information

GMN | The Global MTCC Network
A global network for energy-efficient shipping

Objective 1 - All MTCCs are established and operational

MTCC CARIBBEAN
Maritime Technology Cooperation Centre

University of Trinidad & Tobago

MTCC AFRICA
Maritime Technology Cooperation Centre

Jomo Kenyatta University of Agriculture & Technology, Kenya

MTCC ASIA
Maritime Technology Cooperation Centre

Shanghai Maritime university, China

MTCC PACIFIC
Maritime Technology Cooperation Centre

Pacific Community (SPC), Fiji

MTCC LATIN AMERICA
Maritime Technology Cooperation Centre

International Maritime University of Panama, Panama

GMN | The Global MTCC Network
A global network for energy-efficient shipping

11

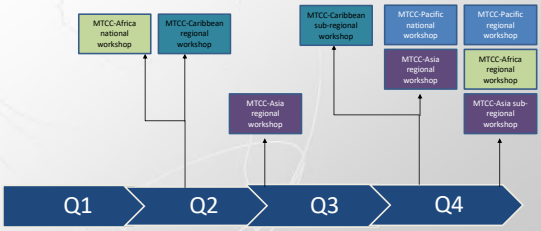
Launch of Global MTCCs Network

IMO HQ, London, 4 December

7

Objective 2 - Capacity building

MTCC capacity building activities in 2017



8

Objective 3 - Low Carbon technologies

- MTCC Africa - Establish on-shore power supply at Port of Mombasa (Cold Ironing)
- MTCC Asia - Update the ship trim optimization management system
- MTCC Caribbean - Capture the current baseline on the use of ship energy efficient technology within the region
- MTCC Pacific - Conduct energy audits in maritime ports
- MTCC Latin America - TBC

9

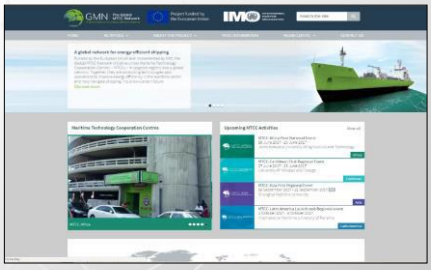
Objective 4 - Data collection

- **Caribbean** - collection of data
- **Pacific** – data templates developed
- **Africa** – Staff training on-board target vessels
- **Asia** – Data collection seminar – Role of key stakeholders confirmed

10

Objective 5 - Communication and dissemination

- Launch of GMN and MTCC websites



11

Objective 5 - Communication and dissemination

- GMN and MTCC newsletters, articles and social media

12

Objective 5 - Communication and dissemination

- International and regional events

13

Overview of GMN deliverables

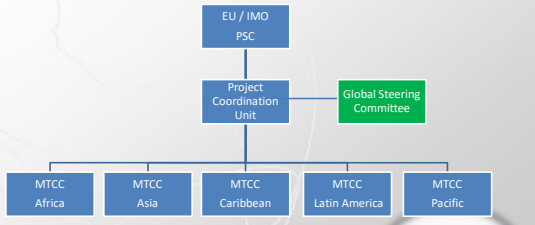
2016
- Established PCU
- Completed international tender process

2017
- MTCCs established and operational
- MTCC Launch Events and Regional Workshops
- Established MTCC network
- Established GSC

2018
- Develop pilot projects
- Deliver national and sub-regional workshops
- Develop sustainability plans

2019
- Complete Pilot Projects
- Deliver regional conferences
- Finalize sustainability plans

GMN MANAGEMENT STRUCTURE



GMN | The Global MTCC Network

15

Thank you for your attention!
http://gmn.imo.org/

GMN | The Global MTCC Network

16

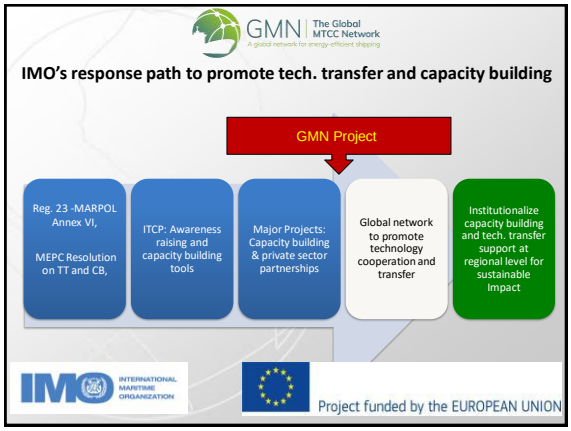
Roadmap for developing a comprehensive IMO Strategy on reduction Of GHG emissions from ships

January 2019	- Start of Phase 1: Data collection (Ships to collect data)
Spring 2019 (MEPC 74)	- Discussion continues - Initiation of Fourth IMO GHG Study using data from 2012-2018
Summer 2020	- Data for 2019 to be reported to IMO
Autumn 2020 (MEPC 76)	- Start of Phase 2: data analysis (no later than autumn 2020) - Discussion continues - Publication of Fourth IMO GHG Study for consideration by MEPC 76[3]
Spring 2021 (MEPC 77)	- Initiation of work for adjustments on Initial IMO Strategy, based on DCS data - Secretariat report summarizing the 2019 data pursuant to regulation 22A.10
Summer 2021	- Data for 2020 to be reported to IMO
Spring 2022 (MEPC 78)	- Phase 3: Decision step - Discussion continues - Secretariat report summarizing the 2020 data pursuant to regulation 22A.10
Summer 2022	- Data for 2021 to be reported to IMO
Spring 2023 (MEPC 80)	- Adoption of Revised IMO Strategy, including short-, mid- and long-term further measure(s), as required, with implementation schedules - Secretariat report summarizing the 2021 data pursuant to regulation 22A.10

MARPOL Annex VI & Technical Cooperation

Regulation 23 of MARPOL Annex VI, Chapter 4: "Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships"

IMO INTERNATIONAL MARITIME ORGANIZATION


GMN
The Global MTCC Network
A global network for energy-efficient shipping
IMO's response path to promote tech. transfer and capacity building
GMN Project
Reg. 23 -MARPOL Annex VI,
MEPC Resolution on TT and CB,
ITCP: Awareness raising and capacity building tools
Major Projects: Capacity building & private sector partnerships
Global network to promote technology cooperation and transfer
Institutionalize capacity building and tech. transfer support at regional level for sustainable impact
IMO INTERNATIONAL MARITIME ORGANIZATION
Project funded by the EUROPEAN UNION

GloMEEP Project Components
Legal, Policy and Institutional Reforms (LPIR)
Capacity building and knowledge sharing
Public-private partnerships
IMO INTERNATIONAL MARITIME ORGANIZATION
gef
UNDP
GloMEEP

USP THE UNIVERSITY OF THE SOUTH PACIFIC

A joint collaboration between RMI Government and USP

MICRONESIAN CENTER FOR SUSTAINABLE TRANSPORTATION

Presentation to the MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

1. The History
2. MCST – A catalyst for transition
3. MCST Framework – priorities for action
4. 1.5 to stay alive – High level Policy Unit
5. GCF – a country driven regional strategy

MICRONESIAN CENTER FOR SUSTAINABLE TRANSPORTATION

Presentation to the MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

1. **The History**
2. MCST – A catalyst for transition
3. MCST Framework – priorities for action
4. 1.5 to stay alive – High level Policy Unit
5. GCF – a country driven regional strategy

2012

1st Sustainable Sea Transport Talanoa
- USP host the first international experts meeting in the region since 1984. USP commit to 6-year research program

2013

Majuro Declaration on Climate Leadership
- Pacific leaders commit to be climate leaders – 9 PICs commit to reducing fossil fuel electricity – only RMI sets transport target

Inaugural PIDF Leaders Summit
- Low carbon shipping named a key regional priority

2014

2nd Sustainable Sea Transport Talanoa
- 150 regional and international participants

RMI calls for a national program for low carbon transport
- RMI ask USP to design a whole of country transition program

UN SIDS – S.A.M.O.A. pathway
- Sustainable transport recognized as regional priority by UN

2015

MCST Framework Endorsed RMI
- MCST Framework national consultation

RMI submission to MEPC68
- Tony De Brum leads Pacific delegations to call for 1.5 shipping emissions target

MCST Framework Endorsed MPS
- Palau, FSM, RMI Presidents endorse MCST approach

Suva Declaration
- PA is silent on bunker emissions

Paris Agreement

2016

MCST Framework Endorsed USP
- USP Council includes 12 PIC Education Ministers

MEPC70 - IMO commits to emissions reduction roadmap 2018-2023
- Pacific and European states combine to form SHAC. PIDF provides facilitation and USP technical backstopping. IMO Roadmap agreed- 2 stage process to determine shipping emissions.

MCST Framework Endorsed CANCC
- Atoll nations endorse RMI request to lead through a whole of country example

2017

ISWG GHG 1/MEPC71
- SHAC continues to press for PA level reductions and high ambition

MCST Framework Endorsed SIS Leaders
- SIS leaders

MCST Framework Endorsed 3rd Regional Ministers Forum
- Regional Ministers agree to support the MCST approach and RMI concept note for $250m GCF application

ISWG GHG 2
- SHAC continues to grow in membership. Roadmap progress is limited. 1.5 is still alive

COP23
- MCST organize High Level Low Carbon Shipping Event. ICS call RMI irresponsible and unrealistic. Germany announces €9.5m project to support MCST.

Macron Summit -Tony de Brum Declaration
- France honors RMI at "Real World Summit" with TdB Declaration calling for IMO to adopt Paris Agreement targets with urgency. Declaration will be signed by multiple world Presidents and Ministers this week

MICRONESIAN CENTER FOR SUSTAINABLE TRANSPORTATION

Presentation to the MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

1. The History
2. **MCST – A catalyst for transition**
3. MCST Framework – priorities for action
4. 1.5 to stay alive – High level Policy Unit
5. GCF – a country driven regional strategy

RMI – 4 strand approach to low carbon shipping transition

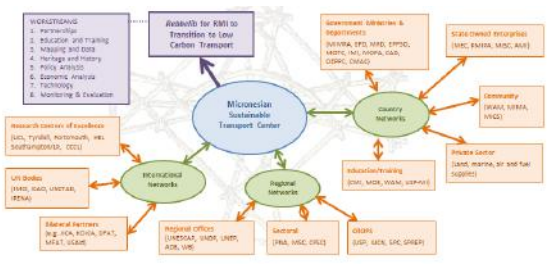
- Shipping High Ambition Coalition
  - All sectors must bear their 'fair share'
  - PSIDS issues must be accommodated and based on science
- Micronesia Center for Sustainable Transport
  - Whole of sector/whole of country low carbon transition
  - Catalyst for change cascading successes to the region
- Re-balance between transport/energy
  - Review NDCs to include transport and electricity emitting sectors
- Climate Financing for Pacific low carbon transition
  - RMI CN to 2nd GCF Council

MICRONESIAN CENTER FOR SUSTAINABLE TRANSPORTATION

Presentation to the MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

1. The History
2. MCST – A catalyst for transition
3. **MCST Framework – priorities for action**
4. 1.5 to stay alive – High level Policy Unit
5. GCF – a country driven regional strategy

Marshall Islands ***Rebbelib*** for Transition to Low Carbon Transport



10

1. Intra and Inter-Island Sailing Multi-Hulls

Historically, Marshallese developed fast, versatile multi-hull sailing vessels for local sea transport within and between its scattered atoll archipelagoes. Using the base built by WAM over the past two decades, this project will develop and trail designs for 2 classes of locally-built multi-hull sailing vessels for intra-lagoon and inter-atoll transport of passengers and cargo.

2. Wing in Ground 'Wingships'

Working with industry leaders from Korea, this project will undertake a full feasibility study and field trials of 'Wingships' capable of carrying 50 passengers or 10 ton of cargo on routes up to 500km as an alternative to small aircraft and high-speed craft. This evaluation phase with include full consideration of training, infrastructure, operations and maintenance requirements necessary to support uptake of this technology in a Micronesian operating environment.

3. MISC 15-Year Fleet Efficiency Strategy

The Marshall Islands Shipping Corporation operates a fleet of 5 vessels providing government services throughout the country. For most outer island communities this is their main source of connectivity. It is essential for Government service delivery, disaster response in particular. Vessels include conventional ships and landing craft aged from 3 to 30 years old. This project will plan how this fleet can be replaced over its operating life cycle with more efficient, low carbon based vessels and what operational and technology retrofits and changes can be effected within the current fleet to substantively reduce fuel use by the MISC fleet over a 15-year period.

4. Flettner Rotors

Flettner rotors offer strong potential for numerous applications including new builds and retrofits of existing vessels. Working with leading German innovators through Green Shipping Niedersachsen (GSN) at the HEL this project will identify and trial the use of Flettner rotors within a RMI context.

5. Wind Powered Interisland Freighter

Copra is an important economic commodity for Micronesian economies and was once traded using small sail-assisted shipping. This project will evaluate the best design option for a small wind powered island trader to support rejuvenation of the outer islands copra trade within RMI and with its neighboring States.

6. RE Options for Electric Vehicle Recharging

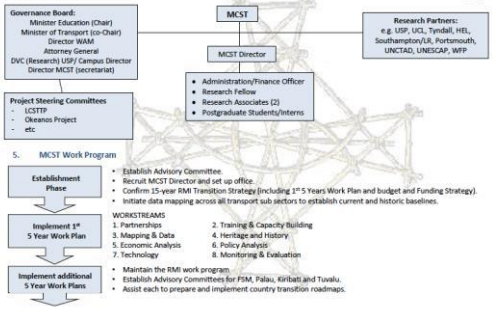
Hybrid and all-electric vehicles offer strong potential for cutting land vehicle fuel usage. However, for plug-in vehicles to be of use in atoll situations, the issue of sourcing the electricity has to resolved. This project will evaluate and trial leading candidates for powering recharging stations using renewables.

7. Marine Based/Sourced Biofuel

Biofuels have often been cited as a potential fossil fuel replacement for transport. Atolls pose the difficulty of a lack of land for source material. Coconut oil processing is one possibility. Recent research indicates that marine biota; especially seaweeds and algae may provide a solution. This

4. MCST Structure

MCST will be established as a small research team at USP-MI campus that coordinates and collaborates with all relevant stakeholders and projects.



5. MCST Work Program

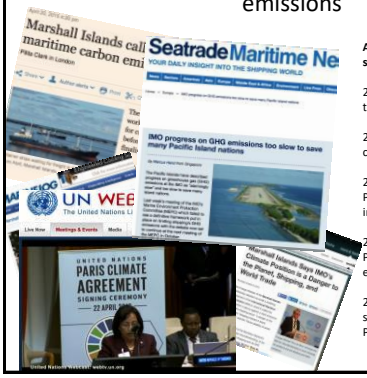
Establishment Phase	• Establish Advisory Committee • Recruit MCST Director and set up office • Confirm 15-year RMI Transition Strategy (including 1st 5 Years Work Plan and budget and Funding Strategy). • Initiate data mapping across all transport sub sectors to establish current and historic baselines.	
Implement 1st 5 Year Work Plan	WORKSTREAMS 1. Partnerships 3. Mapping & Data 5. Economic Analysis 7. Technology	2. Training & Capacity Building 4. Heritage and History 6. Policy Analysis 8. Monitoring & Evaluation
Implement additional 5 Year Work Plans	• Maintain the RMI work program • Establish Advisory Committees for FSM, Palau, Kiribati and Tuvalu. • Assist each to prepare and implement country transition roadmaps.	

MICRONESIAN CENTER FOR SUSTAINABLE TRANSPORTATION

Presentation to the MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

1. The History
2. MCST – A catalyst for transition
3. MCST Framework – priorities for action
4. **1.5 to stay alive – High level Policy Unit**
5. GCF – a country driven regional strategy

RMI has been calling for shipping to reduce emissions



All sectors must contribute their fair share if Paris Agreement is to be met.

2013 - Majuro Declaration – RMI sets transport target

2015 - MEPC 68. RMI joins Pacific coalition to IMO

2015 - Suva Declaration – RMI joins Pacific leaders to ensure transport included

2016 - MEPC 69. RMI joins Pacific/European submission for emissions workplan

2017 – COP23 RMI states initial strategy must include commitment to PA targets

MICRONESIAN CENTER FOR SUSTAINABLE TRANSPORTATION

Presentation to the MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

1. The History
2. MCST – A catalyst for transition
3. MCST Framework – priorities for action
4. 1.5 to stay alive – High level Policy Unit
5. **GCF – a country driven regional strategy**

"Time is not our Friend"

Tony de Brum address to MEPC68

A shirt to low carbon transport is a Now not a Future issue.
It needs a paradigm shift.

USP THE UNIVERSITY OF THE SOUTH PACIFIC

A joint collaboration between RMI Government and USP

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

1. What are the drivers in your country for reducing greenhouse gas (GHG) from your country maritime transport including port and shipping?

- Our broader commitment as a party to the Paris Agreement via our NDCs. We are achieving this through major investment in renewable energy, with a target of 100% reliance on solar power by 2020. This has benefits for the maritime sector, through supplying power to our major ports which are linked to the national grid.
- The Cook Islands, through private sector initiatives, have trialled wind/diesel hybrid systems on board our inter-island domestic shipping vessels, primarily to lower costs of operation.

2. What are the needs to achieve the country objectives (if any) in reducing GHG emissions from maritime transport and/or to take action to address GHG emissions from maritime transport?

These could include a range of things including:

- promoting compensatory mechanisms for SIDS,
- subsidisation to offset economic impacts,
- provision of targeted technical assistance, and/or
- direct financial assistance with acquisition of new technology and/or new vessels to replace older less efficient technology.

3. What are the identified barriers that prevent from implementing country approach to reduce GHG emissions from maritime transport?

Cost. Efficacy. Potential negative impacts on vulnerable SIDS Economies:

- The Cook Islands obviously shares the same concerns as everyone else on the threats to our very existence as a nation by the slow onset impacts of human induced climate change, as well as by more severe short term impacts (i.e. cyclones) to our extremely vulnerable economy as a small island developing state.
- However since the contribution to global GHG from our region is extremely small (less than .03%), there is a comparatively limited amount we can do as a region to lower overall global emissions. This is largely beyond our control.
- We are however extremely sensitive to any measures which are taken which would significantly increase the costs of shipping in our region, which are already some of the highest in the world.
- A timely, reliable, efficient and sustainable shipping service is absolutely critical to the economic wellbeing of our country.
- Since our island economies rely heavily on imported goods and foodstuffs, there remains a very real risk that any measures to minimise GHG emissions will carry with them a cost that will be passed on down to the 'end consumer', and in this case that is the SIDS - who already face extremely high shipping costs – which may further inflate the ever increasing cost of living in our islands.
- In this case, we need to be carefully considering ways to minimise such impacts to zero – commensurate which any reductions of GHG. By example, we need to inform ourselves objectively as to what impacts moving to low carbon fuels will have for our region – including costs and availability of such fuels. The costs of modifications, including to engines, on ships which are largely older ships (retired from Europe, primarily) also need to be considered. Any proposed carbon offset schemes need to avoid adding to the costs of goods shipped from distant markets to our islands. Other proposed ideas such as slow-steaming will not work in our region either for the reasons already articulated elsewhere in this presentation.

4. What are the possible relevant actions to address GHG emissions from maritime transport?

- Since costs of shipping in our region are already very high and already impact on our ability to meet key SDGs related to the 2030 Development Agenda, we need to explore ways to bring these costs down, not increase them. This is why the Cook Islands often links these challenges with the GHG issue. Indeed, its important to acknowledge that in meeting the relevant SDGs, we also increase the ability for our countries to become more resilient to the impacts of human-induced climate change.
- So whatever actions we ultimately decide to take, these must always be considered within the broader context of meeting the development aspirations of our countries.

5. Conclusion

In summary, we are open to considering any and all options related to GHG reductions in shipping, but these must not penalise SIDS who are on the front line of climate change, they must recognise the vulnerability of our small economies and the high sensitivity to any increases in transport costs globally, and they must offer a better alternative than the situation we currently face.

GMN
The Global MTCC Network
MTCC PACIFIC
Maritime Technology Cooperation Centre
Meitaki Maata
Thank you

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

What are the drivers in your country for reducing greenhouse gas (GHG) from your country maritime transport including port and shipping

- National Action Plan on Marine Pollution (Marine Pollution).
- Energy Management in Port
- Kiribati Nationally Determined Contributions (NDCs) on GHG reduction targets
- Strategies in reducing imported fossil fuel dependency

What are the needs to achieve the country objectives (if any) in reducing GHG emissions from maritime transport and/or to take action to address GHG emissions from maritime transport

- Strengthening GHG Policies, Strategies and Legislation;
- Delivering appropriate education, training and awareness programmes
- Improving knowledge and information generation, management and sharing
- Promoting the use of sustainable renewable sources of energy and energy efficiency
- Strengthening capacity to access finance, monitor expenditures and maintain strong partnerships;

What are the identified barriers that prevent from implementing country approach to reduce GHG emissions from maritime transport

- Lack of national GHG legislation in place in addressing GHG
- No Technical Expertise in GHG within the Country
- Lack of detailed information and understanding in anthropogenic CO2 emissions & its impacts by the Maritime, Port and Shipping Sectors
- No study undertaken yet in addressing the impacts of GHG by the maritime transport

What are the possible relevant actions to address GHG emissions from maritime transport

- Seeking support by Government - full enactment and implementation of GHG legislations, Policies and Strategies
- Assistance by foreign technical experts to assist in coordination of awareness programme on GHG to Port, Shipping Communities and relevant key stakeholders
- Entailing benefits to the shipping market, in terms of emission reductions (cost vs revenue)
- Provision of an energy-efficiency culture in both port and shipping sectors

And

thank you for your attention!

Kam rabwa

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

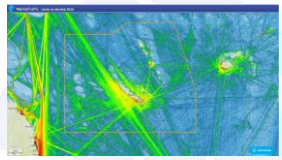
CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

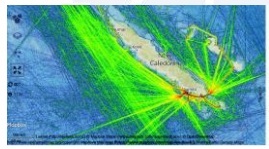
International and domestic maritime traffic

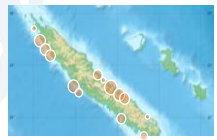


International routes around New-Caledonia

International routes concentrated on the west and south coast

Mining activities all around the main island





Maritime traffic in New-Caledonia

1. General international traffic (container carriers, tankers, car carriers…) in Noumea harbour and nickel factories

International bulk carriers in nickel mines

About 700 vessels /year

2. International Cruising liner

About 500 vessels / year

3. Domestic traffic

Using only gasoil

Division of competences

French state: French flag vessels on international voyages – Port state control – Safey of navigation on EEZ

New-Caledonia government: Environment on exclusive economic zone – natural park on coral sea – domestic vessels

New caledonia provinces: Environment on internal and territorial waters

Measures taken to limit GHG

1. French state: MARPOL VI, IEEC, MRV (Europe area), PSC

2. New-Caledonia government: energy transition plan for next 20 years

SECA to be implemented in the natural park on coral sea

3. Provinces: SECA to be implemented in harbour area (to limit emissions from cruising liner)

The main issues

1. To improve maritime traffic monitoring and to check the compliance to the regulation

2. To coordinate the different measures to reduce GHG

3. To support innovating technical projects for vessels propulsion

GMN
The Global MTCC Network
MTCC PACIFIC
Maritime Technology Cooperation Centre
Thank you for your attention

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

EUROPEAN UNION
IMO INTERNATIONAL MARITIME ORGANIZATION
Pacific Community Communauté du Pacifique
HOST INSTITUTIONS OF MTCC-PACIFIC
SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

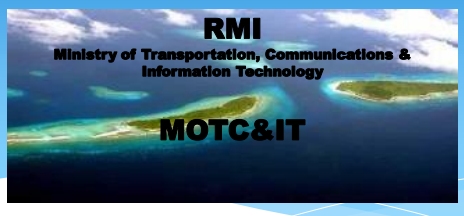
Location

Open Sea Moorings

New Wharf

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji



Geographical location

The Republic of the Marshall Islands (RMI) is located between latitude 4 degree to 14 degree north and longitude 160 degree to 173 degree east, consisting of 29 atolls and 5 independent islands widely scattered. RMI has a wide exclusive economic zone (EZZ) of 2 million square kilometer. The Marshall Islands is characterized by two chains the Ratak, or Sunrise, to the east, and the Ralik, or Sunset, to the west. The chains lie about 125 miles (200 kilometres) apart and extend some 800 miles northwest to southeast.

BACKGROUND OF MARITIME IN RMI

Maritime has always been a way of life for the Marshallese People. Connecting the whole Marshall Islands has been by means of sea transportation. Domestic Shipping services plays an indispensable role to keep the lifeline in their daily life of the Marshall Islands. The basic concept of shipping services is simply that the vessels load cargoes to the outer islands to be delivered to individual consignees. Furthermore, a vessel also carries a merchant onboard to sell the goods in the outer islands and on return trips, they would pick up the copra to bring back the main island.

Drivers in RMI for Reducing GHG

- Purchasing New Ships with fuel efficiency capacity, including wind/solar propelled vessels.
- Effective and efficient operations on Ports
- Aid to Navigation with light buoys in the other island for night operations
- RMI in the Heads of Transport Officials Meeting in November 2015 in Suva Fiji, RMI took the initiative in regard to low carbon transport transition and transport emissions reductions measures at global and local levels.

Cont.

- RMI submission to MEPC 68, May 2015 requesting IMO set a global sector target for shipping emission reduction and consequential actions;
- RMI submission of its INDC including specific targets of transport emissions reduction;
- RMI decision, endorsed by the 2015 Micronesian Presidents Summit, to establish the Micronesian Sustainable Transport Center (MSTC) as a sub-regional and regional catalyst for change.

Needs & Objectives

- Resources (equipment) to fasten both offloading and loading
- We need more sustainable sea transport like Vaka

Barriers:

- Second-handed vessels are usually purchased
- Underdeveloped infrastructure for docking and loading/offloading of passenger cargo in the outer islands.
- Limited Formal Training for RMI Maritime Officers and Seafarers.
- Minimal Maintenance of Government Vessels.
- Bridging the gap between the domestic and international maritime acts to bring about better coordination in which they can better compliment each other.

Actions

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Drivers for Reducing Greenhouse Gas (GHG) Emissions from Maritime Transportation in PNG

- International/Regional Conventions & Treaties/Agreements.
- Real Effects of Climate Change Experienced in the Country – Sea Level Risings & Islands Sinking.
- Promotion of Green Energy and Transportation Strategies.
- GHG & Emissions Control Regulations.

PNG objectives in addressing GHG emissions from maritime transport

- MARPOL Annex VI Ratification-Prevention of Air Pollution from Ships.
- Development and Enforcement of National Legislation.
- Capacity/ Resources Development
- Data Collections, Inspections & Monitoring Aspects

Implementation of Preventative Barriers of reducing GHG emissions from maritime transportation sector

- Lack of National Legislation for regulating both international and domestic shipping.
- Inspections & Monitoring capabilities.
- Emissions data collections, collations, analysis & interpretations.(Costs & Economical Benefits).
- Associated costs involved in shipping engine efficiencies improvements.

Reduction actions to address GHG emissions from maritime transport.

- GHG Emissions reduction strategy put in place.
- Ratification of MARPOL Annex VI-Prevention of Air Pollution.
- National Legislation for regulating both international and domestic shipping.
- Human Resources Capacity Development
- Data Collections, Inspections & Monitoring Aspects
- Possibility of declaring of Emissions Control Areas (ECA) within identified PNG Waters.
- LNG Powered Marine Engines
- GHG Emissions Control Curriculum –Maritime Training Institutions

THANK YOU

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Samoa's Report on GHG Emission

What are drivers for reducing greenhouse gas (GHG) from maritime Transport including ports and shipping in Samoa?

- International Conventions – complying to requirements that call for protection of marine environment from climate change
- National Framework - initiatives involving relevant maritime stakeholders that aligned with international maritime instruments to ensure enabling laws, action plans & procedures to reduce GHG are developed and implemented

What are the needs to achieve the country objective in reducing GHG emissions from maritime Transport and to take actions to address GHG emission?

- MARPOL – comply with applicable provisions of the Convention (eg. Annex VI)
- Implement Marine Pollution Prevention Act 2008
  (Regulations near completion)
- Enforce National Disaster Management Plan
- Implement Greenhouse gas Abatement Strategy 2008-2018.

What are the identified barriers that prevent from implementing country approach to reduce GHG emissions from maritime transport

- Scarcity of resources – finance; technology and lack of expertise (Human resource)
- Cost of New Technology on existing ships - to comply with Annex VI of MARPOL reduce Sox and Nox on vessels of > 500gt

What are the possible relevant actions to address GHG emissions from the maritime transport?

- Enforcement of Ports State & Flag State inspections.
- Public Awareness programmes
- Application of International Rules and Regulations.
- Developing of an Energy National Strategy plan to reduce the GHG emission in the maritime transport in Samoa

GMN | The Global MTCC Network
MTCC PACIFIC
Faafetai.

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFIC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Solomon Islands

- Emissions from steaming;
  - Slower speed reduces emissions – dependant on demand for shipping services, freight rates and bunker prices.
  - Improved ship design (IMO's Energy Efficiency Design Index).
  - SI does not "design" ships; we "inherit" them second-hand
- Emissions in port;
  - Reduction cuts climate impact from CO_2; less NO_x; less CO_2
  - Cuts health risks; improves air quality in Honiara;
  - Depends on City Council's efforts to reach political climate goals;
  - Buses going up hills in Honiara are worse offenders compared to domestic shipping; some on the flat are very bad also.

Solomon Islands

- Measures to reduce GHG
  - Alternative fuels;
  - Ship design; and
  - Operation.
- Horses for Courses
  - Alternative fossil fuels are not realistic, solar and wind power are;
  - We "inherit" not "design", but retrofit is worth examining. Domestic vessels do not lend themselves to retrofit (essential cargo handling gear gets in the way; stability problems; etc.,)

Solomon Islands

- Improved operation holds most potential in domestic fleet;
  - "scientific" operations give best reductions;
  - Better utilisation of "liner" routes around the Solomon Islands – benefits of scale;
- International Shipping Port operations;
  - Potential for speeding up ship's turnaround times;
  - Port opening hours;
  - Stevedoring efficiency;
  - Berth availability;
  - Efficient cargo-handling equipment

Solomon Islands

- Needs:
  - Consciousness raising;
  - Better planning;
  - Better statistical information;
  - Understanding of "cost of ship's time";
  - Removal of socio-political barriers;
    - Provincial rivalry and exclusivity;
    - "Shipping grant ships" vs "private sector ships";
  - Removal of socio-economic barriers;
    - High cost of trading licences to more than one Province;
    - Rationalisation of shipping services.

SOLOMON ISLANDS HAS ONE OF THE CLEAREST GLOBAL ATMOSPHERES – LET'S KEEP IT THAT WAY

Solomon Islands

- Relevant actions to resolve issues:
  - Solomon Islands very active at IMO MEPC in the fight to reduce GHG internationally;
  - Solomon Islands Government to take more concern about all shipping matters; safety, environment and commercial;
  - Increase powers of SIMSA, the safety administration, to take on responsibility for marine environmental protection (as mandated, but not resourced) and also become involved in research into commercial shipping matters as an "Authority" (this is in the pipeline);
  - Rationalisation of port operations to increase productivity;
  - Higher levels of shipping and port education and training (this is also in the pipeline).

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

CONTENTS

- Drivers reducing GHG emissions from Solomon Ports (Ports Perspective)
- What is needed to achieve reduction of GHG emissions (Ports Perspective)
- Barriers to implementation of country approach to GHG emission reduction
- Possible action from Ports to reduce GHG emissions
- Projects to reduce GHG emissions _ Solomon Ports

Drivers for the reduction of GHG emissions from Solomon Ports (Ports Perspective)

- Rising sea level – Climate change
- High electricity cost

What is needed to achieve the country objectives in reduction of GHG emissions (Ports Perspective)

- Government policy
- Ports initiative to become "GREEN"
- Commitment for environment

Barriers identified for the implementation of country approach to GHG emissions (Ports Perspective)

- Lack of awareness and importance of GHG reduction
- High cost of imported material to the country (solar panels + regulatory framework)
- High cost of power generation (Diesel power – as a result providing shore power for vessels will be very expensive)

Possible action from Ports to reduce GHG emissions

- Use of renewable energy for yard lighting, reefers a
- Use of hybrid vehicles
- Reduce un-necessary electricity usage
- Maintain vehicles for better performance

Electricity Consumption – Before and After the Energy Audit

August Electricity Bill

HONIARA ELECTRICITY

INVOICE DATE	A/C NAME	A/C ALLOCATED	A/C #	AMPOUNT	CHQ #	DATE PAID
10/8/2017	ELECTRICITY	410	A/C 05097	$ 384,736.63	116560	15/9/2017
10/8/2017	ELECTRICITY	410	A/C 05098-07	$ 1,449.05	116560	15/9/2017
			TOTAL	$ 386,185.68		
INVOICE DATE		NORO ELECTRICITY				
15/8/2017	ELECTRICITY	410	A/C 81034	$ 1,176.25	116561	15/9/2017
15/8/2017	ELECTRICITY	410	A/C 81006	$ 25,026.73	116561	15/9/2017
15/8/2017	ELECTRICITY	410	A/C 81006-01	$ 3,156.33	116561	15/9/2017
15/8/2017	ELECTRICITY	410	A/C 81006.02	$ 3,760.74	116561	15/9/2017
			TOTAL	$ 33,120.05		
			Grand Total Bill	$ 419,305.73		

September Electricity Bill

HONIARA ELECTRICITY

INVOICE DATE	A/C NAME	A/C ALLOCATED	A/C #	AMPOUNT	CHQ #	DATE PAID
10/9/2017	ELECTRICITY	410	A/C 05097	$ 343,065.29	116730	4/10/2017
10/9/2017	ELECTRICITY	410	A/C 05098-07	$ 1,402.92	116730	4/10/2017
			TOTAL	$ 344,468.21		
INVOICE DATE		NORO ELECTRICITY				DATE PAID
15/9/2017	ELECTRICITY	410	A/C 81034	$ 1,341.32	116728	3/10/2017
15/9/2017	ELECTRICITY	410	A/C 81006	$ 24,348.74	116728	3/10/2017
15/9/2017	ELECTRICITY	410	A/C 81006-01	$ 4,717.30	116728	3/10/2017
15/9/2017	ELECTRICITY	410	A/C 81006.02	$ 4,071.94	116728	3/10/2017
			TOTAL	$ 34,479.30		
			Grand Total Bill	$ 378,947.51		

Electricity Consumption – Before and After the Energy Audit

HONIARA ELECTRICITY

INVOICE DATE	A/C NAME	A/C ALLOCATED	A/C #	AMPOUNT	CHQ #	DATE PAID
10/11/2017	ELECTRICITY	410	A/C 05097	$ 347,130.49	117106	8/11/2017
10/11/2017	ELECTRICITY	410	A/C 05098-07	$ 1,831.52	117106	8/11/2017
			TOTAL	$ 348,962.01		
INVOICE DATE		NORO ELECTRICITY				DATE PAID
15/10/2017	ELECTRICITY	410	A/C 81034	$ 785.88	117107	8/11/2017
15/10/2017	ELECTRICITY	410	A/C 81006	$ 18,377.73	117107	8/11/2017
15/10/2017	ELECTRICITY	410	A/C 81006-01	$ 4,018.35	117107	8/11/2017
15/10/2017	ELECTRICITY	410	A/C 81006.02	$ 2,667.76	117107	8/11/2017
			TOTAL	$ 25,849.72		
			Total	$ 374,811.73		

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

THANK YOU TUMAS

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

TONGA- COUNTRY PRESENTATION (From the Port Perspective)

EUROPEAN UNION
IMO INTERNATIONAL MARITIME ORGANIZATION
Pacific Community Communauté du Pacifique
HOST INSTITUTIONS OF MTCC-PACIFIC
SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Reducing GHG @ Port of Nuku'alofa

Key 3 Drivers to reduce GHG in the Port of Nuku'alofa…

1. Political Support
   - ✓ Strong support from the government/Cabinet (shareholder) will help PAT BoDs and Management successfully achieved the output objectives set in the PAT business Plan to reduce GHG in the Port of Nuku'alofa.
2. Board of Directors Support:
   - ➢ The BoDs must have the value of good governance with strong leadership in order to make concise and informative policy decisions in regards to reduce GHG in the port operations.
3. CEO and Management full commitments through:
   - PAT Internal Policies - *through our Business plan (Statement of Corporate Intent) set by the Board and Management- Strategic Objectives and KPIs.*
   - Procurement strategies - *through investing on low carbon emission handling equipment.*
   - Cargo handling process and wharf layout - *generally aiming at improving efficiency but at the same time reducing GHG emission through less movement by the forklifts.*

PAT needs to achieve its objectives on reducing GHG…

- Maritime Division as Regulatory Body to be more proactive in enforcing existing maritime environmental legislations and regulations.
- Maritime Division to set and monitor the level of GHG emission in the Maritime sector in Tonga.
- Collective effort from a national and regional level to seriously address this issue.

Barriers to achieve the objectives…

- Budget constraint- Funding
- poor enforcement from Regulatory body- Maritime Authority.
- Lack of clear legal framework to address GHG in the Maritime sector in Tonga.
- Lack of coordination between relevant stakeholders i.e Maritime Authority, PAT & Local boat owners.

PAT actions to address GHG emissions…

- Implement effective environmental policies and procedure to minimise the risks of environmental pollution.
- Work closely with Maritime Authority in enforcing maritime environmental legislations and regulations.
- More clear strategies and KPIs to address GHG.
- Report and analyse annual fuel consumption to determine GHG emission to assist setting KPIs.

GMN | The Global MTCC Network

MTCC PACIFIC | Maritime Technology Cooperation Centre

Malo ‘Aupito & Thank you

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

EUROPEAN UNION | IMO INTERNATIONAL MARITIME ORGANIZATION | Pacific Community Communauté du Pacifique | HOST INSTITUTIONS OF MTCC-PACIFIC | SPREP Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

What are the drivers in your country for reducing greenhouse gas GHG from your country maritime transport including port and shipping

- **National Strategy for Sustainable Development 2016 -2020**
  - **STRATEGIC AREA 9 – Infrastructure and Support Services**
    - **THEMATIC AREA – 9.10** New infrastructure and better service support will, by definition, play central roles in combating the effects of climate change. GoT commits to embarking on aggressive climate change adaptation measures, as permitted by available funding.
- **Sustainable Development Goals**
  - **GOAL 13 – Take Urgent Action to Combat Climate Change and its Impacts**
  - **GOAL 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

What are the needs to achieve the country objectives(if any) in reducing GHG emission from maritime transport and/or to take action to address GHG emissions from maritime transport

- ✓ Update National Legislation include requirements for reduction of GHG
- ✓ Expand workforce for small administrations
- ✓ All MS agree that shipping should reduce its GHG emissions in the long term
- ✓ Trading routes and level playing field should not suddenly change because of CO_2 reduction measures.

What are the identified barriers that prevent from implementing country approach to reduce GHG emissions from maritime transport

- No national legal framework in place
- Minimal public knowledge on GHG
- Stimulate/support cooperation between Governments – Research – Shipping sector (golden triangle)
- As in other sectors, development of appropriate technologies, fuels and infrastructure for shipping must be incentivized to reduce GHG emissions.
- Business relationships between charter and ship owner will need improvement.
- Measures of impacts on all States must be considered before implementation, especially impacts on SIDS and LDCs
- Negative impacts on vulnerable States, Ship registries, and the Shipping sector will be greater and more difficult to adapt later in the century when measures are implemented.
- ALL SIDs and LDC's must maintain solidarity in global debates to reduce GHG emissions.

What are the possible relevant actions to address GHG emission from maritime transport.

- ➢ All ships should target to have almost a zero Co_2 footprint in the near future by green (environmental friendly) ship, instead of black ships
- ➢ Energy efficiency measures alone will not achieve zero emission from the sector (2035,2050,2060,2100)
- ➢ A clear roadmap on CO_2 reduction to guide the shipping sector undertake proper planning for the future.

Fakafetai Lasi

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFIC REGIONAL CONFERENCE AND OFFICIAL LAUNCH – VANUATU PRESENTATION

12 – 15 December, 2017
Suva, Fiji

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Country Profile - VANUATU

- KEY MARITIME INSTITUTIONS
  - Ports and Marine Department (Ports Act [Cap 26])
    - Responsible for the operation of Ports and Harbour of Port Vila/Santo
  - Office of the Maritime Regulator (Maritime Sector Regulatory Act 2016
    - Responsible for regulation of Maritime sector of Vanuatu including but not limited to the regulations of vessels and ports, vessel registration, licensing and safety, policy advice, certification of seafarers, trainings, implementation of conventions, etc.
  - Ministry of Infrastructure and Public Utilities
    - International shipping Registry
  - Vanuatu Maritime College
    - Maritime trainings – STCW trainings

Brief stats - Vanuatu

- 57 registered vessels (LC, tugs and passenger vessels;
- 3 International Ports (Longest 360 M);
- 1 privately Owned and 2 owned by Government;
- Stevedoring - operated by 2 different private companies in separate Ports under concessions;

Questions:

1. What are the drivers in your country for reducing greenhouse gas (GHG) from your country maritime transport including port and shipping?

- Vanuatu commitment towards implementing its National Energy Roadmap 2016-2030 in reducing GHG emission in the transport sector (land and sea);
- Vanuatu commitment towards the Global (GSDG) Sustainable Development Goals
- The NERM found that by 2030, Vanuatu consumption of imported petroleum products (petroleum, diesel, etc.) is expected to grow by 50%.
- All vessels operated in Vanuatu relies on diesel fuel
- No standards in place to assess GHG emissions from ships
- Demand for shipping in Vanuatu increases in the past 5 years
- Majority of the population relies on shipping for transportation
- More vessels imported into Vanuatu
- International port of entries upgraded and expanded with state of the art facilities-high demand of electricity

2. What are the needs to achieve the country objective (if any) in reducing GHG emissions from maritime transport and/or to take action to address GHG emissions from maritime transport?

- Need capacity building for maritime administrators and shipping stakeholders
- Need awareness on the importance of reducing GHG emissions for shipping
- Private sector engagement
- Proper policy and regulations needed to legalize the requirement of GHG emissions
- Access to green fund to support Vanuatu implement GHG programs

3. What are the identified barriers that prevent from implementing country approach to reduce GHG emissions from maritime transport?

- Lack of awareness on ship owners
- Lack of understanding and economic benefit for promoting energy efficiency in shipping and Ports
- Lack of partnership between stevedoring operators and Ports administrators (two different entities operate the Ports and stevedoring) in terms of reducing GHG emissions
- Lack of policies and regulations to regulate GHG emissions in Ports and vessels

4. What are the possible relevant actions to address GHG emissions from maritime transport?

- Established proper policies and regulations to address GHG emissions
- Engaged concessionaires in early discussions and negotiations to promote energy efficiencies
- Create a national WG to advocate and implement GHG emissions programs
- Provide capacity for maritime administrations and ship owners on the benefit of GHG emissions (economic and technical)
- Access green fund where possible
- Government must take ownership and support GHG programs (tax incentive, exemptions, subsidy, etc)

Thank You very much

GMN | The Global MTCC Network
A global network for energy-efficient shipping

An IMO Strategy on Reduction of GHG Emissions from International Shipping

Dr Leigh Mazany| GMN Consultant
MTCC-Pacific 1st Regional Workshop | 12-15 December 2017 | Suva, Fiji

The Global MTCC Network (GMN) project
is funded by the European Union and implemented by IMO
The views expressed in this presentation
can in no way be taken to reflect the views of the European Union

Content

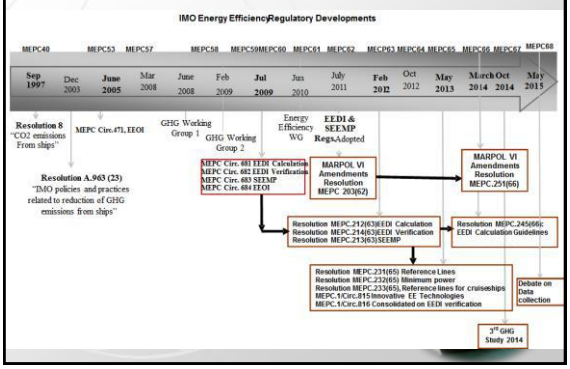
1 IMO initiatives
2 Data Collection System
3 An IMO Strategy on Reduction of GHG Emissions
4 Capacity Building and Technical Cooperation
5 Potential impacts, costs and benefits

IMO initiatives

IMO Initiatives to Reduce Greenhouse Gas (GHG) Emissions

- IMO's work on GHG emissions rooted in
  - Convention on the International Maritime Organization 1948
  - UNCLOS 1982
  - MARPOL 1973 and its 1997 Protocol + International Air Pollution Conference resolution 8
  - Assembly resolution A.963(23) on IMO policies and practices related to the reduction of GHG emissions from ships (2003)

Activities leading to Chapter 4 of MARPOL Annex VI



Energy efficiency regulations for ships

- In 2011, Chapter 4 (regulations 19 to 23) added to MARPOL Annex VI (Resolution MEPC.203(62))
- Entered into force on 1 January 2013
- First ever mandatory global energy efficiency standard for international shipping
  - Applies to internationally trading ships of ≥ 400 GT
  - Make mandatory:
    - **Energy Efficiency Design Index (EEDI)** for new ships
    - **Ship Energy Efficiency Management Plan (SEEMP)** for all ships
  - Address ship types responsible for 85% of GHG emissions from international shipping
  - Introduced new International Energy Efficiency Certificate (IEEC)

Data Collection System

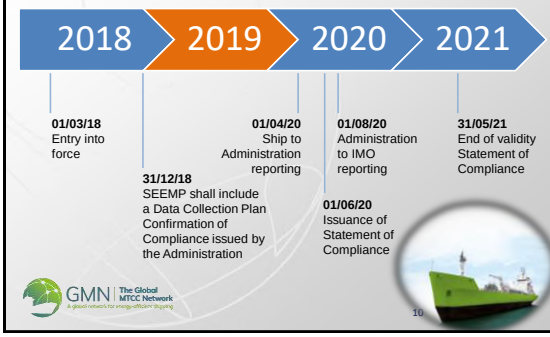
Data Collection System

- Work at MEPC 64 (Oct 2012) and MEPC 65 (May 2013) on a proposal by the US to enhance the energy efficiency of international shipping through a phased approach:
  - Data collection and analysis phase (Phase I)
  - Pilot phase (Phase II)
  - Full implementation phase (Phase III)
- MEPC agreed to add to its agenda work on "Further technical and operational measures for enhancing the energy efficiency of international shipping"

Data Collection System (cont'd)

- MEPC 68 (May 2015) agreed that development of a data collection system for ships should progress and follow a three-step approach:
  - data collection;
  - data analysis; and
  - followed by decision-making on what further measures, if any, are required
- Noted that a purpose of the data collection system was to analyse energy efficiency and that for this analysis to be effective some transport work data needs to be included
- MEPC 69 (April 2016) agreed amendments to MARPOL Annex VI (Regulation 22A) – Data collection system for fuel consumption
- Adopted at MEPC 70 (October 2016) and enters into force 1 March 2018, with reporting starting in 2019

IMO Data Collection System for Fuel Oil Consumption of Ships in MARPOL Annex VI



An IMO Strategy on Reduction of GHG Emissions

IMO strategy on the reduction of GHG emissions

MEPC 70 (October 2016)

- MEPC approved a Roadmap for developing a comprehensive IMO strategy on reduction of GHG emissions from ships, which foresees an initial GHG reduction strategy to be adopted in 2018.
- It contains a list of activities, including further IMO GHG studies and significant intersessional work, with relevant timelines and provides for alignment of those new activities with the ongoing work by the MEPC on the three-step approach to ship energy efficiency improvements.
  - This alignment provides a way forward to the adoption of a revised strategy in 2023 to include short-, mid-, and long-term further measures, as required, including implementation schedules.
- The Committee also agreed to hold intersessional working group meetings on reduction of GHG emissions from ships.

October 2016 (MEPC 70)	- Adoption of Data Collection System - Voluntary data collection and submission begins - Approval of Roadmap
Week before MEPC 71	- Intersessional meeting to start discussions on a comprehensive IMO strategy on reduction of GHG emissions from ships, taking into account inputs such as: (1) Third IMO GHG Study; (2) submissions on the elements below and on existing activities related to GHG emissions reductions by States and stakeholders; and (3) a technical paper by the Secretariat compiling a list of existing IMO activity related to reducing GHG emissions in the shipping sector. The discussions should include but not be limited to the elements below: • Levels of ambition and guiding principles for the strategy; • Emissions scenarios; • Assessment of the projected future demand for shipping; • Parameters/indicators on energy efficiency of ships (current status and long-term potential); • Emission reduction opportunities (near-, mid- and long-term actions), including alternative fuels; • Costs and benefits; • Capacity building and technical cooperation; • Barriers to emissions reductions and how to overcome them; • Priority areas for R&D, including in relation to technology; • Impact of EEDI; • Impacts on States, taking into account the HLAP (resolution A.1098(29)); and • Impacts of other regulations on GHG emissions
May 2017 (MEPC 71)	- Discussion continues[1]
September 2017	- Intersessional meeting
Week before MEPC 72	- Intersessional meeting
Spring 2018 (MEPC 72)	- Adoption of initial IMO Strategy[2], including, inter alia, a list of candidate short-, mid- and long term further measures with possible timelines, to be revised as appropriate as additional information becomes available

[1] Modality of further intersessional work after MEPC 71 to be considered based on written submissions.
[2] Initial IMO Strategy is subject to revision based on DCS data during 2019-2021 and does not prejudge any specific further measures that may be implemented in phase 3 of the 3-step approach.

Roadmap for developing a comprehensive IMO Strategy on reduction of GHG emissions from ships

Roadmap (cont'd)

January 2019	- Start of Phase 1: Data collection (Ships to collect data)
Spring 2019 (MEPC 74)	- Discussion continues - Initiation of Fourth IMO GHG Study using data from 2012-2018
Summer 2020	- Data for 2019 to be reported to IMO
Autumn 2020 (MEPC 76)	- Start of Phase 2: data analysis (no later than autumn 2020) - Discussion continues - Publication of Fourth IMO GHG Study for consideration by MEPC 76[3]
Spring 2021 (MEPC 77)	- Initiation of work for adjustments on Initial IMO Strategy, based on DCS data - Secretariat report summarizing the 2019 data pursuant to regulation 22A.10
Summer 2021	- Data for 2020 to be reported to IMO
Spring 2022 (MEPC 78)	- Phase 3: Decision step - Discussion continues - Secretariat report summarizing the 2020 data pursuant to regulation 22A.10
Summer 2022	- Data for 2021 to be reported to IMO
Spring 2023 (MEPC 80)	- Adoption of Revised IMO Strategy, including short-, mid- and long-term further measure(s), as required, with implementation schedules - Secretariat report summarizing the 2021 data pursuant to regulation 22A.10

Initial discussions on the IMO GHG Strategy

The initial IMO GHG Strategy is set to include:

1. Preamble/introduction/context/objectives including emission scenarios
2. Vision
3. Levels of ambition
   Guiding principles
4. List of candidate short-, mid- and long-term further measures with possible timelines and their impacts on States
5. Barriers and supportive measures; capacity building and technical cooperation; R&D
6. Follow-up actions towards the development of the revised Strategy
7. Periodic review of the Strategy

GMN | The Global MTCC Network

15

Latest progress made in developing GHG Strategy for international shipping

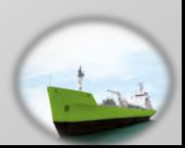
Outcome of ISWG-GHG 2 (23-27 October 2017)

- ISWG-GHG 2 has made progress in starting to shape a draft initial IMO GHG Strategy including refining the **vision** for IMO, which will express IMO's further commitment to reducing GHG emissions from international shipping.
- While the structure of the Strategy has been largely agreed, the detailed text to be included is still under discussion.
- The group agreed that candidate short-term measures could be finalized and agreed by the Marine Environment Protection Committee (MEPC) between 2018 and 2023; candidate mid-term measures could be measures finalized and agreed by the MEPC between 2023 and 2030; and candidate long-term measures could be measures finalized and agreed by the MEPC beyond 2030.
- Dates of entry into force and when the measure can effectively start to reduce GHG emissions would be defined for each measure individually.
- The group supported the need for early action.

GMN | The Global MTCC Network

Capacity Building and Technical Cooperation

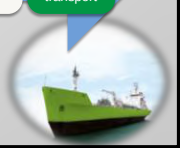
GMN | The Global MTCC Network



Technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships

- Reg. 23, MARPOL Annex VI, MEPC Resolution, TT-EG
- ITCP: Awareness raising and capacity building tools
- Major Projects: Capacity building & private sector partnerships
- Global network to promote technology cooperation and transfer
- Catalyze institutions and financing for sustainable marine transport

GMN | The Global MTCC Network



Potential impacts, costs and benefits

Transportation Challenges in the Pacific

- Long routes – distance from trading partners
- Small economies, with limited economic diversification
- Heavy reliance on imported goods
  - Imbalance between goods coming in and goods going out
  - Limits ability to benefit from economies of scale
- Reliance on imported fossil fuels
- Financing barriers
- High infrastructure costs

All add up to high import costs and reduced export competitiveness

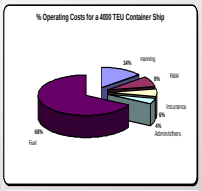
20

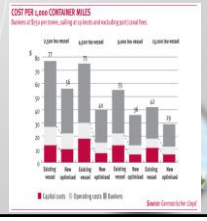
Estimating impacts of potential measures to reduce GHG emissions from international shipping

- Not easy to model economic costs and benefits of GHG mitigation measures on countries or regions
  - Complexity of the model needed to capture all costs and benefits
  - Lack of data on maritime shipping, especially for small island developing states
- Some work has been done to estimate impact on international shipping (UNCTAD, OECD, World Bank/IMF, academia)
  - Depends on impact of measure on freight rates and by how much such changes could be passed on to consumers and producers – this varies by country and product
  - Distance from major exporters is a key determinant, but not the only determinant
- Estimates of impact on GDP suggest less than a 2% effect, but varies by region or country
  - But even small percentage increases can have a large impact on consumers with low incomes

Cost of fuel to the economy

- Industrial activities are impacted by price of fuel
- Size of effect depends on energy intensity of the industrial activities:
  - The more energy intensive, the larger the percentage fuel costs are relative to other costs of production
- Transportation is generally an energy intensive industry
- Shipping fuel cost is a major part of total shipping costs
- Hence, reducing fuel costs can help lower shipping costs





Benefits of GHG emission mitigation

- Reduction of direct costs in the form of lower fuel (energy) costs
- Reduction of social cost to society in mitigating the negative impacts, including health costs, impacts on infrastructure, etc.
- Energy efficiency improvements and use of alternative fuel can have both economic and environmental benefits

23

Benefits of Regional Action

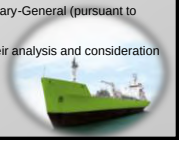
- Strong link between measures to address climate change mitigation and adaptation and sustainable development measures
- Measures to reduce GHG emissions usually imply reducing fuel consumption or switching to renewable energy sources
  - This results in cost savings, increasing competitiveness
  - Also reduces strain on foreign exchange earnings and public finance
- Increased inter-island shipping services and improved port infrastructure can help reduce some of the transport challenges
- Some debate whether cooperation could lead to improved procurement and supply chain management

24

Annex 1: Data Collection System for Fuel Consumption: Main elements

- Application: ships of 5,000 GT and above on international voyages
- Methodology for collecting the data to be outlined in the ship-specific SEEMP
- Data to be collected includes: IMO number, technical characteristics, fuel consumption (by fuel type, in metric tons), distance travelled from berth to berth, hours not at berth
- Data to be aggregated into an annual figure at the end of each calendar year and reported by ship to the Administration (flag State) within three months
- Upon receipt of data, Administration or organization duly authorized shall determine whether data has been reported in accordance with regulation 22A and if so issue a Statement of Compliance to the ship no later than 5 months from the beginning of the calendar year
- Administration to submit data to IMO for inclusion in a centralized database (no later than 1 month after issuing Statements of Compliance)
- Database shall be undertaken and managed by the IMO Secretary-General (pursuant to guidelines developed by IMO)
- Parties shall have access to the anonymized data strictly for their analysis and consideration

GMN | The Global MTCC Network



Thank you for your attention!
http://gmn.imo.org/

GMN | The Global MTCC Network

Low Carbon Sea Transport Project

Marshallese- German
Bilateral Technical Cooperation Project
2017 - 2022

Brief

- Funded by German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)
- Bilateral Technical Cooperation Project between Marshall Islands and Germany
- Bilateral Agreement signed by both Governments in May 2017
- 9.5M EUR (11M USD)

Implementation of Project

- Implemented by GIZ and RMI
- Responsible German Embassy: Manila
- Responsible in RMI: Ministry of Transport and Communication
- Focus: Fleet of Marshall Islands Shipping Corporation

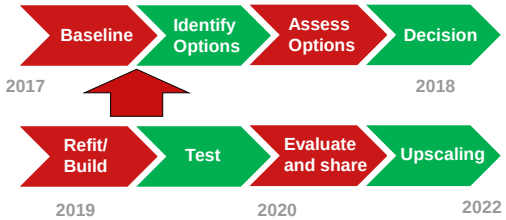
Implementation partners

- Cooperation planned with:
  - University of Emden (Technical Expertise/ Refitting of Cargo Vessels)
  - WAM (Building Intra Lagoon Vessel)
  - USP (Assessment of Social Aspects)
  - MCST (Trainings, Research)

Outcome

- Contribution to reduction of emissions from shipping
- Contribution to achieving RMI's NDC
- Lower shipping costs
- Saving on Fossil fuel imports
- Proposal for upscaling
- Inputs of RMI to UNFCCC, IMO & regional meetings

Project Steps

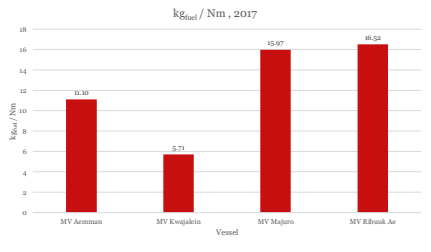


Preliminary baseline data

Data collected and analysed by

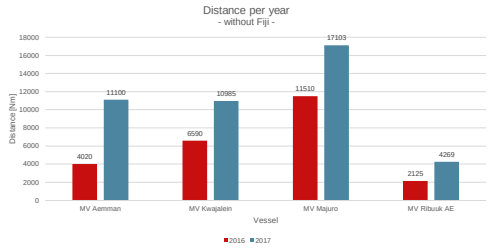
- Raffael Held, Marine Engineer (GIZ)
- Mark Oxley, Shipping Consultant (ADB)

Fuel consumption per nautical mile

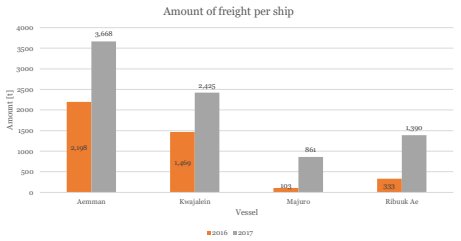


Alexander Beetz, December 6, 2017

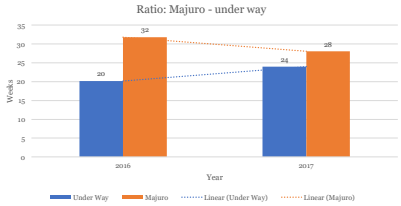
Distances per year



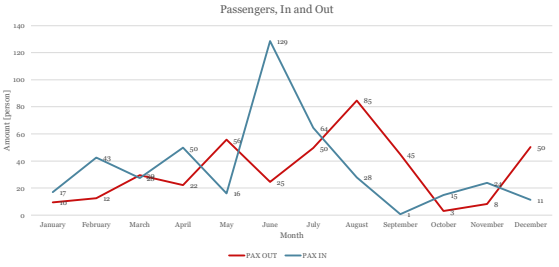
Amount of freight per ship



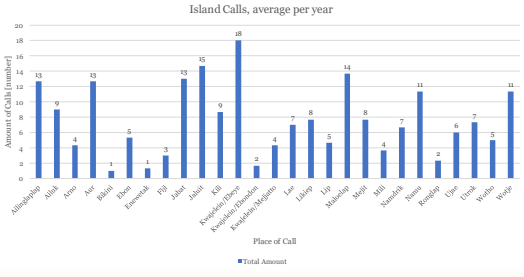
Ratio: In port Majuro – under way



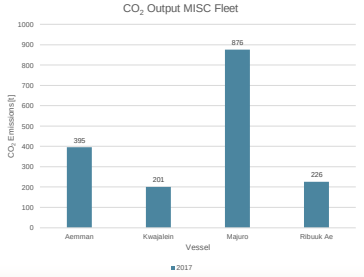
Passengers, In and out



Island/ Atoll calls, average per year



CO_2 Emissions of the MISC fleet



CO_2 Emissions of the MISC fleet

$CO2\ Emissions =$

$Amount\ of\ fuel\ x\ carbon\ emission\ factor =$

[ton fuel] x [ton CO_2 /ton fuel] =

1 t Marine Gas Oil x 3.207 ton CO_2

/ton fuel

= 3.207 tons CO_2

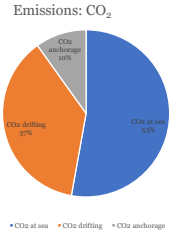
EEOI (Energy Efficiency Operational Indicator)

Calculation: gCO2/t.nm

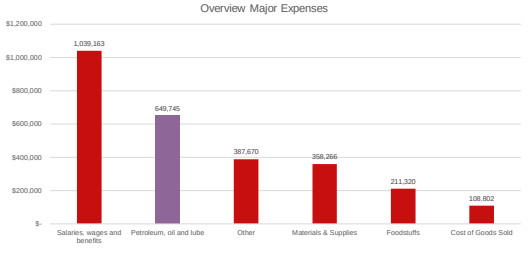
Passengers and cargo

Some data still missing

Ship‘s modes and CO_2 emissions

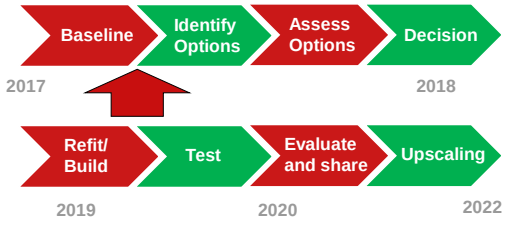


MISC expenses



Alexander Beetz, August 3, 2017

Project Steps



Alexander Beetz, December 6, 2017

Options

- Modification of existing vessels
- Building new vessels

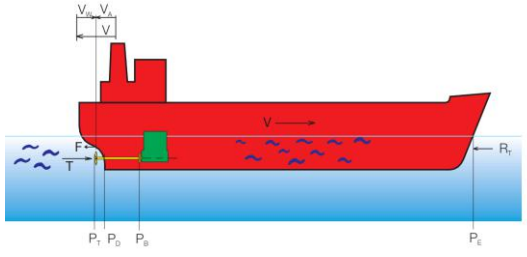
Approaches

- Institutional (Management)
- Operational
- Infrastructural
- Technical

Technology approaches

- Thrust efficiency
- Engine efficiency
- Hydrodynamics
- Auxiliary power
- Wind
- Operational

Thank you!



GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017

Suva, Fiji

EUROPEAN UNION

IMO INTERNATIONAL MARITIME ORGANIZATION

Pacific Community
Communauté du Pacifique

HOST INSTITUTIONS OF MTCC-PACIFIC

SPREP
Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

« New-Caledonia Towards Sustainable Blue Growth »

Programme and Projects of the New-Caledonia Maritime Cluster (CMNC)

Lionel Loubersac, General Manager

Cluster Maritime Nouvelle-Calédonie | Groupe Synergie Outre-Mer

Just a brief

- General Manager

- Oceanographer **(Engineer and PhD)**

  42 years of Oceanographic Applied Research

- Entrepreneur

  Maritime forward looking projects

  Environment, Oceanography and Marine Technology

lionel.loubersac@outlook.fr

http://annuaire.ifremer.fr/cv/16331/

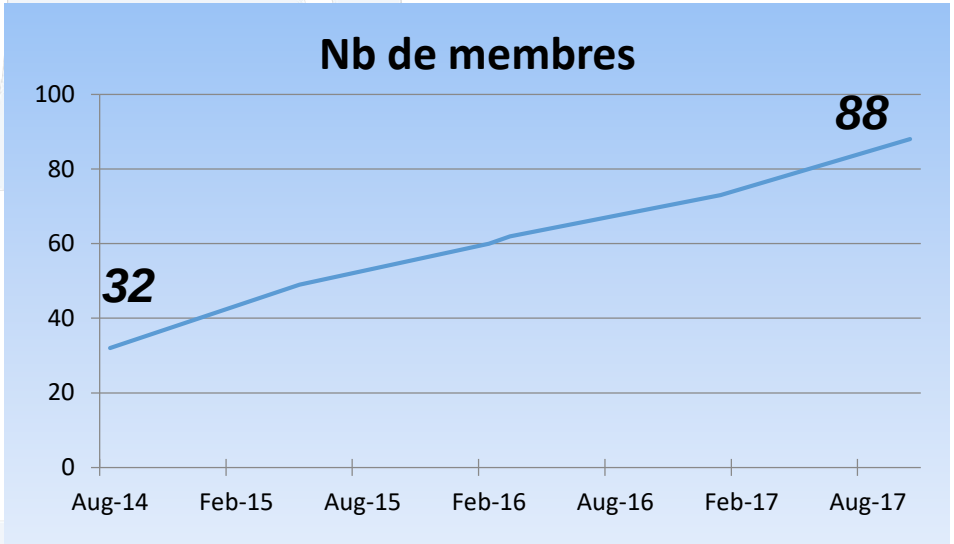
Key Data on CMNC

- ***Non lucrative organization***
- ***Established august 5th 2014***
- ***Represents today more than 3000 employments***
- ***Budget 160.000 euros (members fees and grants from local authorities)***
- ***Associated to Australian Pacific Islands Business Council (regional integration)***
- ***3 members types : active (private), associated (administration, research), observers (ONG, associations)***

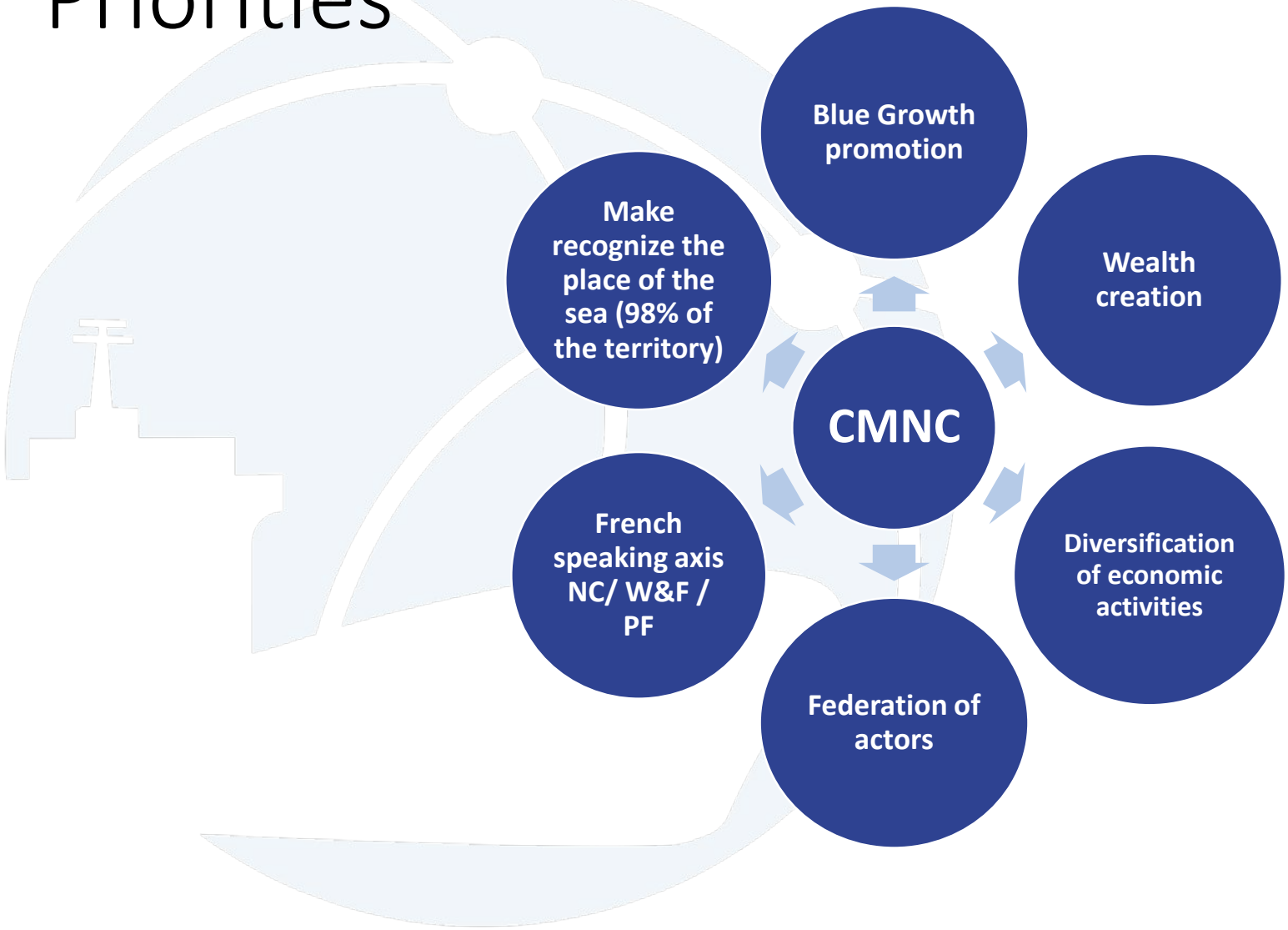
Collective intelligence

« None of us knows what we know together »

Euripides



Priorities


Blue Growth promotion
Wealth creation
Diversification of economic activities
Federation of actors
French speaking axis NC/ W&F / PF
Make recognize the place of the sea (98% of the territory)
CMNC

Key Reminders on NC EEZ

- **An EEZ on a submerged continent (Zelandia)**
- **An exceptional geodiversity associated to a world rank marine biodiversity « hot spot »**
- **As many marine species in a 20x20 km square in the New-Caledonia main lagoon than in the whole Mediterranea**
- **Below 300 meters depth : one species out of two, never described**
- **15.000 km^2 of reefs and lagoon registred on UNESCO World Heritage and 1.300.000 km^2 as Natural Marine Park of the Coral Sea**
- **26 maritime activity sectors, of wich 10 belonging to the 11 priorities identified by the European Union Blue Growth Strategy**

So major sustainabble development stakes and a unique marine « playground » for innovative projects, environmental responsability and Blue Growth implementation.

Flagships

- **Summary report on the maritime challenges and stakes in New-Caledonia**
- **Organization of the General States of the Sea (4-5 july 2016)**
- **Launch of the Maritime Economic Observatory (3500 structures identified)**
- **First Sea Day (12 july 2017)** *to be organized on an annual basis*

Working Groups - Synergies

➡ **16 active groups**

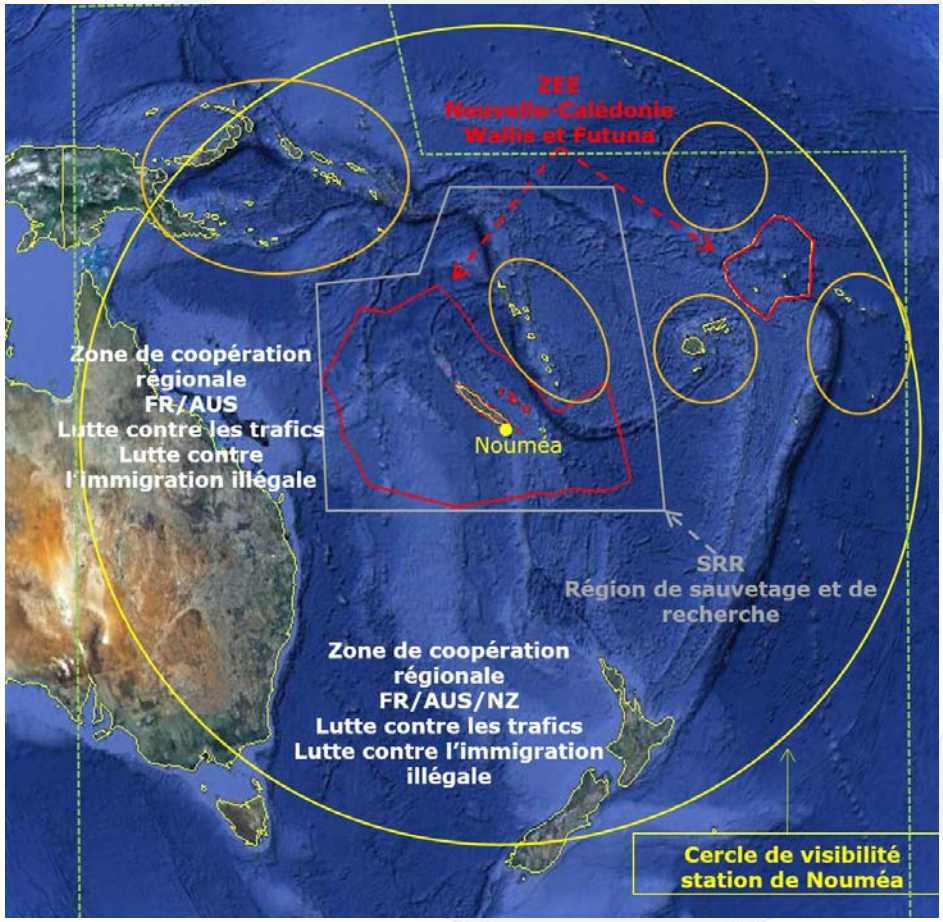
- ***Governance***
- ***Spatial Data & Marine Spatial Planning***
- ***Marine Technology Platform***
- ***Harbour Infrastructures***
- ***Pole of Excellence***
- ***Ship Repair***
- ***Cruise***
- ***Maritime Tourism***
- ***Yachting Sector***
- ***Security***
- ***End-of-life Vessels***
- ***Energy***
- ***Bio-Ressources & Biodiversity Valuation***
- ***Training***
- ***Communication & Heritage (natural and cultural)***
- ***Sustainable Blue Growth Laboratory***

✓ **Most significant projects at the interface between several groups**

✓ **Ecoresponsability as a cross cutting issue**

Project examples

Marine Technology platform



Very high resolution satellites receiving station (optic and radar)

Under study

- Maritime Surveillance
- Security at sea
- Natural disasters impacts
- Marine hydrography
- Environment (mangroves, coral reefs…)
- regional cooperation

Project examples

Marine Technology platform

Submarine Cables

- to promote « SMART » Cables on international roads
- to promote Multidisciplinary Seafloor and Water Column Observatories (EMSO Type)
- environment knowledge
- global change monitoring
- early warning (submarine earthquakes, tsunamis…)

Project examples

Marine Technology platform

« Clever boats »

to equip ships of opportunity with « ferry boxes »

- continuous and repetitive marine environment parameters monitoring at lower cost

- knowledge of the seasonnal, interannual and long term behaviour of the water masses (lagoons, territorial waters, open sea and our Marine Natural Park…)

Project examples

Marine Technology platform

Using AIS to estimate near real time currents fields

about 100.000 boats in operation

- An E_Odyn solution
- statistically significant
- flexible and low cost
- better routing and an opportunity for fuel economy (estimated 1 to 3% by CMA CGM)
- a demonstration on the NC EEZ
- other applications as drift of man at sea….

Project examples

Ship Repair

Floating Dock

- Economic feasibility under progress
- Response to local ships needs
- Response to transient boats and the fleets of neighbours countries
- Up to date and eco-friendly solutions

Project examples

Sustainable Sailing

Eco-sailing

End-of-life vessels

- An important stock of shipwrecks : recently the contener ship “Kea Trader” (180 m long)

- 6300 ships to destroy and recycle within the next 15 years

Project examples

Sustainable Cruise

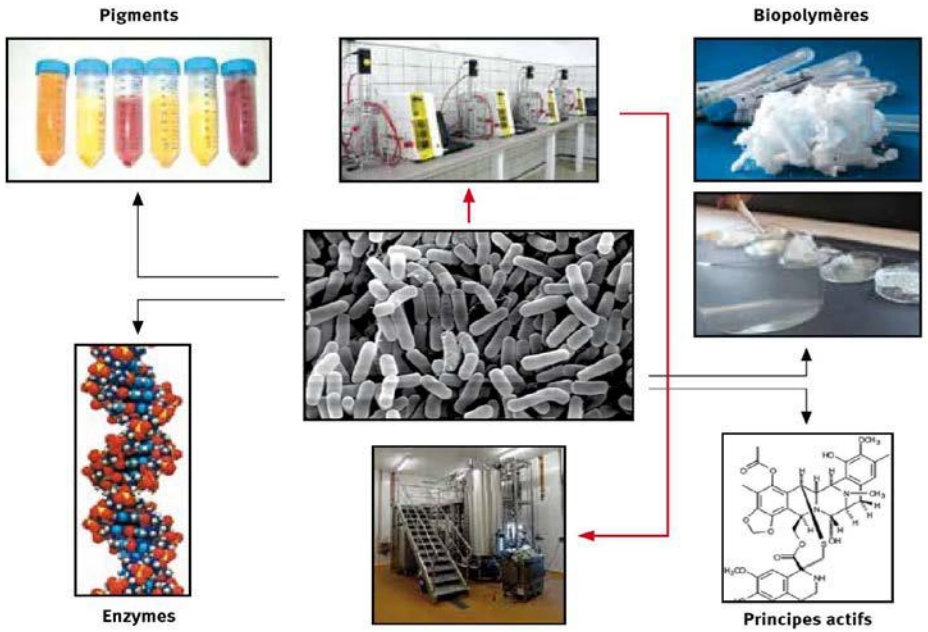
Cruise Club

- 500 cruise liners a year
- Strategy and choices on the cruise types to boost
- Diversification of destinations
- Social and environmental acceptability
- partnerships with neighbours

Project examples

Marine Biotechnologies and Bio-inspiration

(to adopt solutions offered by the Nature)



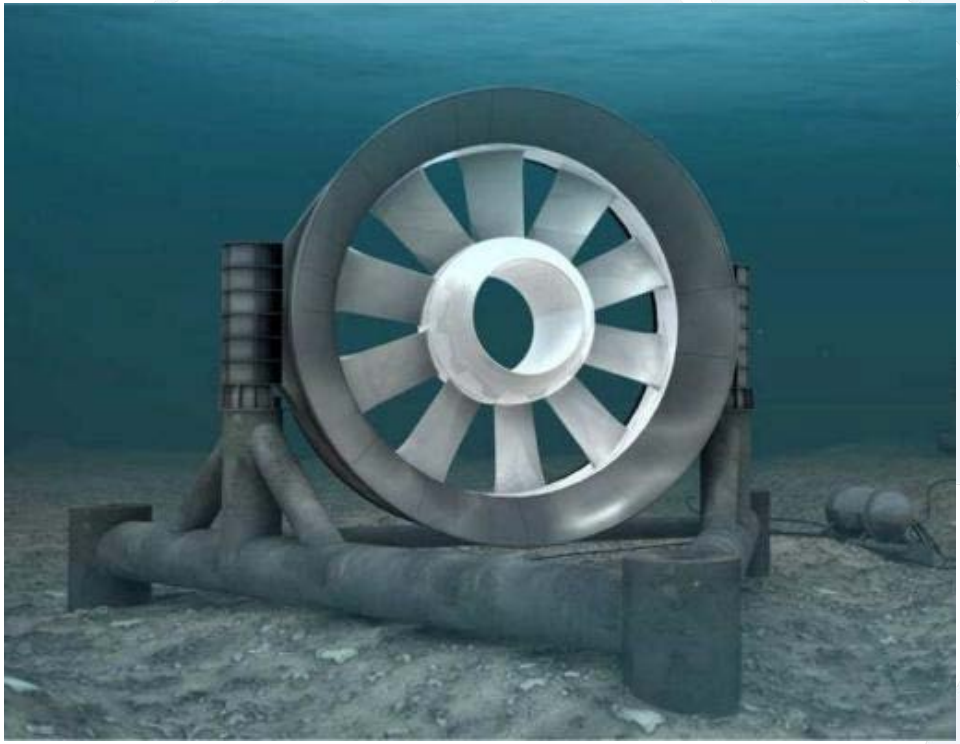
Marine biomolecules

The ultra-small : bacteria & micro-algae

- Health and Cosmetics
- Proteins, pigments,
- Bio-plastics
- Natural antifouling agents
- Soils and water quality decontamination
- Bioremediation and CO2 sequestration
- Future bio-fuels?

Project examples

Energy



Marine Renewable Energies and Energy Transition

- ***Atlas of the potential of Marine Energies (offshore wind, currents, swell, SWAC, OTEC), finalized end of the year***

- ***Solutions for Energy Storage at sea?***

- ***Valuing the future SLN Doniambo nickel plant : power plant equipped with Liquefied Natural Gaz storage unit (decided) ► a project on alternative hybride engines for ships crossing the Coral Sea.***

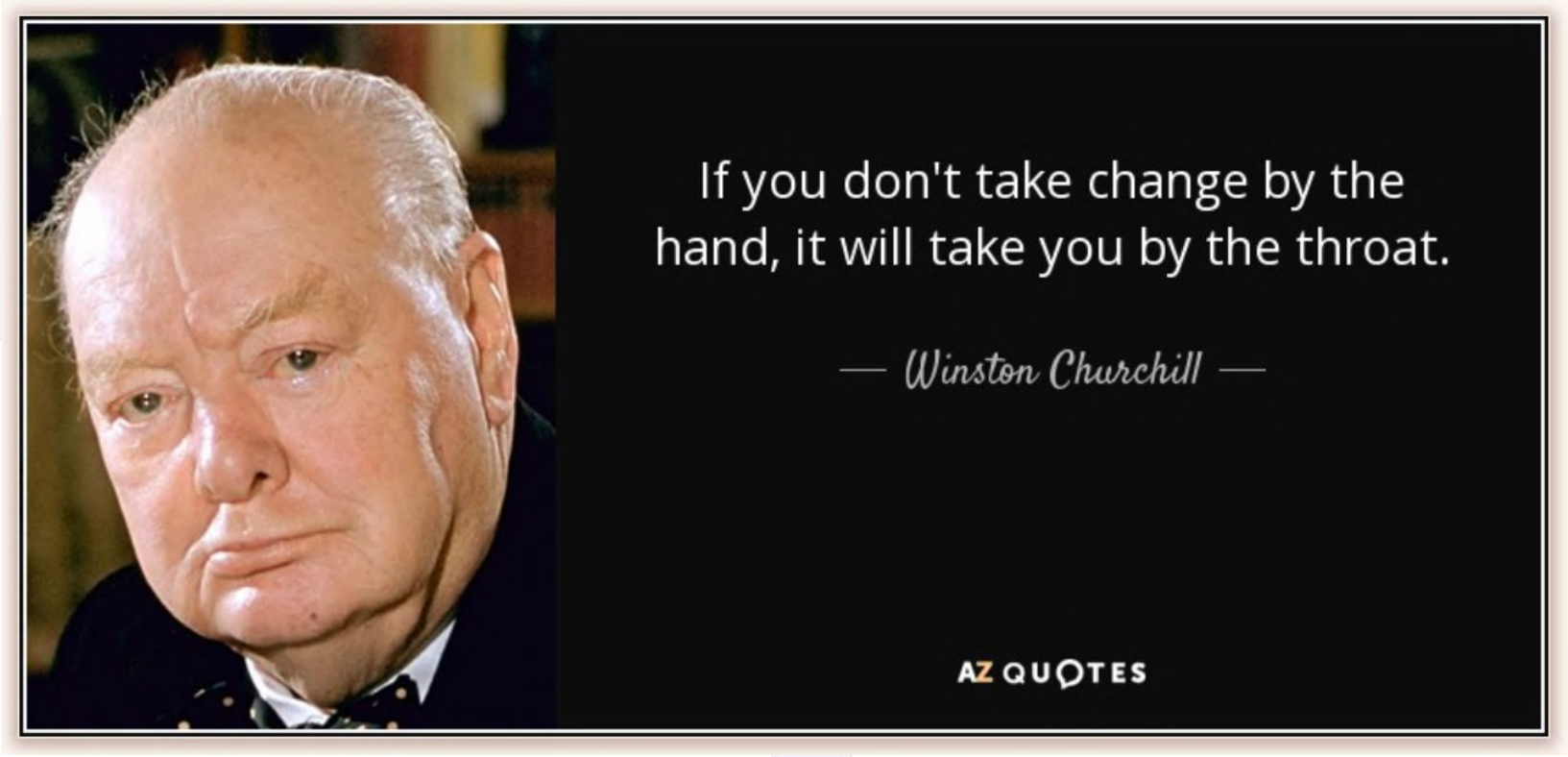
Suggestion

- **CMNC to contribute widering to the whole Pacific the Maritime Cluster governance concept as exposed : Business world (pilot) associated with Politics, Administrations, Research, ONG… ►PIDF**
- **A possible model : The Baltic Sea Forum**
- **Assistance to public decision making,**
- **Appraisal of projects,**
- **Setting up public/private partnerships**
- **Reaching sustainable Blue Growth excellence**

We are facing global change…

The ball is in our court!

Business as usual is nowadays out…



We do need to be innovative!!!

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

Thank you!

The Local Shipowners Association

P.O. Box 14537 Suva, Fiji Islands, Phone: 3380615 Fax 3372035

Reducing GHG FROM Domestic Ships

Ship Owners perspective

Presentation by
Josateki Tagi
LSOA Member

Local Ship Owners Association

- BACKGROUND
- IMO Study - the maritime sector was responsible for nearly 3.3 % of the global greenhouse gas (GHG) emissions during 2007. Of these, 2.7 % of emissions was CO2 from International shipping
- In the absence of proper actions, emissions from the maritime sector may grow by 150–250 % by 2050, in comparison with the emissions in 2007
- Result of Growth in the maritime sector
- This warrants proactive action to achieve a greener shipping industry.

Local Ship Owners Association

PROACTIVE ACTION

- EU Funding, IMO Implementation
- 5 Centers MTCC
- Pacific (MTCC), SPC as Host , Suva, Fiji
- Mission : Reduction of GHG & Promote energy efficiency in Ships

Local Ship Owners Association

WHERE TO FROM HERE

Ship Owners IMO & MTCC Pacific Programme & COP 23

Local Ship Owners Associations (LSOA) – Fiji

- LSOA – Registered in the 1970's
- Fellowship *(Mutual – routes sharing)*
- Protection of Ship Operators
- Advisory Role to the Government - Marine Transportation
- Advocate fare trade
- Observe & Compliance *(IMO Conventions, MSAF)*

Local Ship Owners Association

Local Ship Owners Association

No.	Shipping Companies		Passenger Cargo (Ferries & Tourism Conventional)	Cargo	Fishing Vessel	Total Power Estimates	Fuel Consumption per hour	Fuel consumed per week	Fuel Consumed per year	Estimated carbon discharge
1	Goundar Shipping		**5**	**-**	**-**	**12000KW**				
2	Patterson Bros		**3**	**-**	**-**	**5000KW**				
3	Venu Shipping		**1**	**-**	**-**	**800KW**				
4	All Engineering		**-**	**5**	**-**	**2000KW**				
5	Victoria Marine		**2**	**2**	**-**	**2600KW**	**420L/hr**	**(40hrs) 16800L**	**873,600L**	
6	Cruz Holding		**--**	**7**	**-**	**4800KW**				
7	South Sea Shipping		**2**	**-**	**-**	**1000KW**				
8	Valesasa		**1**	**-**	**-**	**400KW**				
9	Tokalau Shipping		**1**	**-**	**-**	**50KW**				
10	Government Shipping		**4**	**8**	**-**	**10000KW**				
11	South Sea		**6**	**-**	**-**	**4000KW**				
12	Captain Cook		**5**	**-**	**-**	**3500KW**				
13	PBS		**-**	**7**	**-**	**5000KW**				
14	Fiji Fish		**-**	**-**	**7**	**3000KW**				
15	Solander		**-**	**-**	**6**	**2800KW**				
16	Sea Quest		**-**	**-**	**12**	**6000KW**				
17	Hangton		**-**	**-**	**7**	**5000kw**				

Local Ship Owners Association

Local Ship Owners Association

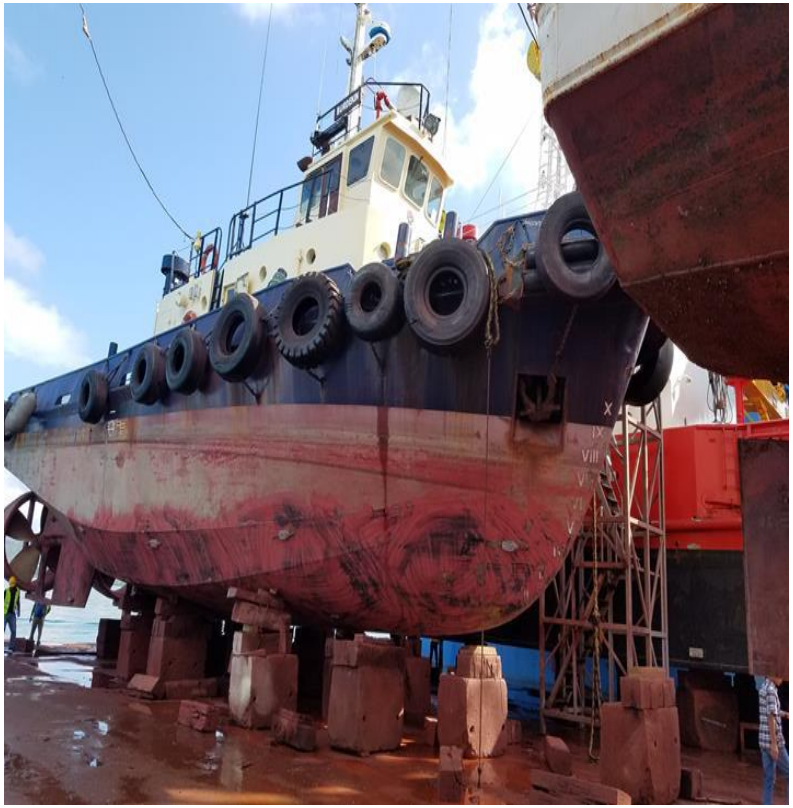
Local Ship Owners Association

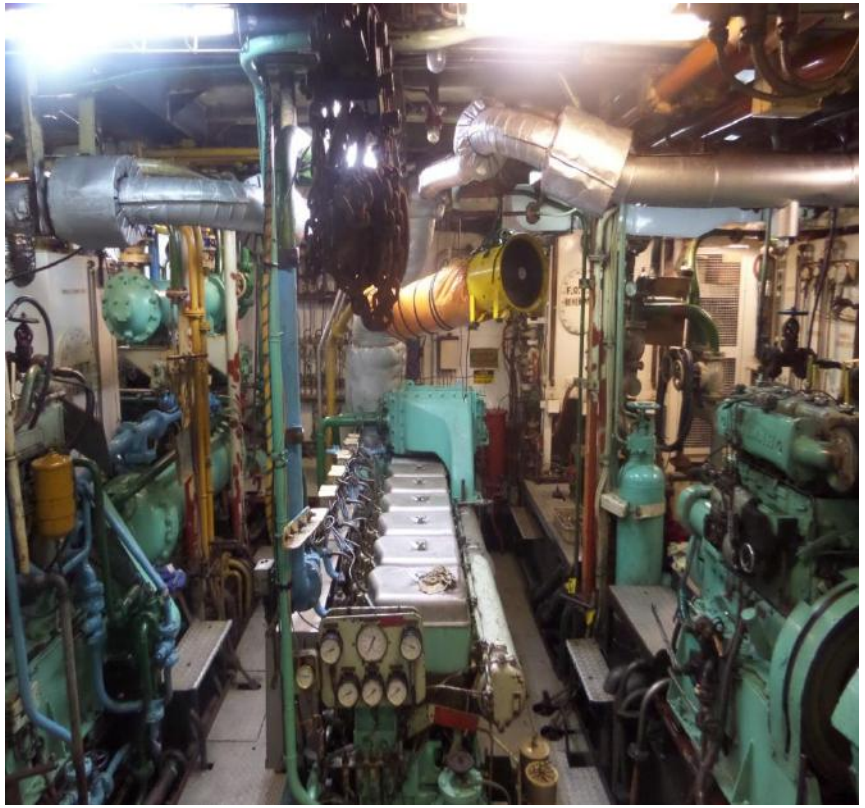
WAY FORWARD

- Support MTCC Data Collection
  - Supply necessary information for analysis
  - Champion the initiative (Placard & MTCC Sticker on Board vessels)
  - Regular update of progress in the implementation

- Improve Ships Maintenance Program
  - Proper Ship Propulsion maintenances
  - Docking and Clean Hull
  - Shipboard Training and take ownership

Local Ship Owners Association





Local Ship Owners Association

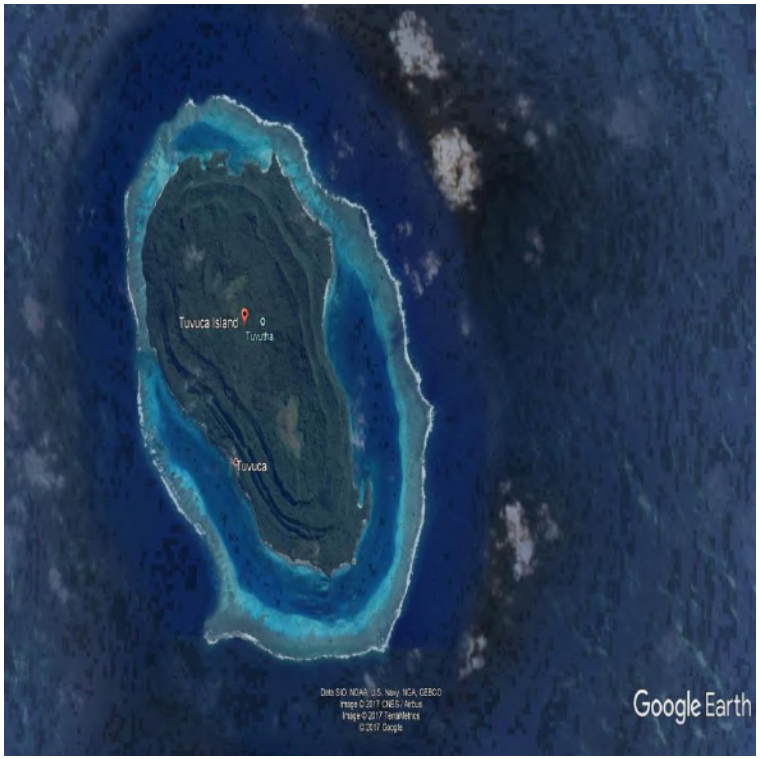
WAY FORWARD

- Improve sailing Schedules
  - Voyage Plan (shortest Route)
  - Day and night Sailing (Nav Aid)

- New Designs (Sail Assistance) to improve efficiency
  - Make shift arrangement - Efficiency Improved by 30%
  - SOLAR Power assist Generators – *In Port*
  - Wind Generators/Crushing Alternators

- Outer Islands Infrastructure
  - Jetty, mooring, proper anchorage, access to outer islands
  - Dredge – proper depth

Local Ship Owners Association



Local Ship Owners Association

SUMMARY

- High Level Lead Role
  - Government - MOT
  - MTCC

- Sustainability and Profitability
  - Revise Freights & Charges
  - Uneconomical Routes – Subsidy x 2
  - Infrastructure Improvement – outer islands
  - Tax Incentives

Local Ship Owners Association

CONCLUSION

- Ideally – Improve/Modernise Domestic Fleet that comply with GHG emission requirement

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017
Suva, Fiji

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

« New-Caledonia Towards Sustainable Blue Growth »

Programme and Projects of the New-Caledonia Maritime Cluster (CMNC)

Lionel Loubersac, General Manager

Just a brief

- General Manager
- Oceanographer **(Engineer and PhD)**
  - **42 years of Oceanographic Applied Research**
- Entrepreneur
  - **Maritime forward looking projects**
  - **Environment, Oceanography and Marine Technology**

lionel.loubersac@outlook.fr
http://annuaire.ifremer.fr/cv/16331/

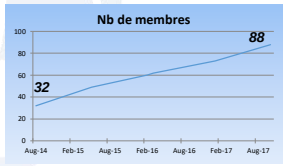
Key Data on CMNC

- ***Association (15 members in the board of directors)***
- ***Established august 5th 2014***
- ***Represents today more than 3000 employments***
- ***Budget 160.000 euros (members fees and grants from local authorities)***
- ***Associated to Australian Pacific Islands Business Council (regional integration)***
- ***3 members types (active, associated, observers)***

Collective intelligence

« None of us knows what we know together »

Euripides



Priorities

Key Reminders on NC EEZ

- **An EEZ on a submerged continent (Zelandia)**
- **An exceptional geodiversity associated to a world rank marine biodiversity « hot spot »**
- **As many marine species in a 20x20 km square in the New-Caledonia main lagoon than in the whole Mediterranea**
- **Below 300 meters depth : one species out of two, never described**
- **15.000 km² of reefs and lagoon registred on UNESCO World Heritage and 1.300.000 km² as Natural Marine Park of the Coral Sea**
- **26 maritime activity sectors, of wich 10 belonging to the 11 priorities identified by the European Union Blue Growth Strategy**

So major sustainabble development stakes and a unique marine « playground » for innovative projects, environmental responsability and Blue Growth implementation.

Flagships

- **Summary report on the maritime challenges and stakes in New-Caledonia**
- **Organization of the General States of the Sea (4-5 july 2016)**
- **Launch of the Maritime Economic Observatory (3500 structures identified)**
- **First Sea Day (12 july 2017)** *to be organized on an annual basis*

Working Groups - Synergies

➡ **16 active groups**

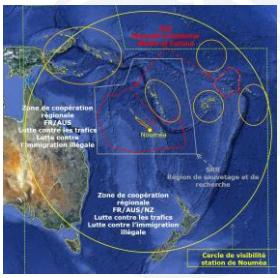
- ***Governance***
- ***Spatial Data & Marine Spatial Planning***
- ***Marine Technology Platform***
- ***Harbour Infrastructures***
- ***Pole of Excellence***
- ***Ship Repair***
- ***Cruise***
- ***Maritime Tourism***
- ***Yachting Sector***
- ***Security***
- ***End-of-life Vessels***
- ***Energy***
- ***Bio-Ressources & Biodiversity Valuation***
- ***Training***
- ***Communication & Heritage (natural and cultural)***
- ***Sustainable Development Laboratory and Showcase***

✓ **Most significant projects at the interface between several groups**

✓ **Ecoresponsability as a cross cutting issue**

Project examples

Marine Technology platform



Very high resolution satellites receiving station (optic and radar)

Under study

- Maritime Surveillance
- Security at sea
- Natural disasters impacts
- Marine hydrography
- Environment (mangroves, coral reefs…)
- regional cooperation

Project examples

Marine Technology platform

Submarine Cables

- to promote « SMART » Cables on international roads
- to promote Multidisciplinary Seafloor and Water Column Observatories (EMSO Type)
- environment knowledge
- global change monitoring
- early warning (submarine earthquakes, tsunamis…)

Project examples

Marine Technology platform

« Clever boats »

to equip ships of opportunity with « ferry boxes »

- continuous and repetitive marine environment parameters monitoring at lower cost
- knowledge of the seasonnal and interannual behaviour of the water masses (lagoons, territorial waters, open sea and Marine Natural Park…)

Project examples

Ship Repair

Floating Dock

- Economic feasibility under progress
- Response to local ships needs
- Response to transient boats and the fleets of neighbours countries
- Up to date and eco-friendly solutions

Project examples

Sustainable Sailing

Eco-sailing

End-of-life vessels

- An important stock of shipwrecks : recently the contener ship “Kea Trader” (180 m long)
- 6300 ships to destroy and recycle within the next 15 years

Project examples

Sustainable Cruise

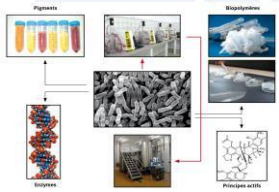
Cruise Club

- Strategy and choices on the cruise types to boost
- Diversification of destinations
- Social and environmental acceptability
- partnerships with neighbours

Project examples

Marine Biotechnologies and Bio-inspiration

(to adopt solutions offered by the Nature)



Marine biomolecules

The ultra-small : bacteria & micro-algae

- Health and Cosmetics
- Proteins, pigments,
- Bio-plastics
- Natural antifouling agents
- Soils and water quality decontamination
- Bioremediation

…

Project examples

Energy

Marine Renewable Energies and Energy Transition

- ***Atlas of the potential of Marine Energies (offshore wind, currents, swell, SWAC, OTEC), finalized end of the year***
- ***Valuing the future Doniambo Liquefied Natural Gaz storage unit and projet appraisal on alternative hybride engines for ships crossing the Coral Sea***
- ***Solutions for Energy Storage at sea?***

Thank you!

2011-2012 OKEANOS VAKA MOANA FLEET
TE MANA O TE MOANA (spirit of the ocean)

TE MANA O TE MOANA FLEET ASKED TO TRANSPORT GOODS, PEOPLE, MEDICINE BETWEEN THE ISLANDS

VAKA MOTU: BOAT FOR THE ISLANDS

EACH VAKA INDIVIDUALLY DESIGNED SPECIFIC TO CULTURAL HOME

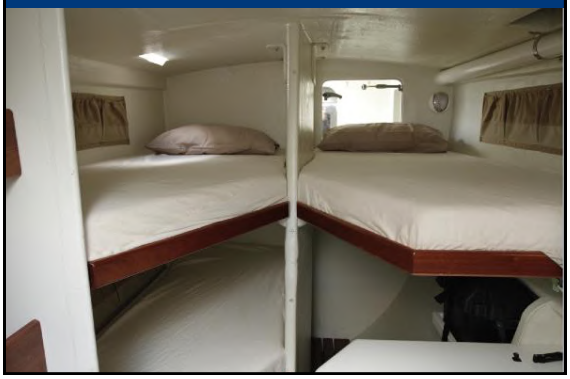
TRADITIONAL LASHINGS

TRADITIONAL SAILS

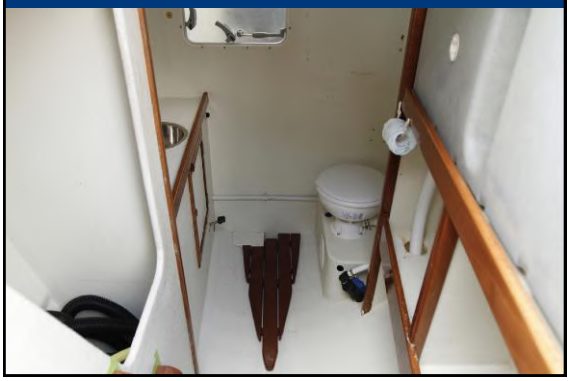
TRADITIONAL STEERING

DOCKS DIRECTLY ON THE BEACH

10 BUNKS



FLUSH TOILET



FULL GALLEY

DECK HOUSE WITH MODERN NAVIGATION

SOLAR ELECTRIC PROPULSION

COCONUT OIL BIO-FUEL

OKEANOS VANUATU

OKEANOS MARSHALL ISLANDS

OKEANOS MARIANAS

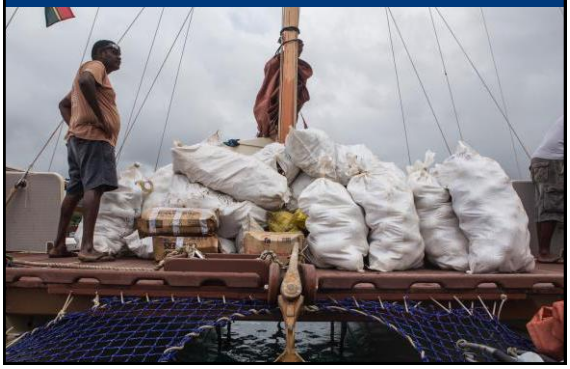
OKEANOS AOTEAROA IN TONGA

BOAT BUILDING

EFFICIENT PRODUCTION

WORK FORCE DEVELOPMENT

CARGO TRANSPORTATION

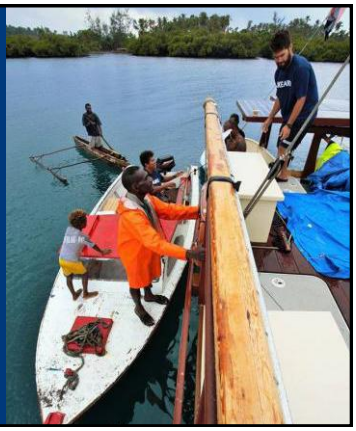


CARGO TRANSPORTATION

TRANSPORT PEOPLE & GOODS TO MARKET

COMMUNITY LED BUSINESS INITIATIVES

DISASTER RELIEF



SERVICING REMOTE COMMUNITIES

HOPE FOR THE FUTURE

VAKA MOTU OPERATIONS

Reviving sea transportation culture in Fiji

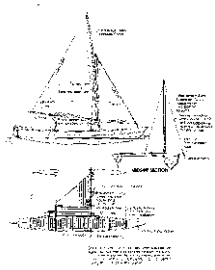
Kinship ties and trade routes…

Although the uptake was low, the design work is still relevant today

One of the critical lessons learned was that cultures with a living sailing tradition were much more likely to use sail effectively.

A whole sailing culture has to be learnt and used .

Sail options need to demonstrate economic viability for broad uptake



KIRIBATI – 7.1 Metre Canoe KIB-4

Transitioning to sustainable sea transport

Pacific Voyaging Revival

- In the past 30 yrs there has been a sustained revival and relearning of Oceanic sailing heritage.
- There are increasing numbers of traditional (and modern adaptations) of iconic Oceanic sailing craft and increasing interest by Pacific Islanders in their sailing heritage.
- The most recent fleet, including Uto ni Yalo has led to an unprecedented resurgence in interest in sailing and Drua culture in Fiji.

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-Pacific Progress Report

Second MTCC-Pacific Steering Committee Meeting

Suva, Fiji, 12 December 2017

EUROPEAN UNION

IMO INTERNATIONAL MARITIME ORGANIZATION

Pacific Community
Communauté du Pacifique

HOST INSTITUTIONS OF MTCC-PACIFIC

SPREP
Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Result 1: Establishment & Operations

IR1.1 MTCC established in the office of SPC

- SPC-IMO contract signed on 12 May 2017 - Project ending on 31 December 2019
- A closed office is allocated by SPC at the third floor of Lotus Building at its Regional Office in Suva, Fiji
- Website published at mtccpacific.spc.int

IR1.2 Appoint qualified staff to MTCC

- 2 October 2017: all MTCC-Pacific staff appointed
  - ✓ Head of MTCC-Pacific
  - ✓ Transport GHG Adviser
  - ✓ Administration and Information Assistant
  - ✓ Maritime Industry Energy Efficiency Officer
- SPC Project Kick-off Team de-established

Result 1: Establishment & Operations

IR1.4 Project workplan implementation

- 7 Project Monthly Meetings have been completed: 18 May, 28 June, 19 July, 24 august, 28 September, 12 October and 1 November
- First Quarterly Progress Report submitted and approved by IMO
- Second Quarterly Report submitted and approved by IMO
- Participated at COP23 GMN side-event
- Participated at the MTCCs Technical Workshop at IMO in December – MTCCs MoU signed and MTCCs Coordinating Committee established.

IR1.5 Partnerships implementation

- MTCC-Pacific Partners' Meeting on 27 June attended by EU delegation, FNU, FMA, PIDF, PIFS, USP
- First Steering Committee Meeting 16-17 August – ToR adopted
- Second Steering Committee Meeting 12 December

Result 2: capacity-building activities

Fiji National Workshop on Energy Efficient Operations of Ships

- Date: 24-27 October in Suva, Fiji
- Representatives from
  - Fiji Ministry of Infrastructure and Transport (MoIT)
  - Maritime Safety Authority of Fiji (MSAF)
  - Fiji Port Corporation Limited (FCPL)
  - Fiji Ships and Heavy Industry Limited (FSHIL)
  - Pacific Islands Development Forum (PIDF)
  - Patterson Shipping/Searoad Shipping
  - Seaquest Fiji Ltd/Sealand Processors
  - Inter Link Shipping Line Ltd
  - Government Shipping Services
  - Tokalau Shipping, All Barging and Marine (Fiji) Limited
  - Billett Wright & Associates (Fiji) Limited
  - Solander Pacific Limited.

- The objective of the National Workshop was to inform the participants on new energy efficient technologies, tools and methods
- This workshop elicited great interest in improved ship propulsion efficiency, especially in Energy Saving Devices (ESD).

Result 3: pilot-projects on energy efficiency

- Pilot-project on Energy Efficiency approved on 19 July by IMO
- Guide for Energy Management in Port and tools developed
- Port Energy audits completed:
  - In August in Samoa and Solomon Islands
  - In Fiji in September for trials, 2nd week of December and scheduled last visit in March
- Ship Energy Management visit in Kiribati in November

Result 4: Pilot-project on Data Collection

- The pilot-project on Energy Efficiency was approved by IMO on 19 July
- SPC visit in Vanuatu in July under the Pacific Islands Domestic Ship Safety (PIDSS) programme
- MTCC-Pacific visit in Kiribati in November in conjunction with PIDSS
- All shipowners provided with data collection templates – awaiting for on-board training

Result 5: communication and visibility

IR5.1 Communication and visibility plan designed and approved

- MTCC-Pacific C&V Plan approved by IMO on 26 June

IR5.2 Communication and Visibility materials

- All communication and visibility materials delivered on 31 July

IR5.3 Dedicated website for the MTCC-Pacific designed and launched

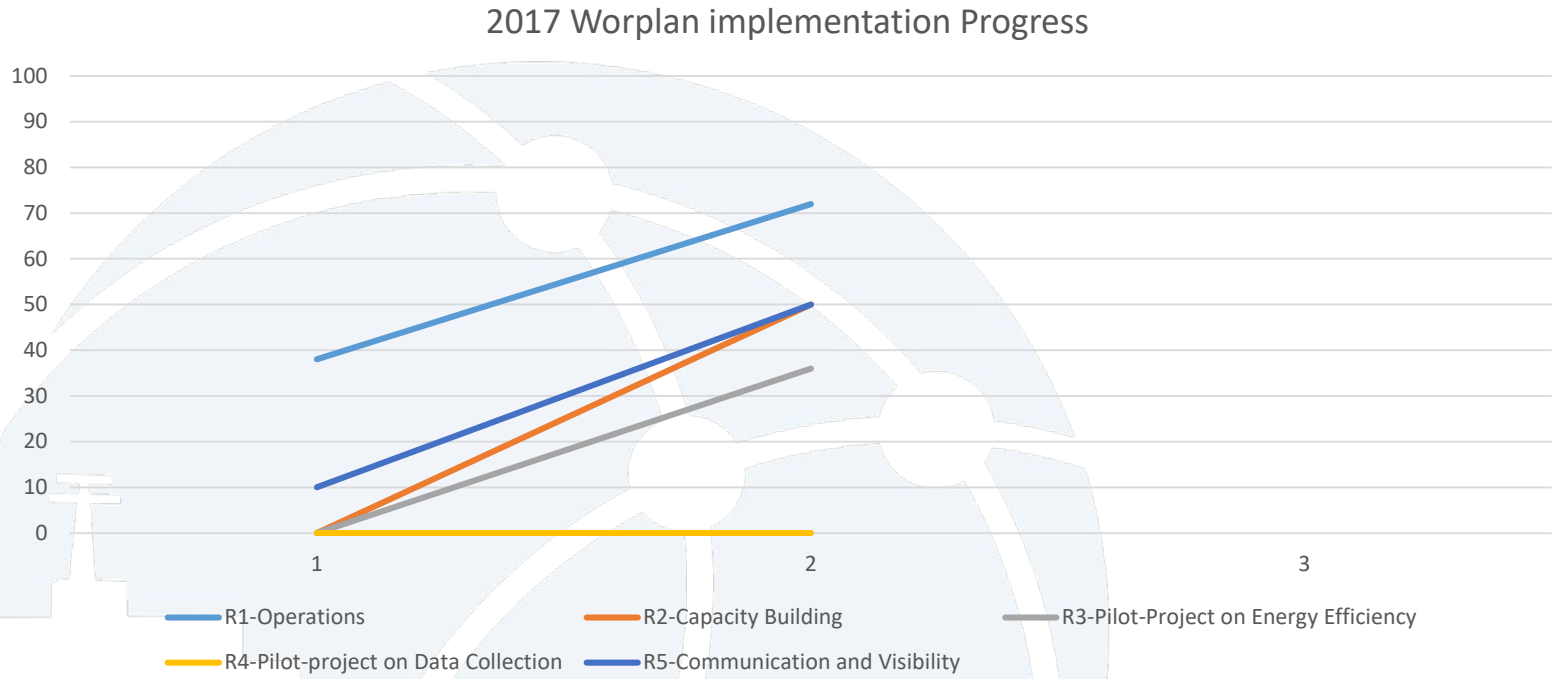
- Website published

IR5.5 Progress communicated

- GMN Project and MTCC-Pacific presented at SPC CRGA (with booth) in July and at September SPREP meeting

IR5.6 Relevant publications

- Article in August *Pacific Maritime Watch* and in next December issue



- As of 12 November, 72% of the Result 1 activities for 2017 completed - on track
- 50% of the Capacity-building activities, rest Regional Conference – on track
- 36 % of the pilot-project on Energy Efficiency activities have been completed – behind schedule for Fiji Port work and legal review that is postponed early 2018
- 0% Result 4 shows 0% completion as the indicators for 2017 activities are related to the dissemination of templates which will happen at the Regional Conference in December
- 50% of the communication and visibility activities – rest is website and dissemination of all template developed (completed this week) – on track

The Way Forward

- In 2018, MTCC-Pacific activities to plan:
  - ✓National workshop on Energy Efficient Operations of Ships
  - ✓Data Collection
  - ✓Development and implementation of Ship Energy Efficiency Management Plan (SEEMP)
  - ✓Energy Management in Port
- Targeted countries:
  - Fiji, Kiribati, Marshall Islands, Samoa, Solomon Islands, Tuvalu and Vanuatu

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by the IMO

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

The Global MTCC Network (GMN) project is funded by the European Union and is implemented by IMO

THANK YOU

EUROPEAN UNION

IMO INTERNATIONAL MARITIME ORGANIZATION

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY
THE GLOBAL MTCC NETWORK (GMN) PROJECT

Energy Management in Ports

Activities and Results

Suva, 14 December 2017

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

Activities

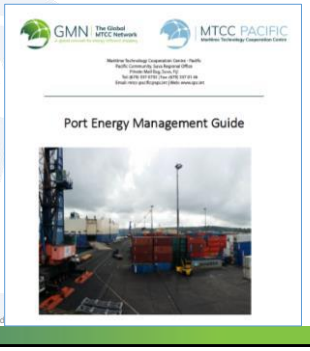
Activity overview

- Energy Management Workshop
- Energy Management Guide
- Energy Audits
- Trials

EM Workshop, Auckland

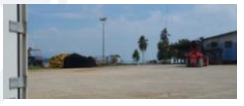
Development of the EM Guide

- Templates for EM Policy and Plan
- Spreadsheets for tracking energy use and quantifying savings opportunities
- EM Guide document



Energy Audits

- Solomon Islands: Ports of Honiara and Noro
- Samoa: Port of Apia



Trials – at port of Suva

- Eco-driving trial
- Tower lighting upgrade

Results

Results overview

- From the EM workshop
- From the audits
- From the trials

EM workshop

Drivers

- Cost of energy
- Capacity development
- National initiatives eg green growth, emissions targets
- Environmental concerns.
- Competitive advantage
- Keeping cost of EE down
- Reputation
- Safety
- International requirements (eg QA)
- Policy and procedures
- Corporate Social responsibility.

Barriers

- Cost of implementation
- Available budget
- Payback period
- Lack of government support
- Political interference
- Port profitability
- Lack of expertise
- Lack of legislation
- Lack of policies

Solutions to barriers

- Spread out cost over several years, having a long term approach.
- Communication policy / make it hard not to support (in line with environment and CSR drivers)
- Develop and implement policies and energy management plans

Cook Islands – post workshop intent

- Preparation of an Energy Policy, appointment of an Energy Manager, and development of an Energy Management Action Plan.

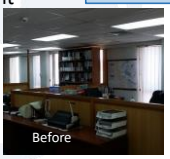
Initiatives already implemented

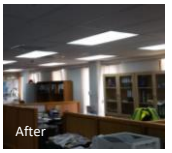
- Yard surface repair and maintenance
- Solar lighting
- Air compressor upgrade
- Reduced idling
- Minimisation of travel distances
- Electricity meters at each marina berth
- Changing of propeller on barge, better matched to vessel, engines

Fiji – post workshop intent

- Preparation of an Energy Policy, appointment of an Energy Manager, and development of an Energy Management Action Plan.
- Detailed audit focussed on eco-driving and yard lighting trial

Initiatives already implemented
- Energy audit
- Draft energy policy and draft EM action plan
- Energy Manager appointed
- Lighting upgrade of FPCL office





Kiribati – post workshop intent

- Preparation of an Energy Policy, appointment of an Energy Manager, and development of an Energy Management Action Plan

Initiatives already implemented
- Yard surface repair and maintenance
- Solar lighting
- Relocation of engineering workshop closer to the port
- Installation of port control tower
- Appointment of a project officer with Masters Degree in Sustainable Energy.

Nauru – post workshop intent

- Preparation of an Energy Policy, appointment of an Energy Manager, and development of an Energy Management Action Plan
- Include energy efficiency measures in specification and design of the proposed new port.

Initiatives already implemented
LED lighting is being installed to illuminate the port area.

Solomon Islands – post workshop intent

- Preparation of an Energy Policy, appointment of an Energy Manager, and development of an Energy Management Action Plan

Initiatives already implemented
- Upgrade of wharf lighting to LED at Honiara
- Energy audit
- Improved port lighting control following the energy audit

Tonga– post workshop intent

- Preparation of an Energy Policy, appointment of an Energy Manager, and development of an Energy Management Action Plan
- Integrate energy performance reporting with financial reporting

Initiatives already implemented
- Tracking of fuel and electricity usage
- Tracking productivity of each machine (eg number of lifts)
- Driver checklist
- Slow steaming
- Yard lighting control
- Hull cleaning every 3 years
- New reach stackers and trailers
- Strong focus on reducing op ex.
- 3% reduction in fuel use in 2016, whilst number of TEUs increased

Vanuatu – post workshop intent

- Preparation of an Energy Policy, and development of an Energy Management Action Plan
- Undertake an energy audit

Initiatives already implemented
- LED wharf lighting

Honiara EA

Very ROUGH Estimates!

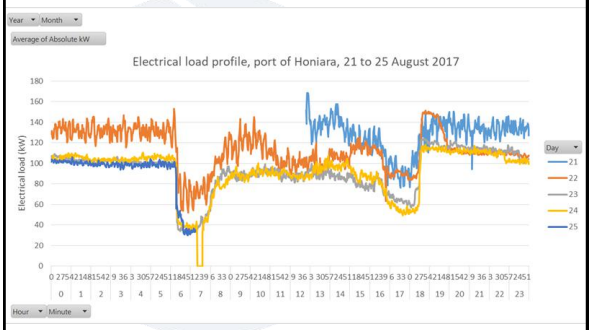
	ANNUAL ELECTRICITY SAVINGS (KWH)	TYPE OF FUEL SAVED	ANNUAL FUEL SAVINGS (LITRES)	ANNUAL ENERGY SAVINGS (GJ)	ANNUAL COST SAVINGS ($ SBD)	ANNUAL GHG SAVINGS (TONNES CO2-E) (TONNES CO2-E)	ESTIMATED IMPLEMENTATION COST ($ SBD)	EST SIMPLE PAYBACK (YEARS)
INSTALL A YARD LIGHTING CONTROL SYSTEM ON TERMINAL 2	57,000			200	$ 290,000	49	$ 430,000	1.5
UPGRADE TERMINAL 2 YARD LIGHTING TO LED	160,000			580	$ 830,000	140	$ 1,200,000	1.4
WHEN UPGRADING SPLIT SYSTEMS PURCHASE HIGH EFFICIENCY UNITS INSTEAD OF STANDARD EFFICIENCY	11,000			39	$ 56,000	9	$ 180,000	3.2
INSTALL A ROOFTOP SOLAR PV SYSTEM	79,000			290	$ 240,000	68	$ 1,100,000	4.7
UNDERTAKE AN ECO DRIVER TRAINING PROGRAM INCLUDING INSTALLATION OF FUEL FLOW METERS		Diesel	10,000	370	$ 71,000	28	$ 350,000	4.9
UPGRADE OFFICE LIGHTING TO LED	13,000			48	$ 69,000	11	$ 390,000	5.7
RATIONALIZE VEHICLE YARD MOVEMENTS WITH A TOS AND CHANGED MODES OF TRANSPORT		Diesel	55,000	2,000	$ 640,000	150	$ 3,700,000	5.8
INSTALL OCCUPANCY SENSORS ON INDOOR LIGHTING	7,100			25	$ 37,000	6	$ 240,000	6.5
TOTAL	330,000		66,000	3,500	$ 2,200,000	460	$ 7,600,000	3.4

Inc. $10,000 in maint. savings

Inc. $312,000 savings in maintenance 8 downtime

Yard lighting control implemented

- Implementation started immediately (straight after presentation of the energy audit report, on the same day)
- In month of September 2017, compared with August 2017:
  - saved 7,800 kWh of electricity
  - Equivalent to about 6.7 tonnes of GHG
  - Saving SBD $40,400



Very ROUGH Estimates!

Noro

	ANNUAL ELECTRICITY SAVINGS (KWH)	TYPE OF FUEL SAVED	ANNUAL FUEL SAVINGS (LITRES)	ANNUAL ENERGY SAVINGS (GJ)	ANNUAL COST SAVINGS ($ SBD)	ANNUAL GHG SAVINGS (TONNES CO2-E) (TONNES CO2-E)	ESTIMATED IMPLEMENTATION COST ($ SBD)	EST SIMPLE PAYBACK (YEARS)
RATIONALIZE VEHICLE YARD MOVEMENTS		Diesel	1,300	45	$ 15,000	3	$ 7,900	0.5
INSTALL A YARD LIGHTING CONTROL SYSTEM	4,700			17	$ 25,000	4	$ 64,000	2.6
UNDERTAKE AN ECO DRIVER TRAINING PROGRAM INCLUDING INSTALLATION OF FUEL FLOW METERS		Diesel	1,100	41	$ 7,000	3	$ 26,000	3.8
UPGRADE YARD LIGHTING TO LED	8,600			31	$ 45,000	7	$ 180,000	3.9
UPGRADE OFFICE LIGHTING TO LED	2,900			10	$ 15,000	3	$ 74,000	5.0
WHEN UPGRADING AIR CONDITIONERS PURCHASE HIGH EFFICIENCY UNITS INSTEAD OF STANDARD EFFICIENCY	2,500			9	$ 13,000	2	$ 71,000	5.6
TOTAL	**19,000**		**1,100**	**110**	**$ 100,000**	**19**	**$ 410,000**	**4.0**

Very ROUGH Estimates!

Apia

Recommendation	Annual Electricity Savings (kWh)	Type of fuel saved	Annual Fuel Savings (litres)	Annual energy savings (GJ)	Annual Cost Savings (WST)	Annual GHG savings (tonnes CO2-e)	Estimated Implementation Cost (WST)	Est simple payback (years)
Upgrade Inside lighting in offices , sheds, and control tower to LED	6,300	Elec	0	23	6,900	5	$19,000	2.7
Replace Main Office Old Split AC Units	810	Elec	0	3	680	1	$2,400	3.5
Yard Lighting Retrofit	24,000	Elec	0	86	23,000	19	56,000	2.4
TOTAL	31,000	Elec	0	110	31,000	25	$77,000	2.5

Port energy benchmarks

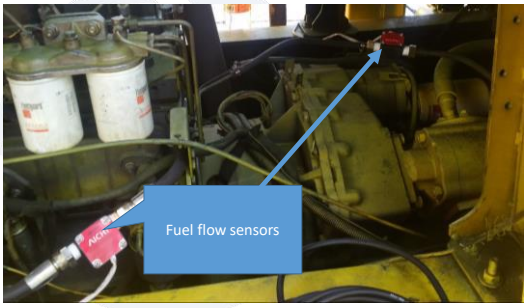
Port name	Organisation(s)	Port operations model	Annual TEUs	TEU estimate or actual	Boundary	Unusual inclusions	Exclusions
Suva	Fiji Ports Corporation Limited (Port Authority) and Fiji Ports Terminal Limited (Terminal Operator)	Landlord	90,000	Estimate	All energy use, including the use of shore cranes, most vehicles	Shore cranes	Terminal company vehicles operating outside the terminal.
Honiara	Solomon Islands Port Authority	Wholly operated by Ports Authority	31,000	Estimate	All energy use, including vehicles, pilot boat		
Noro	Solomon Islands Port Authority	Wholly operated by Ports Authority	2,400	Estimate	All energy use, including vehicles, pilot boat, staff boat	Power supply to the tenanted copra warehouse	
Apia	Samoa Ports Authority	Landlord, although SPA controls yard lighting.	35,876	Actual	Port authority electricity use (including yard lighting), diesel for generator and tug boats	Tug boat	Terminal operations, pilot boat, vehicles

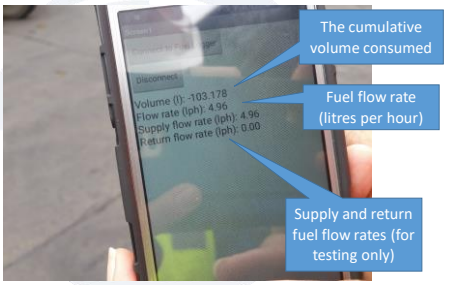
Port energy benchmarks

Port name	Number of reefer points	Annual Electricity (kWh)	Annual Diesel (l)	Annual Petrol (l)	Overall energy (kWh)	Overall GHG (tonnes CO2-e)	Overall Energy/TEU (kWh/TEU)	kg CO2-e/TEU
Suva	100	2,452,945	626,873	87,521	9,515,513	2,966	106	33
Honiara	20	797,286	249,000	12,200	3,388,246	1,391	109	45
Noro	20	58,195	24,000	10,400	395,555	140	165	58
Apia	72	1,130,480	46,700		1,594,678	681	44	19

Trials at Port of Suva

- Fuel trial: Baseline being developed
  - Fuel flow metering installed on an empty container handler
  - Record keeping – soon to start tracking number of movements between refuelling, to determine fuel use per movement
- After the baseline
  - Will install fuel flow meters/dashboard on each machine to provide feedback to drivers
  - Eco driver training
  - Monitoring/reporting of fuel productivity





Lighting trial

- Replacing metal halide lights on one lighting tower with LED
- Installing a dimming system (controlled manually)
- Meter to measure before/after energy use
- Expecting to reduce energy use by 70% to 80%.

Thank you

Bruce Rowse, 8020Green Pty Ltd
Port Energy Management Consultant to MTCC-Pacific
bruce@8020green.com

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

MARITIME TECHNOLOGY COOPERATION CENTRE – PACIFIC (MTCC-PACIFIC)

CAPACITY BUILDING FOR CLIMATE MITIGATION IN THE MARITIME SHIPPING INDUSTRY

THE GLOBAL MTCC NETWORK (GMN) PROJECT

MTCC-PACIFC REGIONAL CONFERENCE AND OFFICIAL LAUNCH

12 – 15 December, 2017

Suva, Fiji

EUROPEAN UNION

IMO INTERNATIONAL MARITIME ORGANIZATION

Pacific Community
Communauté du Pacifique

HOST INSTITUTIONS OF MTCC-PACIFIC

SPREP
Secretariat of the Pacific Regional Environment Programme

The Global MTCC Network (GMN) project is funded by the European Union and implemented by the IMO.

CONTENTS

- Drivers reducing GHG emissions from Solomon Ports (Ports Perspective)
- What is needed to achieve reduction of GHG emissions (Ports Perspective)
- Barriers to implementation of country approach to GHG emission reduction
- Possible action from Ports to reduce GHG emissions
- Projects to reduce GHG emissions _ Solomon Ports

Drivers for the reduction of GHG emissions from Solomon Ports (Ports Perspective)

- Rising sea level – Climate change
- High electricity cost

What is needed to achieve the country objectives in reduction of GHG emissions (Ports Perspective)

- Government policy
- Ports initiative to become “GREEN”
- Commitment for environment

Barriers identified for the implementation of country approach to GHG emissions (Ports Perspective)

- Lack of awareness and importance of GHG reduction
- High cost of imported material to the country (solar panels + regulatory framework)
- High cost of power generation (Diesel power – as a result providing shore power for vessels will be very expensive)

Possible action from Ports to reduce GHG emissions

- Use of renewable energy for yard lighting, reefers a
- Use of hybrid vehicles
- Reduce un-necessary electricity usage
- Maintain vehicles for better performance

Electricity Consumption – Before and After the Energy Audit

August Electricity Bill

HONIARA ELECTRICITY						
INVOICE DATE	A/C NAME	A/C ALLOCATED	A/C #	AMPOUNT	CHQ #	DATE PAID
10/8/2017	ELECTRICITY	410	A/C 05097	$ 384,736.63	116560	15/9/2017
10/8/2017	ELECTRICITY	410	A/C 05098-07	$ 1,449.05	116560	15/9/2017
			TOTAL	**$ 386,185.68**		
INVOICE DATE		**NORO ELECTRICITY**				
15/8/2017	ELECTRICITY	410	A/C 81034	$ 1,176.25	116561	15/9/2017
15/8/2017	ELECTRICITY	410	A/C 81006	$ 25,026.73	116561	15/9/2017
15/8/2017	ELECTRICITY	410	A/C 81006-01	$ 3,156.33	116561	15/9/2017
15/8/2017	ELECTRICITY	410	A/C 81006.02	$ 3,760.74	116561	15/9/2017
			TOTAL	**$ 33,120.05**		
			Grand Total Bill	**$ 419,305.73**		

September Electricity Bill

HONIARA ELECTRICITY						
INVOICE DATE	A/C NAME	A/C ALLOCATED	A/C #	AMPOUNT	CHQ #	DATE PAID
10/9/2017	ELECTRICITY	410	A/C 05097	$ 343,065.29	116730	4/10/2017
10/9/2017	ELECTRICITY	410	A/C 05098-07	$ 1,402.92	116730	4/10/2017
			TOTAL	**$ 344,468.21**		
INVOICE DATE		**NORO ELECTRICITY**				**DATE PAID**
15/9/2017	ELECTRICITY	410	A/C 81034	$ 1,341.32	116728	3/10/2017
15/9/2017	ELECTRICITY	410	A/C 81006	$ 24,348.74	116728	3/10/2017
15/9/2017	ELECTRICITY	410	A/C 81006-01	$ 4,717.30	116728	3/10/2017
15/9/2017	ELECTRICITY	410	A/C 81006.02	$ 4,071.94	116728	3/10/2017
			TOTAL	**$ 34,479.30**		
			Grand Total Bill	**$ 378,947.51**		

Electricity Consumption – Before and After the Energy Audit

HONIARA ELECTRICITY						
INVOICE DATE	**A/C NAME**	**A/C ALLOCATED**	**A/C #**	**AMPOUNT**	**CHQ #**	**DATE PAID**
10/11/2017	ELECTRICITY	410	A/C 05097	$ 347,130.49	117106	8/11/2017
10/11/2017	ELECTRICITY	410	A/C 05098-07	$ 1,831.52	117106	8/11/2017
			TOTAL	**$ 348,962.01**		
INVOICE DATE		**NORO ELECTRICITY**				**DATE PAID**
15/10/2017	ELECTRICITY	410	A/C 81034	$ 785.88	117107	8/11/2017
15/10/2017	ELECTRICITY	410	A/C 81006	$ 18,377.73	117107	8/11/2017
15/10/2017	ELECTRICITY	410	A/C 81006-01	$ 4,018.35	117107	8/11/2017
15/10/2017	ELECTRICITY	410	A/C 81006.02	$ 2,667.76	117107	8/11/2017
			TOTAL	**$ 25,849.72**		
			Total	**$ 374,811.73**		

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

LED Yard Lights – Installation in Progress

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC PACIFIC
Maritime Technology Cooperation Centre

THANK YOU TUMAS

SIPA ports

GMN | The Global MTCC Network
A global network for energy-efficient shipping

MTCC ASIA
Maritime Technology Cooperation Centre

MTCC-ASIA SUMMARY

XIE Jieying | Technical Officer of MTCC-Asia
Dec.2017| SUVA, Fiji

The Global MTCC Network (GMN) project
is funded by the European Union and implemented by IMO
The views expressed in this presentation
can in no way be taken to reflect the views of the European Union

Our Version

MTCC ASIA
Maritime Technology Cooperation Centre

General

- Venues and facilities: city office and campus office, plus all available SMU resources
- Human resources: full time, part time, consultants, etc,.
- Funding: IMO(EU)+SMG+SMU…;
- Stakeholders: Cambodia, Thailand, DNV, BSM(Germany), COSCO-Shipping, CCS, SIPG, and Shanghai Governmental Commissions, etc. (about 25 partners and stakeholders)
- Internal management system: independent but subject to the SMU's

MTCC ASIA
Maritime Technology Cooperation Centre

Main activities in 2017

No.	Activity Report	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Registration in government					5.15							
2	Office space supplement					5.15							
3	Staff recruitment and training					5.15							
4	Development and launching of official website					5.15							
5	Launching event					5.15							
6	Development and launching of Online Clean Shipping Air Forum									9.25			
7	Regional workshop in China									9.25			
8	Establishment of branch office in Cambodia									9.25			
9	Enrollment of postgraduate candidate on ship energy efficiency program								8.25				
10	Seminar on pilot project of energy efficiency (EE)						6.25						
11	Real ship data collection of EE pilot project												12.25
12	Seminar on pilot project of data collection (DC)						6.25						
13	E-System development of DC pilot project												12.25
14	National workshop in Cambodia											11.25	
15	Train the trainer course in Cambodia											11.25	
16	National technology needs, barriers and required relevant action assessment											11.25	

MTCC ASIA
Maritime Technology Cooperation Centre

Action plans in 2017

- Cambodia workshop and train the trainers in November
- Development and launching of Online Clean Shipping Air Forum
- Enrollment of postgraduate candidate on ship energy efficiency program
- Real ship data collection of EE pilot project
- E-System development of DC pilot project
- National technology needs,barriers and required relevant action assessment
- …

Something more:
•Establishment of focal points and network
•Exchange of technical staff and mutual visits
•Joint research programs
•Relevant courses and programs for the promotions of greener shipping industry
•…

MTCC ASIA
Maritime Technology Cooperation Centre

preparation activities

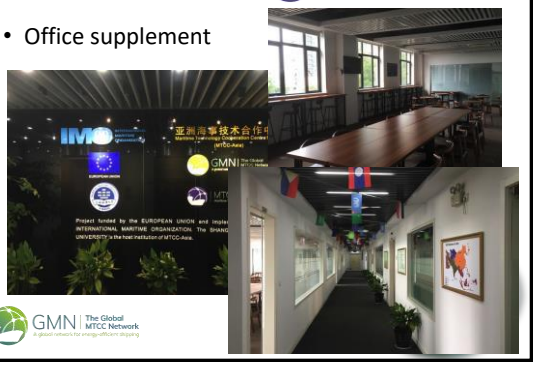
MTCC ASIA
Maritime Technology Cooperation Centre

- Office supplement

preparation activities

MTCC ASIA Maritime Technology Cooperation Centre

- Office supplement



GMN The Global MTCC Network

preparation activities

MTCC ASIA Maritime Technology Cooperation Centre

- Staff training

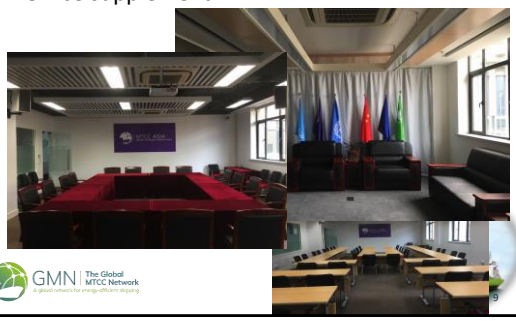
GMN The Global MTCC Network

8

preparation activities

MTCC ASIA Maritime Technology Cooperation Centre

- Office supplement



GMN The Global MTCC Network

9

Launch event

MTCC ASIA Maritime Technology Cooperation Centre

- 15 May, 2017

GMN The Global MTCC Network

10

Regional workshop

MTCC ASIA Maritime Technology Cooperation Centre

- 18th-22nd Sept.,2017

GMN The Global MTCC Network

11

National event

MTCC ASIA

- 18th-22nd Dec.,2017 in Cambod
- Opening of Branch office
- National workshop
- Train the trainer course

KINGDOM OF CAMBODIA
NATION RELIGION KING

INVITATION TO THE FIRST SUB-REGIONAL WORKSHOP
18th TO 22nd DECEMBER 2017, Phnom Penh, Cambodia

Touch Chanboral
Acting Minister
Ministry of Public Works and Transport

International Conference on GHG and EE

MTCC ASIA Maritime Technology Cooperation Centre

- In Oct.23- Nov.10

GMN The Global MTCC Network

13

Pilot project

MTCC ASIA Maritime Technology Cooperation Centre

- Seminars for two pilot projects in June

GMN The Global MTCC Network

14

Upcoming Events

MTCC ASIA GMN The Global MTCC Network

MTCC-Asia First Sub-Regional Workshop

18-22 December 2017
Phnom Penh, Cambodia

Welcome to MTCC-Asia

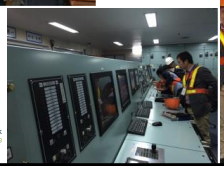
Working discussion with representatives from Ministry of Public Works and Transport, Cambodia

15

Pilot project

MTCC ASIA Maritime Technology Cooperation Centre

- Onboard visit in Oct.

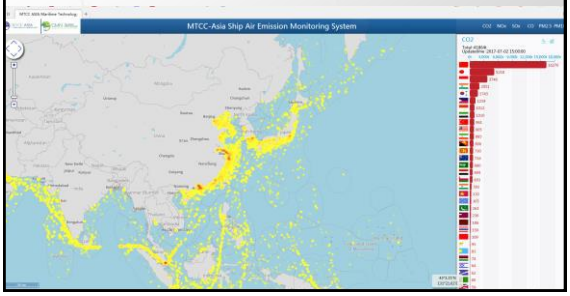


GMN The Global MTCC Network

Pilot project

MTCC ASIA Maritime Technology Cooperation Centre

- Ship Air Emission Monitoring System



Data Collection

Collect fuel consumption data as a ship company

Verify data as a administration

15 Target ships to be selected

18

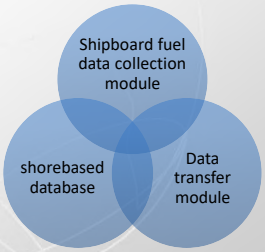
Data collection

Project participants and supporters

19

Data collecting

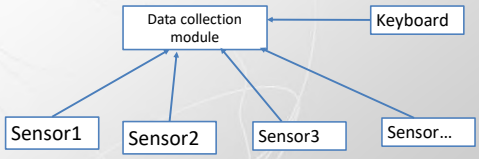
Modules of our fuel consumption data collection system



20

Data collection

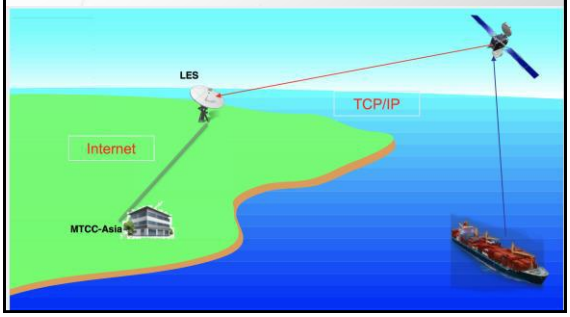
Shipboard fuel consumption data collection module



21

Data collection

Ship to shore communication module



Data collection

Shore based database:

- fuel data receiving,
- Storage and
- verification

23

Data collection

Working plan of the pilot project

•Organize seminars on fuel consumption data collection and reporting(2017.6)

•Develop fuel oil consumption data collection system (2017.6- 2017.12)

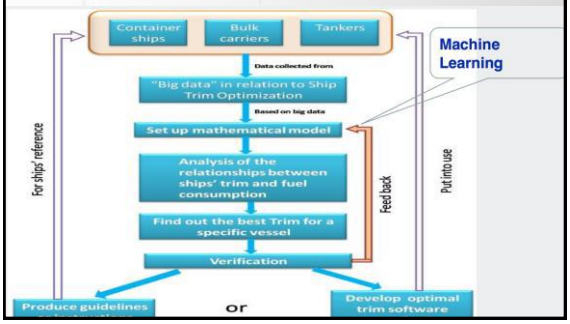
•Collect and analyse real-ship data(3 container ship, 3 bulk 3 tanker for 2017, other 6 ships by 2018)

•Publish and demonstrate ship fuel data collection and reporting process (2019)

24

Trim optimization

Methodology Big dada analytics and machine learni



Trim optimization

Data samples

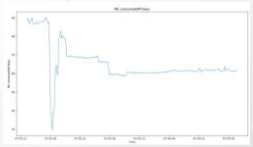
Date and time	Voy. No	ME consumed (ton/day)	Shaft rpm	Relative wind direction	Wind wave direction	Primary wave period (s)	Wind wave period(s)	Trim (m)	Ture wind speed(m/s)	GPS speed(knots)	Log speed(knots)	Draft mean (m)	Trim(m)
2017/7/X X12:00	45N	45.95626786	48.38155	199.4953 84613611	98.18728 95424585	5.271576 52474108	5.271576 52474108	2.216944 44444444	4.054694 44444445	13.39757 89473684	13.67257 89473684	8.31	0.3
2017/7/X X 12:15	45N	34.61123 21428571	44.45045	199.4953 84613611	98.18728 95424585	5.271576 52474108	5.271576 52474108	2.011388 88888889	5.136944 44444444	11.58157 89473684	11.82657 89473684	8.31	0.9
2017/7/X X12:30	45N	32.06048 21428571	43.42065	199.4953 84613611	98.18728 95424585	5.271576 52474108	5.271576 52474108	1.956916 66666667	5.673444 44444444	11.43957 89473684	11.52757 89473684	8.31	1.1

Voyage	Ship	Departure	From	To	EEOI	Duration	kg/nm	MT/day	Distance	Speed
045N	COSCO xxxx	May XX 2017	Hong Kong	Lianyungang, China	48.6	3d 23h 10m	93	26.6	1129	11.9

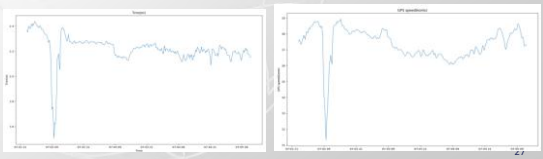
Over 20,000 data have been collected for a COSCO container ship

Trim Optimization

Data

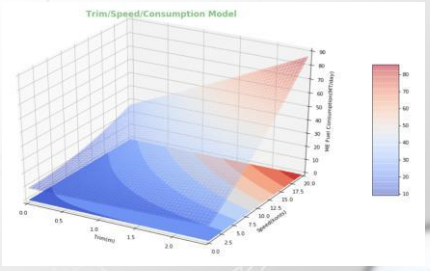


- Relation between main engine fuel oil consumption rate and time
- Relation between trim and time
- Ship speed and time



Trim Optimization

MTCC ASIA Maritime Technology Cooperation Centre



GMN The Global MTCC Network

National technology needs, barriers and required relevant actions

MTCC ASIA Maritime Technology Cooperation Centre

- Based on information and data collected from the websites, database, research papers, etc,.
- Based on the questionnaire survey made during Regional workshops, international conferences, etc,.
- Based on individual meetings.

GMN The Global MTCC Network

Communication and visibility

MTCC ASIA Maritime Technology Cooperation Centre

- News media

CCTV.com 央视网 新闻

中国日报中文网 CHINADAILY.COM.CN

ShanghaiDaily.com

GMN The Global MTCC Network

Communication and visibility

MTCC ASIA Maritime Technology Cooperation Centre

- Wechat
- WhatApp

MTCC-ASIA FAMILY
+880 1672-252653

GMN The Global MTCC Network

Communication and visibility

MTCC ASIA Maritime Technology Cooperation Centre

- Website

http://www.mtccasia.org

Communication and visibility

MTCC ASIA Maritime Technology Cooperation Centre

- Brochure

Communication and visibility

MTCC ASIA Maritime Technology Cooperation Centre

- Video

GMN The Global MTCC Network

Other activities

MTCC ASIA Maritime Technology Cooperation Centre

- Postgraduate enrollment
  - 3-year terms, full-English course, tailor-made for MTCC-Asia
  - lecture, field study, internship at mtcc-asia, etc.
  - master degree issued by SMU when completion
  - full scholarship provided by SMG (tuition, accommodation and living expenditures)
  - 5 students
  - …
- Various visitors (additionally)
  - Director-Generals of Ministry of Transport, China
  - Rector of WMU

GMN The Global MTCC Network

Plan for 2018

MTCC ASIA Maritime Technology Cooperation Centre

GMN The Global MTCC Network

MTCC ASIA
Maritime Technology Cooperation Centre

Thank you for your attention!
http://www.mtccasia.org/

GMN | The Global MTCC Network

37

GMN | The Global MTCC Network
A global network for energy-efficient shipping

Pilot Project & Data Collection

M. A. Zullah | Maritime Industry Energy Efficiency Officer
CAPACITY BUILDING WORKSHOP FOR MTCCs | 4-7 Dec. 2017 | London, UK

The Global MTCC Network (GMN) project
is funded by the European Union and implemented by IMO
The views expressed in this presentation
can in no way be taken to reflect the views of the European Union

MTCC-Pacific

- Capacity Building for Climate Mitigation in the Pacific Maritime Shipping Industry - Support Pacific SIDS and LDCs in limiting and reducing GHG emissions from their shipping sectors
- Consortium of hosting institutions: SPC & SPREP
- Fiji is the host country
- Targeted countries:
  - Fiji, Samoa, Marshall Islands, Kiribati, Solomon Islands, Tuvalu and Vanuatu
- MTCC-Pacific results:
  - Establishment and operation
  - Regional and national capacity building workshops
  - Pilot project on the "uptake of ship energy efficient technologies and operations
  - Pilot project on "fuel consumption data collection and reporting"

MTCC-Pacific Vision

- Pacific low-carbon maritime transport that supports the sustainable development goals of PICTs
- Support national approaches to uptake low-carbon technologies and operations within PICTs maritime sectors to reduce GHG emissions and reliance to fossil fuels
- Provide capacity-building activities to improve the capacity of PICTs to comply with international instruments and facilitate the implementation of energy efficient measures in the maritime industry
- Contribute to international and regional networks of centres of excellence to share information and experiences and promote the uptake of low carbon technologies and operations and energy efficient practises in the maritime industry

Development of a Fundraising Strategy 2017-2019

MTCC-Pacific pilot-projects

- Objective to lead by example and assist Pacific Islands Countries and Territories (PICTs) to reduce fuel oil consumption and GHG emissions from the maritime sector
- 2 pilot-projects have been approved for MTCC-Pacific:
  - ✓ Pilot-project on "uptake of ship energy efficient technologies and operations"
    - Focus mainly on domestic shipping and ports
    - Provide tools to develop/improve energy management
  - ✓ Pilot-project on "fuel oil consumption data collection and reporting"
    - Data collection on fuel oil consumption in domestic shipping
- Use programme/project activities already implemented by SPC and SPREP in the Pacific region
- SPC and SPREP are 2 regional organisations – 22 PICTs are members
  - ✓ SPC host the Regional Maritime Programme focusing on regional coordination, maritime policy and legal assistance, ship safety, security, trade facilitation
  - ✓ SPREP Waste Management and Pollution Division focus on marine pollution
  - ✓ SPC and SPREP closely collaborate in all areas and are the hosting institutions of MTCC-Pacific

Rationale

- 2013 Majuro Declaration, Pacific leader committed to act as climate leaders
- PICTs all declared NDCs under the Paris Agreement and committed to ambitious target however:
  - Data and information supporting the targets are not accurate, reliable
  - GHG emissions are not disaggregated by sector including transport and more specifically maritime transport
- In 2014 Transport Ministers reaffirmed the importance of access to timely, accurate and reliable data to provide the basis for informed decision-making and policy formulation
- In April 2017 Transport Ministers:
  - were informed about:
    - ✓ the issues related to technical and operational measures for enhancing energy efficiency of international shipping and its implications for the Pacific
    - ✓ the three-step approach towards data collection, analysis and decision-making on further measures
    - ✓ the approved Roadmap for developing a comprehensive IMO strategy on the reduction of GHG emissions from ships
  - Agreed to collect and share reliable, accurate and quality data for informed decision-making and adoption of relevant indicators on transport fuel use and GHG emissions
  - Requested regional organisations and development partners to assist PICs to review, when appropriate, their commitments made for transport emissions reductions in their NDCs well in advance of the 2018 UNFCCC facilitative dialogue.

Pilot-project implementation

- Implementation approach:
  - ✓ All activities related to dissemination of templates, guidelines and generic legislation – ALL PICTs
  - ✓ Activities focusing on implementing energy efficient measures and data collection – TARGETED PICTs (Fiji, Kiribati, Marshall Islands, Samoa, Solomon Islands, Tuvalu and Vanuatu)
- Use of PIDSS programme to target domestic ships:

PIDSS Progress Summary : 2010 - 2016	2010	2011	2012	2013	2014	2015	2016	Total as at end 2016
Countries participating*	2	2	2	4	5	6	8	8
Shipping Companies participating*	11	11	13	22	33	47	66	66
Ships considered under PIDSS*	14	14	17	30	50	72	114	114
Ships reported having SOPs approved*	4	7	8	8	6**	7	19	20
Ships reported having SOPs drafted*	0	4	6	6	5**	15	42	42
SOP Initial Audits conducted***	4	2	1	0	0	1	7	15
SOP Follow Up Audits conducted***	0	0	3	0	0	0	1	4
Number of personnel trained ***	39	0	32	27	19	27	92	236

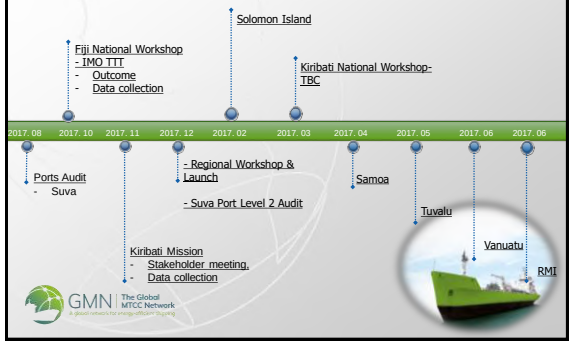
- Kiribati and Tonga (2010); Marshall Islands and Vanuatu (Port Vila) (2013); Solomon Islands and Vanuatu (Luganville) (2014); Tuvalu (2015); and Federated States of Micronesia (Pohnpei) and Samoa (2016).

Pilot-project on EE & DC

Pilot-project on Energy Efficiency	Pilot-project on Data Collection
Develop generic laws for MARPOL Annex VI	Develop a data collection template
Extension of the Pacific Gender & Climate Change Toolkit	Develop a generic regulation for data collection
Develop templates for energy efficiency policy and adapted SEEMP and EEOI	Collect relevant data and information
Develop a guide for port energy management based on ISO 50000 standards	Analyse data and information and produce a report on GHG emissions
Implemented an adapted SEEMP onboard vessels	
Review the implementation of SEEMP measures	
Research, case study and expertise to uptake a low-carbon technology on board vessels	
Implement a low-carbon technology onboard vessel	
Conduct energy audit level 1 in pacific port	
GHG reduction project implemented in port	
Conduct energy audit level 2 or 3 in port	

7

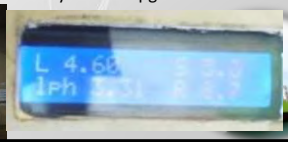
MTCC-Pacific Activities



Energy Saving of FPCL, Suva, Fiji

After level 1 audit, electricity consumption has dropped at FPCL HO by 21% compared with previous year

- Lighting was upgraded to LED
- Expected annual reduction is 75,000 kWh, saving $31,000 and 32 tonnes of GHG emissions.
- Cost of lights was under $23,000.
- LED lights have already paid for themselves (excluding labour costs). They have a 3 year warranty.
- Other indoor lighting has not yet been upgraded to LED



9

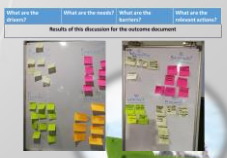
Energy Saving of SIPA, Honiara, Solomon

- Solomon Islands Port Authority (SIPA) – port of Honiara.
  - 800,000 kWh of electricity, 250,000 litres of diesel and 12,000 litres of petrol annually over 2016/17 – 1,400 tonnes of GHG (CO2-e) and cost SBD $5,900,000
  - Energy savings opportunities:
    - ✓ Installing a yard lighting control system and upgrade yard lighting on the new wharf to LED
    - ✓ Install a rooftop solar PV system and upgrade office lighting to LED
    - ✓ Undertake an eco-driver training program including installation of fuel flow meters
    - ✓ Rationalize vehicle yard movements with a TOS and changed modes of transport
    - ✓ Install occupancy sensors on indoor lighting
- SIPA had saved $40,358.20 on September Electricity bill compared to August with management of electricity power usage at the new berth – around 7,800 kWh corresponding to around 6.7 tonnes of GHG.

10

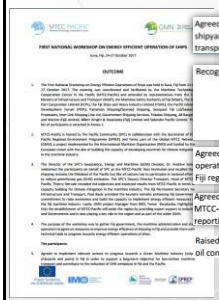
First National Workshop - Fiji

- 95% overall attendance as anticipated
- Group discussion on issues relating SEEO
- Discussion on CC, GHGE and P/SEM measures
- Interactive knowledge transfer on EEDI, EEOI, SEEMP, and PIDSS
- Interactive sessions on IMO GMN technology transfer and technical cooperation- SEET
  - PBCF, LED, WHRS, SG, and PV
- Discussion on the climate mitigation in the Fiji maritime industry: To reduce fuel oil consumption and GHG emission.
  - What are the **drivers**?
  - What are the **needs**?
  - What are the **barriers**?
  - What are the **relevant actions**?



11

Fiji National Outcome



Agreed to implement relevant actions to progress towards a Green Maritime Industry (ships, shipyards and ports) in Fiji in order to support a long-term objective for low-carbon maritime transport and contribute to the reduction of GHG emissions in Fiji and the Pacific.

Recognize the drivers, needs, barriers and relevant actions stated in Annex 2 that should include:

i. Capacity building and awareness;
ii. Policy and legislation review;
iii. Incentives towards energy efficiency and use of new technologies;
iv. Private-public partnerships; and
v. Ship maintenance and use of energy efficient equipment on board existing vessels.

Agreed to lead by example and be involved in MTCC-Pacific pilot-projects on energy efficient operations of ships and data collection that will assist in implementing immediate actions adapted to Fiji registered vessels, ports and shipyards.

Agreed to collect and share relevant data on fuel consumption through protocols with MoIT and MTCC-Pacific and request MTCC-Pacific to provide templates and assist in the collection and reporting, ensuring confidentiality and accessibility of information.

Raised the issue of lack of infrastructure in outer islands to facilitate shipping services and reduce fuel oil consumption and the opportunity to explore onshore power supply at domestic wharves.

12

Vessels in Fiji

2131 registered ships in Fiji by length as of 31/07/17

Length	<15m	15 – 20m	21 – 50m	>50m
No of Ships	1890	55	161	25

Lomaiviti Princess in the Suva harbour yesterday. Photo: Selita Bolanavanua

Details Of The Lomaiviti Princess V

- Previously known as Queen of Nanaimo.
- Built in 1964 for British Columbia Ferry Services Inc.
- Length 130 metres
- Speed: 16.5 knots (30.6 km/h; 19.0 mph)
- Capacity: 1,500 passengers and 192 cars
- Sold to Goundar Shipping Limited on September 2017

13

Kiribati Visit

- Met with Kiribati MCTTD and ships owners
- 4 vessel visit
- Conducted training for DC

With MCTTD Director, Consultant, Dep. Secretary & Secretary

14

Data Collection

- Fiji
  - Government Shipping Services
  - Patterson Shipping/Searoad Shipping
  - Inter Link Shipping Line Ltd
  - Solander Pacific Ltd
  - Billett Wright & Associates (Fiji) Ltd
- Kiribati
  - Kiribati Shipping Service Limited
  - Central Pacifc Producers Limited
  - Atinmarawa Company Limited
  - Coral Ace Shipping
  - Oceanic Shipping Services
  - Lu's Marine Shipping
  - Butaritari Shipping Services

GMN The Global MTCC Network

15

ESD's for the Pacific's "Leader-ship(s)"

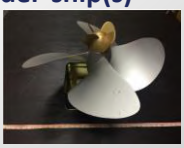
- Photovoltaics Panel
  - ☞ most convenient tech. for the pacific
  - ☞ Easy to install and maintain
  - ☞ Tech. already exist in the region
  - ☞ Few Kiribati vessels have PV for lighting
- Light Emitting Diodes (LED) ***"LED the way"***
  - ☞ Last longer than conventional luminaire (6.5 yrs.)
  - ☞ Do not need to be replaced as often as conventional type (1.25yrs.)
  - ☞ More efficient than conventional luminaire

GMN The Global MTCC Network

16

ESD's for the Pacific's "Leader-ship(s)"

- Propeller Boss Cap Fins (PBCF) ***"The Boss Cap"***
  - ☞ It is suitable for slow speed vessel.
  - ☞ PBCF boost propulsive efficiency by about 5% and ship fuel efficiency by about 2~3%.
  - ☞ PBCF can be retrofitted easily to an existing ship.
- Optional data collection system
  - ☞ "If we cant measure it, we cant manage it"
  - ☞ Collects data through installed sensors (fuel meter, engine load, RPM sensors)
  - ☞ Eliminates the human error and non-consistency in data collection



GMN The Global MTCC Network

17

MTCC-Pacific Office and Staff

SPC, Lotus Building, Nabua, Fiji

Thierry Nervale – Head of MTCC

Mark H Davis GHGETA

Mark Zullah MTCCO

Lore Cicker Admin & Info

18

MTCC-Pacific Website

GMN | The Global MTCC Network

19

Thank you for your attention!
http://gmn.imo.org/

GMN | The Global MTCC Network

20