Sustainable Sea Transport
Back to the Future
O Jesus,
be the canoe that keeps me straight,
be the outrigger that supports me in time of
great temptation,
Let your spirit be my sail that carries me through
each day,
as I journey steadfastly on the long voyage of life.
Amen

Taken a from book written by Arch Bishop Winston Halapua
“Waves of God’s Embrace
The most significant artifact in the history of the Pacific is the canoe. Our ancestors were craftsmen of a stone-age culture who successfully carried out what is considered a monumental human achievement in the migration and settlement over an awesome expanse of the Pacific Ocean.
The Drua, Kalia, Alia
The Drua is one of Fiji’s most recognisable icons – on coins, stamps, phone boxes, coats of arms, letterheads, adverts, t-shirts.

The Drua is arguably the pinnacle of traditional Pacific sailing design – combining Micronesia rig, the Fijian timber and Tongan boatbuilding skill.

No full scale Drua has been built for 100+ years.
HOKULEA
launched 1975

Hawaiian artist Herb Kane designed Hokulea, a 19-metre-long voyaging canoe. Hokulea was built mostly with modern materials (plywood hulls and cloth sails). However, it sailed like a traditional canoe.
July 12\textsuperscript{th}, 2010

Mau Piailug, master navigator, dies on his home island of Satawal in the Federated States of Micronesia, aged 78

The success of Mau's navigation sparked pride in the Hawaiian and Polynesian culture and a renaissance of voyaging, canoe building, and non-instrument navigation that has continued to grow
In 2011 and 2012, 150 voyagers from Aotearoa, Cook Islands, Fiji, Kiribati, Samoa, Solomons, Tahiti, Tonga & Vanuatu set out on a voyage called "Te Mana O Te Moana" - The Spirit of the Ocean.
Voyaging has taught us that our ancestors were great people who lived in tune with nature. Today we are a testimony of their skills, confidence, courage and intelligence in building and sailing these magnificent canoes, thousands of miles across a vast ocean to discover these islands.
Vision

Sustainable sail-powered sea transport

Empowering the Pacific:
- a celebration of traditional culture, knowledge & skills
- a responsible Pacific solution to issues of fuel availability/price & climate change
- a modern adaptation to issues of sustainable sea transport
Why Now

Ships are to Oceania as cars, rail and trucks are to continents.

- Globally, 90% of goods/resources transported by sea.
- Sea transport globally produces more CO\(_2\) than Germany;
- produces more sulphur dioxide than all global cars and trucks;
- generates 27% of the world’s nitrogen oxide emissions.

Oceania is more reliant on imported fossil fuel than any other part of the world – 95% (99% if PNG & Fiji excluded).

Fuel prices continue to rise.

Sea transport is critical (and increasingly expensive) to daily life in most Pacific Island Countries.
GOAL

To establish the most sustainable sea trading fleet in the world:

- a network of locally built, owned and operated sail-powered trading vessels, providing:
  - environmental;
  - social;
  - economic
  - cultural benefit

for current and future generations.

NOTE: All four criteria must be met if we are to be sustainable over time
Na Mataisau (1984)

6 yr old, 300 ton passenger/cargo ship used for island work in Fiji. Retrofitted with auxiliary sailing rig - ADB /Southampton University project.

Results were impressive:
- 23% fuel saving
- Incr stability = incr passenger comfort & safety, reduced engine wear, reduced roll.
- 30% overall engine wear reduction
- Feathering prop would = additional 30% saving
- Capable of pure sail
The research from Southampton University collected comprehensive wind and route data for all Fiji which is all still relevant today.
ANGLES OF SAILING AND FACTORS FOR REDUCED FUEL CONSUMPTION WITH PREVAILING WINDS

Note. No sails would be set on a south east course.

For explanation of Reduced Fuel Factor see Appendix 1, Figure 8, Page 22.
KEY LESSONS

• Vessels MUST be appropriate, affordable, accessible

• MORE than just technology – ownership, management, whole of industry approach

• COLLABORATIVE approach – include ALL stakeholders from outset

• MUST be commercially viable

• HERITAGE is critical
Village Based Sail/Solar powered Canoe 4-10 tonne capacity

Greenheart vessel – 500 tonne capacity

B9 vessel – 3000 tonne capacity