

# ***Sustainable Shipping Solutions***

## ***Greenheart***



# **Sustainable Shipping**

**Technical Applicability**

**Operational Flexibility**

**Economic Viability**

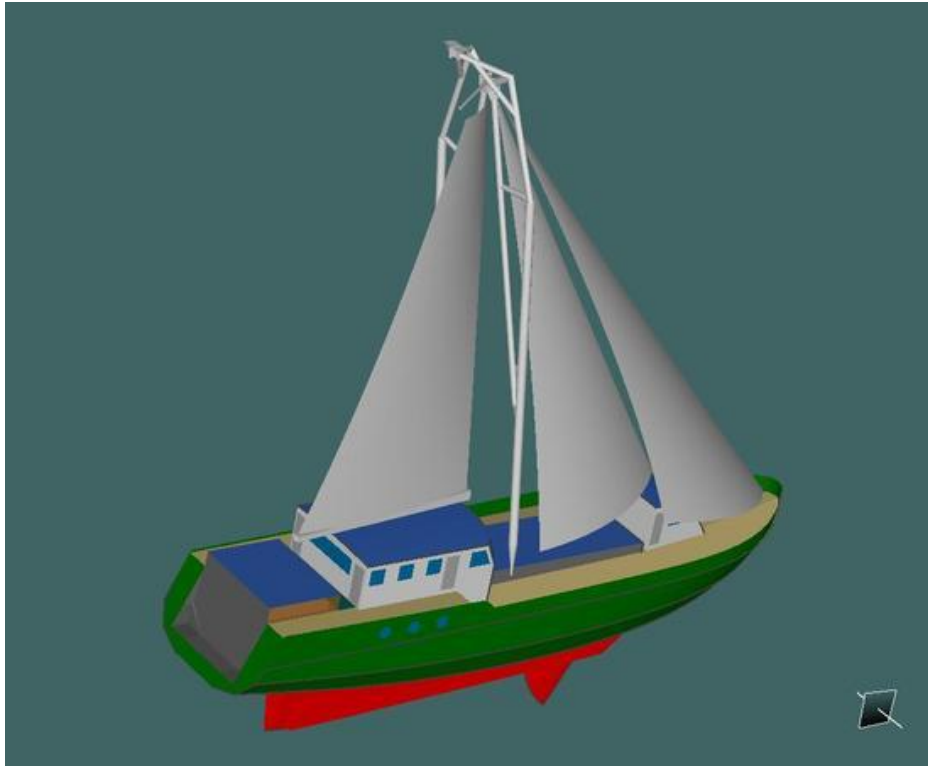
**Wider Economic Impact**

**Environmental Impact**

**Social Impact**



# Technical - Ship Design



- Displacement – 220 tons
- LOA – 31.5m (103ft)
- Beam – 7.8m (25.5ft)
- Draught – 2-3m (6-9ft)
- Sail: 300 m<sup>2</sup> (3230 ft<sup>2</sup>)
- PV array: 125 m<sup>2</sup> / 1313 ft<sup>2</sup>
- DC motors: 100kW x 2
- Battery: Lead/Acid traction
- Cargo: 3 TEU (20ft std containers) - 50-75 tons
- Hull speed: 10~11 kn

# Operational Flexibility - Applications



Open Source Design

Adaptation &  
Modification



Scalability

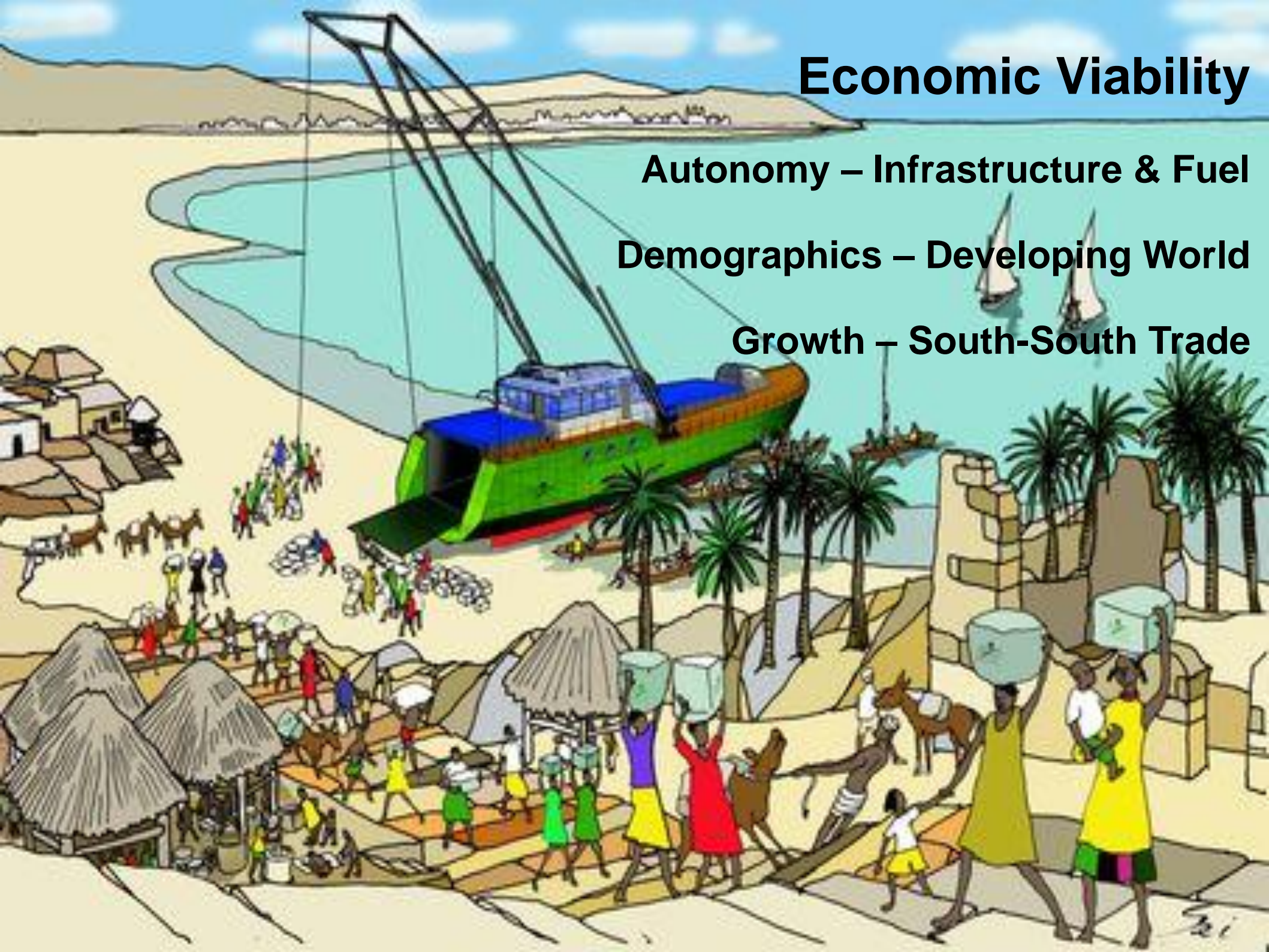


# Economic Viability

Autonomy – Infrastructure & Fuel

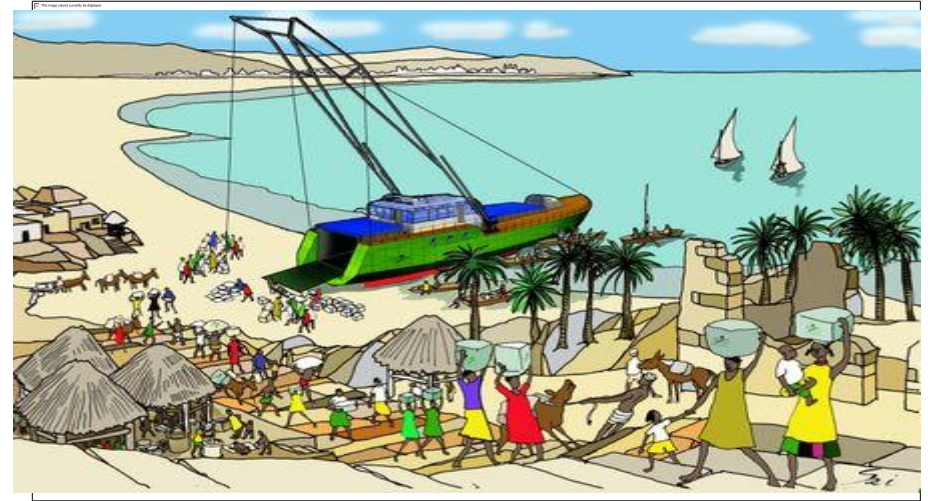
Demographics – Developing World

Growth – South-South Trade



# MV Tokelau / SV Greenheart

Tokelau population: 1,411 (Apia, Samoa-Tokelau 480nm)



- Fuel - MDO 3.24tn/day (c.\$700/t)
- Servicing cost – >\$300,000/yr
- Speed – 9kn max (13kn design)
- Capacity – <40 pas / c.40t
- Crew – c.6 (commercial)
- Replacement – \$8mill / 2yr tender + \$6mill new build (2015)
- Govt subsidy = \$500-800K p.a. (c.90% per sailing)

- Fuel - Solar/Sail – no fuel cost
- Servicing cost – <\$100,000/yr
- Speed – 10kn max / 6-7kn op
- Capacity – 12 pas (cargo) / 75t
- Crew – 4-6 (trained islanders)
- New Build – c.\$350-500,000

# Wider Economic Impact



## Shipbuilding Revitalization

local construction and outfit

## Shipping Support Business

local ownership & operation



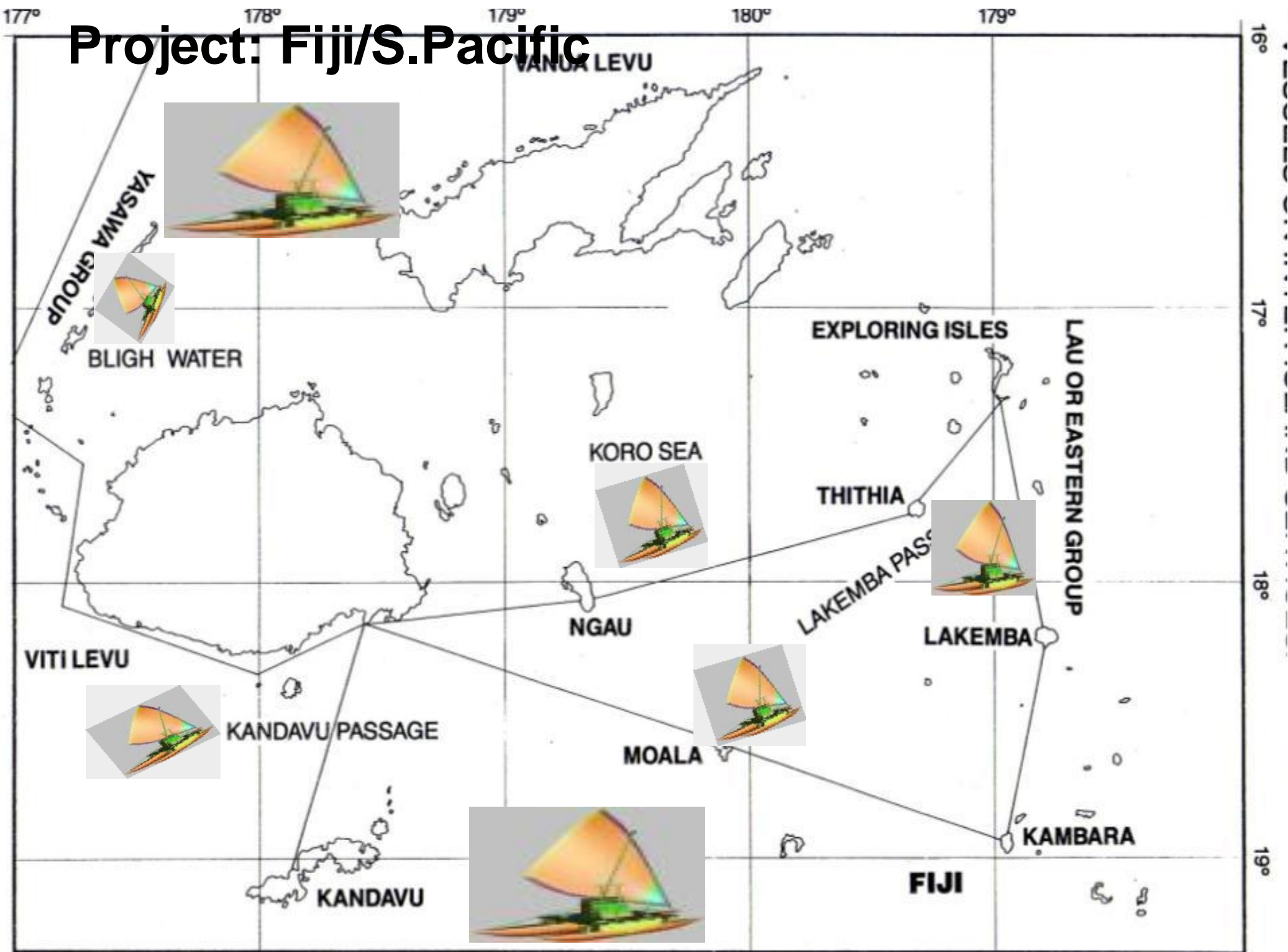
## Reliable Transport & Trade

local entrepreneurship & investment

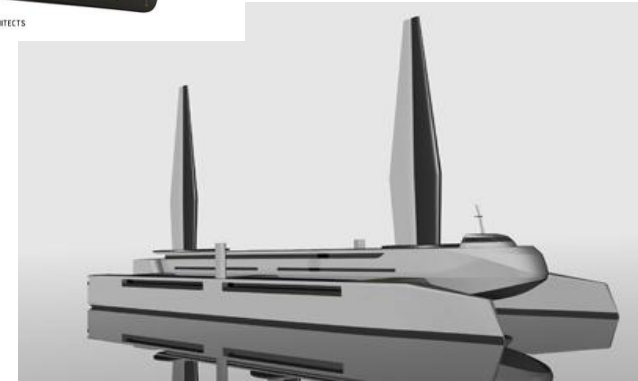
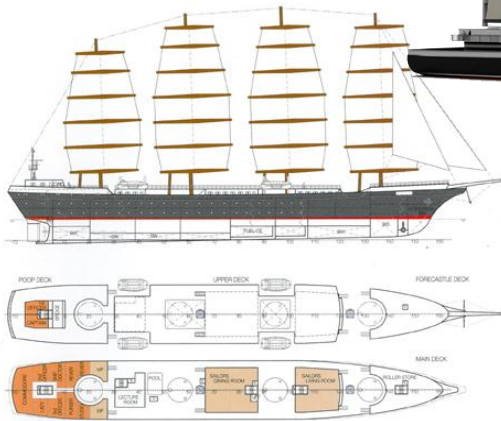
## Resilience & Empowerment

local employment & climate adaptation

# Project: Fiji/S.Pacific



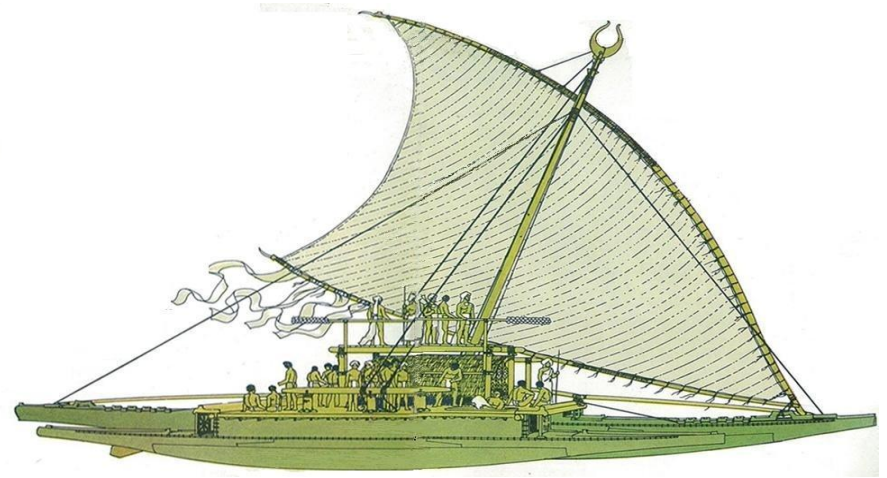
# Developing Association



- Wind Sector Lobby
- Network
- Carbon Trade



# Social Impact - Building on Sail Traditions



## Sail-powered Village Vessels

Proven / Light / Versatile

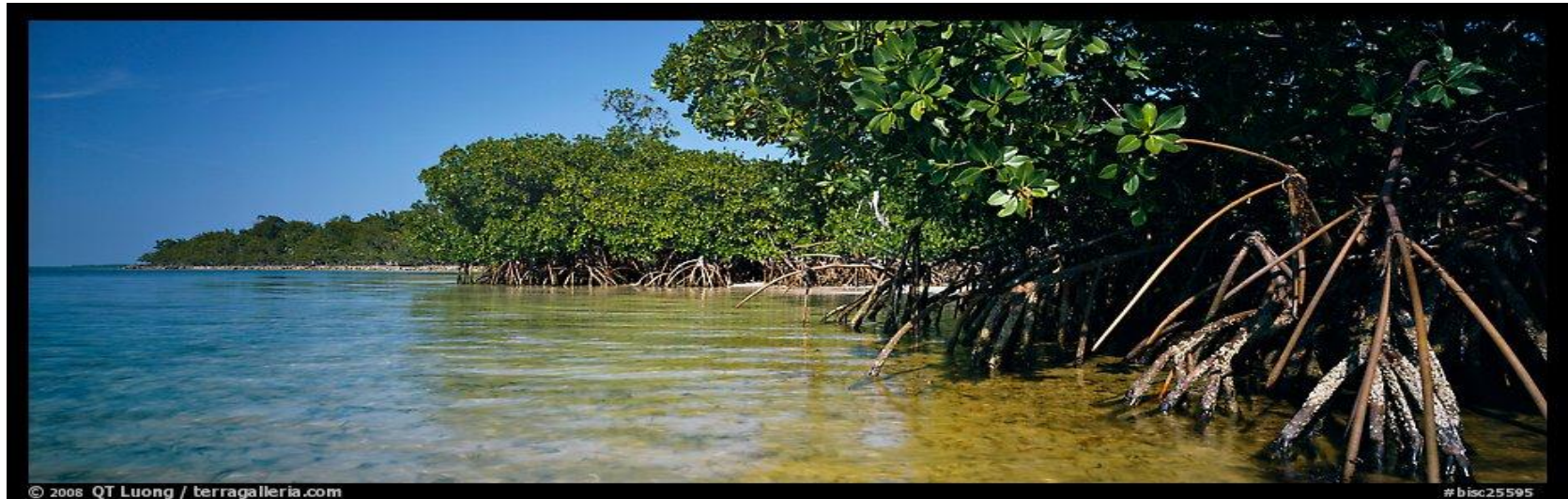
## Drua / Voyaging Societies

Design / Renaissance / Pride

Crews / Training

Local / Quality / Gender

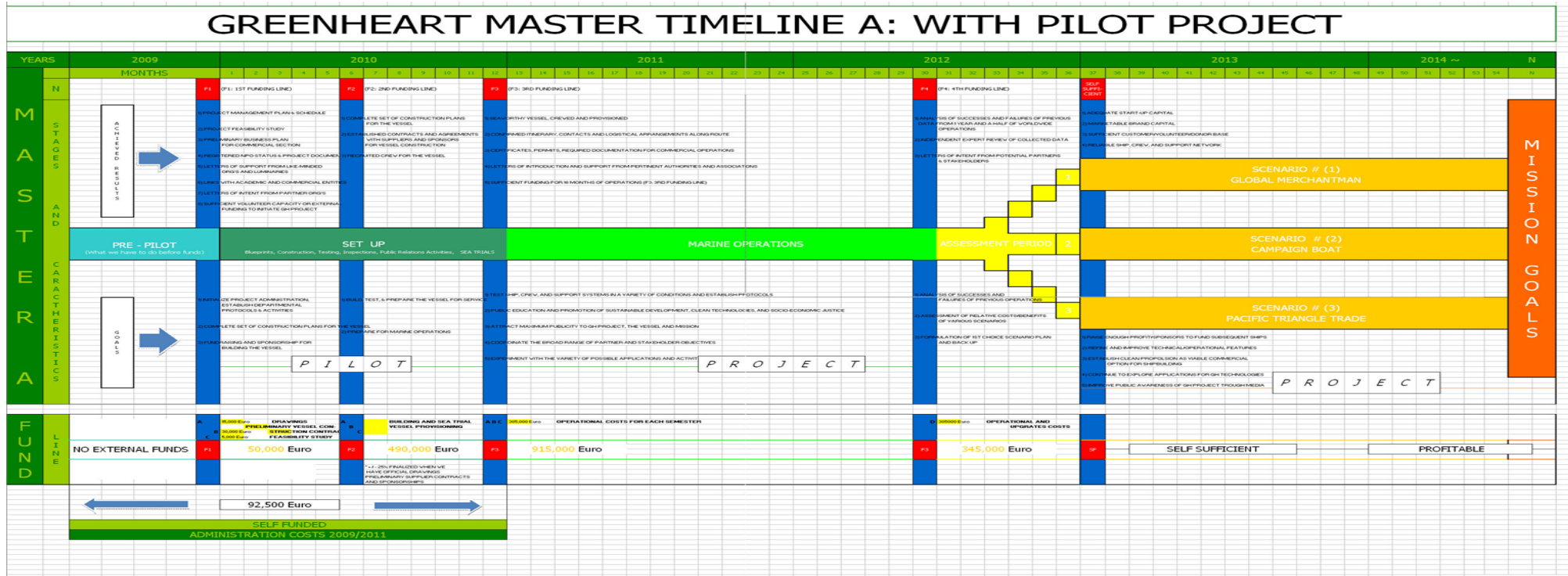
# Environmental Impact



# Meeting South Pacific Challenges

- Vast Distances-----
- Resilience / Climate -----
- Isolation -----
- Fossil Fuel Dependency-
- Lack of Infrastructure ----
- Resource Depletion -----
- Depopulation -----
- Empowerment-----
- Unlimited Range
- Flexible Applications
- Trade Network
- Zero-fuel, decentralized
- Beach land, shallow draft
- Security, patrol, diversify
- Jobs, aspiration
- Local ownership, micro-finance, open source etc.

# Project Schedule



- S/V Greenheart Launch - mid-2013
- Maiden RTW Voyage – 2013-2015
- Est. Micro-Finance Facility – 2013-14
- South Pacific Pilot - 2014-15

Greenheart

[www.greenheartproject.org](http://www.greenheartproject.org)

