

Transport and Climate
Change Week
#TransportWeek26



NDC-TEC: e-solutions for Maritime Transport

Speaker: Giovanni Buckle

**Organization: Caribbean Centre for Renewable Energy &
Energy Efficiency (CCREEE)**



NDC-TEC- Technology Pilot Projects

Saint Lucia pilot



Government fleet electrification:
22 EVs across 9 government
institutions, supported by Solar
PV

EUR 1.2M

Grenada pilot

TODAY'S FOCUS



Marine Transport Electrification:
Electric propulsion and a new
vessel design, supported by
solar PV

EUR 1.4M

Pilot implementation approach:

Test the technology



Prove electric transport
technologies can work
real Caribbean
conditions

Energy offset



Install solar PV to
offset the energy
demands associate
with battery charging

Build local capacity



Skills for boat builders,
fisherfolk, students,
and the Coast Guard

Share the data



Data sharing,
supporting regional
replication and pilot
upscaling

Beneficiaries Identified for Grenada Marine Electrification Pilot

The Royal Grenada Coast Guard

The Carriacou Fishing Community
Co-operative

The Petite Martinique Fishing
Community Co-operative

The Gouyave Fishing Community
Co-operative



Pilot Beneficiaries and Pilot Scoping

Grenada: Project Locations



Fisherfolk cooperatives
Gouyave, Carriacou and Petite Martinique



Coast Guard
Royal Grenada Coast Guard patrols

Technology Limitations - Fit for Pilot Interventions

EXISTING OPERATIONS: NOT FIT FOR PILOT

Coast Guard

- ✗ Search and rescue
- ✗ High speed pursuit

Fisherfolk

- ✗ Extended trips, such as 2 weeks at sea

EXISTING OPERATIONS: FIT FOR PILOT



Coast Guard

Royal Grenada Coast Guard

- ✓ Coastal patrol



Fisherfolk

Day fishing trips

- ✓ Long line fishing
- ✓ Near shore lobster fishing



Water taxi

Passenger service

- ✓ Petite Martinique to Carriacou

Data collection: Results



Telematics and fuel flow sensors fitted on existing boats



Track distance, speed and weather



Fuel flow converted to energy

Under 3 Nm

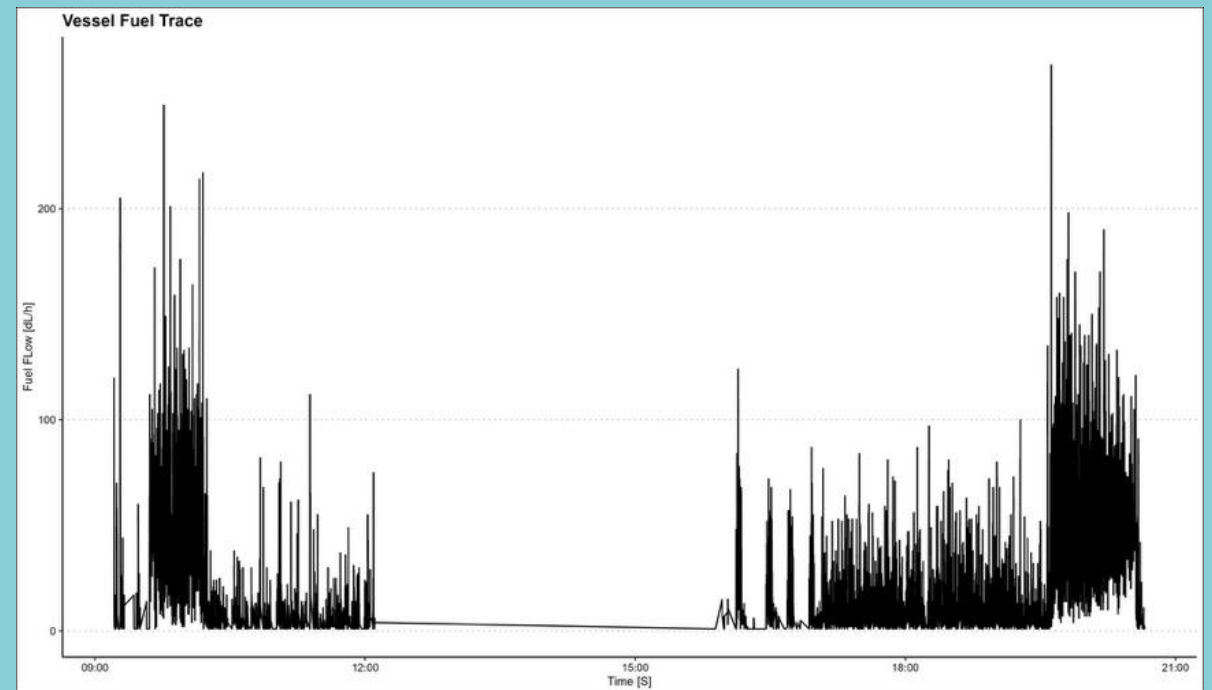
Typical transit distance from shore

High speed

Only to reach spots, and power climbs steeply

Under 6 knots

Minimal power use, for 6 to 10 hours of fishing



Sample fisherfolk day-time trip data

Data Informed Technical Specifications



From measured data

Real trips, with fuel converted to energy

Conservative

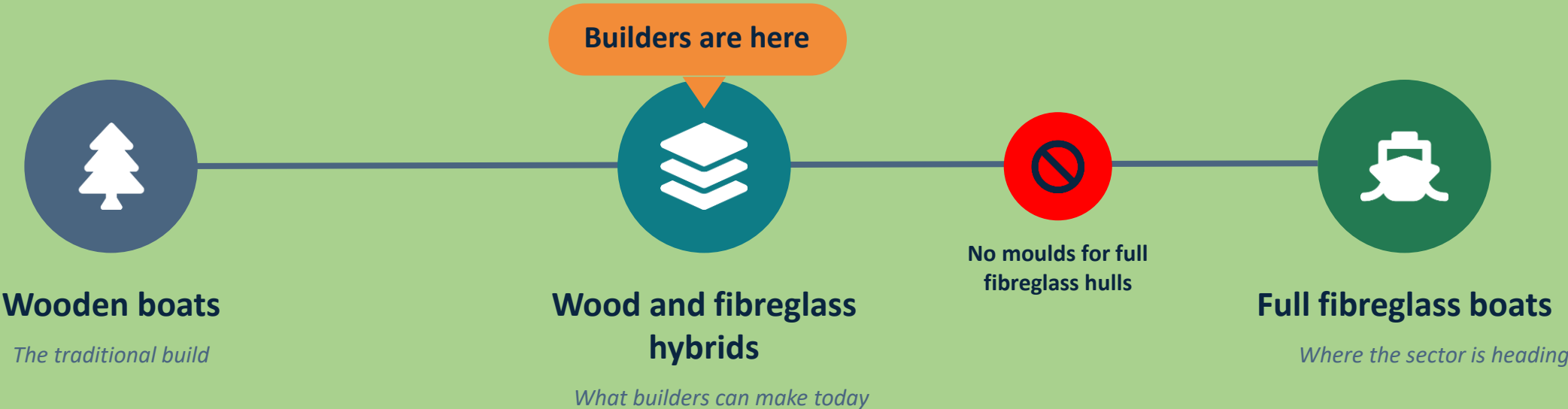
Room for longer days and rough weather

Tropical climate

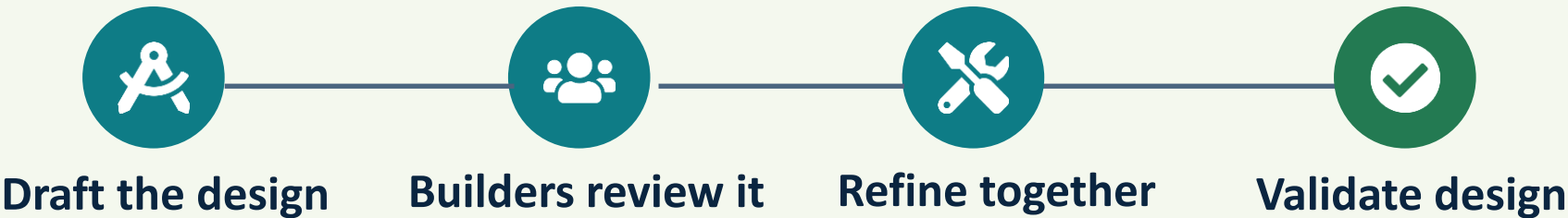
Accounts for the battery degradation anticipated associated with operations in tropical conditions

 **Sufficient capacity for the operations, even as the battery ages**

Supporting the Boat Building Transition



DESIGNED WITH THE BOAT BUILDER COMMITTEE



Wide-reaching Capacity Building



Fisherfolk and Coast Guard

- ✓ Marine transport electrification
- ✓ Training on the vessels and propulsion systems we procure



Boat builders

- ✓ Building from a mould
- ✓ Interpreting the drawings



TVET institution, (TAMCC)

- ✓ Long term skills pipeline
- ✓ Involving youth

Solar PV and BESS: Innovation and Agile Implementation



The plan

Solar PV to offset the energy used to charge boats



The problem

Solar PV in Petite Martinique would impact grid stability given small system peak of 100 kW



The pivot

Battery energy storage systems (BESS) to support grid stability

WHAT THE BATTERY UNLOCKS

100 kWh

of utility operated battery storage to support system response.



Supports overall grid operations



Facilitate residential solar PV deployment, which would have otherwise been restricted



A major steppingstone towards 100% renewable energy penetration in Petite Martinique

THANK YOU!



on the basis of a decision
by the German Bundestag

