



# **BPTT's – Charting a course towards reducing Marine GHG**

## **MTCC Caribbean 2<sup>ND</sup> Southern Sub-Regional Workshop - GHG**

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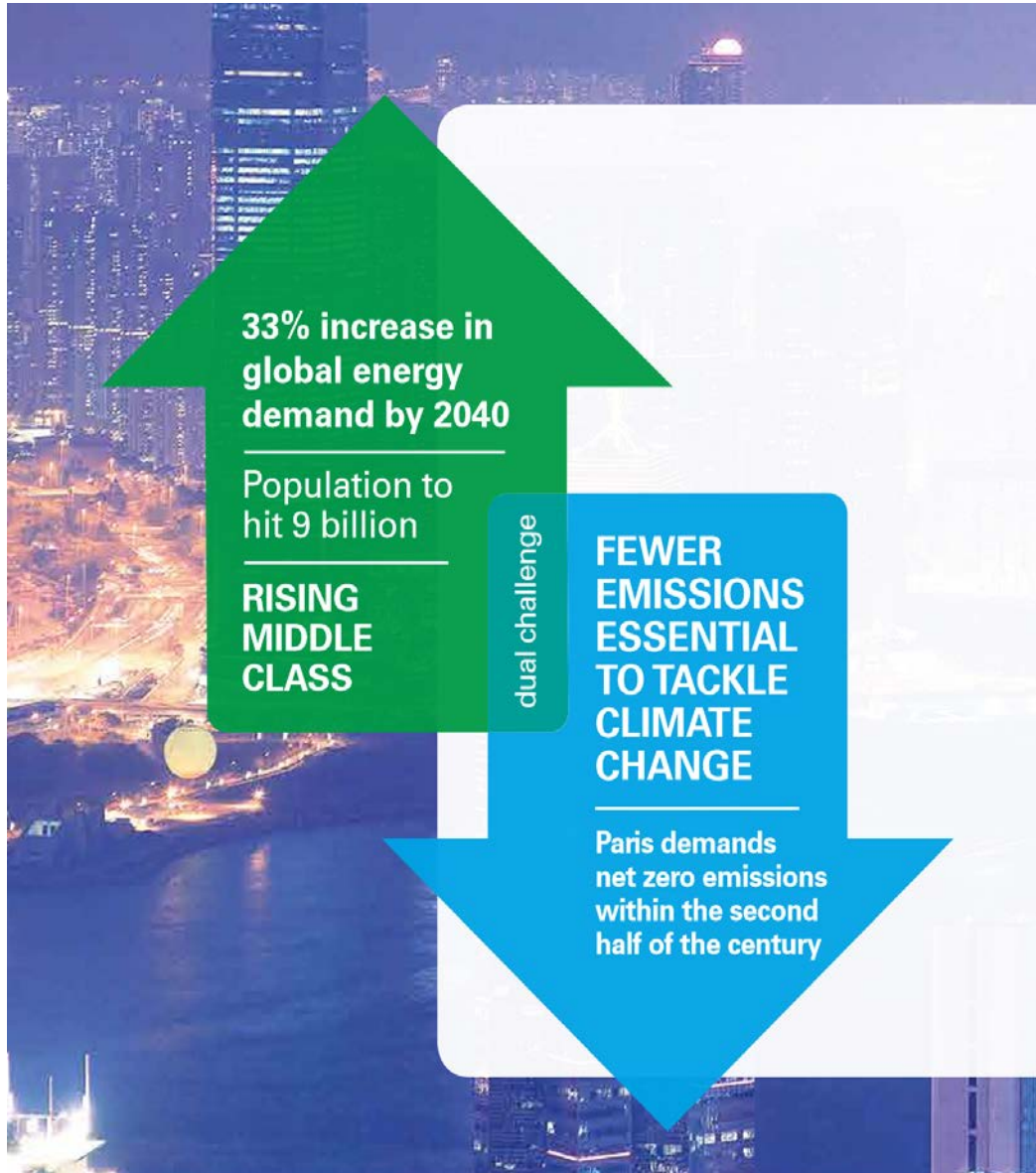
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# BP's Commitment to a low carbon future



## Advancing low carbon

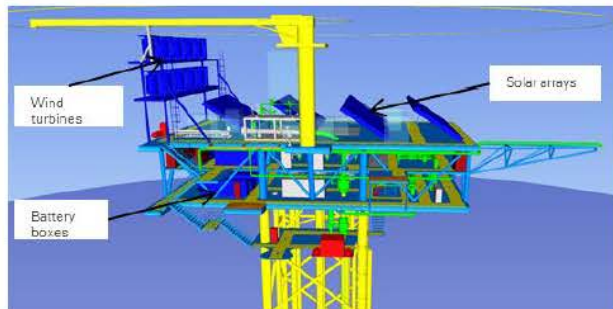
Our targets include:

- Zero net growth in operational emissions from 2015 to 2025
- A goal of 3.5 million tonnes of sustainable greenhouse gas emissions reduction in the timeframe
- The aim of limiting methane 0.2%

# Reducing GHG emissions in Upstream



## Zero Net Growth in operational emissions



- In 2018 our emissions were 1 million tonnes CO<sub>2</sub>e below our 2015 baseline

## 3.0 Mte SERs by 2025 (Upstream target)



- Upstream has delivered 2 Mte of SERs cumulatively since 2016, with 1.1 Mte delivered in 2018

## Methane intensity below 0.2%



- Upstream methane intensity reduced by 20% in 2018 compared to 2017 – and is now 0.16%

# A Shared Challenge



The experience and expertise we have acquired over decades inform our actions, our future plans and our belief that, to meet global climate goals, the world should prioritize:

- **Reducing emissions rather than promoting any one fuel as the answer.** The world will need all forms of energy for a long time to come, so we need to make all fuels cleaner.
- **Improving energy efficiency, where the greatest reductions in emissions can be achieved.** Advances in technology for everyone – from industry to individuals – are creating huge opportunities to achieve gains over the coming years.

# Various Offshore Support vessels



## Offshore support vessels

- vessels for supply,
- standby,
- anchor handling
- subsea operations,

have multiple combustion engines and dynamic positioning systems to ensure that they can perform their duties with a high reliability at nearly any sea state.

Dynamic positioning (DP) is a computer-controlled system that automatically maintains a vessel's position and heading using its own propellers and thrusters. The DP mode must keep power resources available at any time sufficient to handle peak loads caused by extreme waves and wind variations, even in combination with failure of one of the main vessel engines.

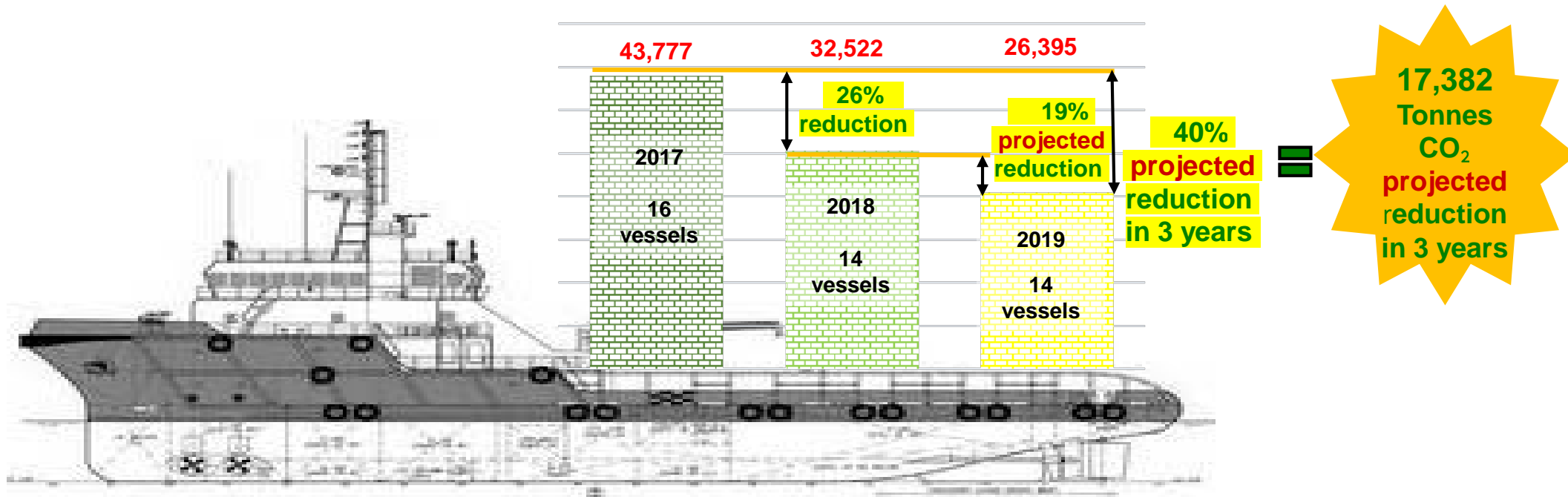
**This has resulted in a general operational pattern with vessels running multiple engines simultaneously even at calm sea conditions when serving the oil and gas installations, i.e. inside a radius of 500 m.**



# BPTT - Reducing our marine carbon footprint



## CO<sub>2</sub> Emissions 2017 – 2019 Term vessel fleet Tonnes



# BPTT - Our Journey – 2017 to present



2017

## Problems

1. Lack of efficient logistics planning
2. Poor deck utilization
3. High standby time offshore
4. Vessels with inefficient propulsion technology i.e. CPP, diesel
5. High inter-field transfers
6. Sailing above economical speed.

## What was done differently:

1. Changed strategy to having fit for purpose vessels, e.g. from term AHTS to spot hire, as required
2. Operating vessels at economical speeds - no 'hot shot' sailings
3. Fixed sailing schedule
4. Vessels assigned to support functions rather assets
5. Clear guidelines in Marine Operations Manual - regulating standby time in 500m Safety Zone
6. Change of diesel propulsion to mainly diesel electric. Increased Azimuth drive in fleet.

2018

NOW

1. Transition to National Energy Port, Galeota for production cargo. *Reduction of transit time/distance offshore*
2. Enforcement of vessel standby guidance as per Marine Operations Manual within 500m Safety Zone – *Less fuel burn on DP and emissions*
3. Current fleet under 8 years and have met the energy efficiency mandate.



# Our Contractors Initiatives



## Environmental Protection

This is aimed at reducing GHG emissions established with firm commitment of senior executives. Establish annual Environmental Protection KPIs i.e. fuel consumption and CO2 reduction targets.

Plan/Policy

## Policies

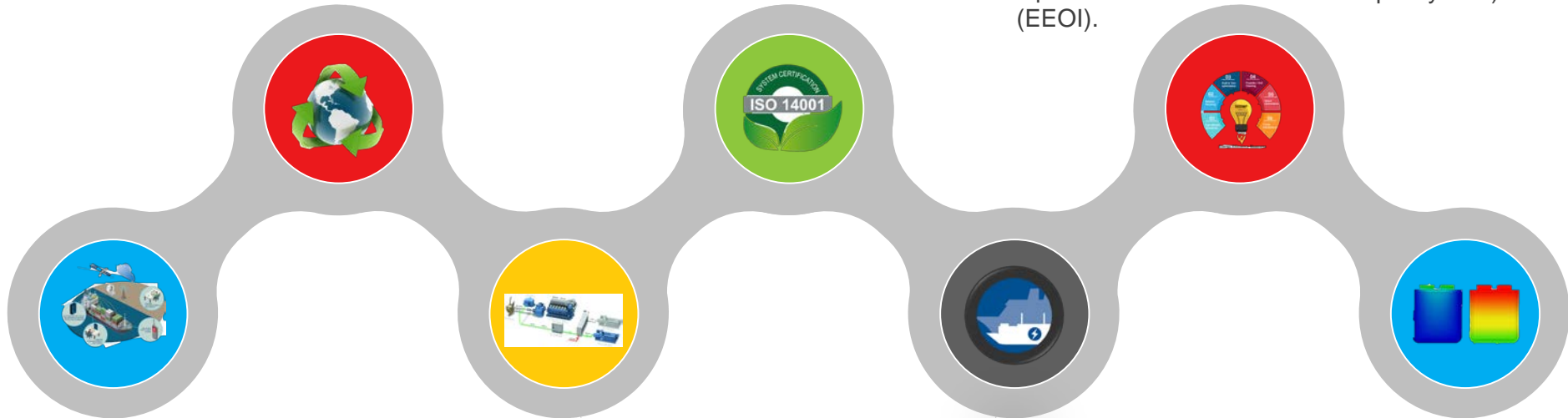
### 14001 Certification

Pursuit/achieved ISO 14001 Environmental Management System (EMS) certification

### Compliance with SEEMP & EEDI

**July 2011** - Vessels outfitted with Ship Energy Efficiency Management Plan (SEEMP) which is audited by Class utilizing the Energy Efficiency Operational Indicator (EEOI).

**January 2013** - Energy Efficient Design Index (EEDI), new ship design are required to meet the reference level for their ship type (grams of CO<sub>2</sub>/ship capacity mile)



### Remote Monitoring Center

For oversight of vessels operations.

### Power Management System (PMS)

Vessels fitted with Power Management System (PMS) which automatically removes non-essential generators from the switchboard based on operational requirements (i.e. standby mode)

### Cold Ironing

“Cold ironing” - vessels plugged into electrical shore power during port calls.

### Energy Storage System and / or Hybrid Technology

Pursuit of Energy Storage System and/or Hybrid Technology – battery technology and/or alternative power supply to support main electrical consumers such as DP system; thus, reducing diesel generators usage.

## Operations/Technology

# BP TT L&I Strategies



- **Plan**, organize and set up systems for reduced double handling of cargoes, multiple visit to offshore facilities and reduced time in 500M zone in DP mode
- **Slower speed sailing** – The BP marine team has support the contractors in ensuring that they follow their already established guidelines for “slow speed sailing” or “econo – sailing”.
- **Loading the vessel to optimal draft** settings to allow for design waterline “tuning with vessel power” and environmental conditions.
- **Guidelines for limited time in 500M zone** – reduced number of engines required to be on and reduced fuel consumption
- **Newer tonnage** – taking credit for the different efficiency measures that are regulatory required to measure ships efficiency of energy consumption.
- **Facilitating maintenance time** to operators so that they can keel their hulls and propellers clean.
- **Changing to an all Diesel electric fleet** with fuel consumption of the order 6-9 tonnes a day or lower depending on vessel size.

# Future



Batteries are currently a fast growing technology in shipping.

In October 2017, the platform supply vessel *Viking Princess*, classed by DNV GL, returned to service after being refitted with a hybrid power system that incorporates batteries.

She was the first offshore support vessel on which batteries have been used to reduce the number of generators on board.

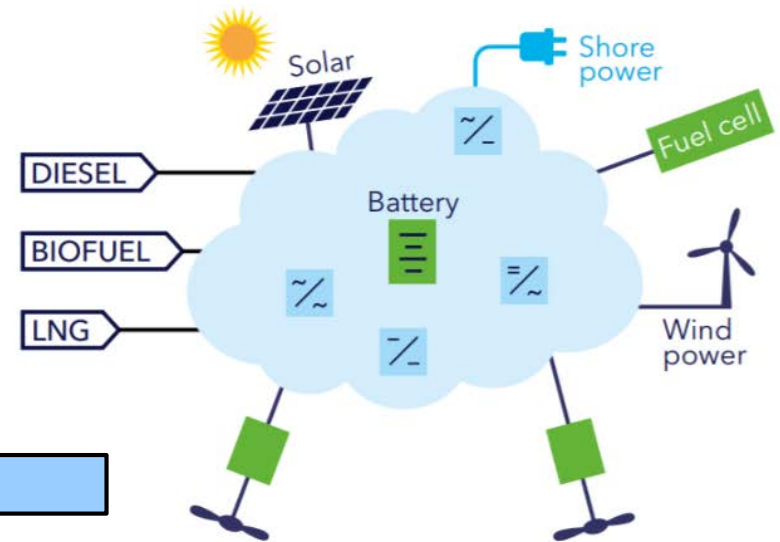
According to Wärtsilä, the hybrid system will generate savings through improved engine efficiency, as the operating profile of supply vessels is highly variable.

When using the energy storage system on board *Viking Princess*, the fuel saving potential can be up to **30 percent in various operations and the CO<sub>2</sub>** emissions can be reduced by up to approximately 13 to 18 percent per year.

The vessel now runs on a combination of a battery pack for energy storage and three liquefied natural gas-fuelled Wärtsilä engines.

## Future propulsion power

In future, it is assumed that many different types of fuel will be used. In addition, renewable energy will be required to be harvested. This situation involving several energy sources will likely require there to be a way to store the energy on board the vessels. To deal with this, an electrical distribution system with integrated batteries will be a smart solution. By preparing for a battery today, you will be prepared for the future.



## Wind Power?

<https://www.youtube.com/watch?v=9ejpylWINgc>

# Closing



- BP will continue to seek new technologies/process that will enable to achieve BP global GHG objective.
- Our culture will continue to evolve and adapting to efficient ways of working.
- Promote the use of innovative technology in maritime operations.
- No one company or sector alone can deliver a low carbon future.
- Everyone from consumers to corporations to governments, needs to take responsibility. If we respond collectively, even a challenge as complex as climate change can be met.
- BP is dedicated to being part of the solution.