



# The global opportunity – Gas' role towards a more sustainable future

Elisabeth Tørstad, CEO, DNV GL - Oil & Gas

IGU Diplomatic Forum, Hovik, December 15 2015

## DNV GL – Oil & Gas - Global reach – local competence



**150**

years of experience

**3,500**

technical experts

**9**

unique laboratories

**Expertise**

in managing risk  
across the asset  
lifecycle

## Opportunity for gas in a more sustainable future

- Ensure sustainable energy supply is **available**, **affordable** and **clean**
- **Gas** as part of a sustainable energy future
- Challenges to ensure **switch from coal** and oil to gas



## Just how clean is gas?

### Production of fossil fuels

Oil	29-134
Natural gas	12-71
Natural gas w main power supply from renewable energy	0.3-30

Tons of CO<sub>2</sub> pr 1000 ton oil equivalent produced, numbers from Norwegian Continental Shelf

### Production of energy from fossil fuels

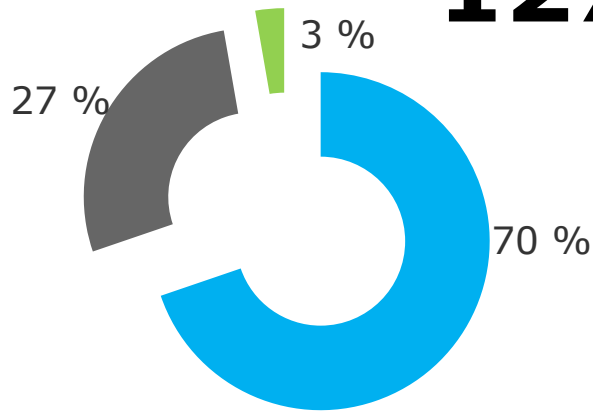
Coal	214.3 - 228.6
Diesel fuel and heating oil	161.3
Gasoline	157.2
Propane	139.0
Natural gas	117.0

Pounds of CO<sub>2</sub> emitted per million British thermal units (Btu) of energy for various fuels, source IEA

# Carbon intensity

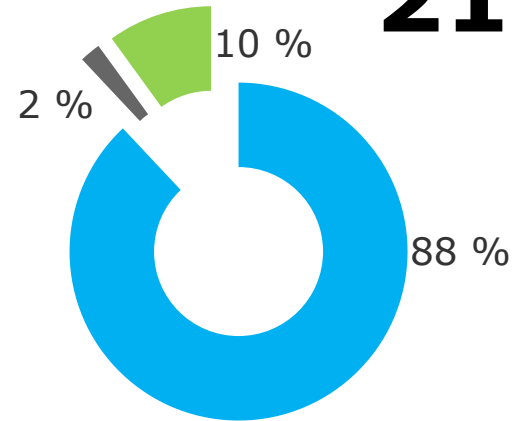
## Upstream

**127** t CO<sub>2</sub> /  
1000 t.o.e.



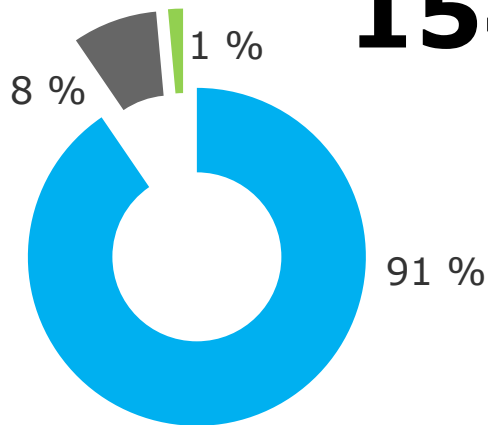
## Midstream

**210** t CO<sub>2</sub> /  
1000 t.o.e.



## Downstream

**154** t CO<sub>2</sub> /  
1000 t.o.e.



- Energy for processing and transporting
- Flaring
- Venting

For internal use only

## How can gas displace coal for power in Asian markets?

- In 2015 Asian power companies are building more than 500 coal-fired plants
- 45% of energy demand in India is met from coal
- 40 % of the 400 gigawatts in generation capacity in South East Asia by 2040 will be coal-fired



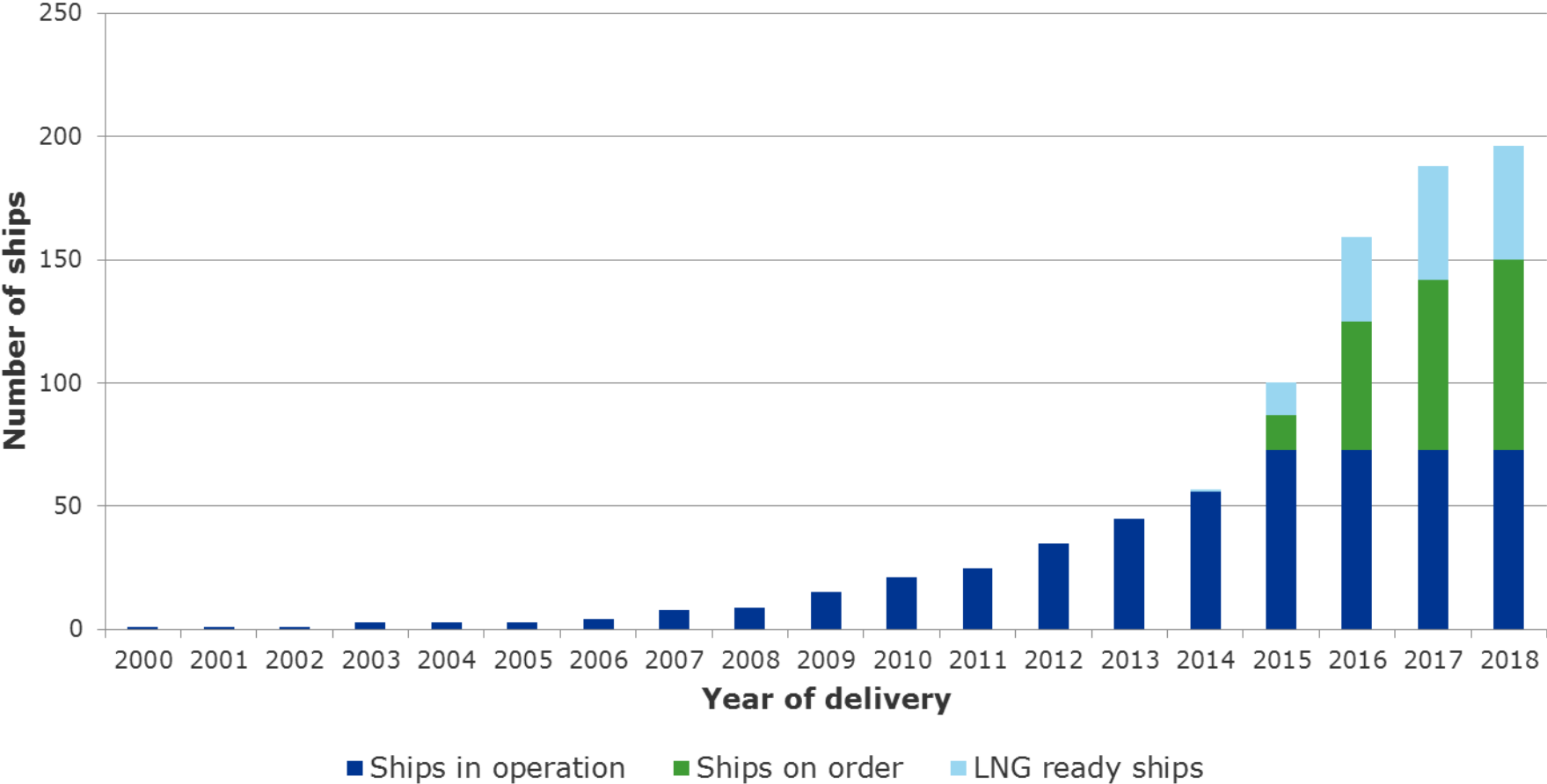
Malaysia



China

# Development of LNG fuelled fleet

Development of LNG fuelled fleet

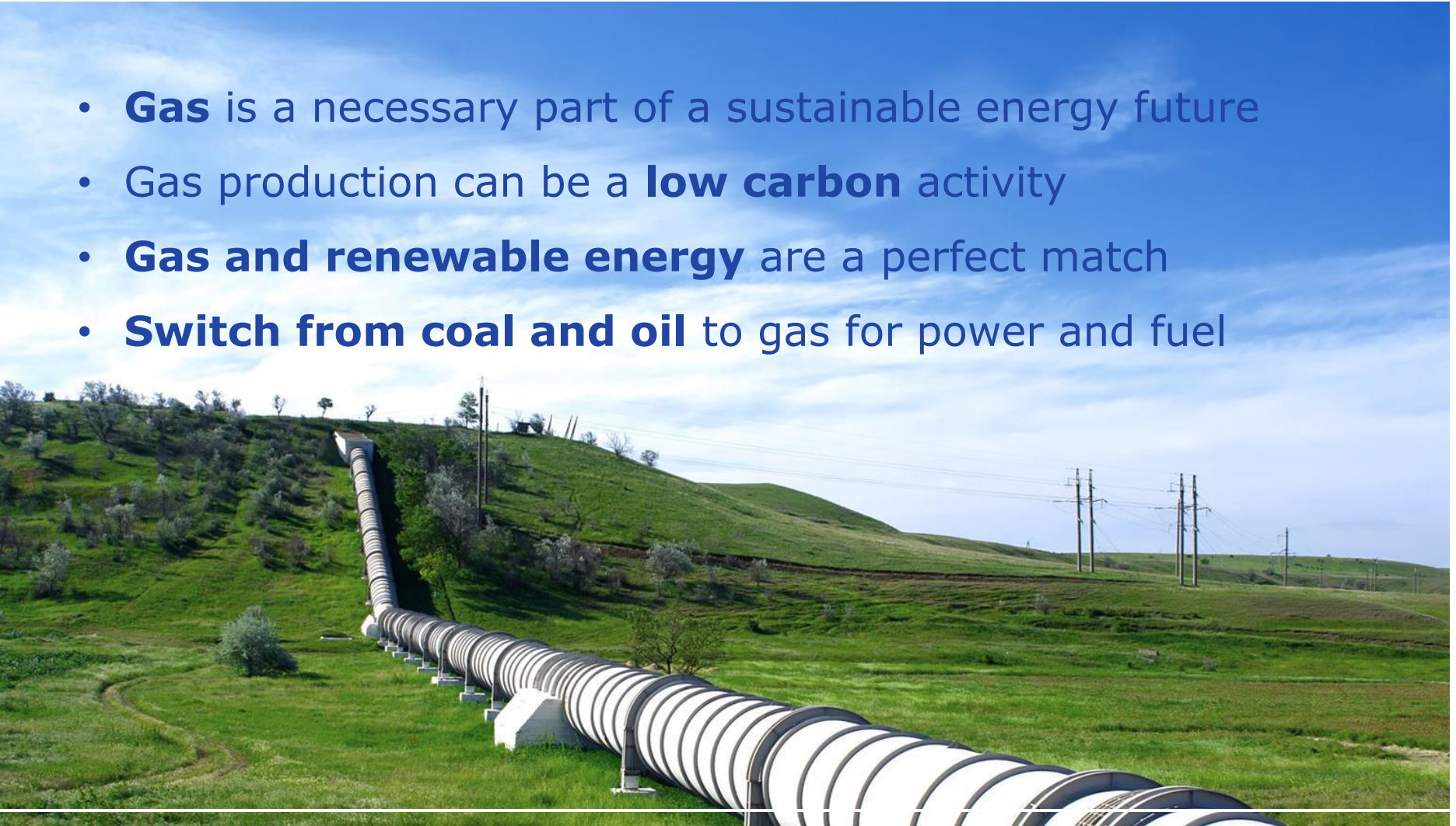


Additional orders beyond 2018 are confirmed

**Updated 23 October 2015**  
**Excluding LNG carriers and inland waterway vessels**

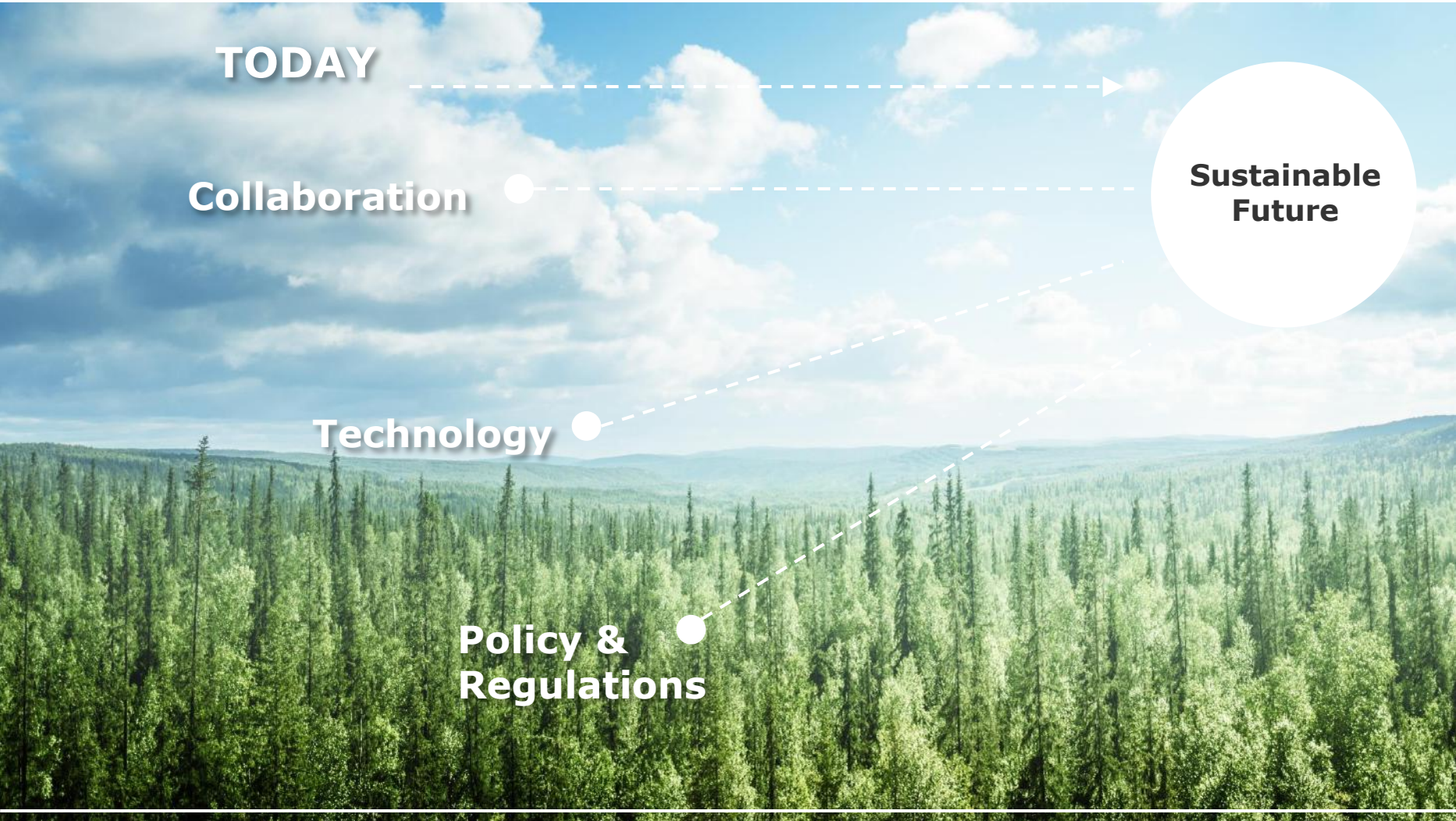
## Opportunity for gas in a more sustainable future

- **Gas** is a necessary part of a sustainable energy future
- Gas production can be a **low carbon** activity
- **Gas and renewable energy** are a perfect match
- **Switch from coal and oil** to gas for power and fuel





# Enabling a sustainable gas future



# Thank you

[www.dnvgl.com](http://www.dnvgl.com)

**SAFER, SMARTER, GREENER**