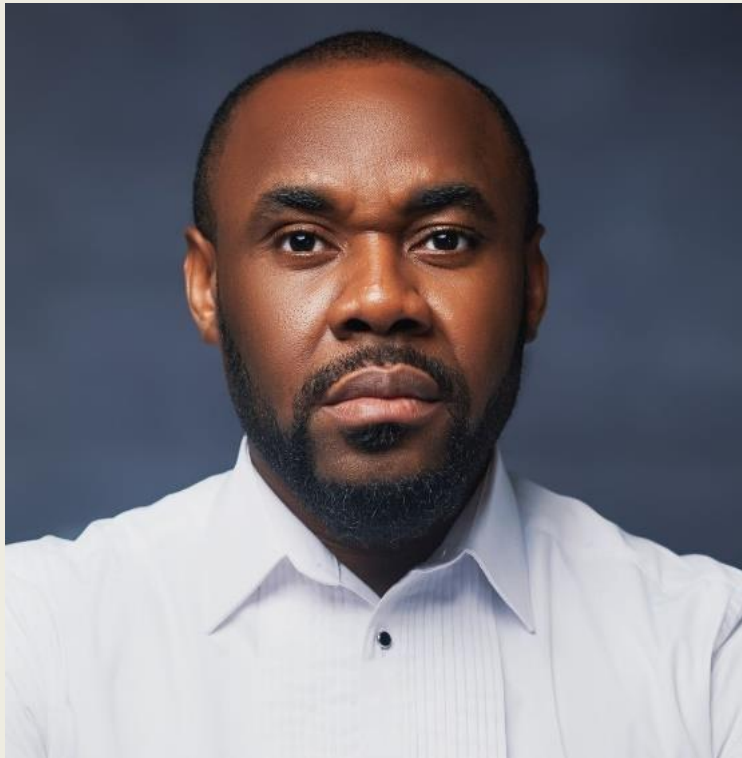


# OFFSHORE WIND HEALTH AND SAFETY RISK GOVERNANCE: THE UK EXPERIENCE

**DR EDDY WIFA**





- **Dr Eddy Wifa** is an Energy Law lecturer at the School of Law, University of Aberdeen. He has a Masters in Oil and Gas Law with Distinction and a PhD Marine Renewable Energy Risk Governance both from the University of Aberdeen. His research expertise includes offshore energy health, safety and environmental regulation across several jurisdictions, decommissioning, regulatory theories, energy and natural resource governance, energy transition and energy justice. He has advised governments and has been a part of several research projects. He has several publications and has spoken at several conferences and events. He is currently a member of the Aberdeen University Centre for Energy Law, The Centre for Energy Transition and the Director of the African Natural Resource and Energy Law Network (ANREL).

# Outline

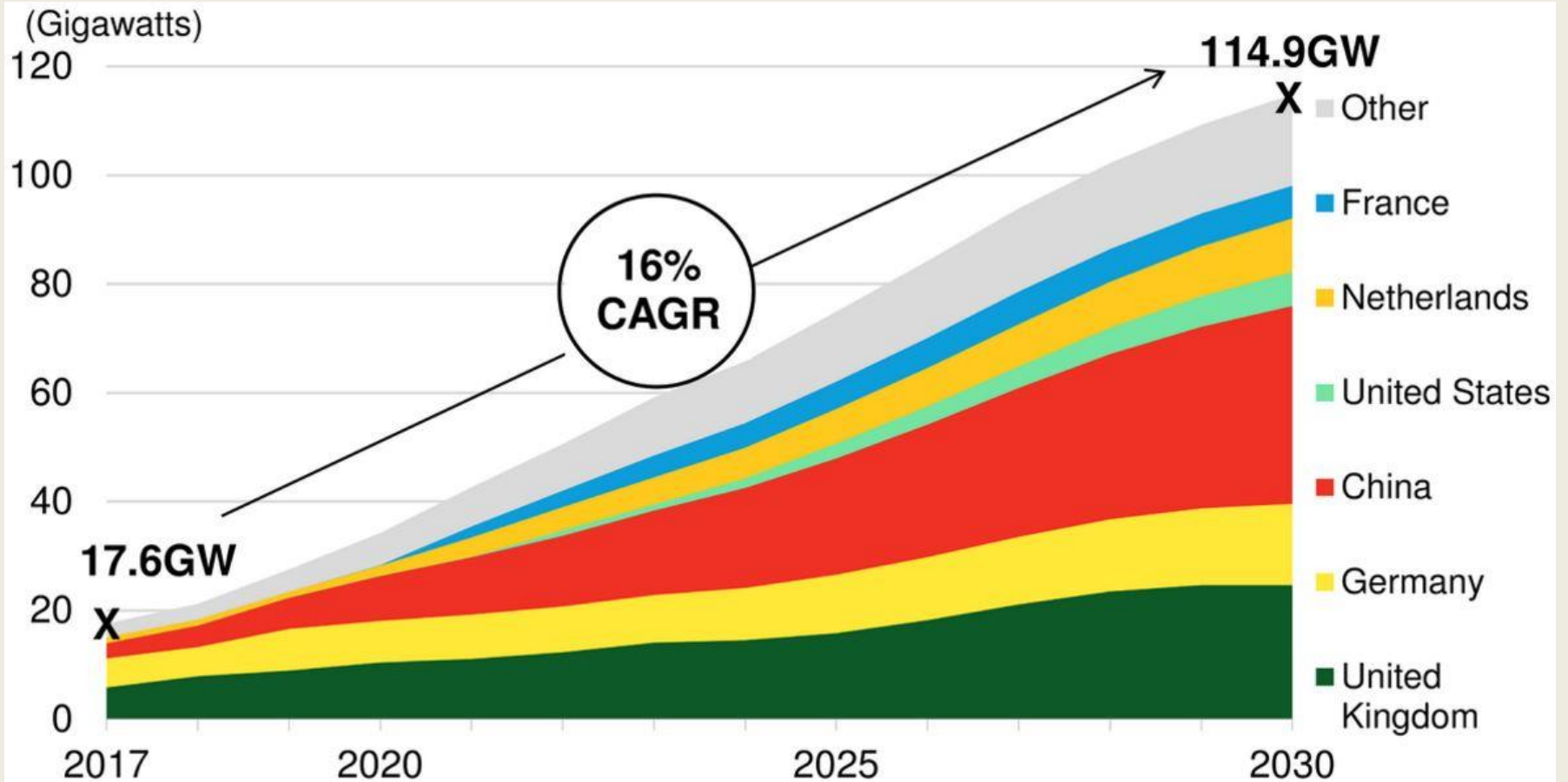


- Energy maximisation and the political economy of speed.
- Regulating high/major risk industries.
- Offshore wind energy health and safety risks.
- The UK regulatory regime.
- The safety Case regulatory model.
- Conclusion

# Preliminary Discussions..



# Country Data



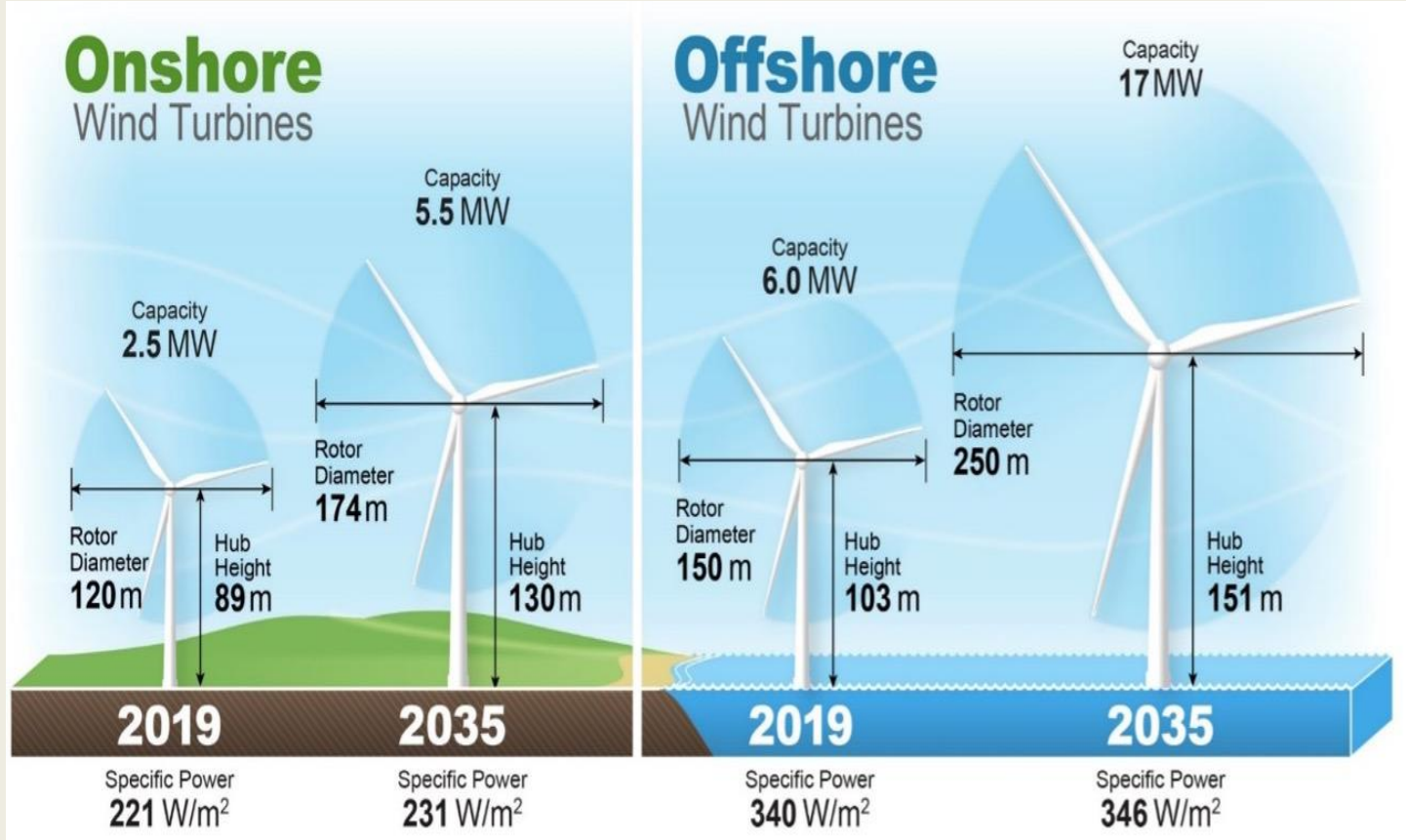
# Danish Energy Island



# The UK Offshore Wind Energy Industry



- Offshore wind turbines installed- 2294
- Offshore operational capacity – 10463.420 (MW)
- Number of projects – 40
- Number of homes power – 18.8million (annually)
- Total investment between 2016 -2021 – £19bn





# Key health and safety risks



- Accidents in relation to transportation
- Fall from heights
- Falling structures and objects during liftings
- Mechanical hazards caused by contacts with moving parts.
- Electrical hazards eg. Electrostatic phenomena
- Fire or explosion caused by combustible chemicals
- Hazards from manual handling e.g. fatigue & working in confined spaces.
- Uncertainties in health and safety risks



# HEALTH AND SAFETY CHALLENGES



- *Increase in health and safety incidents*  
(<https://www.gplusoffshorewind.com/work-programme/statistics> )
- *Skills gap*
- *Poor safety culture*
- *Weak risk governance/regulatory regime*
- *Insufficient funding and capacity*
- *Inconsistent safety data*
- *Denial and benignity*



# Alarm bells...



“The number of serious incidents and accidents in the offshore wind industry are too high when compared with offshore oil and gas’. For this reason, there are significant lessons to be drawn from the oil and gas industry. Despite the prevailing challenges in the offshore wind energy industry, the situation appears to be worsened by the safety culture and attitude of some companies regarding safety”. [Environmental Health and Safety Manager for Equinor](#)

“Operators who apply high safety standards are losing out to companies that cut corners... The situation is frighteningly similar to the boom in North Sea oil in the 1970s. Back then people were warning of poorly enforced standards, but it wasn’t until 167 men died in the Piper Alpha disaster that anything was done to clean up the industry”. [Andrew Linington, a spokesman for Nautilus](#)

# Incident Data

<https://www.gplusoffshorewind.com/work-programme/workstreams/statistics>



**Global Offshore Wind  
Health and Safety Organisation**

[About the G+](#) [Work programme](#) [Members](#)



## G+ summary statistics

Actual consequence	2014	2015	2016	2017	2018	2019	2020	Total
Lost work day injury	44	41	43	49	39	62	43	<b>321</b>
Restricted work day injury	13	32	35	30	34	23	30	<b>197</b>
Medical treatment injury	85	53	42	78	45	38	22	<b>363</b>
First aid injury	90	70	61	226	223	267	201	<b>1138</b>
Near hit/miss	634	333	272	315	163	230	193	<b>2140</b>
Hazard	9	148	230	63	133	102	107	<b>792</b>
Asset damage				332	65	137	147	<b>681</b>
<b>Total</b>	<b>875</b>	<b>677</b>	<b>683</b>	<b>1093</b>	<b>702</b>	<b>859</b>	<b>743</b>	<b>5632</b>



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Andy Goldsmith  
International Marine Contracts Association  
52 Grosvenor Gardens  
London  
SW1W 0AU

Reference  
HSE Letter 20200710

Date 10th July 2020

Dear Andy  
**HEALTH AND SAFETY AT WORK ETC ACT 1974**

The UK governments are moving into the next stages of their responses to the COVID-19 pandemic. As work activity increases and following a review of recent RIDDORs and data from the various industry bodies, I have concluded that in some sectors of the wind energy industry, improvements in health and safety performance has at best stalled if not reversed. In 2020, there have been a number of serious incidents both in the UK and elsewhere which could indicate that any reversal may continue. This would be unacceptable. I know that your organisation and your members state your commitment to improve health and safety, however there is a renewed need to ensure that all organisations and individuals provide the necessary leadership to ensure health and safety remains an industry priority.

HSE plan to restart proactive site inspections at offshore and onshore wind farms. These inspections will allow HSE to determine if the industry is COVID-19 compliant; performance was not compromised during the pandemic; and arrangements to manage health and safety are provided. While we will continue to consider the holistic approach to health and safety; we will specifically consider the following:

Energy Division

**Trevor Johnson**

Energy Division  
Belford House  
59 Belford Road  
Edinburgh  
EH4 3UE

Tel:+44 (0)20 3028 2411  
Trevor.johnson@hse.gov.uk

<http://www.hse.gov.uk/>

Head of Unit  
Gill Minshull

# REGULATING HIGH/MAJOR RISK INDUSTRIES



- Energy maximisation and the political economy of speed.
- Self-Regulation
- Prescriptive Regulation
- Meta-Regulation/Safety Case

# UK Regulatory Regime



- Health and Safety at Work etc. Act 1974 is the principal regulation.

Section 2 general duty:

“ it shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all employees” .



HOW?



## • Other Regulations

- The UK Merchant shipping Reg
- The Management of H&S at Work Regulation 1999
- Construction Design and Management Reg. 2015
- Reporting Industrial Diseases and Dangerous Occurrences 2013
- Provision of Use of Work Equipment Reg 1998

## • The Regulators

- Health and Safety Executive
- The Maritime Coastguard
- MAIB
- The Civil Aviation Authority
- The Air Accident Investigation Board
- The Police



# Criticism and Regulatory Gaps



- Transplantation of onshore regulations offshore without critical modifications especially when there are higher Health and Safety risks offshore. *Health and Safety at Work etc. Act 1974 (Application outside Great Britain) Order 2013.*
- *Absence of sufficient regulatory safeguards*
  - *Permit regime*
  - *Independent verification*
  - *Auditing*
  - *Regular review*
  - *Weak regulator*
  - *Fragmented and complex*

*could lead to regulatory capture*



*See diagram below:*

# So what is this Safety-case



- Safety Case: used in the offshore oil and gas industry under Offshore Installation Safety case Regulations 2015

“ a document which demonstrates adequacy of operators management system, for design and operation of the installation, proper identification of potential major hazards of the installation and prevention or mitigation measures.” ... helps give stakeholders **CONFIDENCE/ASSURANCE**

- It also provides adequate temporary safe refuge for personnel in the event of a major accident.
- It includes **Quantitative Risk Analysis (QRA)**, Formal Safety Assessments (FSA) and Safety Management systems amongst.

## **Quantitative Risk Analysis**

- *Regulatory safeguards like, independent verification, auditing, 'living document' and a permit system.*

***WHY OFFSHORE OIL AND GAS?***

# Differences and similarities between offshore wind and offshore oil and gas operations

- Is the HSE RIGHT?

Differences are:

- The type of product:-Hydrocarbon
- Number of personnel:- This is fast changing
- The geological structure underneath an oil and gas platform which could lead to uncertainties

But admits ‘that the potential for accidents will increase giving the planned expansion’.

# Offshore wind vs offshore oil and gas

## Hazard

## Relative Risk (Wind vs Oil & Gas)

## Comment

Electrical Injury

Higher

Higher-Voltage Equipment & all activities related to this equipment

Personnel Transfers

Higher

More boat transfers expected for a worker on offshore wind turbines. Oil and Gas platform boat landings and helipads are larger than those of wind monopiles.

Awkward Postures

Higher

Generally, more room to perform tasks is available on Oil and Gas platforms

Hazard	Relative Risk (Wind vs Oil & Gas)	Comment
Electrical Injury	Higher	Higher voltage equipment and all activities related to this equipment.
Personnel transfers	Higher	More boat transfers expected for a worker on offshore wind turbines. Oil and Gas platform boat landings and helipads are larger than those of wind monopiles.
Awkward postures	Higher	Generally, more room to perform tasks is available on Oil and Gas platforms.
Coordination issues entry	Similar	Wind turbines have more confined spaces and entry to internal areas (tower, nacelle, gearbox, controller, etc.) may be more difficult than on Oil and Gas platforms.
Falls from height	Similar	Activities to facilitate safety falls are similar on both types of platforms.
Hoisting	Similar	Similar activities and equipment.
Advanced electrical	Similar	Similar activities on maintenance, inspection, repair, etc.
Working in confined spaces	Similar	Similar activities on maintenance and repair.
Working in awkward postures	Similar	Similar activities on maintenance and repair.
Working in confined spaces	Similar	Similar activities on maintenance and repair.
Working in confined spaces	Similar	Similar activities on maintenance and repair.

# Offshore wind vs offshore oil and gas

## Hazard

## Relative Risk (Wind vs Oil & Gas)

## Comment

Confined Space  
Entry

Similar

Wind Turbines have more confined space and must be entered more frequently; regardless, confined space entry for both Oil & Gas & offshore wind carries inherent risk & can have serious consequences

Falls into water

Similar

Activities in locations where falls into water are likely are similar

Diving

Similar

Similar activities & frequencies

# Offshore wind vs offshore oil and gas

## Hazard

## Relative Risk (Wind vs Oil & Gas)

## Comment

Manual  
Material  
Handling

Similar

Similar needs for upgrade or maintenance requiring manual handling of equipment & materials

Long term  
physical wear  
& tear

Similar

Relatively little climbing is required for offshore Oil & Gas workers, but shifts & work schedules may be longer

Mechanical  
Hazards  
e.g. Pinch points

Similar

Both installations require work on machines that pose dangers to workers

# Offshore wind vs offshore oil and gas

## Hazard

## Relative Risk (Wind vs Oil & Gas)

## Comment

Slips and Trips

Similar

Common Hazard in all work places

Exposure to heat and cold

Similar

Both Wind & Oil & Gas facilities have limited climate-controlled spaces

Falls from heights

Similar

More climbing & higher climbing is required for activities in wind turbines; however, a higher exposure rate for personnel on Oil & Gas platforms may exist

# Offshore wind vs offshore oil and gas

Hazard	Relative Risk (Wind vs Oil & Gas)	Comment
Fire	Lower	Oil & Gas facilities process flammable materials
Explosion	Lower	Oil & Gas facilities process flammable materials
Crane Lifts	Lower	Oil & Gas facilities generally have permanent cranes that are used more frequently than those that may exist on wind turbines.



# Lessons to be drawn from the offshore oil and gas experience

- The need for proactive Health and Safety Risk regulation (Safety-case).

The following Table shows the interconnection and relation between major accidents and development of offshore health and safety regulation in UK, Norway and U.S.



Thank You!

