



# Offshore Safety: ESU Policy Support

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2. Offshore Challenges in Europe
3. The impact assessment process
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- Deepwater Horizon, Montara.
- Indigenous production important to EU consumption.
  - Oil: 196 million tons produced in EU 27 + NO
  - Gas: 269 MTOE in EU 27 + NO
- In the EU + Norway, over 90% of oil and over 60% of gas produced comes from off-shore operations.
  - North Sea: NO, UK, NL, DK, DE
  - Mediterranean: IT, CY, MT
  - Black Sea: RO, BU.

- Over 1,000 offshore installations in the NE Atlantic alone.
- ‘Frontier oil’:
  - Deep water
  - High pressure
  - Challenging climactic conditions
- Entrance of new/smaller companies
- Ageing infrastructure.
- Technological advancement: innovative well design and more subsea infrastructure.
- New exploration in MSs with little or no experience.
- Little international standardization.

We need:

1. The **expected future costs** of offshore accidents (baseline scenario);
2. the **additional costs** of implementing the proposed policies in Europe;
3. and the extent to which implementing the proposed policies is likely to **reduce losses**.

- Broad range of causes and consequences.
- Multifaceted role in the European economy.
- Rarity of large-scale accidents.
- Effectiveness of policy options.

- Semi-quantitative approach
  
- Focuses on **select key dimensions of cost** where:
  - the scale of the impact is most significant;
  - its nature is well-understood;
  - we have dependable data.
  
- **Case studies** to estimate the costs of policy options within general but reliable bounds.

- Costs of major offshore accidents
  - 1) Losses to infrastructure, 2) Losses resulting from oil spills.
  - Sources
    - Case histories
    - Actuarial Publications (Grey Material)
  
- The probability of major accidents
  - Methodological challenge: Low sample size
  - Sources
    - Industry Sources for Quantitative Risk Assessment



Operation		Blowout Probability / Unit	Unit	Annual No. Units in European Waters	Annual Probability of at least one Blowout in European Waters
Drilling	Exploration Drilling, deep (normal wells)	$3.1 \times 10^{-4}$	per drilled well	383 (estimated)	$1.1 \times 10^{-1}$
	Exploration Drilling, deep (HPHT wells)	$1.9 \times 10^{-3}$	per drilled well	29 (estimated)	$5.3 \times 10^{-2}$
	Development Drilling, deep (normal wells)	$6.0 \times 10^{-5}$	per drilled well	635 (estimated)	$3.7 \times 10^{-2}$
	Development Drilling, deep (HPHT wells)	$3.7 \times 10^{-4}$	per drilled well	48 (estimated)	$1.8 \times 10^{-2}$
Well Intervention	Completion	$9.7 \times 10^{-5}$	per operation	608 (estimated)	$5.7 \times 10^{-2}$
	Wirelining	$6.5 \times 10^{-6}$	per operation	10735 (estimated)	$6.7 \times 10^{-2}$
	Coiled Tubing	$1.4 \times 10^{-4}$	per operation	505 (estimated)	$6.8 \times 10^{-2}$
	Snubbing	$3.4 \times 10^{-4}$	per operation	316 (estimated)	$1.0 \times 10^{-1}$
	Workover	$1.8 \times 10^{-4}$	per operation	1074 (estimated)	$1.8 \times 10^{-1}$
Producing Wells (excluding external causes)		$9.7 \times 10^{-6}$	per well year	6315	$5.9 \times 10^{-2}$
Producing Wells (external causes)		$3.9 \times 10^{-5}$	per well year	6315	$2.2 \times 10^{-1}$
Total:					$6.45 \times 10^{-1}$

$$p = 1 - \prod_{i=1}^{11} (1 - p_i)$$

The annual probability of at least one blowout in European waters is around  $6.5 \times 10^{-1}$ , or 65%.

But:

- Scandpower calculates that the blowout frequency for gas wells is 2.6 times that for oil wells. Assuming an equal number of oil and gas wells in Europe...

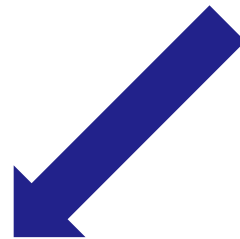
**$1.8 \times 10^{-1}$ , i.e. 18%**

- Det Norske Veritas calculates that should a blowout occur, there is a 56% chance of it lasting 2 days or less, and only a 15% chance of it lasting more than 2 weeks.

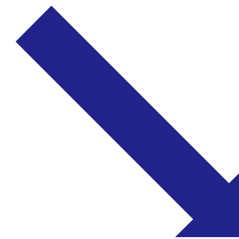
**$2.7 \times 10^{-2}$ , i.e. 2.7%**

- Historical figures suggest a recurrence rate of 35 years for a blowout lasting more than 2 weeks in Europe.
- Assuming an average cost of €5 billion, this amounts to costs of €140 million per year.
- Add to this an annual figure of €65 million in property losses resulting from less costly, but more common, major accidents, and we can estimate a total annual figure of over €200 million in direct, tangible costs for offshore accidents in Europe.

**Assumption:** As many policy options are already at least partially implemented, case studies drawn from their experience can give us an indication of many dimensions of impact.



Effectiveness of  
proposed policies



Regulatory and  
compliance costs

## Sources

- For the effectiveness of proposed policies
  - Official reports on previous accidents (qualitative).
  - Statistics from before and after an offshore regulatory regime was introduced.
- For the regulatory and compliance costs
  - Data gathered from regulators and industry
  - (EC administrative burden calculator)

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