

# A risk-based approach to regulating extraction activities



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# Agenda

- What is risk-based regulation?
- UK regulatory landscape
- Challenges and solutions in understanding risk related to prioritised guidelines and standards
- Conclusions



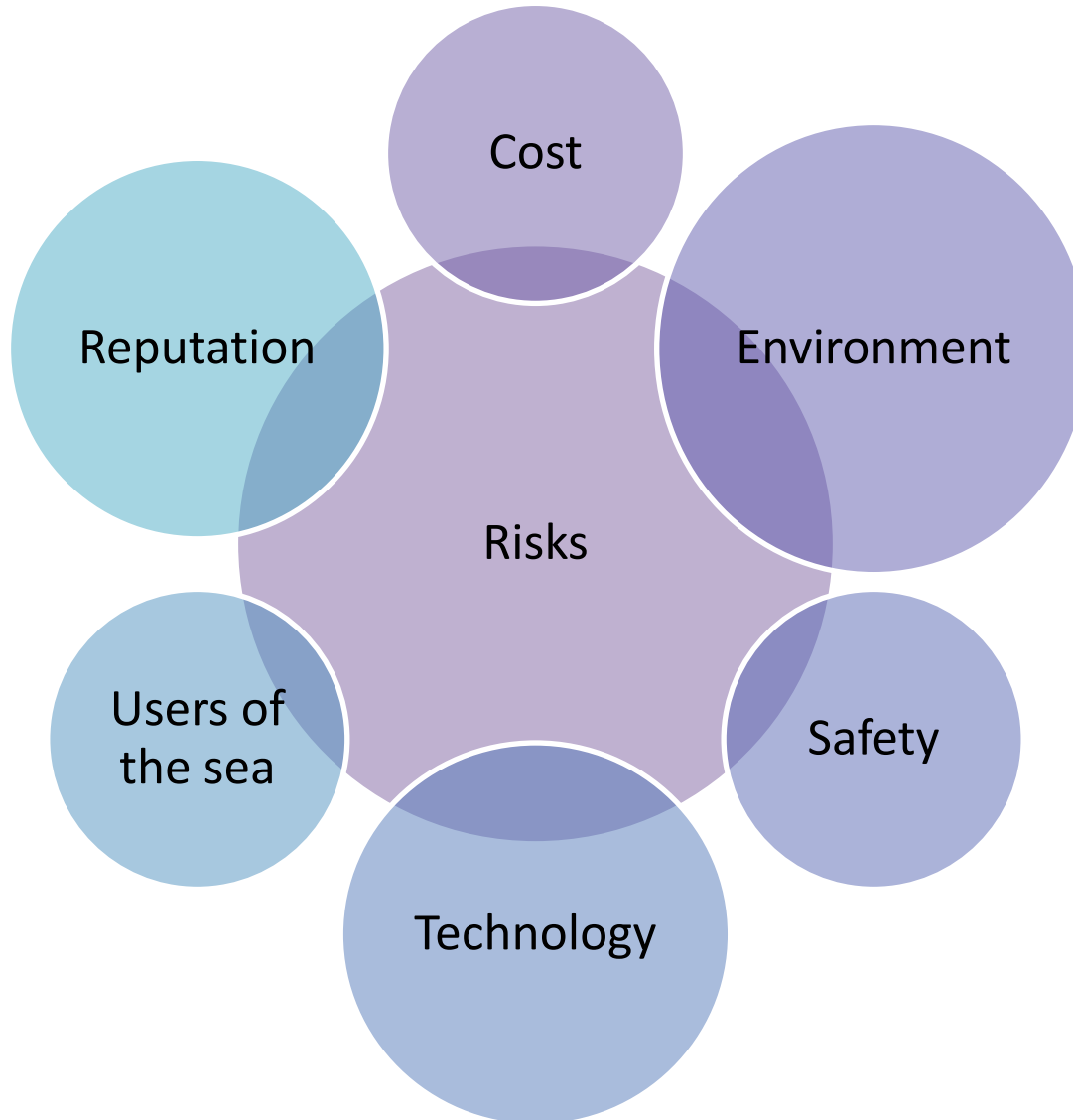
# What is risk-based regulation?

**Regulation that focusses on allocating resources in proportion to the risks in question to address the most important environmental issues and is adaptive to changing circumstances**

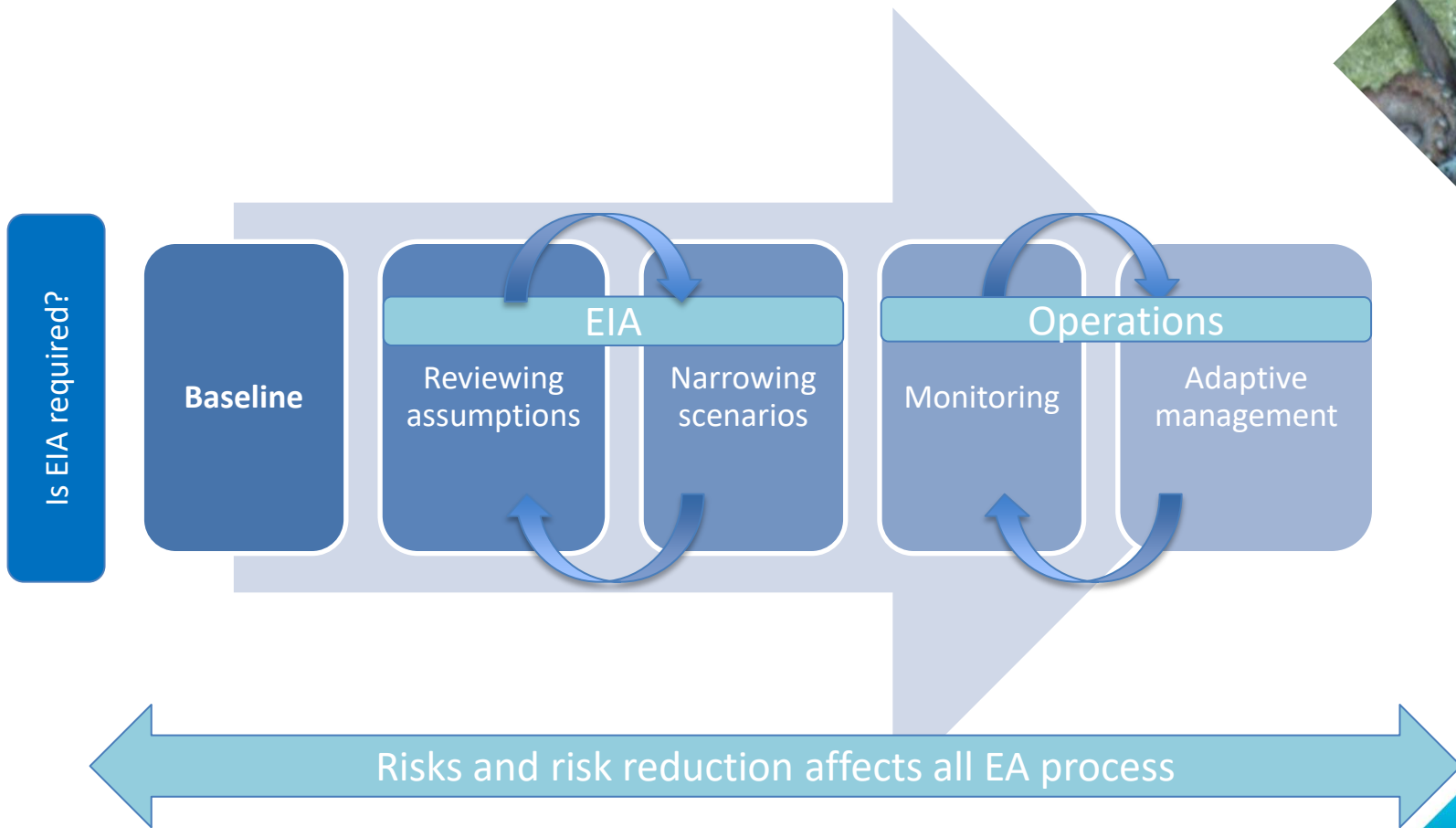
- Evidence-based
- Data-driven and responsive
- Auditable
- Clearly communicable
- Flexible
- Forward-thinking



# What are the risks?



# Where are the risks?



# UK experience

Minimising risk through guidelines and standards



# Guidelines: Transparency / participation

**Guidelines for access to environmental data and information**

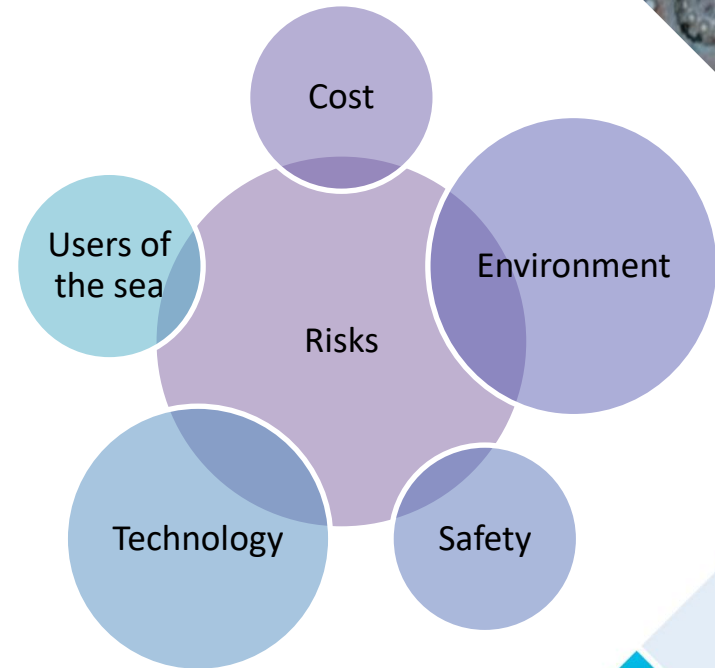
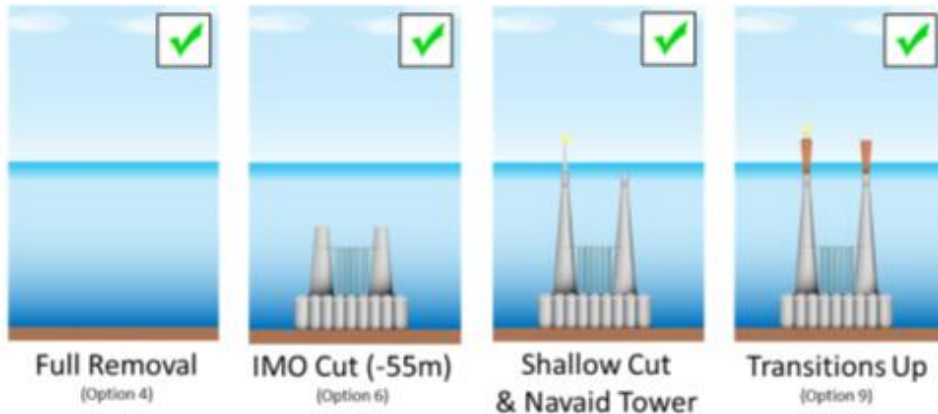
**Guidelines for procedures for stakeholder participation in activities in the Area**



# Guidelines: Transparency / participation – comparative assessment

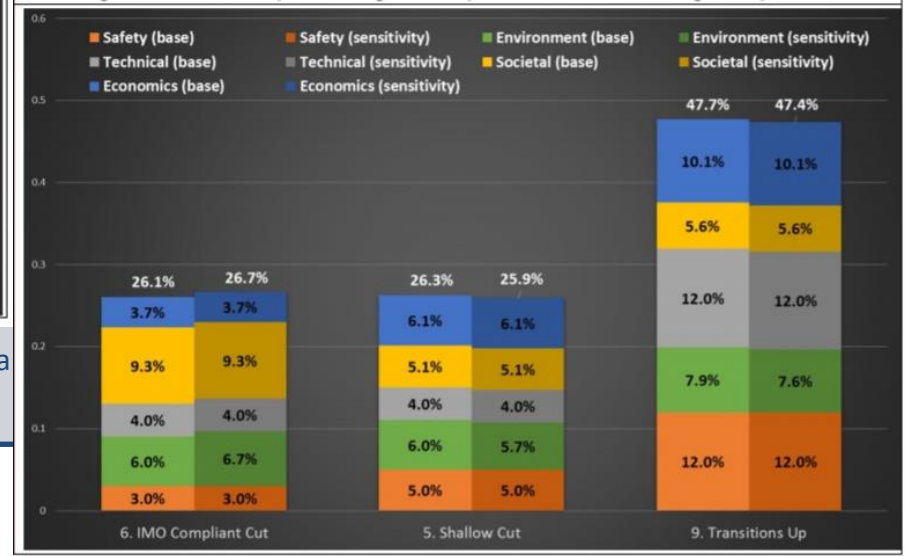
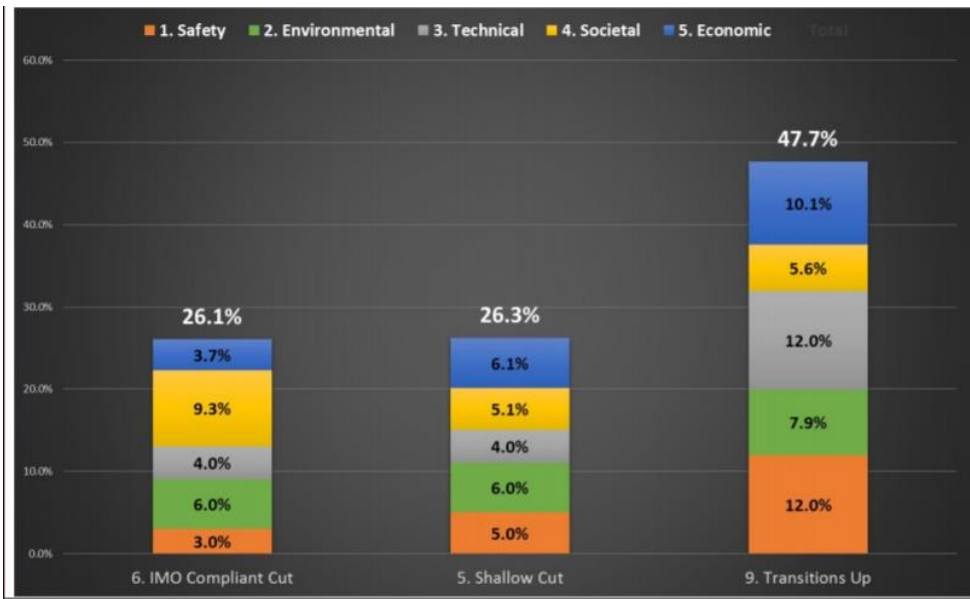
Stakeholder-based process that agrees best options for decommissioning infrastructure

## Evaluation Candidates





# Guidelines: Transparency / participation – comparative assessment



• Cost only used as a “break”

# Transparency / participation – lessons learned

## Deep sea mining use

- Transparency and participation should be at the heart of assessment processes
- Iterative stakeholder consultation allows refining of options and full use of available expertise, as well as managing stakeholder expectations as to transparency
- Important to include feedback loops in guidelines, so that stakeholders can see that their comments are being taken into account
- Process should not be onerous on stakeholder time or resources



# Guidelines: Adaptive management

**Guidelines on the use of adaptive management techniques**

**Guidelines for mapping seabed habitats and resources in the Area**



# Guidelines: Adaptive management – SDM policy in Scotland

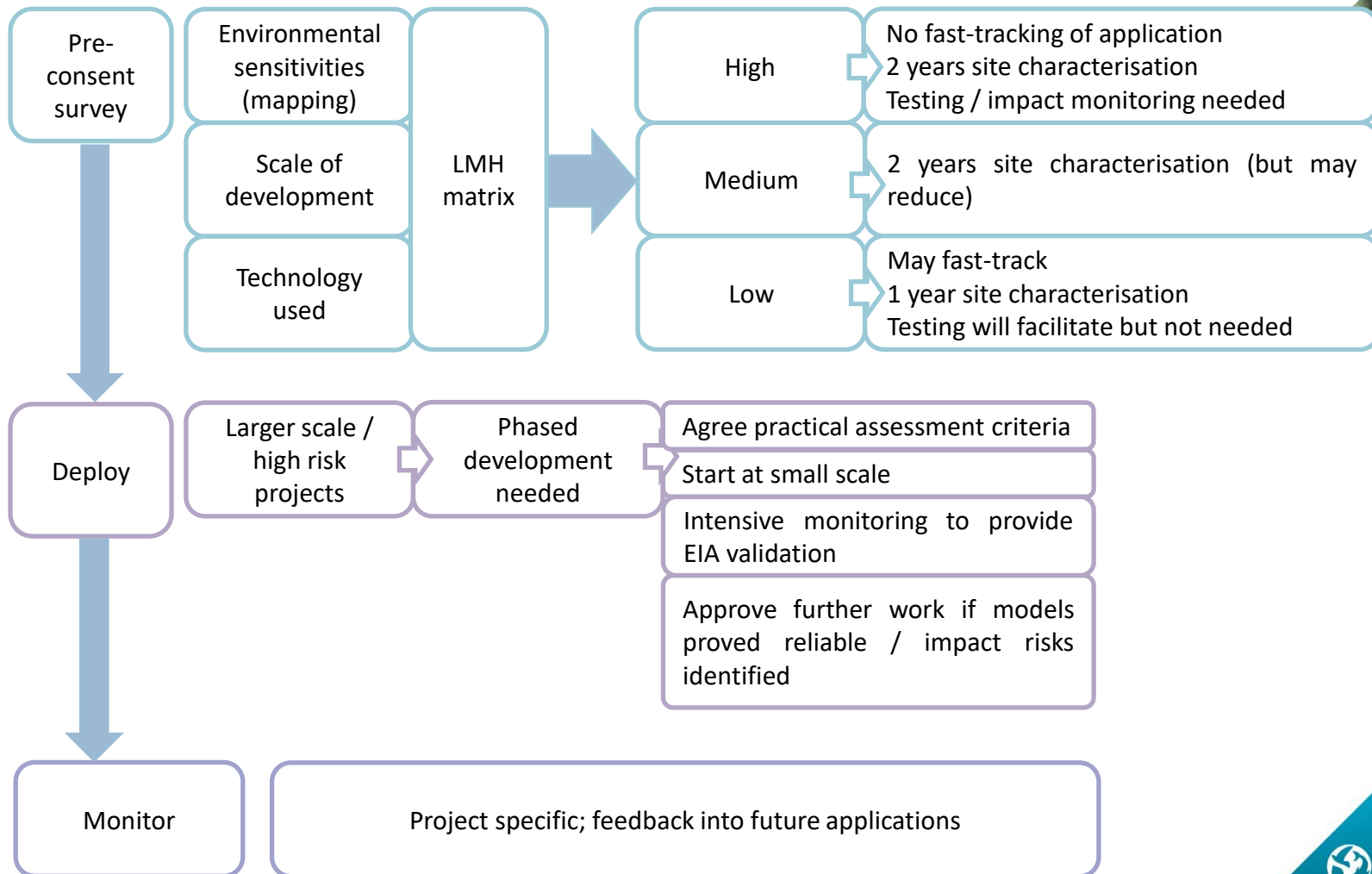
## Survey Deploy Monitor –

Risk-based approach for taking forward wave and tidal energy proposals, designed to enable novel technologies to be deployed in a manner that will simultaneously reduce scientific uncertainty over time whilst enabling a level of activity that is proportionate to the risks

Used for offshore wave and tidal devices, but applications to other industries



# Guidelines: Adaptive management – SDM policy in Scotland



# Guidelines: Adaptive management

## Deep sea mining use

- Adaptive management allows for testing of EIA assumptions and validation of EIA conclusions
  - in the UK, all offshore windfarms have to provide noise results for their first 4 piles before proceeding to further noisy activities
  - how to apply this feedback process to a front-loaded capital intensive industry?
- Allows for the use of novel technologies etc by providing a route for risk reduction during operations or between contracts
  - but requires management responsiveness to create change



# Guidelines: EIA frameworks

**Guidelines for environmental impact assessment and preparation of an environmental impact statement**

**Guidelines for the development and application of environmental management systems**

**Guidelines for the preparation of scoping reports**



# Guidelines: EIA frameworks

**Adequacy of information provided –  
can a science-based opinion be concluded on risk and impact?**

## The basics

- Maps
- Numbers don't add up
- References missed out

## More advanced

- Potentially important impacts screened out and then have to be reinserted
- Detail provided on receptors that aren't affected by the operations
- Are conclusions using best available evidence?
- Use of old evidence
- Use of non-site specific evidence
- Use of inappropriate impact matrices

## Guideline requirements

- **Early consultation (around scoping) on what the EIA needs to focus on**
- **Early consultation to agree evidence sources**
- **High quality QA before submission**



 **DOGGER BANK  
CREYKE BECK** August  
2013

**Environmental Statement  
Chapter 1 Introduction**





# Guidelines: EIA frameworks

## Amount of information provided

EIA reports can overwhelm with information

- Dogger Bank windfarm EIA consisted of 17 lever arch files
- Hornsea 3 windfarm had 14685 pages accepted into the examination *post* EIA submission



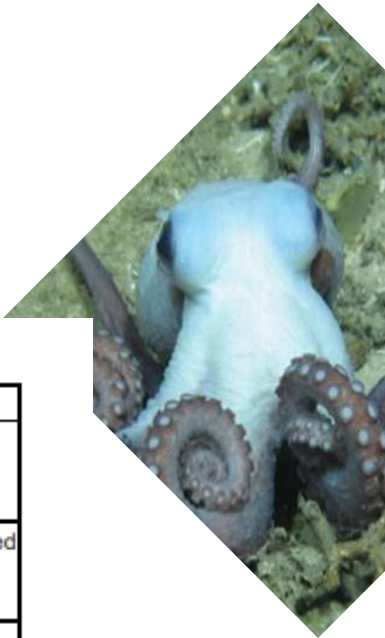
## Guideline requirements

- Documents focussed on consenting issues / large scale impacts
- Refer to information in other published documents
- Expectations of time needed to review documentation compared to contracting timetable

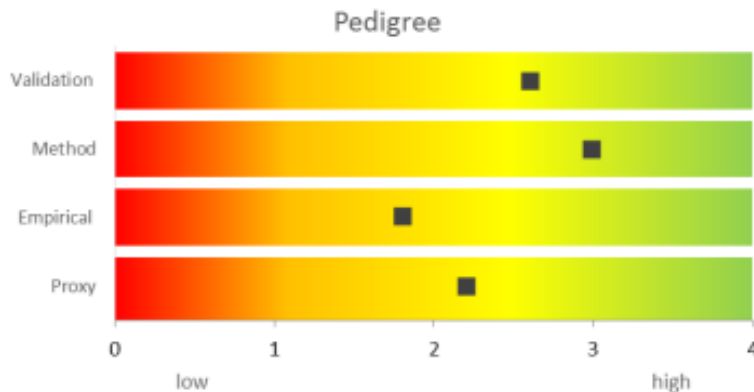
# Guidelines: EIA frameworks

## Communicating risk

Uncertainty in evidence and uncertainty in conclusion should be clearly stated



**Table 4. Pedigree chart.**



Score	Proxy	Empirical basis
4	An exact measure of the desired quantity	Controlled experiments and large sample direct measurements
3	Good fit or measure	Historical/field data; uncontrolled experiments; small sample; direct measurements
2	Well correlated but not measuring the same thing	Modelled/derived data; indirect measurements
1	Weak correlation but commonalities in measure	Educated guesses indirect approx. rule of thumb est.
0	Not correlated and not clearly related	Crude speculation

Source: Pedigree matrix for emission monitoring data [Available at: <http://www.nusap.net/>]

## Guideline requirements

- Need to provide understanding of uncertainty through the process
- Uncertainty Assessment?
- Uncertainty levels appropriate for metrics and indicators

# Guidelines: EIA frameworks

**Sharing risk**      Decom guidelines by industry body and consultants

- Operator input through questionnaire and commenting on drafts
- Regulator input on steering group

## **Positives**

- Rounded view on environmental appraisal
- Agreed among all major stakeholders

## **Challenges**

- Commerciality of result
- Complementary to regulator guidelines; fully aligned but not official



# Guidelines: Thresholds and indicators



**Guidelines (generic) for a risk-based approach to the development and assessment of environmental thresholds and indicators**

# Guidelines: Thresholds and indicators

- Management thresholds are naturally attractive to decision-makers as they can offer a clear-cut, evidence-based process to decide whether damage will / will not occur to an ecosystem or area.
- Management thresholds can also offer false security if they are arbitrary, have no valid biological basis, or not designed for the management regime.



# Guidelines: Thresholds and indicators

## 1. Before initiation of EA

UK oil and gas –

- operations that need EIA are noted in the Petroleum Act
- operations expecting greater than 500 tonnes of oil per day or more than 500,000 m<sup>3</sup> of gas per day

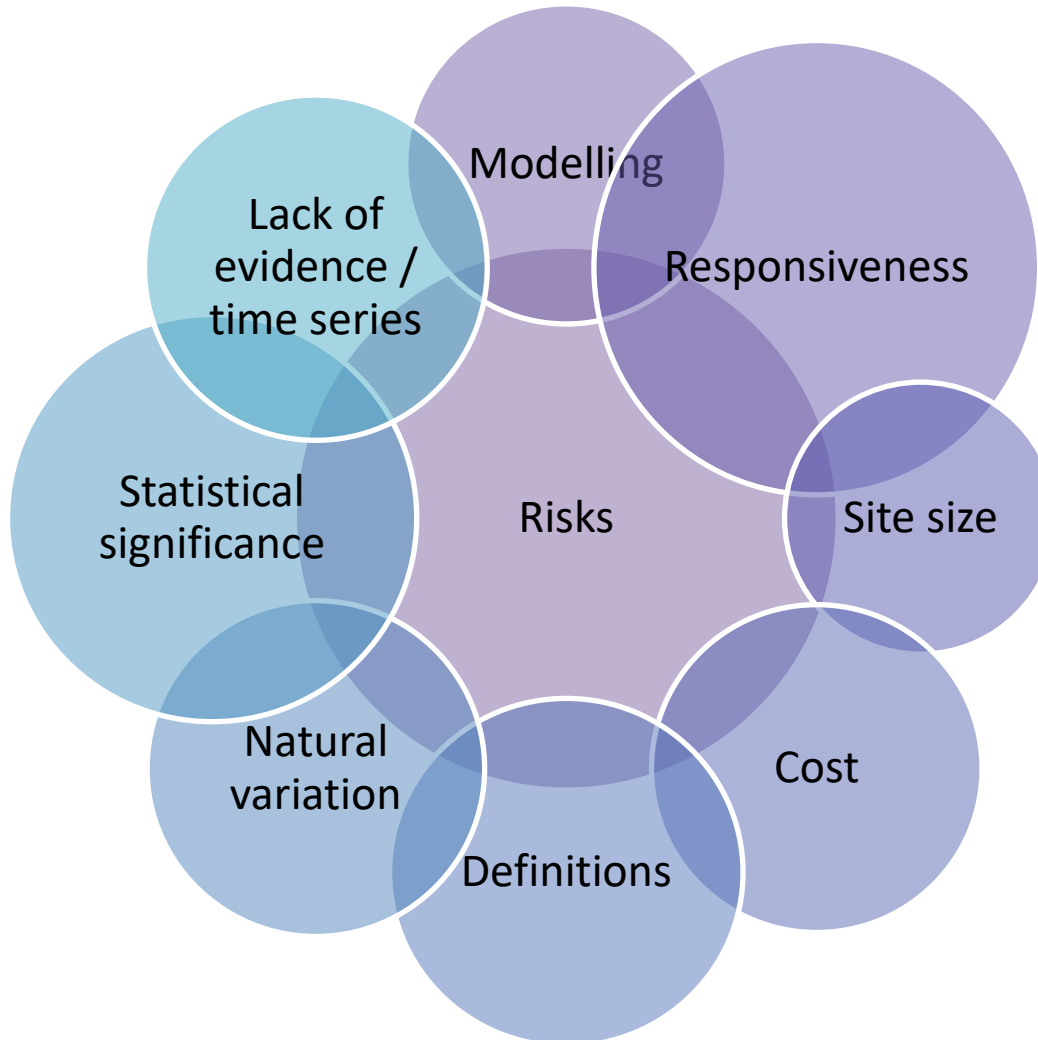
How would this apply to deep sea mining ...?

- EIA needed for testing of mining equipment, test-mining operations and commercial-scale mining
- material changes to a project? How are these defined?
  - timescale
  - footprint
  - severity of impacts
  - change to methods
- Will smaller-scale changes require an EIA Direction / EIA addendum?



# Guidelines: Thresholds and indicators

## 2. Within EA (and as validation for ES)



# Conclusions





# Risk-based regulation: conclusions from UK experience

- Risk is found throughout assessment and regulation
- Risk can be lowered through
  - Narrowing down options as evidence becomes available / plans become firmer
  - Adaptive management to validate assumptions and provide a means of
    - using robust evidence base spatially and temporally
    - using agreed definitions
    - stakeholder input
    - transparency of process
    - responsiveness of management regime



# Risk-based regulation: conclusions from UK experience

For deep-sea mining, major issues to consider include

- Responsiveness of management regime
  - Adaptive management
  - Starting point for measuring serious harm / adverse effect
  - Transparency of process
- Dealing with uncertainty
  - Need for baseline validation
  - Time series availability?
  - Evidence *required* for consent

