

# R-DECO



## ***Decommissioning Regulation and Contractual Implications***

***CET seminar, Tuesday November 23 2021***

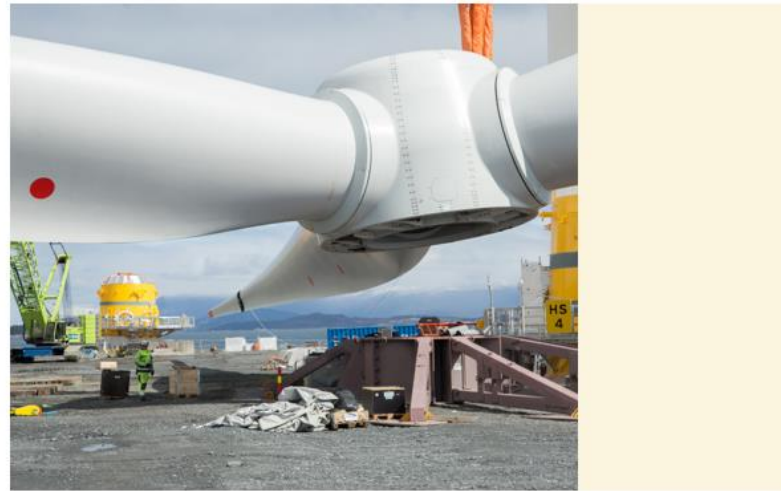
Gunnar S. Eskeland, NHH,  
based on work w Ignacio Herreira  
Anchustegui, Frode Skjeret, and others

R-DECO  
Center for  
Recommissioning  
and Decommissioning



EOV Energiomstilling Vest

## **Understanding decommissioning of offshore infrastructures: A legal and economic appetizer**

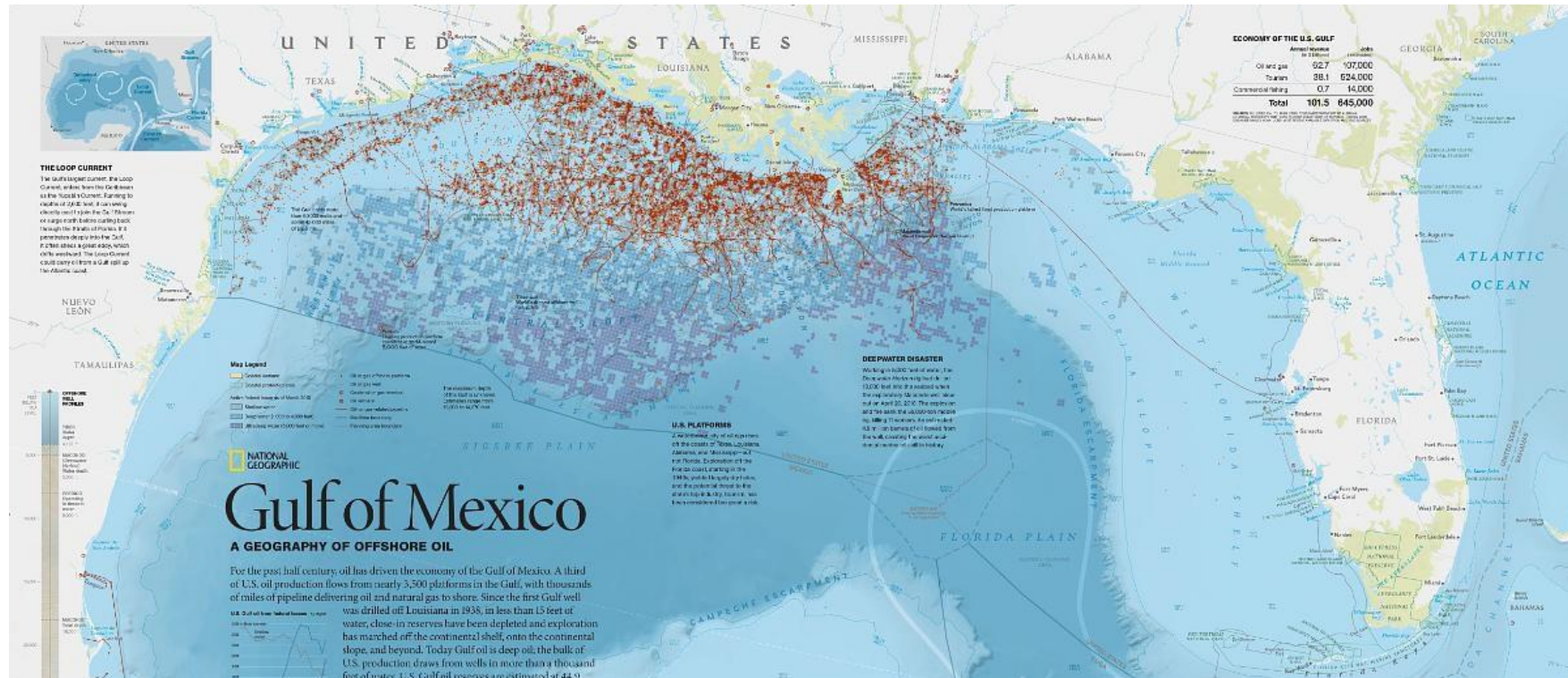


# Legal and Economic Report

- Studies the main implications of decommissioning
  - From a legal and economics perspective
- Divided into 3 large parts
  - Conceptual perspective of decommissioning
  - Regulatory governance
    - International law
    - Denmark, Norway and UK (Scotland)
  - Challenges ahead

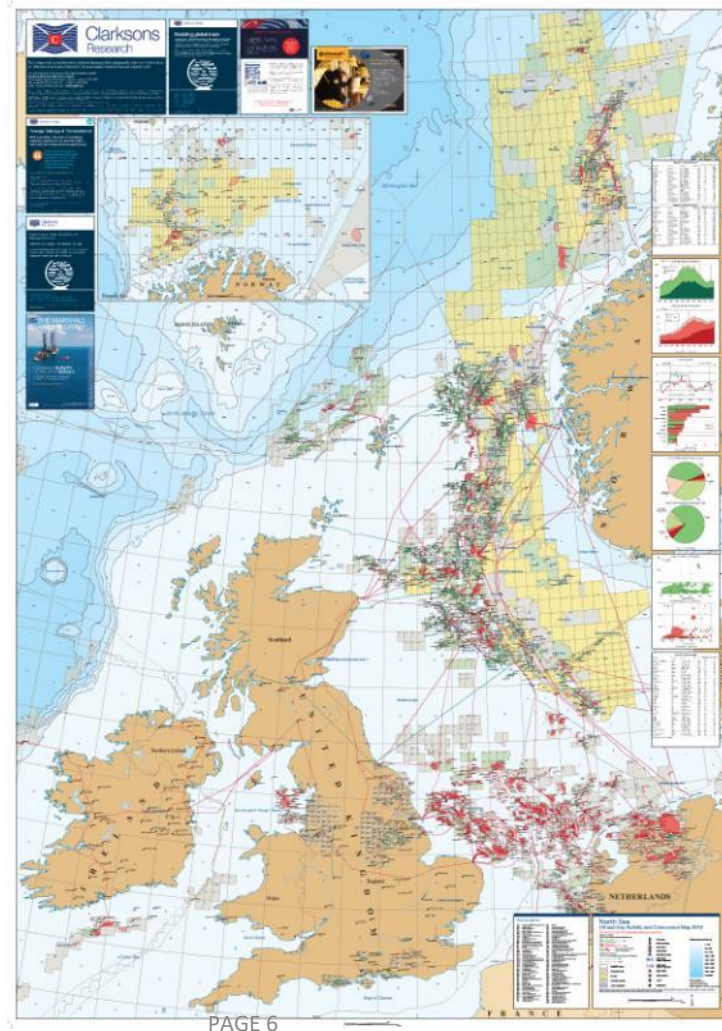
# Some facts and figures

- About 12,000 offshore energy installations worldwide
  - For oil and gas
  - An additional 5,047 offshore wind turbines
    - In Europe alone
- Decommissioned about 4,000 installations
  - Mainly in the Gulf of Mexico





# Some facts and figures



- 170 offshore installations in the North Sea
  - Plus 5,000+ wind turbines
- About 10% of them have been decommissioned
- Costs reaching up to €2 billion
  - Compared to \$500,000 to \$4,000,000 in GoM

# Some facts and figures

- 4 offshore wind farms decommissioned in Europe
  - Among our study countries only 1 in Denmark
- 3 others around the world
- In terms of costs decommissioning appears to be about 3% of the total of all lifetime of oil and gas and wind
  - But very rough estimates – varies from project to project
- Global market by 2024 to be about \$42 billion
- North Sea alone by 2040 €52 billion

# Conceptual perspective of decommissioning

- Defining decommissioning
  - Part of the cessation process
  - Implies the removal and/or treatment of installations at sea
  - Several options:
    - Total removal
    - Partial removal
    - Leave in place



# Key Regulatory Features

- Who has to decommission
  - Typically the owner/operator
    - Even tracing back to previous owners/operators
    - Creating liabilities
      - Can be for eternity
  - But also sometimes the state
    - When there is a transfer of ownership
    - Or they forgot to clarify who does it



# Key Regulatory Features

- Liabilities and default risks
  - Key issue to be tackled by regulation
  - More and more small companies exploiting mature wells
    - Unlikely for wind?
  - Risk of default
  - Creation of shared liabilities
  - Request of insurance
  - Or creating a decommissioning fund

# Key Regulatory Features

- Liability and taxes
  - Decommissioning takes place when there is no further income from structure
  - North Sea jurisdictions allow decommissioning costs to be deducted
    - Justifications for this
  - But also by some seen as a subsidy to energy companies
  - Anything for offshorewind?

# International treaties

- States are obliged by Public International Law to conduct decommissioning
  - Based on:
    - Ensure safe use of sea spaces
    - Environmental protection
- Rules also for Dumping
  - London Convention of 1972
- International (global) and regional regulations
- Mix of hard and soft law approaches

# International treaties

- **1958 Convention Continental Shelf**

- First on the matter
- Denmark, Norway and the UK are parties
- Broad rule (article 5): constructions at sea «Any installations which are abandoned or disused must be entirely removed.»
- Applies to «seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea». 1958 Convention on the Continental Shelf, Article 1(a).

- **1972 London Convention**

- On dumping but not on decommissioning
  - Reusing even if leaving at sea is not dumping

# International treaties

- **UNCLOS 1982**

- Requirement of general (and total removal)
  - And notification of what is left in place
- Focus on safety of navigation
- Applies only to EEZ and CS
  - Not territorial sea
- Not clear what to do with pipelines or cables

- **OSPAR Convention 1992 and Decision 98/3**

- **Regulation for both oil and gas and wind**
  - But only to have experience in wind
  - But not on gas
- **Decommissioning in oil and gas**
  - Taken into account since licensing
  - Governed by a law last modified in 2019
  - Full removal default obligation
    - Exceptions for well and pipelines
  - Must be made within 50 years
  - Mix of soft and hard law
    - Decommissioning Guidelines are central



- **Decommissioning in oil and gas**
  - Focus on best practices
  - And circularity
  - Complex and broad liability system
- **Decommissioning in wind**
  - Principle is to restore the area as it was
    - Full removal?
  - Requirements about sufficient financial capacity
    - Same criteria for electricity plants
      - But not oil and gas

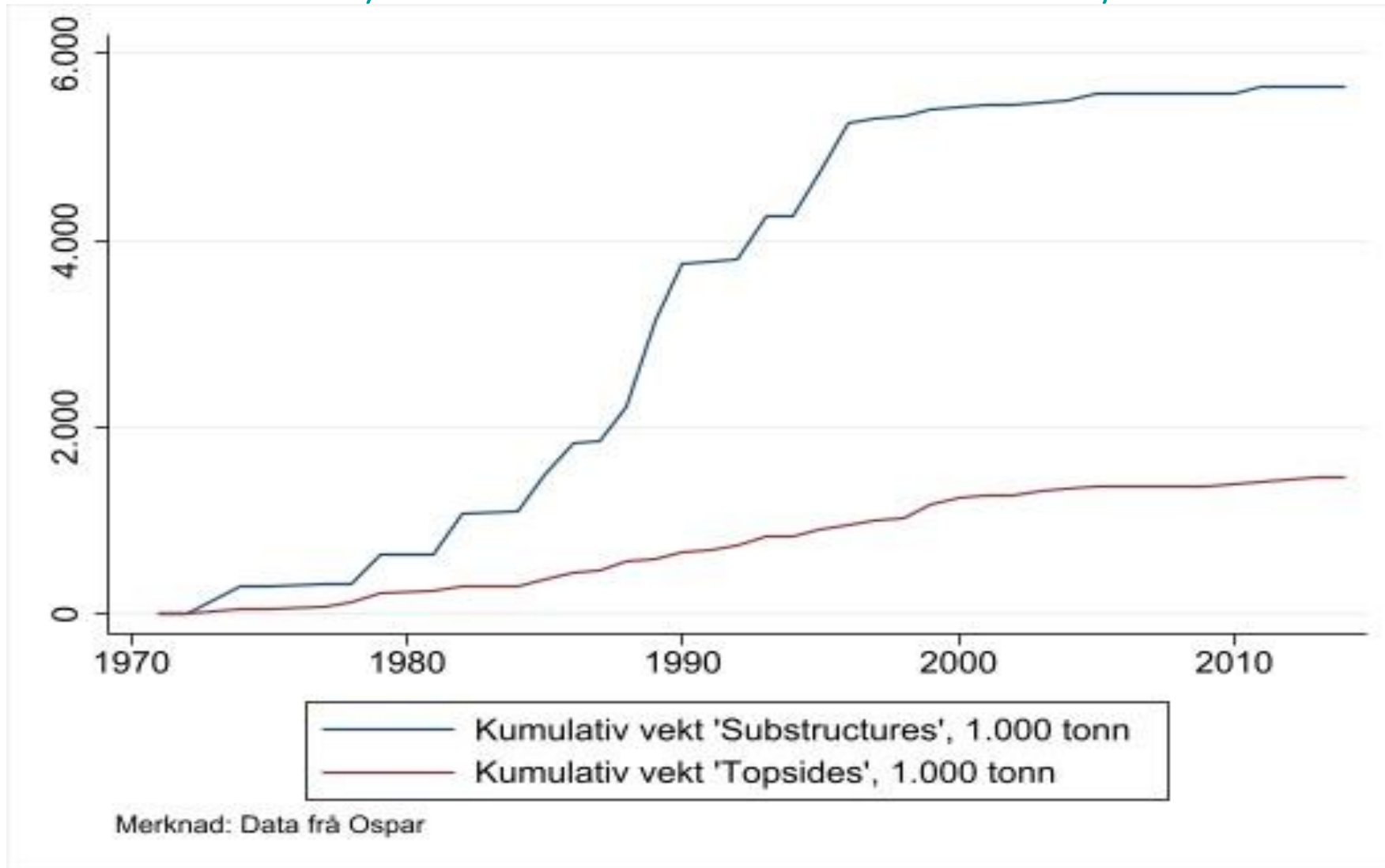
- **Decommissioning in wind**
  - Basic regulation in Havenergilova (§6-1)
    - Ministry can expand on this
    - Energy plant has to be removed
      - Nothing on total/partial
    - A plan has to be in place
  - Havenergilova forskriften
    - Requires to have a decommissioning plan (§9)
      - Part of the «proposal» which is made before plant is built
    - Has to include impact of decommissioning in the impact assessment
  - Nothing on liabilities
  - Empty box compared to other regimes

## Three big PreDecor and R-Deco Question:

1: Is this waste pile a goldmine?

2: Too few, or not smart enough goldminers bidding for it?

3: If so: why? How? Doesn't a market economy know how to make money?



# Traditional approaches to circularity from economics and management

- A waste stream should be and will be exploited with the same enthusiasm as we approach mining and forestry: until marginal costs equal price
- Well, virgin materials and pollution may be 'underpriced', giving rise to taxes, regulations, deposit refund schemes, etc
- Including, perhaps, government efforts in recycling and reuse itself

## Three Pre-Decor Findings

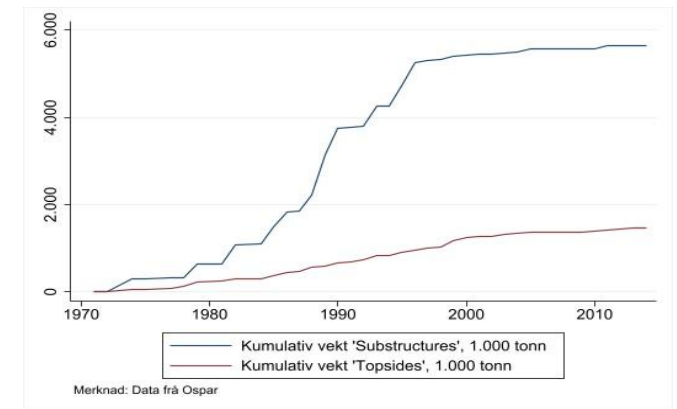
1: This is waste, with pearls, but mainly seen as an obligation

2: The obligated 'owners' are putting too little smartness into it:

- they are risk averse: it is *risky to be creative*
- they do this ad-hoc, with *insufficient competence, knowledge*
- potential improvements would be – in large parts – *other people's gains*

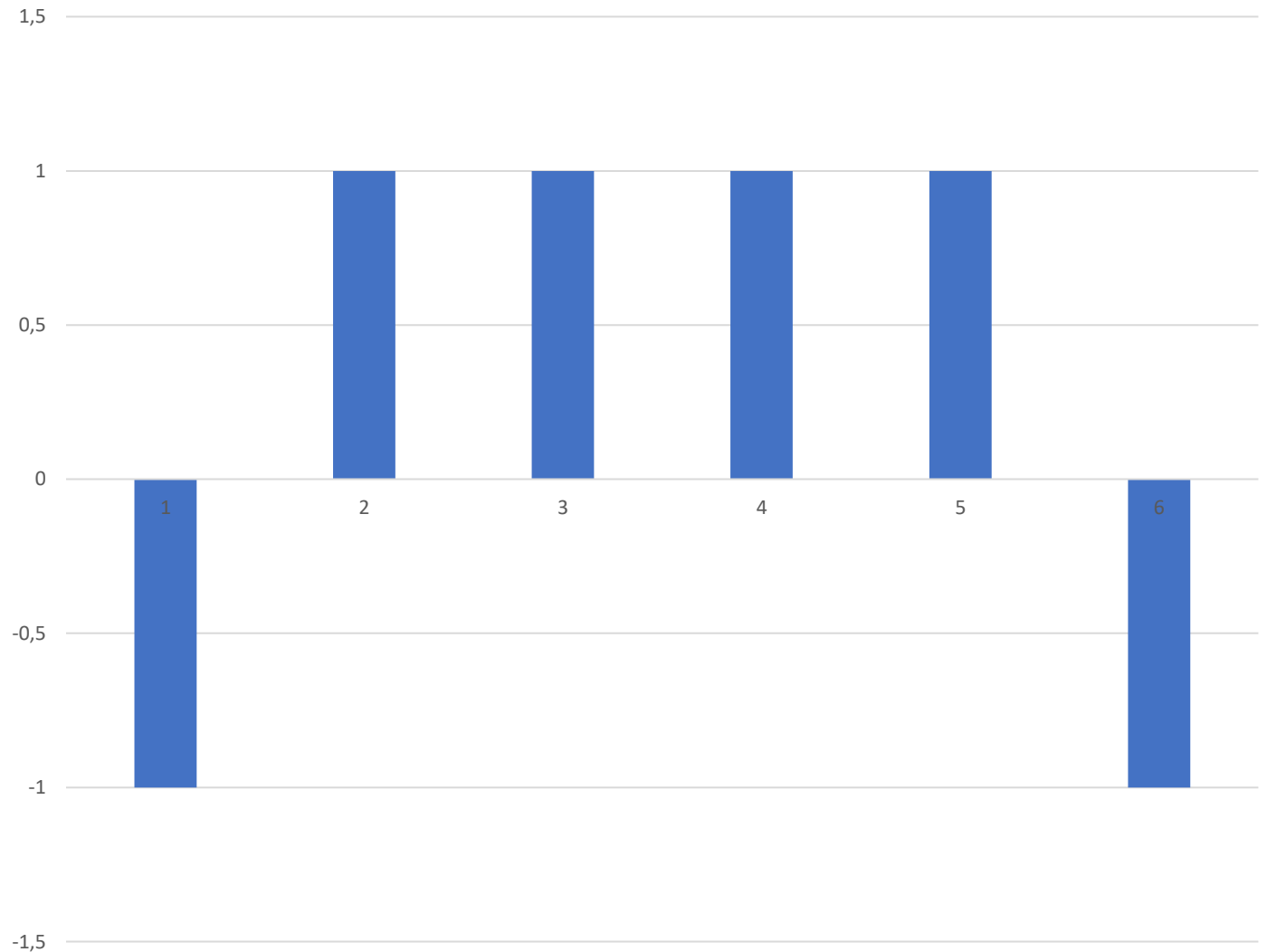


'Contracts for removal are purposefully written to distance yourself from further responsibility'  
experienced offshore expert/operative

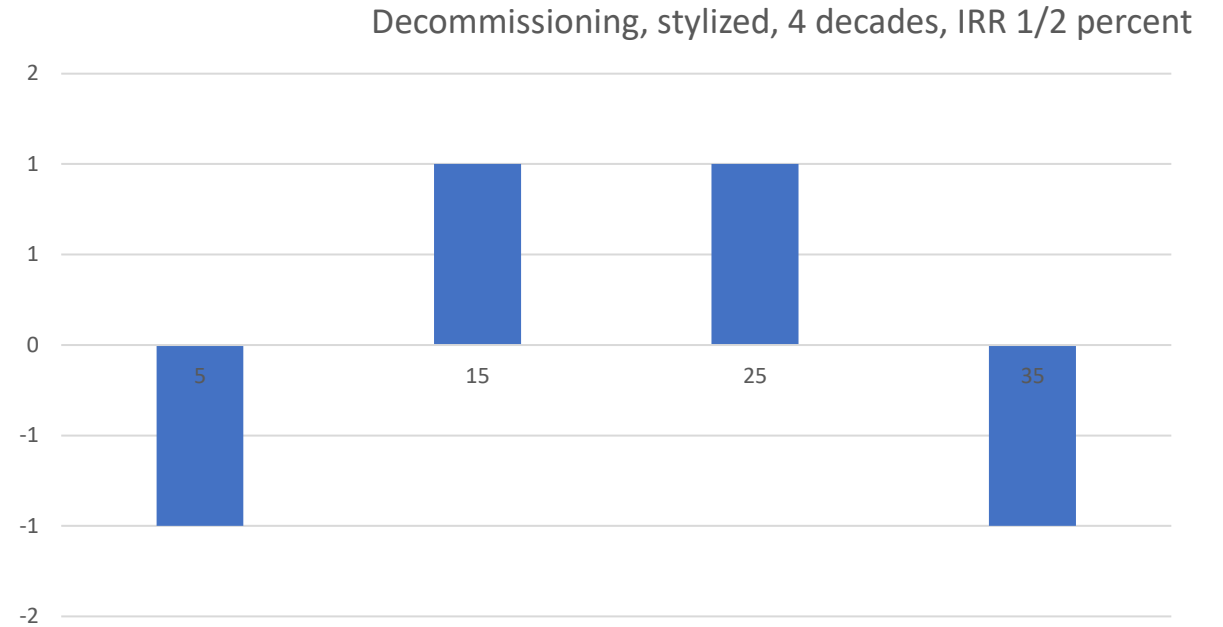
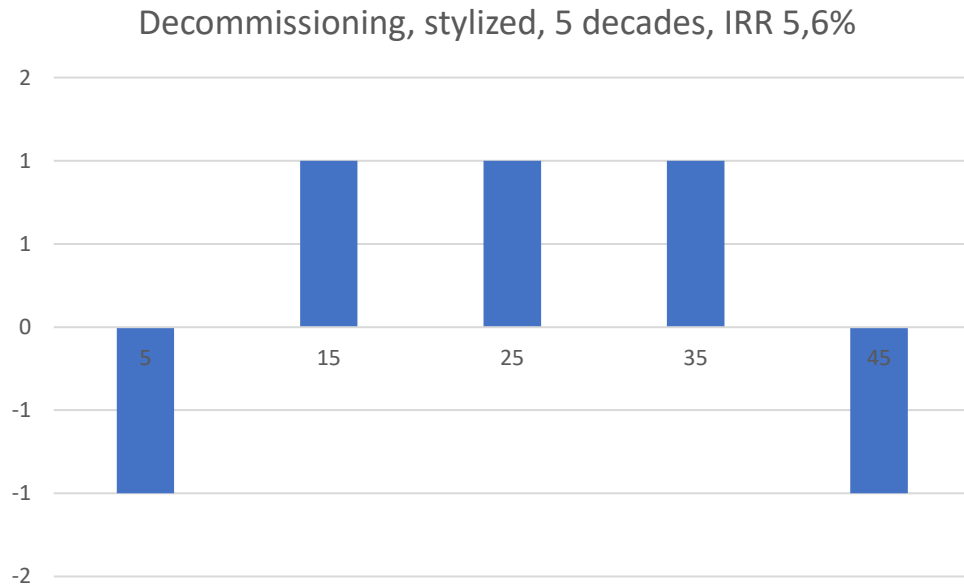


A big removal cost is small over 5 decades  
Only 30 basis points:  
returns from 6.5% plus  
minus ,3% is 6.2% or  
6.8%  
So include uncertainty:  
removal could cost zero  
or double: this is not a  
big deal *at*  
commencement of  
licence

## Decommissioning, a stylized project, six decades



# Windfarms

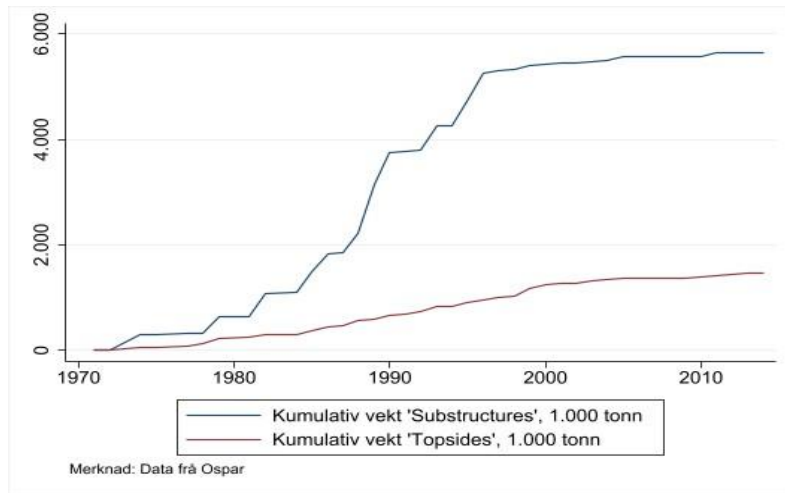


- Let us think about windfarms as similar, except they have shorter lifespan (between two and three decades of production, above)
  1. For symmetry between investing and decommissioning), a consequence is lower profitability
  2. For shorter lifespans, the decommissioning costs must be smaller for the project to be profitable
  3. For shorter lifespans, the tendency of 'think about it later' diminishes:
    - A greater tendency that you actually think about decommissioning in the design phase!
    - A greater policy concern regarding a potential flaw in the incentive framework: what about the long term (of the site)



# If you bid for a job to pick apart/ clean up from a licence, a chunk of steel and cement and wings, what are your concerns?

- A) Circularity: how valuable are the parts, in re-commissioning, say?
- B) Costs: how much will it cost me to cut, transport, reuse, or deliver for safe disposal?
- C) Alternatives; especially *ecological values*, reuse?
- D) Regulatory uncertainty: If I invest in new, creative, circular ways of doing this, is it also costly and risky fight to have them accepted?



# So: much is about regulation and incentives

- A fairly impressive – and interesting – aspect of the contractual, legal and regulatory framework is a Removal Obligation
    - In other areas of environmental matters, removal and cleanup issues are often raised late, discovered late, exploding late, culprit not to be found
    - For offshore structures
      - Plug and abandon
      - Actually remove thisGenerally appear quite firm, quite inescapable.
- (In Svalbard, left-behind assets are *protected* if older than a certain age. So: vintage garbage is not garbage?)

# The Removal Obligation: Protection argument

- Original argument: Protect current seabed environment.
- Restore seabed to original state
- Carefully taking account of sectoral conflicts/synergies?
- After 30+ years of oil/gas activities:
  - original seabed environment has changed
  - So has technology, and understanding of ecology, and perhaps priorities
  - If it is tempting to save on decommissioning costs: are there benefits (rigs to reef, say) or: How much damage can be tolerated?
  - There might be conflicts or tradeoffs – as with ecology versus money: How do we ensure some balance, if we allow ‘renegotiation’

# Economic argument

1. When deciding to invest in energy assets, discounting means removal costs are 'small'
2. Today, as closure approaches, removal costs are large, and revenues much smaller. Honestly, I'd be glad to walk.
3. Investors have strong economic incentives (today) to not remove assets. So might (much of) Norwegian tax payers. If there is a loss for **a third party**, here: How do we give her a voice?
4. Norwegian public policy: societal discount rates should be lower for distant cash flows. Favoring greater weight given to removal policy. Also: If private (delegated) operators work with higher costs of capital, what are the consequences? Implications?


# Time consistent policy:



- A policy that will be sustained even when circumstances change over time
  - No room for leaving assets in place under original removal obligation
  - Restore seabed to original state
  - Tension: not playing against nature, but parties play each other
- ‘Circular economy’ concerns itself with designing assets that can be reused
  - Removal costs must – according to these arguments – be included in analyses
  - As in Net present value analysis above
  - Low attention to recommissioning in the outset may be an important part of the problem

# Time consistent policy (contd.)

- Time consistent policy and circular economy
  - Regulations fixed over time and states of nature
  - Design assets so that waste and scrap can/will be reused
- If investors today see that energy assets can be left in place; will they design new assets so that they can be easily removed?
  - Next generation O&G assets
  - Offshore windfarms
- Can pursuing a time consistent policy provide incentives for investors to pursue a asset-design philosophy as in the circular economy?
- Can it be optimal to play the game to break the rule? (like hostage taking)
- Do we negotiate with hostage takers, and should we?
- If 'regulator' cannot commit to an impossible removal being executed, she may need to prevent an impossible build in the first place (kydland and prescott).



I JUST DO WHAT  
I'M TOLD

A Removal Obligation:

*Does it Stifle  
Innovation?*

Or is it just right:

*Nice, and firm*

Or too soft:

*he's a dove, a pushover,  
a wimp, couldn't guard  
your house, befriends  
those he should  
supervise (regulatory  
capture)*

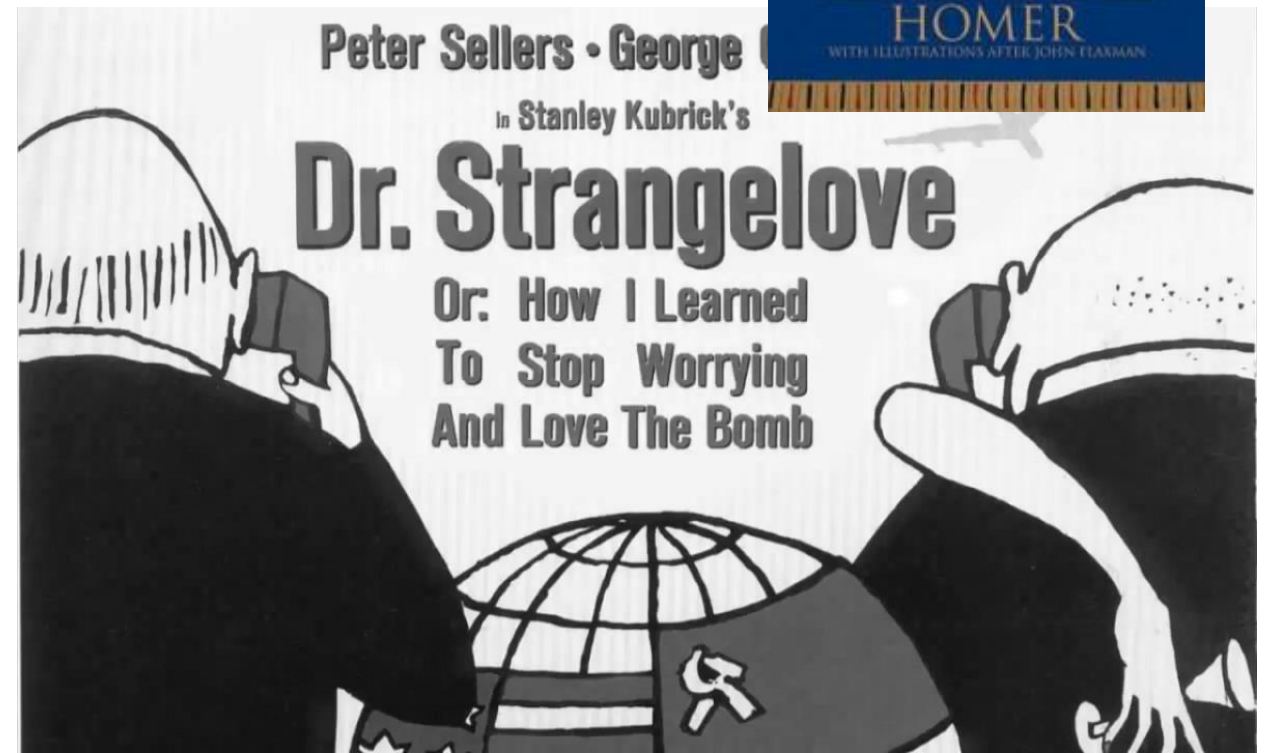
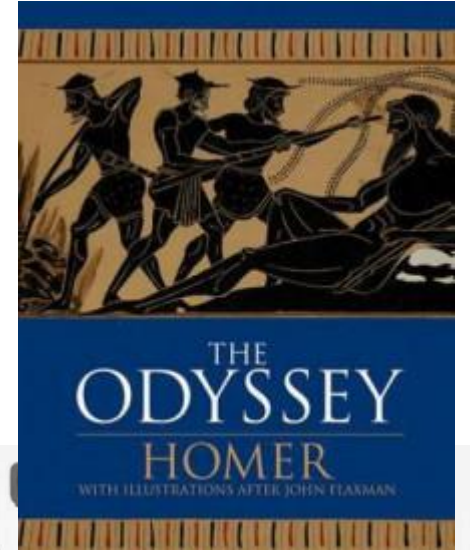


# So: what is the problem, or what are the problems?

- An important realization is that the decisions – optimally – must be taken *late*, thus will, even though
- The obligation was placed and (somewhat) defined early
- This creates tensions:
  - Time elapses, innovation: this would ask for flexibility, new decisions
  - Commitment, contract clarity: this asks for prescribed solutions
  - Our ability to commit – in regulator, for instance – need to be realistically assessed
  - International agreements, OSPAR for instance, may be seen as commitment devices (and should not be over-rated, as such)

# The commitment problem: well described in Kubrick's 1964 'Dr Strangelove':

- *'Are you telling me you created a doomsday machine and you did not tell anybody?'* (no gains).
- Also: in Homér's 'Odyssey', where Odysseus ties his hands in order not to be tempted to deviate from his course
- In modern social science terms: then, the sirens will not try to tempt him: big gains!



# Winner's curse; and the inescapable need for competence in the host

- Say there is uncertainty in the value of a recommissioning (decommissioning job):  
how valuable are the parts?  
What will it cost me to cut it, transport it, resell it  
What constraints will apply for reuse and status of seabed
- Winner's curse is the awful feeling you get if you win the job  
you may have underestimated the costs: others have thought of the job as less valuable
- This idea of Winner's curse describes a naïve bidder:  
In real life, we may all bid less, as we accept the incorporation of other bidders' private information
- In other words:  
Winner's curse is seller's curse
- In other words: Seller (the host, the Norwegian people)  
will suffer losses unless she does most of the investment in knowing the business of decommissioning



# Challenges ahead

- **Circularity and reusability**
  - Included in the legislation, but timidly
    - UK seems to be at the forefront
  - Beyond recycling
  - Need to develop a local secondary market
  - And competence in the North Sea to attract more business

# Challenges ahead

- Offshore wind decommissioning
  - Uncharted territory
  - Seems 'easier', but much larger spaces used
  - More conflicts with other sea users?
  - Much less developed regulation
    - Norway critically so
- Offshore-onshore interactions
  - Location of removal activities in land
- How to deal with residual liabilities?



Takk for oss