The Endgame is on
Options for Oil Producing Countries

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IAIA19, Brisbane, 2 May 2019
Climate risk and the Norwegian economy
# Climate Risk

## Physical

<table>
<thead>
<tr>
<th>The Global Warming itself</th>
</tr>
</thead>
</table>

## Transitional

<table>
<thead>
<tr>
<th>Implications of the change to a low emission society</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ways of living</td>
</tr>
<tr>
<td>Modes of Production</td>
</tr>
<tr>
<td>Sources of Energy</td>
</tr>
<tr>
<td>Value of Financial assets</td>
</tr>
<tr>
<td>Cost from possible Litigations</td>
</tr>
<tr>
<td>Probability</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Certain</td>
</tr>
<tr>
<td>Likely</td>
</tr>
<tr>
<td>Possible</td>
</tr>
<tr>
<td>Unlikely</td>
</tr>
</tbody>
</table>
The Climate Risk is asymmetric on the wrong side.
The importance of time

The Tragedy of the Horizon
Life beyond the limitations of models, politics, business transaction etc.

Earlier is better than later
If later is not exceptionally better and best without earlier
The Poor are loosing (again)
Fossil Fuels is the main problem
O&G Business and Global Warming

NO IMPORTANT RISK
Non-adaptable Physical Consequences on O&G Activity

POSSIBLE SERIOUS RISK
• Market disruptions
  Volume; Price; Quality (climate-motivated)
• Political interventions (outside the Market)
• Litigations
• Ownership & financing
  Persistent expectations and requirements beyond operational logic and/or legal limitations
The average also matters
High Profit Requirements – trouble and a (surprising) possibility

1. It’s all about Profits
2. High Risk implies High Profit + preference for Quick Cash

1+2 → A Conservative Investment Strategy
High Profit Requirements – trouble and a (surprising) possibility

1. It’s all about Profits
2. High Risk implies High Profit + preference for Quick Cash
3. Climate Risk added to other uncertainties

1+2 → A Conservative Investment Strategy
1+2+3 → An even more conservative Investment Strategy ???
Private Sector “needs”

- Incentives & regulation: sufficient, relevant & reliable
- Knowledge/insight: support
- Stress testing: climate specific, on demand
## TCFD
Task Force on Climate-related Financial Disclosures

<table>
<thead>
<tr>
<th>Governance</th>
<th>Risk description</th>
<th>Risk management measures</th>
<th>Risk measurements and methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of general framework and key principles for managing</td>
<td>Description of climate-related risk faced by the Norwegian economy, and how it may affect key national objectives and strategies</td>
<td>Description of measures aimed at managing climate-related threats and opportunities</td>
<td>Description of how to measure and monitor climate-related threats and opportunities</td>
</tr>
</tbody>
</table>
When & How to deal with the Climate Risk

The activity
- Invite (dream)
- Explore (search)
- Extract (operate)
- Close down (clean up)
- Domestic Use

The revenues
- Subsidise
- Tax
- Pay for clean up
- The spending/saving pattern
- Return on saved capital
Know where you belong in this chart

- Producing fields
- New onshore Middle East
- Offshore Continental Shelf
- North America tight oil
- Heavy oil
- Deep-water
- Other offshore
- Oilsand

Cost (US $/barrel) vs. Resource (bill. barrels)
When will you build the last one?

Thank you