

Alternative markets and 'green flings'- Experiences of entering into new markets outside of petroleum

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Overview

- The SIVAC project conducts several studies of oil and gas (O&G) supply firms attempting entry to other non-O&G markets (diversification)
- Diversification of supply firms is interesting because it constitutes a mechanism through which resources (finance, technology, routines, skills, etc.) in the O&G industry can be redeployed in other industries
- The guiding questions are thus whether, to what extent, and how can resources be redeployed.

Structure of talk

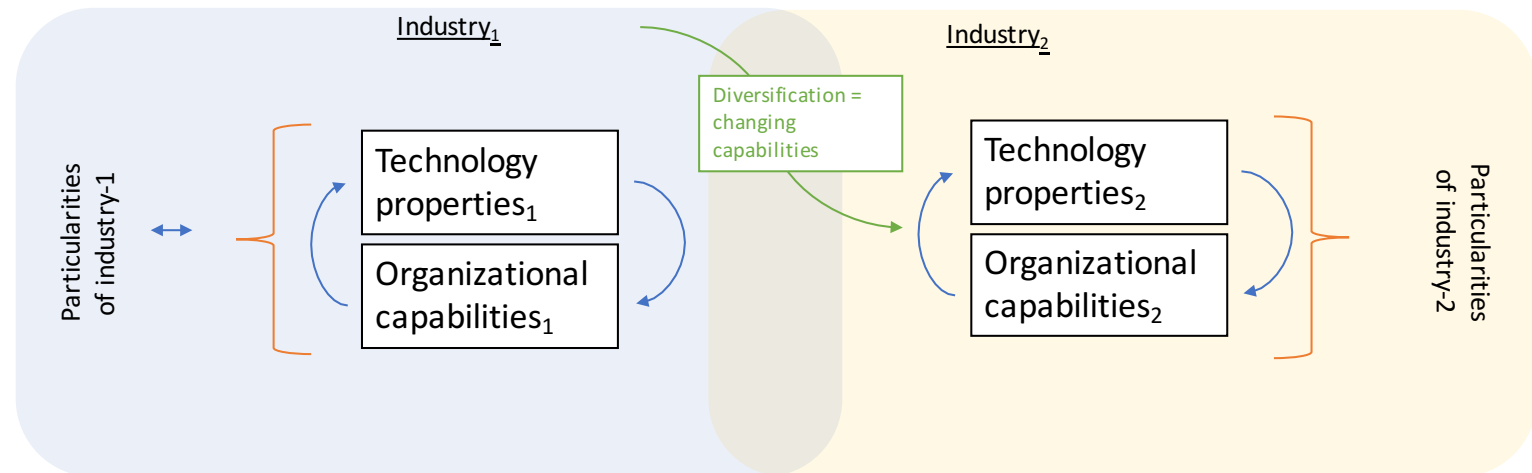
- Challenges for diversification into new markets for petroleum supply firms (book chapter)
- The engagement of O&G suppliers in offshore wind power industry (2 articles)
- Overall conclusions: Technology is not a problem but various 'soft' factors challenge diversifiers
- Policy implications

Challenges for diversification

- Goal: understand the main challenges that petroleum supplier firms experience when they try to move into other industries
- Diversification – similar to innovation oriented at new markets
- Method: interviews with 14 “lead diversifiers” and 4 others with experts and clients
- Message: main challenges of diversification are not technological

Approach

- Diversification as a process of “capability matching” between old and new industry (Helfat and Lieberman, 2002)
- Diversification challenge, largely, defined by inter-industry differences
- Can be more (unrelated) or less (related) challenging regarding building new capabilities (Kogut & Zander, 1992; Helfat & Peteraf, 2003)
- Several dimensions of relatedness



Approach

- Oil and gas can be characterized as a CoPS industry (complex product systems) (Hobday, 1998; Gann & Salter, 1998).
- CoPS differ from other industries – contrast with mass-production industries
- Influences capability matching / diversification challenges
- Main dimensions of capabilities and relatedness arise from CoPS (cf. table)
- Guides empirical analysis

Products / technology		Market		Manufacturing	
<i>CoPS</i>	<i>Mass-P</i>	<i>CoPS</i>	<i>Mass-P</i>	<i>CoPS</i>	<i>Mass-P</i>
Many components	Few components	Oligopoly	Competition	Small-batch*	serial production
Systemic relationships	Analysable relationships	Monopsony	Multitude of individual buyers	High unit cost	Low unit cost
Many alternative architectures	Few	Government Regulation	Free markets	Customized	standardized
Customized products*	Standardized products	Sophisticated buyers	Non-professional buyers	Project-based organization	Functional organization
Engineering intensive (and non-routine)*	Routine	High degree of user involvement in the innovation process*	Low degree of user involvement in the innovation process	Systems integration	Design modularity specialization

*(Söderlund & Tell, 2011; Magnusson, Tell, & Watson, 2005).

Results

“Our new industries are more pragmatic: things should work, everything else is not that important if the product works. When there was money in oil and gas we got funding for development, this never happens in aquaculture (CTO, mechanical products firm).

“Everything is one of a kind [in petroleum]. We never make copies. This is because each oil reservoir is totally unique and therefore you never need the same [equipment].” (CTO, engineering firm)

Serial production requires *“more focus on planning the production steps and ensuring that component stocks and logistics are in place”...*

We used to be *“50% engineering and 50% production, but after moving into offshore wind power it had become more like 20-80”.* (CEO, subsea firm)

Capability Dimension	Oil and Gas	New markets
Product / technology development process	Tech development responsive User-driven innovation User-producer interaction pivotal RD&D financed by client Tech exploration within projects Customized products R&D goal: customization and durability High user competence	Tech development proactive Strategic innovation Less user-producer interaction RD&D at own expense Tech exploration prior to projects Standardized products R&D goal: low unit cost Low user competence
Manufacturing / production process	Small-batch production Customized production Maximize quality Design production line for high quality Engineering & production integrated Integrated tasks	Large-batch production Serial manufacturing Minimize unit price Design production line for high volume Engineering & production sequential Modular tasks
Market properties	Few dense links Customer confidentiality Few & similar customers Few, large, and long contracts Conventional finance High profit margins Quality / safety over price	Numerous weak links Arm’s length relation with customers Many & diverse customers Many, small(er), and short(er) contracts Project finance Low(er) profit margins Price over quality / safety

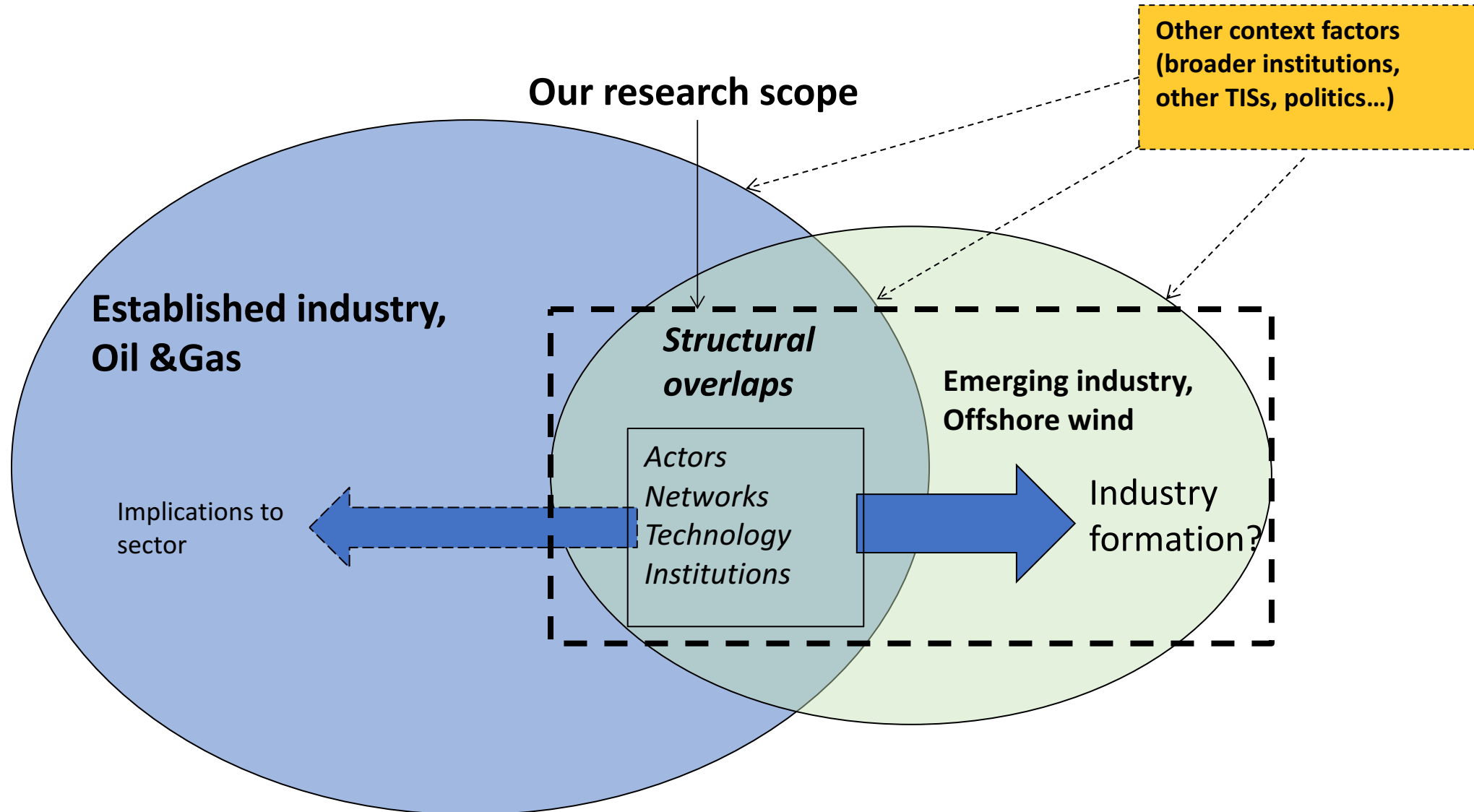
Insights from diversification challenges

- Technology does not seem problematic (motivate diversification strategy) while ‘softer’ organizational issues are challenging.
- Entry to even technologically related markets quite challenging. A “normalization” process?
- The biggest challenge *“is that things take time, and time is money”* (CTO, electromechanical firm)
- Aggravated in a context of industry crisis where patience and resources are in short supply

The offshore wind power case

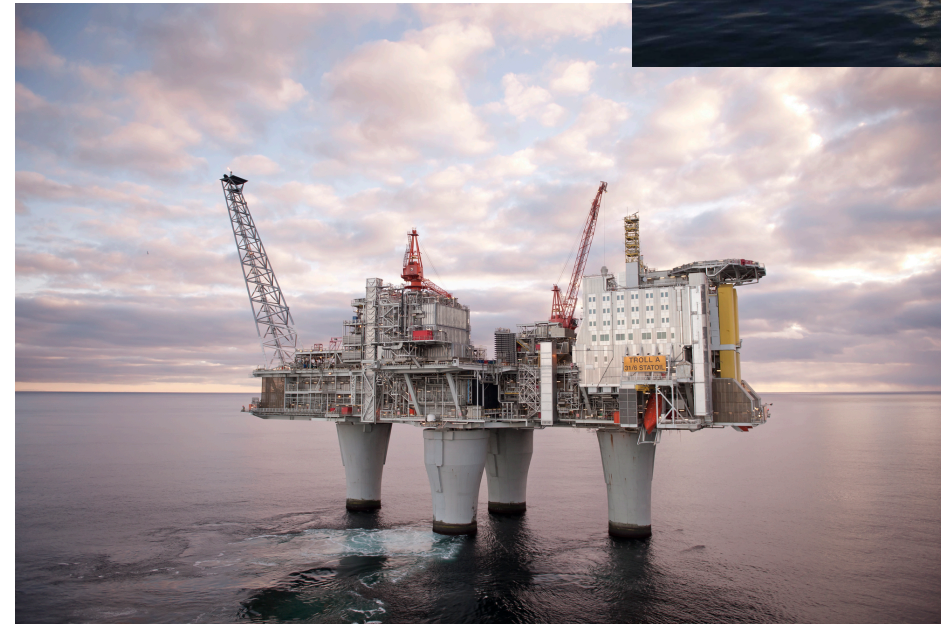
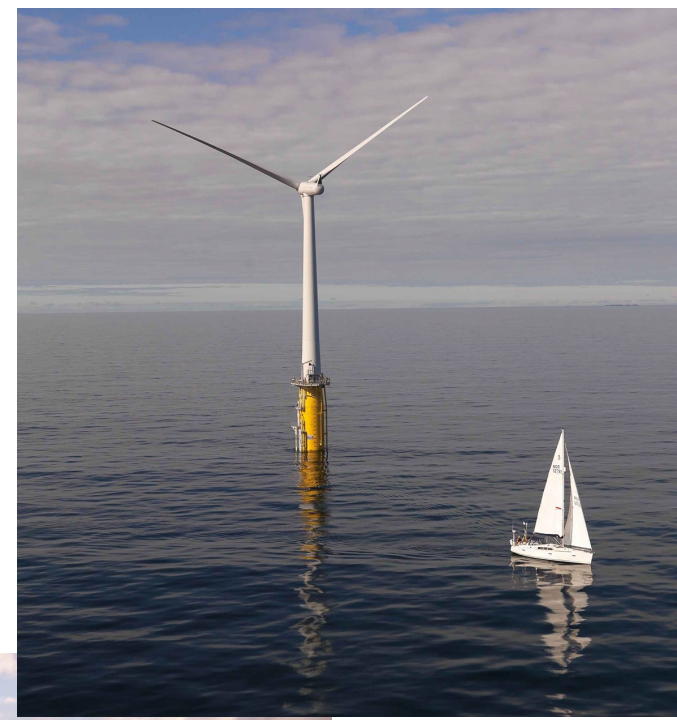
- Two complementary research articles
 1. How does O&G supply firms' engagement in offshore wind power influence formation of an offshore wind power industry in Norway
 2. Focus on nature of O&G supply firms' engagement in offshore wind power over time

Approach: Old-new industry interaction



Structural overlaps between industries

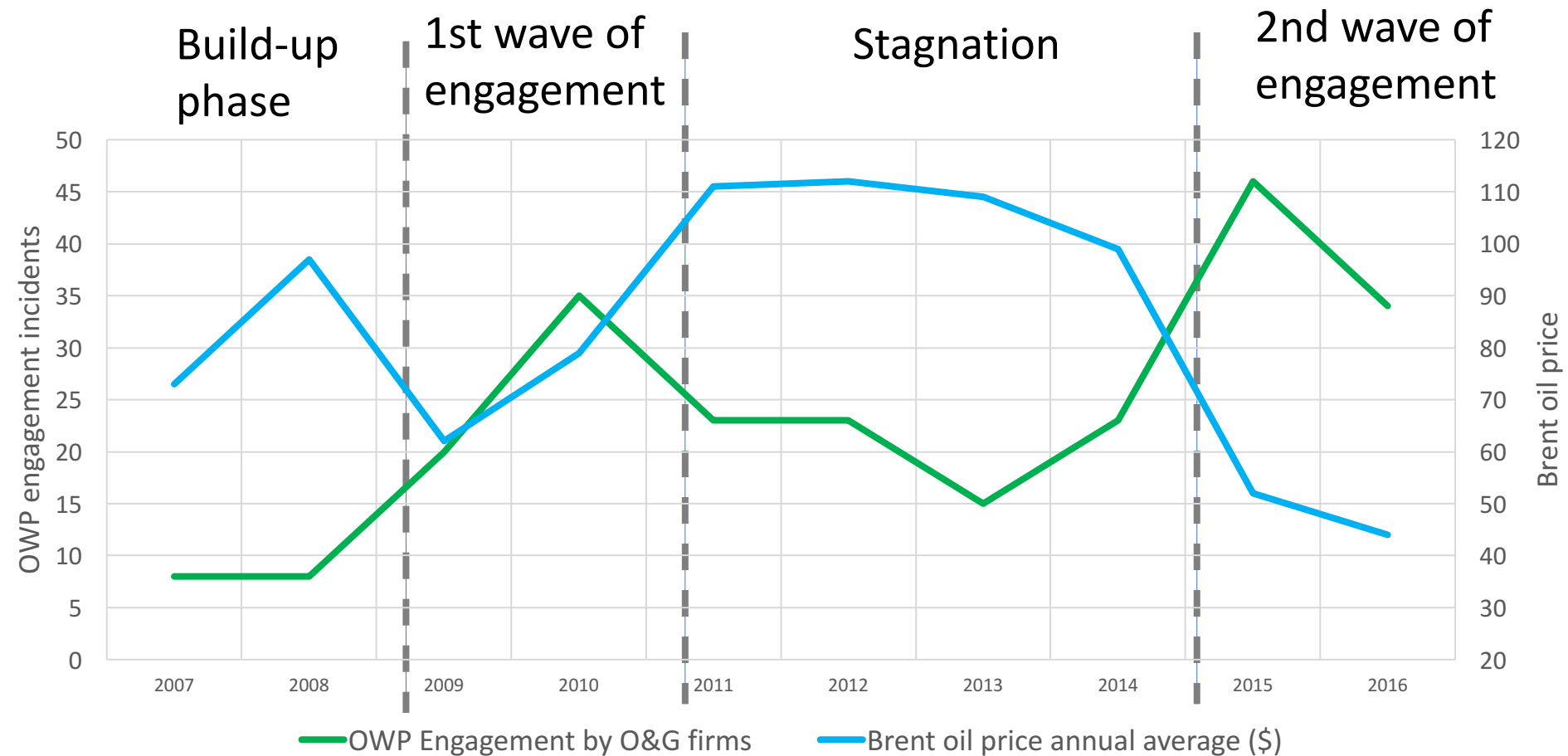
- Significant overlap in terms of companies
- Transferability of O&G knowledge fairly easy
- Some network overlaps
- Relatively small institutional overlap



Results of analysis

- Firm diversification, technology relatedness, and overlapping networks enable resource flows from O&G industry to wind power
 - Institutions category more complex and ‘problematic’
 - *Expectations*: Diversifiers either (a) see wind as a growth option for the longer term or (b) are indifferent to wind (just a market among many)
 - *Business identity*: Diversifiers predominantly see themselves as ‘oil firms’ and wind as an auxiliary market when oil price is low and which should not disturb O&G activities
 - *Industry routines for collaboration*: Diversifiers find collaboration with wind firms ‘difficult’ and have relatively low participation in wind innovation networks
- Indicates that diversifiers reluctant to commit significant resources to wind, and mainly when oil price is low – a ‘green fling’
- Differences in visions, strategies, and goals between specialized wind firms and diversifiers render ‘collective entrepreneurship’ (dugnad) to push forward new industry building in Norway difficult
- Influence from O&G suppliers thus ambiguous

Engagement of Norwegian O&G suppliers in wind power over time



Insights from offshore wind power

- Temporal study suggests that O&G suppliers very much remain first and foremost oil firms despite diversification activities
- In general, these seem to be intermittent and can be described as a 'green fling'
- Indicates that O&G suppliers will not be a driving force for new industry formation in Norway as long as O&G is expected to be profitable (at some point in the future)
- Caveat: some large suppliers internationalize and don't bother with wind industry building in Norway (partial explanation for phenomenon)

Conclusion and policy implications

- Possible to redeploy resources from O&G to other industries via supplier firm diversification
- Extent of resource redeployment via diversification is facilitated by the vast technological capabilities in the O&G supplier industry
- Extent of resource redeployment is inhibited by:
 1. Supplier firms' intermittent diversification activity and 'preference' for oil -> less chance of successful diversification and contribution to new industry building
 2. Non-tech challenges, costs, time, and uncertainty involved in diversification difficult to overcome due to (1)
 - aggravated by crisis situation – “bleeding on two fronts”

Conclusion and policy implications

- If extensive diversification of supply industry is deemed desirable, what can be done?
- Incentivize firm exits. Install 'push factors' making O&G less attractive. E.g. gradually reduce activity level and support to promote strategic re-orientation by firms.
- Incentivize firm entry. Develop strategy for 'pull factors' – where should they go? Prospective capability matching? Certainly trial-error experimentation by firms should be integral in such collective search process.
- Policy that can support firms in overcoming non-technological challenges in diversification. Non-conventional policies needed. Support must be conditional on performance. Partly 'socialize' business risks.
- Things take time. Re-orientation with crisis at doorstep will not work.
- Consider other mechanisms of resource redeployment focused on skills, people and knowledge e.g. entrepreneurship, spin-offs, etc.

References to works

- Andersen, A.D. and Gulbrandsen, M. (2018).” A capabilities perspective on oil and gas supply firms’ diversification challenges”, chapter 14 in Transformations in upstream petroleum and the role of the supply industry, Routledge.
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