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ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Exploring European oil majors' response to pressures for climate action

Dr. Leticia Canal Vieira

A/P Mariolina Longo

A/P Matteo Mura

*Department of Management
University of Bologna*

Introduction

Why IOCs?

- Climate change action is incompatible with their core business.
- IOCs possess the power and influence characteristics of incumbents: they can sustain the regime or produce disruptive innovation.

Is the external pressure sufficient to prompt action?

How widespread are decarbonisation efforts?

Our aim

Analyse the dynamics between **socio-political** and **economic pressures** and the **industry response** from 2005 to 2019.



Method - Conceptual Framework

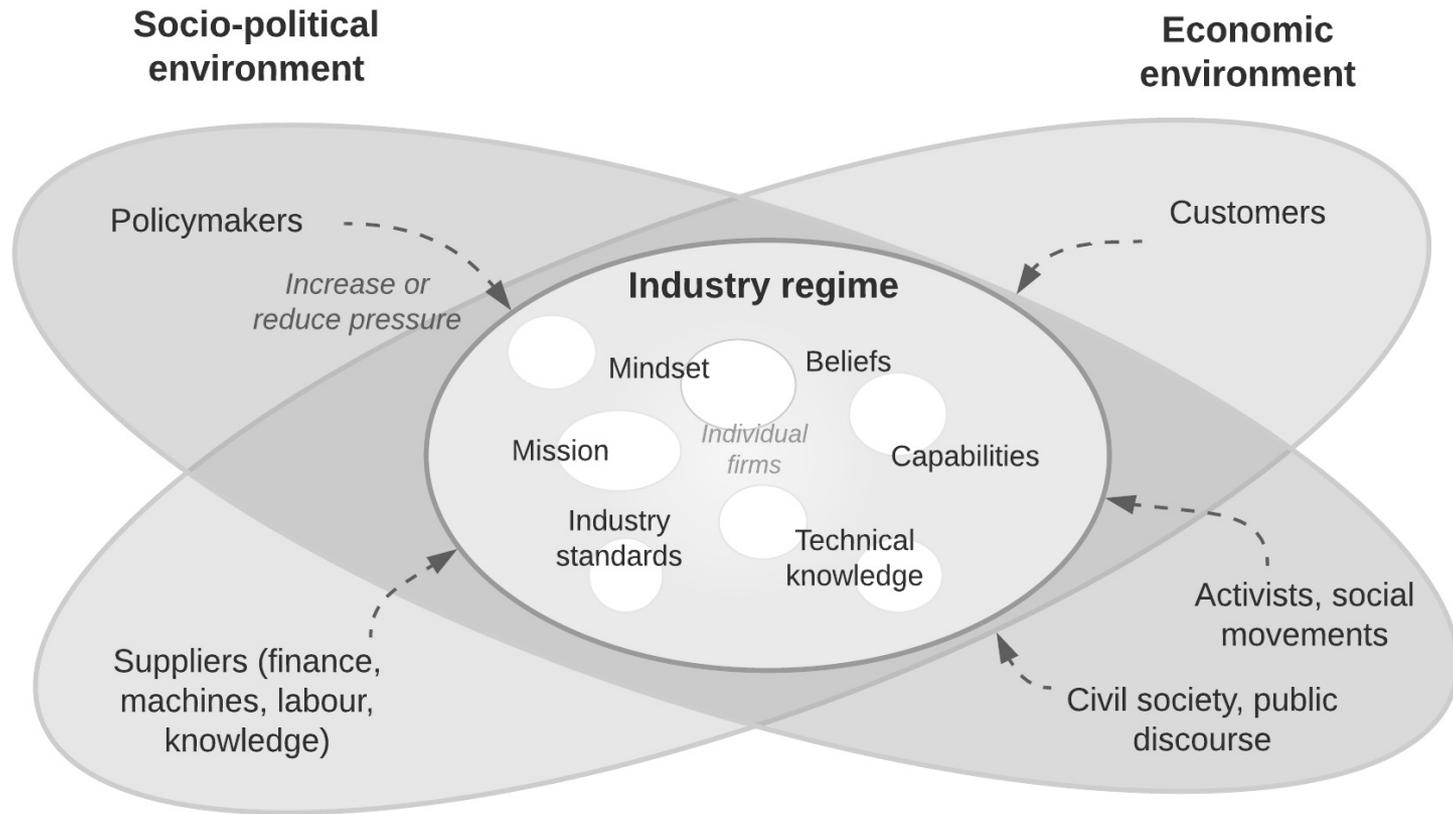


Figure 1: Triple Embeddedness Framework – TEF (adapted from Geels 2014).



Method – case study

Analysis period: 2005 to 2019.

Selected companies: S&P Global Platts 2020 ranking of the world's 250 largest energy companies.

Boundary: European IOCs and context. – *more proactive?*

Mixed data.

Table 1: Major European IOC included in the analysis (12).

Rank	Company	Country
5	Royal Dutch Shell	Netherlands
6	Total SA	France
28	OMV	Austria
36	BP	United Kingdom
51	PKN Orlen	Poland
82	MOL Group	Hungary
116	Galp Energia	Portugal
122	Eni SpA	Italy
173	Lundin Energy AB	Sweden
185	Grupa LOTOS SA	Poland
193	Repsol	Spain
214	Hellenic Petroleum SA	Greece



Method – data collection

Table 2: Data types and sources used in the analysis.

TEF FRAMEWORK		Traces
Socio-political	Policymakers	<ul style="list-style-type: none"> • IPCC treaties. • EU climate, energy, and mobility policies (regulations, directives and targets). • EU incentives for carbon capture and storage (directives and financial support). • EU directives related to the transport sector. • Emissions trading system and carbon taxes.
	Activism, social movements and campaigns	<ul style="list-style-type: none"> • Emergence of social movements against oil industry (Nexis Uni database). • European Green Party presence in the parliament. • News related to fossil fuels transition or divestment (Nexis Uni database).
Economic (task)	Suppliers (finance, machines, labour, knowledge)	<ul style="list-style-type: none"> • Share of energy from renewable sources in Europe (Eurostat). • Volume of oil production in Europe (Eurostat).
	Customers	<ul style="list-style-type: none"> • Consumption of oil in Europe (Eurostat). • Price of crude oil barrel (Refinitiv). • Share of cars purchased in Europe that are electric (IEA).
Industry regime	Regulations, laws, standards Mindset, identity, and belief systems	<ul style="list-style-type: none"> • Sectoral associations and guidelines targeted at low-carbon transition. • Mission, letters of CEO, chairman or directors (annual reports). • Decarbonisation strategies.
	Technical knowledge and capabilities	<ul style="list-style-type: none"> • GHG emissions of companies – Scope 1 (Refinitiv). • Reserves and production of crude oil (Refinitiv). • Reserves and production of natural gas (Refinitiv). • Investments in carbon capture and storage (annual reports). • Investments in biofuels (annual reports). • Investments in hydrogen (annual reports). • Investments in renewables (annual reports).



Method – data analysis

Annual reports analysis - Nvivo 11:

- CEO, chairman or directors letters - coded segments referring to renewable energy, climate change, or emissions mitigation.
- Engagement incidents: text search using the keywords renewable*, solar, wind, biofuels, hydrogen, and carbon capture and storage (CCS).



Engagement incidents: R&D projects, acquisitions, joint ventures, partnerships, construction of facilities, and patent registrations. – NO GENERIC MENTIONS.

Total: 330 incidents.



Results: socio-political environment

Year	Developments in policymaking
2005	<ul style="list-style-type: none"> • Ratification of the Kyoto Protocol. • Launch of the EU ETS.
2007	<ul style="list-style-type: none"> • European Commission sets the targets for the 2020 Climate & Energy package: 20% reduction of GHG emissions, a 20% increase in the share of renewable energies, and a 20% improvement in energy efficiency.
2008	<ul style="list-style-type: none"> • End of the pilot phase of EU ETS and beginning of Phase 2: refining activities were considered exposed to carbon leakage and receive free emission allowances.
2009	<ul style="list-style-type: none"> • Directive 2009/31/EC – establishment of a legal framework for CCS. • Fuel Quality Directive (2009/30/EC) – fuel suppliers need to reduce the GHG intensity of fuels up to 6% by 2020, compared to a 2010 baseline. • The Renewable Energy Directive I (2009/28/EC) - promoted energy from renewable sources in transport, targeting a minimum of 10% in total final consumption in every member state by 2020. • EU leaders endorsed the objective of reducing the European Union's GHG emissions by 80% to 95% compared to 1990 levels by 2050, as proposed in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in 2007.
2013	<ul style="list-style-type: none"> • The Clean Air Policy Package is announced to target air pollution. • The European Commission established the EU Refining Forum to discuss the impact of EU regulation on the EU refining sector and the EU security of supply of petroleum products.
2014	<ul style="list-style-type: none"> • IPCC Report AR5 Climate Change 2014: Mitigation of Climate Change. • Announcement of the European 2030 Climate and Energy package without a new binding target for the inclusion of renewable energy sources in the transport sector. • Reform of the EU ETS to increase stringency. Activities from the mineral oil industry still entitled to free allowances due to the risk of relocation. • Directive 2014/94/EU on Alternative Fuels Infrastructure.
2015	<ul style="list-style-type: none"> • Adoption of the Sustainable Development Goals by the United Nations.
2016	<ul style="list-style-type: none"> • Ratification of the Paris Agreement.
2018	<ul style="list-style-type: none"> • IPCC Report Global Warming of 1.5 °C. • Renewable Energy Directive II (2018/2001/EU): inclusion of a 14% target for renewable fuels share in transport by 2030 and criteria for ensuring bioenergy sustainability. EU greenhouse gas emissions must be reduced by at least 55% in 2030. • International Maritime Organisation agrees on strategy to reduce 50% of greenhouse gas emissions from shipping by 2050.
2019	<ul style="list-style-type: none"> • European Green Deal is presented, setting the goal of making Europe the first climate-neutral continent by 2050.

Several policies were developed after Kyoto, but focus was on energy efficiency and partial reductions.

After the Paris Agreement we can see more social pressure – Fridays for Future, Extinction Rebellion.

European Green Deal – transition?



Results: economic environment



Figure 2: The evolution of the economic (task) environment (2005 to 2019).

- Renewables expanded but not necessarily replaced fossil fuels (specially at the transport sector).
- **Consumers** lacked alternatives (aviation, maritime, petrochemicals).
- **Suppliers** – divestment movement.
- European International Bank – no more funds to fossil from 2022.



Results: the regime decarbonisation efforts

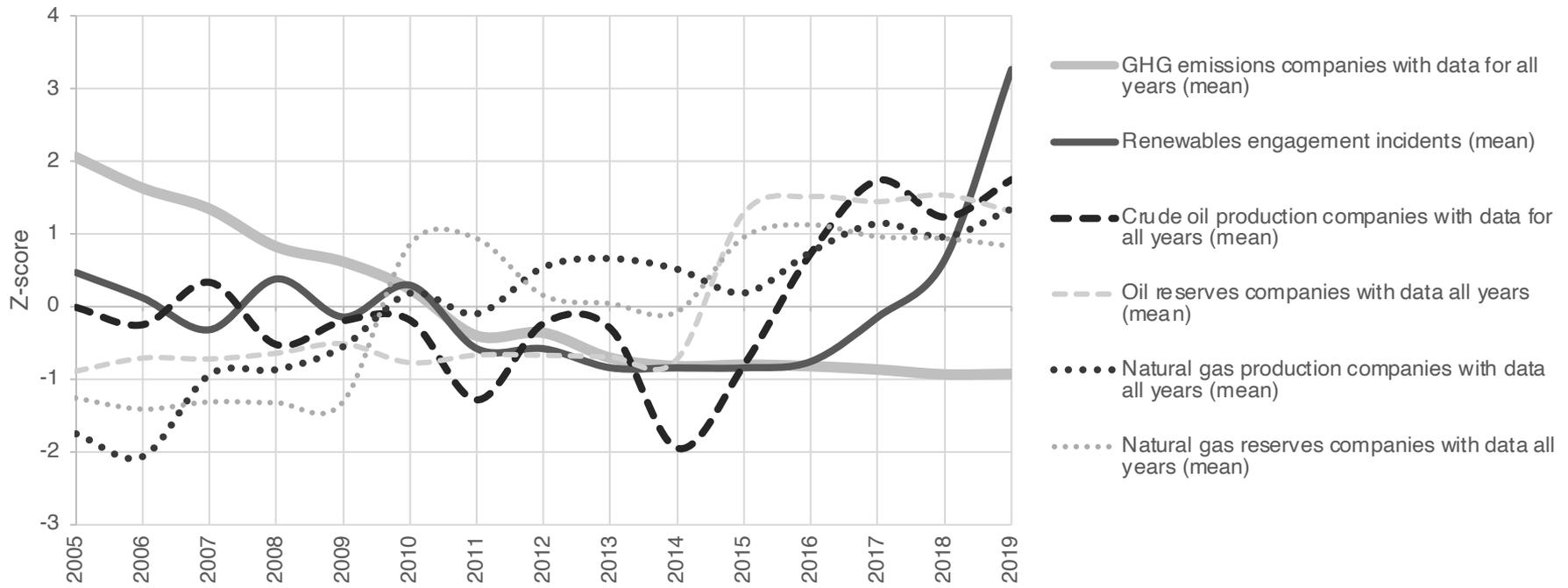


Figure 3: The IOCs response to decarbonisation.

- After 2005 there was some level of GHG emissions reductions from all IOCs and engagement with renewables. It slowed down after 2011.
- Production of crude oil started to rise after 2014.
- 9 of the 12 companies had net-zero targets in 2020; however, all companies had marginal reductions lately.



Results: the regime decarbonisation efforts

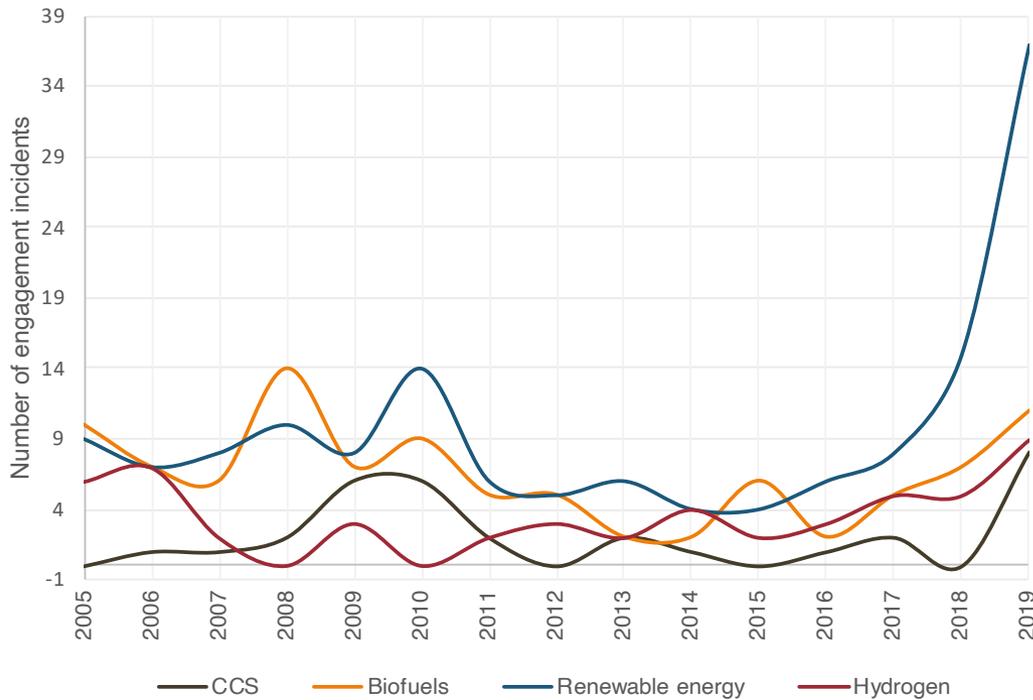


Figure 4: IOCs' engagement incidents with renewables, low-carbon fuels, and CCS.

- Renewable energy (solar and wind) are the preferred technology and investments have increased largely after 2017.
- No consistent investments in CCS that IOCs often place as a solution.



Discussion

	Phase 1 (2005 - 2010) - The Kyoto Effect	Phase 2 (2011 - 2016) - Back to business as usual	Phase 3 (2017 - 2019) - Has the transition arrived?
Socio-political	Policymakers Ratification of Kyoto (+) Fuel Quality Directive (+) Renewable Energy Directive I (+)	The Alternative Fuels Infrastructure Directive produces insufficient results (-) A target for the transport sector is not included in the drafting period of Renewable Energy Directive II (-) Ratification of the Paris Agreement (+)	IPCC 2018 Report Global Warming 1,5° C (+) The Renewable Energy Directive II increases the binding target for renewables in the transport sector (+) EU Green Deal sets the target of net-zero emissions by 2050 (+)
	Mineral oil activities are entitled to free allowances in the EU ETS (-)		
Civil society	Increase in the number of Green Party seats (32%) at the EU Parliament (+)	Decrease in the number of Green Party seats (-9%) at the EU Parliament (-)	Increase in the number of Green Party seats (42%) at the EU Parliament (+) Rise of youth activism (+)
Economic	Suppliers	Increase in competition from Middle East, Asia, and USA (+)	Consolidation of the fossil fuels divestment movement (+)
	Consumers	Peak oil consumption in 2014 (+)	Oil consumption rises again after 2014 (-) Lack of alternatives for petrochemical products (-) Electric cars start to increase its market share more rapidly (+)
Regime	GHG emissions	Decrease	Stable
	Oil production	Stable	Stable
	Engagement incidents with renewables	Stable	Decrease
	Engagement incidents with CCS	Increase	Decrease

Figure 5: Dynamics between the external environment and the mineral oil regime (additional pressure and climate action – green, reduction of pressure and climate action – red).



Final remarks

1. Pressures on IOCs to take climate action were insufficient and lacked sequence.
2. After 2017, economic and social pressures increased. To maintain pressure build up and ensure a transition:
 - European policy needs more effective regulations to IOCs' GHG emissions.
 - Supply-side policies for fossil fuels need to be advanced.
 - Alternative fuels and its infrastructure need to be expanded.
 - Development of alternatives to petrochemical products, as well as the reduction and recycling.
3. Limitations of the study: boundaries of analysis, European context only, large companies only.





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Thank you!

Leticia Canal Vieira
leticia.canalvieira@unibo.it

www.unibo.it