



Handelshøyskolen BI

GRA 19703 Master Thesis

Thesis Master of Science 100% - W

Predefinert informasjon

Startdato:	16-01-2022 09:00	Termin:	202210
Sluttdato:	01-07-2022 12:00	Vurderingsform:	Norsk 6-trinns skala (A-F)
Eksamensform:	T		
Flowkode:	202210 10936 IN00 W T		
Intern sensor:	(Anonymisert)		

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Informasjon fra deltaker

Tittel *: A study of oil and gas companies and their strategies regarding energy transition

Navn på veileder *: Birgitte Grøgaard

Inneholder besvarelsen konfidensielt materiale?: Nei
Kan besvarelsen offentliggjøres?: Ja

Gruppe

Gruppenavn: (Anonymisert)
Gruppenummer: 19
Andre medlemmer i gruppen: Deltakeren har innlevert i en enkeltmannsgruppe

Master Thesis

- A study of oil and gas
companies and their
strategies regarding energy
transition -

Hand-in date:
01.07.2022

Campus:
BI Oslo

Examination code and name:
GRA1973 - Master Thesis

Programme:
Master of Science in Business – major in Strategy

Supervisor:
Birgitte Grøgaard

Executive summary

The following master thesis explored energy transition and its impact on oil and gas companies' strategies and activities. Existing literature, in the light of the internalisation theory, has investigated the evolutions of firm-specific advantages (FSAs) and country-specific advantages (CSAs) regarding energy transition and the oil and gas industry. However, little research has focused on the changes of these advantages by looking at oil and gas companies in the energy transition and how it affects their businesses and makes them shift their strategies or recombine their activities. Hence, by using a framework based on the existing literature, this paper analysed, in a two-case study on oil and gas companies Equinor and TotalEnergies, how these firms have changed over time and which factors are keys in their strategies' evolution. The data analysis highlighted the five main factors influencing the ways oil and gas companies are shifting their strategies and activities toward energy transition by recombining in novel ways: reputational, structural, expertise, capital, and incentives factors. While this study showed us that Equinor and TotalEnergies have aligned in their evolutions and strategies for energy transition thanks to similar FSAs and CSAs, it also showed that some different FSAs and CSAs are highly influencing the direction that they are taken to deal with climate change and energy transition. This paper also emphasises the importance of the intertwinement of FSAs and CSAs, showing that they are not independently affecting companies' strategies.

Keywords: *oil and gas, energy transition, internalisation theory, FSAs, CSAs*

Acknowledgements

As this thesis marks the end of my master's degree, I would like to express my gratitude to everyone who has contributed to its completion.

First and foremost, I would like to thank my thesis supervisor, Birgitte Grøgaard, for her support and guidance throughout this thesis-writing process. Her commitment, constructive feedbacks, insightful inputs, expertise and interest in the topic were precious.

I extend my gratitude to Helene Loe Colman and Thao Vo, who greatly help discuss the topic. Our interactions have provided me with valuable support to understand better and analyse the oil and gas industry and adopt different research lenses to explore the issue.

I would also like to thank BI Norwegian Business School and EDHEC Business School for allowing me to complete a double degree throughout the Master of Science in Business with a major in Strategy.

Finally, a big thank you to everyone I met during the realisation of this thesis that helped me progress and get more insights. This thesis was profoundly enriching and enabled me to develop expertise in a critical topic – energy transition – and a key industry – oil and gas.

Thank you.

Laura Mailhol.

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Introduction

In September 2021, the OGCI (Oil and Gas Climate Initiative) – an international organisation whose members include some of the leading companies in the oil and gas industry (Aramco, BP, Equinor, Shell, TotalEnergies, etc.) – released its last strategy to accelerate the energy transition through deep reductions in greenhouse emissions by moving to a net-zero carbon emission future. They believe that oil and gas firms “have a role continuing to provide access to energy in an affordable, reliable, and sustainable manner and to collaborate to be key architects of the energy system of the future” (p.2).

Energy transition refers to the global shift from fossil-based energy consumption and production systems to renewable energy and zero-carbon solutions (IRENA, n.d. b). As international agreements, energy agencies, and scientists highlight, tackling climate change will be impossible without taking action for a long- and short-term energy transition to reduce energy-related CO₂ emissions (IEA, 2021 b). It is a huge challenge to tackle as it is driven by the interaction and evolution of social, economic, technological, and regulatory elements framing the energy system. This transition cannot occur without involvement and action from the energy sector, which today is the main emitter of greenhouse gas emissions (IEA, 2019). Indeed, climate change is one of the most significant systematic risks that the global economy faces, and it increasingly reveals the inadequacy of the fossil fuel industry in the energy system compared to the more resilient renewable industry (IRENA, 2021).

Oil and gas (O&G) companies must adapt to survive the ongoing energy transition. To maintain their competitive advantage, they should reposition themselves at the forefront of a low-carbon future (Porter et al., 2020). The Deloitte Insights report on energy transition explains that we can partition firms’ actions into six areas: “decarbonizing energy sources, increasing operational energy efficiency, identifying new investment priorities, deploying new technologies, adjusting to new policy mandates, managing consumer and shareholder expectations.” (Porter et al., 2020, p.2). By acting in these different areas, O&G companies are leveraging the main drivers of the energy transition. They are increasingly developing a long-term strategy for a sustainable, low-carbon future. However, “different companies are taking different approaches, with their reduction targets clearly differentiated by size.” (Porter et al., 2020,

p.4). Thus, for this master thesis, I chose to focus on how energy transition drivers shape O&G firms' strategies and how O&G firms' strategies shape the energy transition.

Contribution & Research question

This thesis aims to understand what strategies O&G companies have developed regarding energy transition: Are they similar or highly differentiated? To what extent are strategies influenced by international/regional/national policies and the company's core business and structure? Thus, the paper aims to examine several aspects of the energy transition, what actions companies take, and for which purposes. The goal of this thesis is to contribute to the internalisation theory by using the scope of the energy transition to gain a new perspective on the interactions and influences between firms-specific advantages, country-specific advantages, and companies' strategies. This paper will contribute to the research by analysing the intertwinement of firms-specific and country-specific advantages and their effects on the decision-making of O&G companies regarding the energy transition. I will intend to validate the influence of some factors and emphasise how the similarities and differences in firm-specific and country-specific advantages lead to specific strategies and ways of doing business in the framework of the energy transition phenomenon. Hence, I propose the following research question:

How is energy transition influencing the recombination of activities and the strategic evolution of oil and gas companies?

To address the presented research question, the paper will draw on public reports, press releases, communication and presentations of oil and gas firms. By selecting two O&G companies, Equinor and TotalEnergies, and analysing the evolution of their communication and their strategies regarding the energy transition, we will see how the focus has shifted over time, what they were emphasising a few years ago, and what they are emphasising now. This paper will analyse how these O&G companies recombine in new and novel ways.

Literature review

Multiple main actors of the O&G industry have expressed ambitions of acting toward a low-carbon future and energy transition, making it relevant to examine prior research about the field of international business, firm-specific advantages, and country-specific advantages. Internalisation theory in relevance to energy transition strategy is only starting to be researched. Thus, this review intends to build on the existing literature to gain a better understanding of the phenomenon of the energy transition. We will also focus on how energy transition influences companies' strategies and what are the factors triggering shifts and recombination in the oil and gas sector.

Internalisation theory

Foundations of internalisation and FSAs

The internalisation theory was conceptualised by Buckley and Casson (1976) to explain how the boundaries of firms stretch across borders while this expansion is governed by the benefits and costs of internalisation in foreign countries. In the presence of less effective transactions, multinational enterprises (MNEs) decide to internalise some activities across national boundaries as an alternative to develop and exploit knowledge and different types of products/activities. Hence, according to Rugman & Verbeke (2008), the internalisation theory enables us to apprehend the limits between the firm's internal structure and its external environment, and their interactions. It allows assessing how these interdependencies are managed and governed by the companies (i.e. analyse if they are efficient and effective).

Another important aspect is that "Internalization theory recognizes the immense importance of resource heterogeneity among firms" (Grøgaard & Verbeke, 2012, p.27). To develop their view, Buckley and Casson (1976) built on the concept of **firm-specific advantages (FSAs)** defined by Hymer (1960, published 1976). The firms possess specific assets and capabilities that we call firm-specific advantages; they include raw materials, superior corporate governance, distribution channels, privileged access to information, technological/brand superiority, and organisational culture (Adarkwah & Malonæs, 2022). By developing and exploiting their FSAs, MNEs can gain competitive advantages over their competitors to compete abroad. According to Rugman's approach, FSAs enable the survival, growth, and profitability of a firm; they shape the scope of the

activities the company involves itself in (i.e. the levels of diversification and vertical integration) (Grøgaard & Verbeke, 2012). When MNEs take decisions about the selection and retention of governance mechanisms, they must choose between using the external market or internalising each activity. By modelling firms as a network with strong and weak ties, it is possible to use the internalisation theory to explain the firm's boundaries (Rugman & Verbeke, 2008). MNEs need to decide what type of network to use for activities not performed internally (e.g. alliances, short- or long-term contracts) and structure inside the firm the activities performed internally (Grøgaard & Verbeke, 2012). Hence, the internalisation theory is primarily focused on governance design.

Rugman also highlights the importance of location in the form of **country-specific advantages (CSAs)** to understand the role and functioning of a firm's subsidiaries. So, the interactions between FSAs and CSAs enable us to understand the effect of internal factors leading to decisions on entry mode choices and the impact of external factors leading to decisions on location choices. Rugman's central insight in this context is twofold. On the one hand, interventionist public policies, instead of creating a fair, competitive field for domestic companies against outsiders, tend to weaken their FSAs. On the other hand, fostering regional investments and free trade enables the development of regional-specific advantages. It helps firms (with strong FSAs) reinforce their competitive position against foreigners (Narula & Verbeke, 2015). An MNE is made of a network of FSAs that are linked or not to a location. Rugman argues that only FSAs that are not bound to a location can be deployed, exploited, and transferred outside their original place. Internalisation theory builds on the assumption that MNEs engage in efficiency-driven decision-making by deploying and using across borders FSAs (Rugman, 1981).

However, with a changing international business environment, Verbeke & Kano (2015) highlight the necessity to develop a "new" internalisation theory. The new internalisation theory focuses on the new resource combinations to expand existing FSAs and select more effective governance mechanisms (Verbeke & Fariborzi, 2019, p.1214). The new internalisation theory will help us understand how and why the O&G companies adapt their strategies to maintain and gain a

competitive advantage when the energy sector sees the arrival of new competitors offering renewable energies for a low-carbon future.

New Internalisation theory

Narula & Verbeke (2015) summarise one of the main insights to get from the new internalisation theory by saying that “MNE strategic decisions [...] depend on MNE’s FSAs, but also complementary resources from domestic and foreign economic actors, to make deploying, exploiting and augmenting extant FSAs feasible.” (p. 620). The complementary resources can be accessible/exogenous CSAs and resources acquired on the market (bought at the market price), or resources challenging to access. Here, we can better understand how MNEs adapt to changing business environments by adopting a resource-based view. Verbeke & Fariborzi (2019) analyse how managerial governance is adapting to cope with local failures, and they mainly focus on the timing and scale of this adaptation to remain efficient. They show how FSAs and CSAs shape the international strategies and performances of MNEs. Regarding the choices offered to MNEs for their governance systems, when we consider the timing, the managerial governance adaptations will be swift (i.e. anticipative/corrective) or delayed (i.e. cumulative failure). And when we consider the scale, the managerial governance adaptations will be local/narrow or organisation-wide (what they name ‘wholesale’) (Verbeke & Fariborzi, 2019).

Thus, the new internalisation theory gives us a more dynamic view of managerial governance in MNEs. In addition, taking into account the timing and scale of governance adaptations enables us to understand better how, for instance, regulatory policies regarding energy transition are implemented by MNEs and the timing of their implementation.

Moreover, “FSA recombination – new and novel ways of using FSAs – is a central concept within New Internalization Theory. Recombination can take multiple paths involving FSAs that are geographically spread across an MNE, or even external to it, but nonetheless complementary.” (Bass & Grøgaard, 2021, p.814). As both FSAs and CSAs shape MNEs’ performances and strategies, and the energy transition is changing the nature of FSAs, it is interesting, according to Bass & Grøgaard (2021), to use the new internalisation theory to analyse how MNEs both influence and are being influenced by the energy transition. “Size,

quality, and ease of access to natural resources are the main CSAs for MNEs producing nonrenewable energy, such as oil and gas.” (Bass & Grøgaard, 2021, p.814). According to the authors, O&G companies are concerned with the risks of exploration and development of resources, safety, risks management, costs, efficiency, and transferability of technology across locations.

The energy transition is changing for O&G firms the nature of CSAs regarding the access to non-renewable energies and also leads to recombination of FSAs. Tackling energy transition requires firms to rethink, redeploy and recombine their FSAs about climate change by moving away from current technologies and building new ones. Firms in the O&G industry are grasping the opportunity of this FSAs recombination to gain a strategic advantage against competitors.

Energy transition

After deep-diving into what is internalisation theory and the role of CSAs and FSAs in multinational companies, we will focus more on how they are linked to the energy transition. Indeed, as we saw in the paragraph below, energy transition is changing the role and characteristics of FSAs and CSAs for the firms, and that is why we will focus more on this topic in this section.

In the past century, the world has faced two energy transitions. The first one, from coal to oil and gas, changed the competitiveness of the firms by offering affordable and easy-to-ship energy sources. And the second one, from hydrocarbons to renewables and low-carbon solutions, with wind and solar energies competing in terms of prices and costs (Doh et al., 2021, p. 952). Even if private actors are increasingly involved, NGOs, civil society, and government regulations carry the current energy transition. The economy and political forces are shaping and being shaped by the energy transition, redefining then the competitiveness of the nations and firms (Doh et al., 2021, p. 952). Today, it’s paramount to investigate how MNEs respond to different policy frameworks and environments worldwide. “This will become all the more significant considering that it is unlikely that private actors will make necessary behaviour changes swiftly to reduce greenhouse gas emissions without appropriate inducements” from governments (Doh et al., 2021, p. 955).

At the core of the energy transition is climate change, which is not only an environmental challenge but also – due to dependency – an energy security challenge (Kolk & Pinkse, 2012). “Climate change exemplifies an issue from which MNEs can learn how to anticipate future developments in a context of uncertainty and exercise leadership that combines societal and strategic concerns.” (Kolk & Pinkse, 2012, p.473). Tackling this challenge requires recombination and building new FSAs, which will offer possibilities for increased competitiveness for firms. However, not all MNEs can gain a competitive advantage from this recombination and shift. Kolk & Pinkse (2012) state that the companies most confronted with energy transition and climate change “are firms in high-salience industries such as oil and gas” (p.474) as their business model is threatened (because of relying on fossil fuels). So, by positioning themselves as early movers and leaders of the energy transition, the development of “new key capabilities in a lower-carbon direction may transform climate change into a driver for future profitability and growth” for O&G companies (Kolk & Pinkse, 2012, p.474). Thus, FSAs and CSAs are critical factors in corporate decision-making to move toward energy transition to grasp competitive advantages. According to the authors, FSAs and CSAs are intertwined. Successful firms in the energy transition will be the ones that are the “are most responsive to a wide range of relevant locational factors” (p. 484) because it will enable them to develop climate-related FSAs “with implications for their profitability, growth and survival” (p. 484). In their paper, Kolk & Pinkse found out that the main firm-level factors are the *degree of internationalisation, market positioning, position in the supply chain & nature of core products, historical involvement with alternative products, corporate culture, organisational structure & nature of strategic planning process, the ability to anticipate and spread risks, and internal climate expertise* (p.474; p.480). And the main country-level factors are *national policies, national regulatory culture, national industrial promotion policies, natural capital, societal concerns, and social perception of the role and responsibilities of a firm* (p.474; p.481).

Through their study, Hartmann et al. (2021) confirm the effects of some of these factors on the corporate decision-making to shift toward energy transition, explaining why some O&G companies are engaged in a high degree of investment in low-carbon solutions and renewable energies while others not. First, the authors

identify and confirm a CSA factor: *Regulative and normative social pressures*. “However, for the CSA to have value, investments in renewable energy must be viewed as an important strategic investment” (Hartmann et al., 2021, p. 897). Regulative pressures are extreme in developed countries, where legal and financial sanctions create a “no-choice” scenario for organisations. Home-country characteristics of the company play an essential role in the commitment to renewable energy, especially when the study shows that most firms start their projects in the headquarters’ country before sharing the knowledge abroad with their subsidiaries in other countries. Hartmann et al. (2021) call for future research to analyse the role of institutional context and the impacts of CSAs on strategies behind investments in renewables.

Moreover, the authors support the importance of two FSA factors: *Degree of internationalisation* and *Environmental citizenship* (i.e. formal initiatives like climate reports, transparency policies, performance indicators, and training programs, but also informal initiatives such as green projects in the workplace). Regarding environmental citizenship, “such voluntary, proactive, non-prescribed adoption” (p.898) will provide the firm with expertise, experience, and exposure to sustainability issues and enable them to gain competencies in the matter. When it comes to internationalisation, the firm learns from the different market, and competitive contexts, which can help them “hone their skills in the emerging renewables marketplace and enhance their absorptive capacity and transformative capabilities” (p.898) and “firms from countries where country-specific institutional factors are relatively weak can overcome their renewables experience gap by harnessing global knowledge and experience” (p.898).

Hartmann et al. (2021) ask for future research to explore deeper factors of strategies pushing companies to shift toward energy transition, and this paper will intend to assess some of them. The authors reckon that future research can focus on the corporate reputation by analysing if poor environmental citizenship reputations engender investments in renewables. They also ask for more deep-dive and on the optionality for firms to invest in new energies and solutions to see if it’s a way for them “to gain experience in how to move away from oil” (p. 899).

Finally, Patala et al. (2021) confirm the importance of internationalisation by showing that high international experience is linked to the involvement of MNEs in investments in renewables. The authors also emphasise another main firm-level

factor: *existing organisational and technological capabilities*. Indeed, the accumulation of specific capabilities results in transferable FSAs and knowledge supporting the development of investments in renewables and low-carbon solutions. “The high share of technological capabilities allows the incumbent firms to follow aggressive international expansion strategies in renewables rather than having energy transition ‘imposed’ upon them by national governments” (p. 943).

The authors also have a great time showing the importance of the role of CSAs, emphasising the importance of *demand conditions and growth* in the host country. “Since the demand for energy is closely linked to the rate of economic growth, a high economic growth rate is a key driver for cross-border investments, for both renewable and non-renewable energy” (Patala et al., 2021, p.934).

The review of energy transition literature highlights the importance of the interplay of FSAs and CSAs. At the core of decision-making for shifting toward energy transition, the authors emphasise different areas: the importance of specific capabilities, experience and expertise, and governance and regulations. Building on previous research, this paper intends to identify and confirm critical factors in the energy transition strategies adopted by O&G companies.

Conceptual framework

In identifying factors that influence differences in energy transition strategy in the O&G sector, this research explores the interlinkage of FSAs and CSAs in relevance to shift toward energy transition. By identifying the influences between these elements, this paper will analyse which drives are the most important in leading companies to adopt a particular strategy regarding energy transition and why they are shifting in this direction.

The conceptual framework (Figure 1) is taking ground in macro-level global climate change regulations influencing and compelling O&G companies in their strategies and decision-making. Then, FSAs and CSAs are positioned as central components of the framework. The dynamic between both will enable us to assess the strategy of O&G companies regarding energy transition. Among each advantage, we find different factors responsible for the strategies' specificities and pushing companies to shift more or less. I will now go more into detail about

these other factors in the O&G industry and elaborate on why each is important in the energy transition. But, first, I will touch upon the importance of the macro-level in this framework analysis.

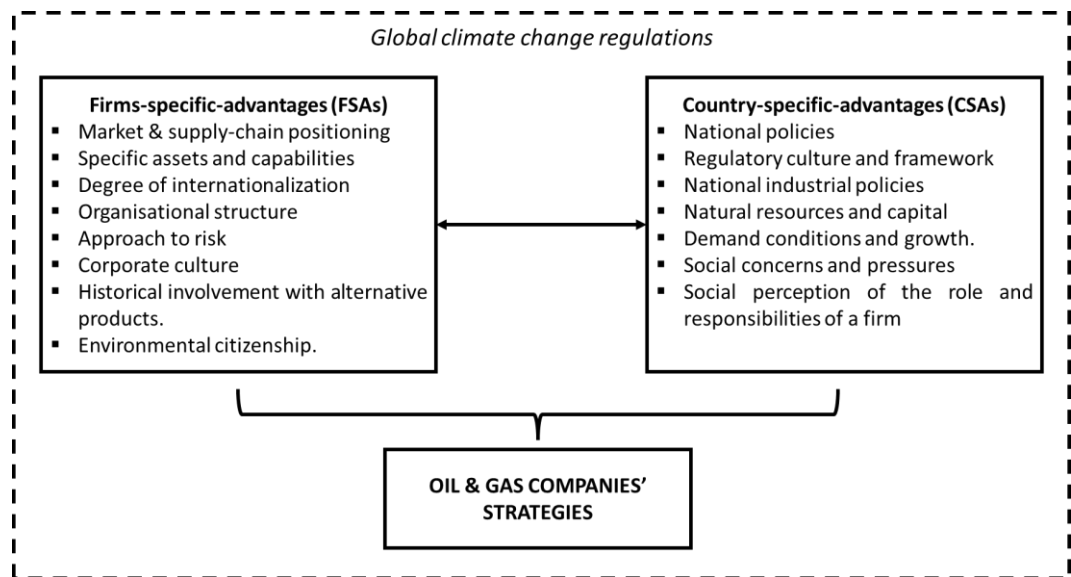


Figure 1 - Conceptual framework. Source: author

Macro-level: global policies

The energy transition represents a shift from fossil fuels to renewables and low-carbon energies at a global scale and so requires action at the macro-level to make the energy system evolve. “The energy transition is not a uniform, one-size-fits-all process. It reflects diverse priorities and entails a combination of abilities, technologies, policies, finance and resources. [...] International and regional cooperation is essential to facilitate the sharing of experiences and good practices.” (United Nations, 2021). Thus, effective and efficient governance is critical for the global energy transformation, and the intertwinement between local, national, regional and international policies is paramount for facilitating and accelerating the energy transition. Global regulations and cooperation around energy transition are necessary to establish a standard set of global rules, to green international financial institutions, to enable, promote and diffuse new technologies and know-how, to enhance consumer-producer dialogue, and also to tandem between developed and emerging countries (Pastukhova & Westphal, 2020). Thus, global governance for energy transition policy framework enables to tackle the three pillars at the core of the process together: energy security, energy access and climate change. And “the United Nations has its special place in the centre of the system, setting up the concepts, the goals and institutions, providing

a legal basis for energy governance by concluding conventions and agreements, and providing a framework for cooperation between all the major international energy organizations” (Zuev, 2020, p. 372). The Sustainable Development Goals (SDG) have mainly played a central part in setting a framework for energy transition application and implementation. Moreover, “the G20, G7, OECD, IEA assure the global coordination for sustainable energy. They work together on concepts and ways to achieve the transformation” (Zuev, 2020, p. 372). Finally, another significant level of regulation, in addition to global and national levels, is the regional level, which is especially important concerning the European Union, which succeeded in conducting effective standard policies.

Country-specific-advantages

National policies. Energy policies, incentives for investments in efficiency-enhancing or green purchasing, climate change levies, environmental protection laws, and GHG emissions regulations are examples of favourable institutional changes that play a vital role in the oil and gas sector and strategy’s direction of the company (Patala et al., 2021, p.935; Tarim et al., 2021). Indeed, national policies that accelerate the development and investments in renewables and low carbon solutions positively affect MNEs’ investments in these areas inside and outside the country. “Market-based mechanisms to trigger and sustain long energy transitions, complemented with focused and continuous state interventions (e.g. incentives, taxation), provide a more effective and accountable institutional framework for the state and energy firms to deal with the energy trilemma” (Tarim et al., 2021, p. 648). Renewable-friendly policy tools instituted by a country is encouraging “a ‘race to the top’ resulting in higher levels of investment in renewable energy sources” (Patala et al., 2021, p. 935).

National regulatory culture. Institutional ambiguity and complexity, the structure of political institutions, and regulatory regimes are at stake when it comes to creating conditions for implementing energy transition strategies (Tarim et al., 2021). Regulatory culture can take many forms: political debates, 5-years plans in China, etc. According to Tarim et al. (2021), “a centrally coordinated and imposed approach by the state can generate institutional clarity in long energy transitions, which is quickly seized on by firms striving to preserve and increase their

resources and influence” (p. 648). However, according to the authors, these institutional approaches are debilitated by the trilemma of energy affordability, security and sustainability that f states and firms face. Therefore, market-based appear to be more effective as incentives for renewables investments. The rigidity of national regulatory culture is also an essential factor for MNEs. It can impede companies from running the innovation process in favour of new sustainable solutions because of a lack of flexibility (Wagner, 2009).

National industrial promotion policies. Influenced by the national political cultures, industrial policies vary from country to country regarding their roles and characteristics and have increasingly gained importance since the financial crisis in 2008 (Kolk & Pinkse, 2012). They can be, for example, stimulus packages with climate-related components, incentive schemes supporting the substitution of old cars for more environment-friendly vehicles or environmental taxes. According to Johnstone et al. (2021), industrial policies can be a barrier to energy transition when they implement too protective measures distorting competition by favouring struggling incumbents instead of stimulating new actors and innovations. But the authors also show in their study that industrial policies can be enablers of the energy transition and transformations by fostering job creations and retentions, changing energy business models while acting on the energy ownership, or stimulating the creation of new industries as a form of green industrial policy. “Yet, interventionist policies around offshore wind and prioritisations around nuclear employment and capabilities highlight that industrial policy-related factors have been important in driving long-term policy for those particular technologies” (Johnstone et al., 2021, p. 101900). Georgallis et al. (2021) support this idea by showing that supportive policies stimulate the energy transition, especially by fostering the entrance of foreign actors that diversify into renewables and have more non-market experience.

Natural capital. Geographic and natural capital in a country is vital for MNEs to act for energy transition, mainly because it’s the kind of advantage that cannot be redeployed easily in another country (a company will need to combine FSAs with a similar CSA in another geographical location). “For some specific technologies related to renewable energy, the production location depends on a country’s natural capital” (Kolk & Pinkse, 2012, p. 483). This geographic specificity is

critical, for example, for wind power (necessity of important wind speed) and hydroelectricity (require mountainous areas). On the contrary, Hartmann et al. (2021) found out that – except for Norway and Abu Dhabi – “the presence of large reserves of oil and gas might well be seen as a country-specific disadvantage [...] because they limit the firm’s access to local knowledge and skills associated with renewable energy” (p. 897). Indeed, being risk-averse regarding the uncertainty of the energy future, the MNEs having access to a great extent of fossil energies prefer to keep investing and focusing on the resources they are already exploiting and have experience in.

Demand conditions and growth. During the next decade, the energy demand will increase, especially in emerging and growing markets such as China and India (IEA, 2021b). Growth in demand for renewable is an incentive for MNEs to accelerate development and investments in the energy transition to implement low-carbon solutions and renewable technologies. And the synergies between national policy and regulatory frameworks to tackle energy demand are at stake. “In developed markets with lower growth in demand, investment in new power plants generally occurs only when existing plants are decommissioned and replaced” (Patala et al., 2021, p. 934). Even if the investments in renewables have increased due to a decrease in costs, strong growth in demand in growing markets has also generated fossil-fuel-based investments (IEA, 2021b; Patala et al., 2021).

Societal concerns and pressures. “Normative pressures encompass commonly accepted local social norms and values that are an integral part of doing business in the specific country context. These include the value that society places on clean air, societal expectations for clean energy sources, and the willingness of the local population to embrace renewable energy alternatives” (Hartmann et al., 2021, p. 881). These pressures will be more or less intense, depending on the country. Hartmann et al. (2021) show that normative social pressure has a strong influence on the decisions of O&G companies to invest in renewable energy when they perceive energy transition as a strategic area. According to the authors, a firm can benefit from a legitimate advantage from these national social concerns and values. “A firm based in a country with strong normative pressures for environmental performance could have an advantage over a firm from a country with comparatively weaker normative pressures” (p.897).

Social perception of the role and responsibilities of a firm. Oil and gas companies are the primary providers of energy worldwide. While the industry is the main responsible for climate change environmental issues, it can also reshape the energy business to support energy transition. “The industry is viewed as a major cause of climate change and environmental problems and is under significant pressure to transform to a more sustainable way of operating” (Morgunova & Shaton, 2022, p. 102573). Today, in most parts of the world, according to a study by EY (2017), the O&G industry is perceived quite negatively as not worth the environmental impact, and the public lacks trust in energy companies. Public perception of oil activities is mainly negative. On the contrary, they are seeing positive renewables and are increasingly rejecting fossil fuels as a source of energy even if they are efficient products (EY, 2017). “The survey shows Americans value the industry for its expertise and its technological prowess, but they remain unconvinced that oil and gas companies are trustworthy on important issues such as protecting the environment” (EY, 2017, p.12).

Firm-specific-advantages

Position in the supply chain & nature of core products. According to Kolk & Pinkse (2012), the higher up you are in the supply chain (i.e. operating in markets where you are away from the end customers), the more adaptation of product offer to sustainability issues is going to pay off because of a differentiation to meet customers’ expectations on climate change issues. However, in an industry such as oil and gas, we found many vertically integrated MNEs. According to the authors, these companies can benefit from integrating energy transition into their activities and strategies as climate change affects the whole value chain. Indeed, many O&G companies are involved in both upstream and downstream activities for oil and gas, meaning that they are engaged in the exploration, production, refinement, and distribution of fossil fuels. Today the integration of low-carbon energies and renewables is key regarding how to integrate them into the value chain and retain, create or recombine this FSA. “If MNEs are able to adapt both upstream and downstream activities simultaneously, this will contribute more to a sustainable competitive advantage because such investments will be more difficult to imitate and lead to higher-order capabilities of combining technological

(upstream) and non-technological (downstream) FSAs” (Kolk & Pinkse, 2012, p. 479). For example, O&G companies can create an FSA by developing a low-carbon technology in upstream activities and then commercialising it through existing downstream FSAs in market-related activities.

Existing organisational and technological capabilities. Georgallis et al. (2021) show that experience is an essential firm-level advantage as “it implies learning, or the acquisition of knowledge, which can later be leveraged as the firm encounters the choice of whether to invest in other locations or the choice of where to invest.” (p. 858). The accumulation of experience and knowledge is a driver that can support the creation of a new advantage or a new resource and support new investments outside the core business (Hartmann et al., 2021, p. 887). Pre-existing assets play a crucial role in influencing MNEs in the oil and gas sector to invest in new business areas such as renewable energy (Hartmann et al., 2021, p. 887). Moreover, in a highly competitive field such as oil and gas, the ability to create new applications from existing expertise, which Garcia et al. (2014) called “combinative capabilities”, is at stake to develop “architectural competencies” that enable the deployment of current capabilities in new and flexible ways. Thus, in the oil and gas sector, extending in-house operational expertise goes is possible in 2 main areas: biofuels (building on the experience of refining oil and gas products) and offshore wind (leverage expertise in oil and gas offshore structures) (Patala et al., 2021).

Degree of internationalisation. The more a firm is internationalised, the more it is prone to develop capabilities for sustainable activities as they are exposed to global climate change pressures (Patala et al., 2021) and will also tend to have higher commitments towards renewable energy (Hartmann et al., 2021). In the O&G sector, the highly internationalised companies will take advantage of unique locational resource endowments for renewable resources (e.g., high solar irradiance or optimal wind conditions) and develop capabilities that can be leveraged for investing in locations with less optimal conditions (Patala et al., 2021, p.933).

Organisational structure and nature of strategic planning process. Organisational structures are critical in how the energy transition is dealt with in the companies

and how it is integrated into the strategic planning process (Kolk & Pinkse, 2012, p. 479). Companies can have a centralised or decentralised structure, they can also have a rigid or flexible decision-making process, or they can be more or less hierarchical. All these characteristics of a firm's structure will profoundly influence how the energy transition is integrated into the organisation: is the headquarter having a hand on the corporate strategy and imposing its vision on the application of energy transition to all subsidiaries? Does each subsidiary have room for developing its energy transition strategy according to the shape of the local market? It's also important to focus on how innovation and knowledge transfer are managed inside the company between headquarters and subsidiaries.

The ability to anticipate and spread risks. How a company perceives climate change's effect on its value proposition and business model influences how the company is acting toward energy transition (Kolk & Pinkse, 2012, p. 479). According to Kolk & Pinkse (2012), while energy transition is perceived by firms as a business opportunity or is assessed through its risks, it's not often that it's seen as a strategic issue that needs to be dealt with. In the O&G industry, the ability to anticipate and spread risks regarding energy transition is of paramount importance when it comes to decision-making. Indeed, transitioning toward a more responsible energy future requires O&G companies to assess, anticipate and act on the risks to diversify their portfolio energy mix and evaluate the opportunities of renewables and new low-carbon solutions. It's also at stake to predict risks to make their portfolios more resilient. Diversification into alternative, profitable growth options in low-carbon businesses raises numerous questions about reimagining operating models and the risks behind it (Beck et al., 2021)

Corporate culture. A strong corporate culture that can lead to effective transformational changes is made of crucial elements: "use of different management styles, support of employees in making innovative decisions, development of cooperation and elimination of conflicts between workers, formation of general corporate values, creating trust between employees and top managers, promoting the development of young workers, use of the mechanisms of education and maintenance of a high level of morality and culture of workers" (Polyanska et al., 2019, p. 562). Corporate culture is at stake when developing

strategies and making choices for energy transition, where sustainability awareness and incorporation in corporate values are majors. “Low-carbon energy transitions are not based only or merely on techno-economic dimensions and considerations. Rather, they are shaped—in positive and negative ways—significantly by culture” (Sovacool & Griffiths, 2020, p. 690). Indeed, here cultural practices and norms are essential.

Historical involvement with alternative products. A firm’s specific history about how it has along the time being confronted with environmental issues, being involved in the past participation with environment-friendly alternative products or activities, or developing new business areas, is shaping the perception of the company on climate change and decision-making regarding energy transition (Kolk & Pinkse, 2012). Indeed, in the O&G sector, a company can be reluctant to develop activities in renewable energies if they have tried it in the past and proven unsuccessful. Similarly, suppose a firm has been successfully involved for decades in solar or wind powers, for example. In that case, it will be more prone to invest in low-carbon technologies and renewables.

Environmental citizenship & internal climate expertise. Environmental citizenship can be defined as the right to participate in environmental policymaking, choose sustainable actions and pro-environmental behaviour, prevent the creation of new environmental problems, comply with environmental regulations, and promote sustainable arrangements ([European Network for Environmental Citizenship](#)). For oil and gas companies, environmental citizenship can be expressed through different kinds of actions: release of sustainability and climate reports, implementation of performance indicators, training programs for employees on how to act more sustainably, and establishment of transparency policies. As Hartmann et al. (2021) explain, companies decide to be involved in environmental citizenship for different reasons. Among them are these two main ones: company reputation and building competencies in more sustainable activities that markets will increasingly require in the future.

Methodology

To investigate the links between FSAs, CSAs and the evolution of strategies in the oil and gas sector in the light of energy transition, I decided to focus on two companies: TotalEnergies and Equinor. The methodology chapter will intend to shed light on the choice of conducting qualitative research and the benefits of a comparative case study and will focus on ethical considerations related to the framework of the paper. Data collection and case selection will be illustrated thoroughly.

Research setting

This paper aims to understand how O&G companies adapt their strategies and businesses to shift toward energy transition. To tackle the research question, I will conduct a qualitative approach for my research. To conduct research, several methods can be used. The main broad domains of research are *Quantitative* research (used to test assumptions, to establish generalisable facts about a topic) and *Qualitative* (used to understand concepts/thoughts/experiences, to gather in-depth insights on issues that are not well understood) research (Adams et al., 2014). In qualitative research, the data collection consists in gathering in-depth interviews, observations, written documentation, and so on. (Adams et al., 2014).

A focus on case study

A comparative design is believed to provide a proper in-depth understanding of a particular phenomenon (i.e. energy transition) in specific settings (i.e. the oil and gas industry). Moreover, “a case study is an in-depth study which explores issues, present, and past, as they affect one or more units (organisation, group, department or person).” (Adams et al., 2014, p.98). So, it is an appropriate approach as I will look at the evolution over the years of the O&G companies’ strategies regarding energy transition.

Case studies involve uniqueness, understanding, and particularisation rather than generalisation. Yin (1984) states that they generate more than they test the hypothesis by asking the questions “How?” and “Why?”. I esteem case studies is well suiting my research as it is not generalised conclusions to all companies as if conditions were identical in other organisations. Indeed, my purpose is to make a “small generalisation” about a particular case (i.e. general strategies adopted by companies regarding energy transition, but in the oil and gas industry).

This type of research design, when it is built on multiple case studies, enables to conduct of a comparative approach. In line with Yin (1984), a comparative approach suits the frame of this research as it asks the same question in several related organisations (i.e. “How is energy transition influencing the recombination of activities and the strategic evolution of oil and gas companies?”). It enables recognising similarities and distinctions between companies (such as organisations with collective goals) and offers explanations of structures influencing the energy transition strategies.

This research is based on a two-case study. According to Bell et al. (2019, p. 67), it enables us to compare and contrast the findings. And the comparison itself pushes us “to consider what is unique and what is common across cases” (Bell et al., 2019, p. 67). This comparative analysis aims to see if we see similar patterns among O&G companies, to know if they have similar strategies and how they differ.

However, it’s essential to be careful with the pitfalls of such research design. Researchers must not forget to pay attention to the specific context, how the cases can be contrasted, and to try to keep a not too narrow approach.

Collected data

This case study is based on secondary data collection; as Adams et al. (2014) explain, secondary data are more valid and reliable than data I would have collected from primary data. Secondary data can be found in books, libraries, the web, etc. This research tries to understand how O&G companies are shifting their strategies toward energy transition over the years. Thus I chose to focus on what companies communicate and how they report over the years. I primarily based my analysis on annual reports and online stakeholders’ presentations.

The analysis of corporate communication enables to seize how the strategy is applied, what the processes are, and what are the shifts that lead the company to succeed in moving or not toward energy transition.

The goal was to look for more than figures in these corporate communications. I searched for some keywords, critically thinking defining the strategies, and paid attention to how reports are displayed. It gives me a clue if there is a focus on a new subject or an emphasis on some investments or areas. In other words, the goal

is to understand how they are switching toward cleaner technologies and how they will continue with the old system of fossil fuels.

Scope of the data collection

Different criteria were defined when it came to the case selection. First, the companies should be significant actors in the O&G industry – i.e. operating in upstream and downstream activities related to oil and gas. Secondly, the companies should consider sustainability, climate change, and energy transition at some level of the firms' strategies – e.g. at an operational level, at the level of their corporate cultures, or a strategic level (achievement of long-term goals). Thirdly, the companies should not be from the same home country and should have a worldwide footprint so that we can evaluate the influence and impact of CSAs.

Choice of the companies

To seize how companies in the O&G sector are shifting their strategies and recombining in new ways in the energy transition, I decided to focus on leading oil and gas companies worldwide as they are modelling the industry. In 2022, the ten most prominent companies are ExxonMobil (US), Chevron (US), Reliance Industries (India), Royal Dutch Shell (UK), PetroChina (China), TotalEnergies (France), ConocoPhillips (US), Equinor (Norway), Petrobras (Brazil), and BP (UK). (Statista, 2022). My choice settled on TotalEnergies and Equinor.

TotalEnergies is a historical player in the industry, part of the seven supermajors – also called Big Oil – alongside BP, Chevron, Eni, ExxonMobil, Shell, and ConocoPhillips. These companies were assigned with this denomination decades ago to emphasise their political and economic power. As for Equinor, it's only 50 years old, but the company has imposed itself these last decades as a significant actor in the oil and gas industry, challenging the traditional century-year-old players.

According to IRENA (2021), Equinor and TotalEnergies are critical actors at the forefront of the shift toward energy transition in the oil and gas sector. Indeed, they are positioning themselves as full energy companies adjusting their core businesses.

I reckon that for the purpose of the paper, analysing both leaders is pertinent as the differences in their corporate cultures, operation modes, internationalisation, history, and expertise, are keys to understanding their FSAs and strategies.

Geographical conditions

By picking TotalEnergies, which home country is France, and Equinor, which home country is Norway, this paper can focus on different geographic areas and analyse the influence of CSAs on strategic decisions. It allowed me to identify if a firm's strategy is differentiated according to its location and explore the triggers for change (competition, regulatory pressure, etc.).

The choice of France and Norway is interesting as it brings three lenses of analysis: 1) influence of regional supranational regulations through the European Union (Norway is not a member of the EU, but it is part of the EEA agreement, which means that the EU energy policies are applying to the country); 2) influence of CSAs and 3) differences of national policies and their effects on O&G strategies while abiding by the same EU rules.

Secondary data & Timeline

This paper explores the strategic choices over time of TotalEnergies and Equinor. In this order, it was essential to collect reliable data over time. Thus, I decided to rely on secondary data from mostly annual reports and shareholders' presentations of the companies ([Appendix 1](#)). These reports shed light on the evolution of the companies' strategies, communications, and focus areas. The strength of this approach is to have access to the same type of sources over the years on the contrary to interviewees that can be biased in their analysis by mainly focusing on a short-time period for analysing the shift or that can miss some information and overview on the change in the strategies over time. The choice of TotalEnergies and Equinor was also driven by the availability of transparent and forthcoming documentation on their operations and strategies and many years of data (available online on their websites). For Equinor, 21 years of data were collected, and for TotalEnergies, 17 years. This extended timeline enables me to analyse both companies' shifts and recombination toward energy transition and the different phases and watersheds of their strategies and choices. This data analysis

is valuable as it provides a good and accurate overview of what the organisations are doing, what they are emphasising, and what they are saying.

Ethical considerations

Building a study raises several considerations as it is attached to significant concerns. Among them, ethical concerns are at stake and have been thoroughly considered during the study. Neuman (2014) explains, “The perspective and techniques of social research can be powerful tools to understand the world. Nevertheless, with that power comes responsibility – to yourself, your sponsors, the community of researchers, and the large society.” (p.62).

Research should be conducted by acting morally, responsibly, and in accord with several ethical principles. Other researchers and ethics codes are providing guidance. However, it is the individual researcher who, in the end, is responsible for ethical conduct (Neuman, 2014). Thus, when collecting data, I placed honesty and understanding about personal gain. “The truthfulness of knowledge produced by social research and its use or misuse depends on individual researchers like you, reflecting on their actions and how social research fits into society.” (Neuman, 2014, p. 162). I am committed to constantly weighing the potential costs (privacy, loss of dignity) against potential benefits so that the pursuit of scientific knowledge doesn’t hinder the rights of people being studied (or of others in society).

Another critical concern is plagiarism. Indeed, Adams et al. (2014) explain that it is necessary that all quotes and illustrations are correctly referenced and sourced. To prevent this kind of problem, research has been cautiously planned.

Finally, “If the work is not honestly undertaken, then it will be essentially fraudulent” (Adams et al., 2014, p. 21). Fraud can emerge in several ways, so, in line with Reese and Fremouw (1984), I have been careful not to be selective in sampling, to not makeup data, not falsify results, or also not be tempted to remove data that doesn’t fit in with my analysis.

Analysis & Findings

Before providing the data collection and analysis findings, this chapter will briefly overview both cases. This chapter aims to understand the intertwinement between macro-level climate change regulations, CSAs, and FSAs and their influence on Equinor and TotalEnergies' strategies regarding energy transition and how it leads or not their shifts. Despite several of these factors being interconnected, they are reviewed separately due to their levels of complexity. The strategic evolutions of the firms will be presented to assess the importance of the different drivers in decision-making and strategic choices.

Introduction to the Cases

Case 1: Equinor

Founded in 1972, Den Norske Stats Oljeselskap AS—Statoil (the Norwegian State Oil company), which changed its name to Equinor in 2018, is an international energy company present in almost 30 countries worldwide (Equinor, n.d. c) and the leading operator of the Norwegian continental shelf. Based in Stavanger, Norway, Equinor is owned 67% by the Norwegian state. In 2021, the company had a turnover of \$90B and over 21,000 employees ([Equinor](#)). Equinor is an energy company that develops oil, gas, wind, and solar energy projects and focuses on offshore operations and exploration services. In June 2021, Anders Opedal, CEO of Equinor, presented the group's new strategy based on diversification and decarbonisation of production. "It's a balance. We continue to do what we do, reducing the carbon impact, to generate enough capital to finance the energy transition," sums up Philippe Mathieu, the director of the strategy (Hivert, 2021). Today Equinor is positioning itself at the forefront of the energy transition with the "aim to be a leader in the energy transition by building the energy industry of tomorrow and becoming a net-zero company" by 2050 (Equinor, 2020, p.3). As Anders Opedal states, "Our task in the coming decades will be to contribute to the transition from fossil fuels to other forms of energy while continuing to create value." (Equinor, 2022). Turning into a leading company in the energy transition is at stake for Equinor if they want to build a competitive advantage for the future. They are changing to be able to create value through the energy transition, tackle new industry opportunities by meeting the net-zero target, be at the cutting-edge of innovation to maintain competitiveness,

and manage margin pressures (Equinor, 2021). Equinor has then defined three main areas where to focus their efforts: reduction of greenhouse gas emissions, the fast growth of renewable energy (long time focus now on wind power), and cutting CO₂ from the atmosphere and industrial processes (Equinor, 2022).

Case 2: TotalEnergies

Founded in 1924, the Compagnie Française des Pétroles (i.e. “French Oils Company”) was created to enable France to be part of the oil adventure. In the 1950s, the company established the brand TOTAL. It became one of the seven oil supermajors we know today following mergers in 1997 and 1998 with Elf Aquitaine (a French company) and Petrofina (a Belgium company). Some 20 years later, in 2021, Total changed its name to TotalEnergies to embody its transformation strategy with the ambition “to be a world-class player in the energy transition and to achieve, together with society as a whole, carbon neutrality in all its global activities by 2050” (TotalEnergies, n.d. a). Today, TotalEnergies is a broad energy company that produces and markets energies on a global scale, from crude oil and natural gas exploration and production to power generation, transportation, refining, petroleum product marketing, and international crude oil and product trading. It’s also a large-scale chemicals manufacturer. Based in Courbevoie (near Paris), France, TotalEnergies is listed in Euronext and NYSE. The company had a turnover of \$205B in 2021 and more than 105,000 employees ([TotalEnergies](#)). Active in more than 130 countries, TotalEnergies’ ambition is to “be a major player in the energy transition” (TotalEnergies, 2021b, p.14), and for that, diversification of their portfolio mix is still at stake. This ambition is backed by an integrated strategy across the gas, electricity, and liquid fuels value chain and the development of carbon sinks (TotalEnergies, 2020). TotalEnergies has big ambitions regarding energy transition and positions itself at the forefront of it with the goal of “becoming one of the top 5 renewable majors by 2030.” (TotalEnergies, 2021c, p. 60) and so by reducing the proportion of fossil fuels in their energy mix. To provide clients with solutions for energy transition the group offers three critical areas of action: “Promoting renewables. Favouring substitution. Decarbonizing carbon.” (TotalEnergies, 2021c, p. 16). As Patrick Pouyanné summarises it “more energy, fewer emissions and always more responsible” (TotalEnergies, 2021a, p.14), TotalEnergies’ *raison d’être* and

mission “is to provide more affordable, more reliable and cleaner energy to as many people as possible” (TotalEnergies, 2021a, p.17).

Macro-level climate change policies: Global and regional policy framework

“The UN set up the foundations, basics for the legal framework of the energy sector development, according to the principles of sustainability and climate protection.” (Zuev, 2020, p. 367). The Kyoto Protocol of 1997, and the Paris Agreement of 2015, are some of the international policies that have paved the way in the last decades for legally binding regulations regarding climate change offering concrete mechanisms to tackle energy transition. They both aim at country-specific GHG emissions but didn’t attempt to regulate or discuss the supply side of energy, i.e. the oil and gas industry (Harstad, 2018).

Ratified in 2005, the Kyoto Protocol gathered today 192 countries and was the first step towards achieving more substantial global emission reductions. It “operationalizes the United Nations Framework Convention on Climate Change by committing industrialised countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions by individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically” (UNFCCC, n.d. a). The goal was to set binding emission targets for developed countries – as they are responsible for the current high levels of GHG emissions – and to limit the emission increases of the remaining countries. After that, in 2010, the Cancún Agreements of the UNFCCC (United Nations Framework Convention on Climate Change) implemented comprehensive finance, technology and capacity-building support package for developing and emerging countries to help them adopt climate change policies and move toward a low-carbon future for their economies. It also confirms that developed countries should dedicate \$100M by 2020 for these countries.

Then, in 2015 the Paris Agreement (also called COP21) was another landmark for global climate change policies and ambitious efforts to limit global warming by bringing nations into a common cause. Adopted by 196 Parties, the treaty’s goal is “to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels” (UNFCCC, n.d. b). This legally binding commitment applies to both developed and developing countries, and to achieve this long-term goal, countries agreed to achieve a climate-neutral world by mid-

century. This agreement reinforces the decarbonisation measures already present in some parts of the world, especially in Europe, that aim to reshape the global energy system.

Finally, in 2015 the UN set 17 Sustainable Development Goals (SDGs) in its 2030 Agenda for Sustainable Development as a plan to tackle climate change, which all the members have adopted. It intends to act hand-in-hand on different topics that need to be dealt with: poverty, inequality, health, education, energy, economic growth, access to energy, water management and access, and preserve ecosystems (UN, n.d.).

However, the UN is not the only international institution to establish a framework to act against climate change. The G20 is also an important organisation that works on energy governance and regulates it. One of its long-term concerns is energy efficiency, as it is linked to the use of energy resources and their optimisation. “G20 members agree that increased collaboration on energy efficiency can drive economic activity and productivity, strengthen energy security, and improve environmental effects.” (Zuev, 2020, p. 367). Thus, they implemented numerous initiatives to be engaged in global energy governance. For example, the G20 Sustainable Finance Working Group (SFWG) aims to promote and scale-up sustainable finance for an affordable energy transition and other issues in line with the SDGs (G20, 2021). The group develops tools to support banks and financial institutions to invest in energy efficiency activities. Many other approaches developed by G20 intend to keep the emergence of sustainable financial markets, promote cooperation at national, regional and international levels, create collaboration between research institutes on clean energies, and support the involvement of the private sector (Zuev, 2020).

Regarding the impact and involvement of the oil and gas industry, the OPEC has a unique role in global energy governance and establishing a framework for regulations and actions for the energy transition. The organisation's fixing oil production quotas strongly impact energy prices and modulates the energy sector. Today, OPEC is involved in energy transition and proclaims the necessity of energy diversification for the long-term sustainability of economies. HE Mohammad Sanusi Barkindo, OPEC Secretary-General, stated in 2021 that “The oil and gas industry can foster its resources and expertise to help unlock a low-

emissions future, through its role as a powerful innovator in developing more efficient technological solutions” (OPEC, 2021).

The IRENA (The International Renewable Energy Agency) is another international and intergovernmental institution that pushes forward sustainable energy networks and primarily promotes renewable energy development. It “supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy.” (IRENA, n.d. a). The organisation developed a roadmap to double the share of renewables in the global energy mix by 2030 (called REmap) and, for that, developed multiple innovative initiatives and collaborations ([IRENA](#); Zuev, 2020, p.370). While IRENA mainly focuses on renewables, the IEA (International Energy Agency) also develops alternative energy sources. Still, it approaches the energy transition and the reduction of dependency on oil and gas with broader initiatives (Zuev, 2020, p.370).

The European Union: solid regional regulations

This paper focuses on two companies operating and from countries in the European Union; understanding the structure of the EU energy policy is at stake here as it modulates the decision-making and the regulatory framework in which TotalEnergies and Equinor evolved.

The European Union has proven over the years that it can implement a solid and effective global energy governance and be actively involved in GHG emissions reductions with long-term goals for a sustainable future. “Since the Lisbon Treaty, the EU has stepped up its environmental policies and has been able to expand and increasingly integrate both energy and climate policies. This process has seen the introduction and reinforcement of longer-term decarbonisation objectives. A growing role of the climate dimension in EU’s internal and external energy policies.” (Eyl-Mazzega & Mathieu, 2020, p.28). The EU positioned itself at the forefront of the energy transition by endorsing a long-term strategy of climate neutrality by 2050 (set in 2018) and net-zero carbon emissions (established in 2019) (Europa, n.d. a). The EU set for itself sustainable energy targets and its main pillars of actions for energy transition and climate change are:

decarbonisation (greenhouse gas reduction and renewables), energy security, energy efficiency, internal energy market, and research, innovation and competitiveness. This vision for a prosperous, inclusive, and sustainable future is supported by several tools and policies implemented over the years: the European Investment Bank, the Green Deal, the Emission Trading System (ETS), Horizon Europe program for research and innovation, REPowerEU plan (for clean energy, energy savings, and diversification of energy mix), the Renewable Energy directive, and so on (Eyl-Mazzega & Mathieu, 2020). The European Green Deal, developed in 2019, is a watershed in the energy policy of the EU by introducing the ambitions of being “the first climate-neutral continent in the world” by 2050 (Europa, n.d. b) and reducing GHG emissions by 55% vs 1990 levels. In this plan, the EU is developing actions and initiatives to ensure cleaner energy and cutting-edge clean technological innovation (e.g. by increasing the share of renewables), more resilient industries, future-proof jobs and skills training for the transition, energy-efficient building, and preservation of the biodiversity (Europa, n.d. b). For that, they are, for example, implementing a solar strategy since 2022 to develop and accelerate the deployment of sustainable solar energy in the EU and promote cooperation in the field.

Thus, this section shows that multiple types of macro-level climate change policies exist – from global to regional levels. This diversity is at stake when analysing CSAs, especially regarding the EU’s regulations shaping national policies and regulatory frameworks and impacting country-specific advantages.

Country-specific-advantages

In this section, we will analyse the CSAs of Norway and France, which are the home countries respectively of Equinor and TotalEnergies. This focus will help us understand if they have typical CSAs. We will analyse if these CSAs influence TotalEnergies and Equinor’s decision-making when elaborating their energy transition strategies.

Norway

National policies. Much of Norway’s economic activity rests on using its natural resource base, and the country has a great time protecting its biodiversity. The country has been a pioneer in supporting sustainable development and integrating

environmental policies. Today, Norway's environmental policies are ranked by Sustainable Governance Indicators as the 2nd best worldwide, thanks to a strong focus on renewable-energy production ([SGI Data](#)). The Norwegian government has indeed implemented numerous tools for fostering sustainable development: Ministry of Climate and Environment since 1972, adoption of specific sustainable targets to be reached most cost-effectively, tax on CO₂ emissions, environment-friendly motivation taxes, providing transparent public information, the introduction of EIA and including a significant environmental dimension in planning studies and budgetary documents, incentives for the purchase of electric vehicles, creation of Enova to develop new energy and low carbon technologies, etc. (OECD, n.d.; OECD, 2022).

National regulatory culture. The state-centred tradition in Norway has created a system where the government is proactive in all areas. The government fosters decentralisation of decisions and gives a lot of power to regions. The legislative tradition is based heavily on the binding force of precedents, and numerous statutes have a certain degree of vagueness in leaving discretionary powers to administrations. As a member of the European Free Trade Association (EFTA), Norway is subject to several EU regulations, such as free circulation (SGI, 2020b). Moreover, Norway is a pretty consensus-oriented society with a strong tradition of citizens' consultation and discussions with business organisations and trade unions before enacting new laws. Finally, when it comes to governmental decision-making and implementation of regulations, strategic planning is highly present, with an essential role of the Ministry of Finance in the long-term planning process. Norwegian policymaking is also highly influenced by economic and social research to develop policies (SGI, 2020b). Even if the parliament makes all decisions on environment-related legislation and taxation, most aspects of environmental management are handled by local authorities, such as local pollution control (OECD, 2022).

National industrial promotion policies. The oil and gas industry is a vital sector of the Norwegian economy and contributes to the development of society. Thus it's paramount for the country to ensure that the sector keeps creating jobs and wealth. "The government's main objective for the oil and gas sector is to ensure long-term value creation through sound resource management on the NCS [Norwegian

Continental Shelf]. The activities are to be safe and clean and coexist with other users of the Norwegian waters.” (IEA, 2017, p.23). To ensure that oil and gas activities benefit society, the government is highly involved in the O&G industry. The Petroleum Act of 1996 paved the way for regulating the licensing system of the sector and for sound management of the resources (Norsk Petroleum, n.d.). The Norwegian government has implemented policies to regulate the industry over the years to operate sustainably. In 1991, the government introduced a carbon tax to persuade oil companies to reduce gas flaring on platforms and install more efficient gas turbines for offshore power generation.

“The aim of Norwegian energy policy is to provide a suitable framework for maintaining an efficient, climate-friendly and reliable energy supply system.” (Energifakta Norge, n.d. a). Norway’s energy policy relies on these four pillars: profitable development of renewable energy, supply security, value creation based on Norway's renewable energy resources, and more efficient and climate-friendly energy use. Thus, to support its ambition, Norway implemented several climate-friendly national policies and fostered energy transition such as carbon-pricing instruments or support for R&D and innovation in low-carbon technologies over the years. Norway is especially a leader in carbon capture and storage, in which they developed an expertise for more than 20 years now through Sleipner and Snøhvit projects, and they are fostering R&D through the Technology Centre Mongstad that aims to develop international initiatives in the field and tests capture technologies (IEA, 2017, p.88).

A backbone of the Norwegian energy policy is the development of renewables and facilitating the profitable production of these energies. For that, the government has been relying for a long time on hydropower. But it also implemented the Electricity Certificate Act in 2011 to promote the production of electricity from renewable energy sources and the Offshore Energy Act in 2021 to foster the development of offshore renewable energy production (Energifakta Norge, n.d. b).

Natural capital. Norway has large amounts of multiple primary energy resources thanks to large reserves of oil and gas offshore, water reserves with lakes, rivers, mountains and seas (i.e. excellent conditions for hydropower), and good wind conditions, especially on the coasts (important to generate wind power), and coal

reserves in Svalbard (IEA, 2017; DNV 2021). This extensive portfolio of natural capital gives the country access to both fossil fuels and renewable energies.

Demand conditions and growth. Population and economy are expected to keep growing in the following decades in Norway. While this trend was coupled with an increase in energy demand in the previous years with requests for more energy services (such as heating, transport, lighting, etc.), in the future, the situation will change with a slower energy demand growth. After a peak in demand in the 2030s, the energy demand will gradually drift downwards to 2050 (DNV, 2021). The reason for that will be an improvement in energy efficiency driven by the electrifying the roads (e.g. electric vehicles development), developing energy-efficient buildings, and electrifying oil and gas production (DNV, 2021). Moreover, today electrification is the most used energy in Norway, and there has been a decrease in the use of oil and gas products in aid of electricity, district heating and bioenergy (NVE, 2021). A specificity of Norway is its access to cheap and clean hydropower energy thanks to vast resources available and an almost entirely renewable electricity generation system (IEA, 2017). Thus, demand conditions are favourable in Norway for development and investments in the energy transition through low-carbon solutions and renewable technologies.

Societal concerns and pressures. According to a survey by the Norwegian climate research centre CICERO, Norwegians think Norway should cut its oil production, be responsible for cutting GHG emissions, and support developing countries to prevent climate change (Kjørstad, 2020). Through school strikes, demonstrations, and elections, Norwegians are campaigning vocally for concrete political action to halt global warming and are mainly targeting politicians who continue to facilitate more exploration for oil and gas at companies pursuing such operations. Some climate organisations are demanding a final date for Norwegian petroleum activity ([Norwegian Petroleum Museum](#)). Environmental activists are highly active in Norway and fight against developing oil and gas projects, even if they face opposition from the O&G industry and the government. For example, in 2020, Norway's Supreme Court rejected the demand of climate organisations to invalidate licenses for new oil exploration in the Arctic, allowing drilling to continue (Libell & Taylor, 2020).

Social perception of the role and responsibilities of a firm. The traditional active interventionist role of the government, close collaboration between the public and private sector, the welfare state and egalitarian values shaped the development of a strong CSR culture in Norway (Knudson, 2020). Environmental responsibility for society and companies is paramount in Norway and drives the idea that business is an integral part of the country but not the most important one. Thus, Norwegian firms are expected to do business sustainably, or in other words, to create value across environmental, social and economic dimensions. To support these societal expectations, the government implemented measures such as the obligation for companies since 2013 to report on their environmental and social impact (Knudson, 2020).

France

National policies. While France has been an early leader worldwide in leading topics and discussions on energy transition and climate change, it has more trouble meeting domestic targets due to powerful lobbying interests (IEA, 2021a; SGI, 2020a). However, Sustainable Governance Indicators today rank France's environmental policies as the 6th best worldwide ([SGI Data](#)). Indeed, the country is tackling numerous engagements and developed several tools for tackling climate change: the Grenelle Forum and Laws in 2009-2010 (to reshape and structure French environmental policies but also private initiatives), the Energy Transition for Green Growth Law of 2015 established a cross-sector planning system (it aims to ensure access to cheap energy, strengthen energy independence, fight more effectively against climate change and the preservation of the environment), creation in 2018 of the High Council on Climate (an independent organisation evaluation government's performance on sustainability issues), the obligation of reporting for companies (e.g. on financial risks related to the effects of climate change and measures adopted by the company to reduce them), Energy and Climate Law in 2019 (set GHG emissions reduction targets by sector) (IEA, 2021a; OECD, 2016). The ADEME (i.e. the Agency for Ecological Transition) is a vital authority actor in enforcing public policies related to energy efficiency, development of renewables and low-carbon technologies by acting through evaluations, monitoring, innovation and funding programmes.

National regulatory culture. Opportunism is often prevailing in strategic planning in France due to important bureaucracy. At the national level, in the government and ministries, short-term considerations are usually more important than strategic planning for policymaking due to high turnover. The governmental bodies more prone to take long-term approaches are the finance, foreign affairs, environment, and transport ministries (SGI, 2020a). On the opposite of many European countries – such as Norway – the government is relying not much on academics for policy advice. France is a highly centralised country but with national, regional, and local levels of decision-making. It results in difficulties in balancing conflicting goals. “The French government’s efforts to adopt rules and regulations applicable across the country encounter resistance due to the diversity of local situations and the relative strength of vested interests.” (SGI, 2020a, p.49). The Ministry of the Ecological Transition (MTE) is responsible for environmental and climate policies and issues at the national level. The ministry is working on cross-disciplinary topics such as equality, biodiversity, air quality, water management, energy taxation, and new technologies (IEA, 2021, pp. 24-25). Alongside the Ministry of Higher Education, Research and Innovation, share R&D responsibilities on energy. At the regional levels for the implementation of energy transition plans, the Energy Transition for Green Growth Act of 2015 enables the regional governments to act in the framework of the regional plans for spatial planning, sustainable development and equality (i.e. the SRADDET: “Schémas régionaux d’aménagement, de développement durable et d’égalité des Territoires”) (IEA, 2022, pp. 24-25). Finally, as a founding member of the European Union, France is deeply engaged in EU diplomacy and policy-making. It is set on implementing EU rules and regulations at a national level.

National industrial promotion policies. In 2018, the French government set an ambitious goal of reaching carbon neutrality by 2050. It relies on two strategies: a roadmap for reducing GHG emissions and the Multiannual Energy Program (PPE), which sets the priorities for action in the energy sector for the next decade (IEA, 2021a). These last years, the country has invested massively to reduce its consumption of fossil fuels (coal, oil, gas) and strengthen its energy independence (Gouvernement, 2022). The new energy strategy will rely on nuclear activities and renewable energy. For that, the government set a target of 40% of renewables in its energy mix by 2030 vs 20% only today (Gouvernement, 2022). Several

regulations and initiatives support the shift toward energy transition and renewables like the 2021 Climate and Resilience Law to accelerate energy transition (e.g. ban of short domestic flights, most polluting vehicles, heated outside terraces), R&D efforts for low-carbon technologies through the ADEME, in 2021 a ban on support for coal-fired power plant projects. At the end of 2021, France joined an international coalition to end foreign government support for fossil fuel projects without capture technologies by the end of 2022 (Jacque & Cossardeaux, 2021).

Natural capital. France has few energy resources (gas, oil or coal) on its territory. So, combined with the oil shocks of the 1970s, France decided to resort to nuclear energy to ensure its security of supply and acquire sovereignty (ADEME, 2022). However, France is the second-largest producer of renewable energy in the European Union after Germany, thanks to its strong hydraulic, wind and geothermal potential. The country has the fourth-largest forest area in Europe, behind Sweden, Finland and Spain. Thanks to its vast and well-exposed coastline, Metropolitan France has the potential to develop wind energy (it has the 2nd largest potential in continental Europe after the UK). The French overseas regions also have significant wind and solar possibilities for developing these energies ([ADEME](#)).

Demand conditions and growth. While until 2005, the energy demand was increasing; since then, the trend has reversed, and the energy mix has evolved in the last decade. Indeed, the share of coal and oil has decreased to respectively 2.4% and 28% in 2021, while the share of nuclear and natural gas have increased respectively to 16% and 40%. The percentage of renewables has doubled to 13% (mainly biomass, but also biofuels, hydropower, and wind) (Ministère de la Transition Ecologique, 2021). Oil covers energy demand mainly in industry and transport, and natural gas and electricity are used chiefly for buildings (IEA, 2021a). The share of renewables in the energy demand and production should increase in the following years in France thanks to the development of solar energy, wind power and renewable heat, but also because of the rarefication of fossil energies. Indeed, in France, conventional oil and gas deposits are limited and are being depleted. Coal mining is economically unprofitable and has been abandoned. There are no longer any active uranium mines. Due to debates about

its environmental impact, shale gas exploitation has not been implemented (ADEME, 2022).

Societal concerns and pressures. An overwhelming majority of French people say they are worried about climate change (85%) according to an IFOP survey, and young adults are the most concerned about the climate issue. To fight against global warming, the French state that they are committed to sorting their waste, sacrificing a few degrees of heating in their homes, favouring renewable energies, and using less-polluting transport (IFOP, 2018). The population is rallying, especially in climate strikes. And while climate change is at the core of the concerns of the French people (2nd biggest issue to be dealt with by the government), it was deeply forgotten during the last political debates for the French elections in 2022 (Garric, 2022). Moreover, France's oil and gas industry is increasingly criticised for its environmental and sustainability impact. TotalEnergies is mainly in the centre of numerous critics, condemning its footprint on the environment and its actions. In May 2022, during the group's Annual Shareholders meeting, a group of climate activists tried to block the meeting, stating that the O&G company is irresponsible because it keeps producing fossil energies and developing polluting projects while there is a climate urgency (France Info, 2022).

Social perception of the role and responsibilities of a firm. In France, we note a desire for greater accountability from companies beyond the missions inherent in their activity, and this feeling has grown enormously throughout the COVID-19 health crisis. Employees wish to make their contribution and are particularly sensitive to their employer's position on political issues of an economic or societal nature (MEDEF, 2021). Managers and employees consider that their company plays an essential role in society beyond its economic activity. The very evolution of the status of companies is moving in this direction. Indeed, since the "Pacte" law in 2019, companies' leaders can modify statutes to include a "raison d'être". The concept of "mission-based company", also included in this law, allows to give more concrete substance to the *raison d'être* via environmental or social missions that the company commits to ensuring in the framework of its activity (Fondation Jean Jaurès, 2021).

Findings

France and Norway are at the forefront of energy transition worldwide. Despite differences in regulatory culture and natural resources, they have implemented several environmental policies and regulations to support energy transition throughout the year. Both countries are also confronted with critical social pressures and considerations for climate change. The perception of the role of companies is also evolving profoundly by a population requiring increasingly CSR approaches from companies. We notice in both countries a growing demand for renewables, supported by the governments and their numerous actions in favour of developing these new energies. However, France and Norway have different approaches to policymaking for the energy industry, influenced by natural capital, economy, and values. Indeed, even if they promote the development of low-carbon energies, they diverge in support of non-renewable energies: Norway is supporting a lot of still oil and gas industry, while France is still betting on nuclear.

Overall, Equinor and TotalEnergies are playing a lot on and are influenced by these country-specific advantages.

First, **national climate change and industrial promotion policies appear to impact Equinor and TotalEnergies' strategies greatly.** Norway has imposed high social and environmental standards on its companies, especially on how oil and gas firms operate in the country on the Norwegian continental shelf (NCS). Equinor has built its strategies on these regulations and incorporated them into its values: the group has, since its creation, developed its activities with the idea of “causing no harm through our activities to the country’s rich coastal fisheries” (Sustainability report 2001, p. 8). Moreover, the 1971 national ban on routine flaring and the price of carbon have been strong incentives for Equinor to invest in gas and sustainable solutions (Sustainability report 2017, p. 10). As for TotalEnergies, following the Grenelle law and forum, the group created a subsidiary, Total Énergie Solaire, to develop photovoltaic projects and educate on solar energy (Annual report 2008, p. 42). By making CSR reporting an obligation for listed French companies, the Grenelle law resulted in TotalEnergies releasing its first Sustainable report in 2012.

Moreover, the government’s incentives for renewable energy and innovations in low-carbon technologies seem to be highly effective in encouraging companies to

develop strategies and take action for the energy transition. For example, the decision of the government to invest more heavily in offshore wind and implement regulations that facilitate developing this business in the country is encouraging Equinor to invest in offshore wind in Norway now. Significantly, following the decision of the Norwegian government to open more licensed areas in the NCS for offshore wind, Equinor created a joint-venture in 2021 with RWE Renewables and Hydro REIN for a bottom-fixed offshore wind farm in the North Sea (Equinor, 2021b).

On the contrary, the lack of national policies supporting renewables and low carbon technologies hinders companies from investing and moving toward energy transition. While wind resources are essential in France, wind power is still underdeveloped. Indeed, even if TotalEnergies has been developing offshore wind farms in France, the group perceives that: “Administrative procedures, the need to create a specific legal framework, competition between market players and states also slow down the development of this technology” (TotalEnergies, 2021d).

Thus, national policies, incentives, and tools for tackling climate change strongly influence Equinor and TotalEnergies’ strategies and actions to recombine their businesses for acting toward energy transition.

Secondly, **natural capital is essential for TotalEnergies and Equinor in their development and recombination of activities and to tackle local demand.** In line with Hartmann et al. (2021), it appears that even if Equinor is making the most of oil and gas resources available on the NCS, it is also involved in exploiting renewables resources of the country: “As we work towards our ambition of realising the full value potential of the Norwegian Continental Shelf (NCS), we are simultaneously developing international platforms for long-term growth and gradually building a position in renewable energy production.” (Annual report, 2009, p. 16). For Equinor, Norway, with its NCS and the North Sea, has one of the world's best wind resources. The development of floating offshore wind in Norway will enable Equinor to supply the growing demand for renewables in Norway.

As for TotalEnergies, France's non-access to oil and gas resources is spurring it to invest and deploy unconventional energies available on the territory, such as water for hydropower, wind power, and solar power. Today, TotalEnergies has developed hydropower plants in France to use the abundant and easy access to

water and is highly involved in solar energy. In 2021, the group built its largest photovoltaic solar power plant in France; this project will enable the company to respond to the growing demand for solar energy in the country where solar is decreasingly costly and other traditional energies such as gas and oil and increasingly expensive (Sustainability Climate progress report, 2022).

Thirdly, **national regulatory culture seems to affect companies' strategies and decision-making**. Indeed, for Equinor how the involvement of the citizens is essential in the elaboration of their strategy: "We come from a tradition with a strong belief in stakeholder engagement. In Norway, the notion of a fair hearing has been institutionalised: those concerned or affected are to be heard." (Sustainability report 2001, p. 8).

Finally, **societal concerns, pressures, and perceptions of the role of the firm seem to influence also Equinor and TotalEnergies' strategies for the energy transition**. Equinor notices the impact on its strategy evolution of shareholders' pressure, which is increasingly asking for more transparency on the actions undertaken by the company for climate change, especially after the Paris Agreement (Equinor, Sustainability report, 2015, p. 14). In the reaction to increased pressure on TotalEnergies from climate activists to stop operating in protected areas, especially the following controversy on a license in the Virunga National Park that is welcoming the highest gorilla population, TotalEnergies decided in 2013 to "refrain from prospecting or exploiting oil and gas in natural sites inscribed on UNESCO's World Heritage List at this date." (Factbook, 2013, p. 8). Acting on sustainability topics according to societal pressures and expectations appears at stake for companies' reputations.

Firm-specific-advantages

The purpose of this section is to analyse what FSAs are present in TotalEnergies and Equinor: which are similar and which are different.

Position in the supply chain and core products. Both TotalEnergies and Equinor are vertically integrated O&G companies acting on the entire value chain. Indeed, they have activities of exploration onshore and offshore for oil and gas;

production onshore and offshore for oil and gas (natural and LNG), renewables (wind and solar), and biomass for TotalEnergies; transformation through refineries (also petrochemicals and blending plants for TotalEnergies), power plants, and energy storage; transportation by ship, train, power station, pipeline, trucks, and planes; and distribution of oil, fuel for TotalEnergies, gas, electricity, other petroleum products for TotalEnergies (lubricants, polymers, chemical bases), carbon sinks for TotalEnergies, and energy efficiency services for TotalEnergies (TotalEnergies, n.d. e; Equinor, Annual report, 2021, p. 29).

Recombining this FSA appears to be at stake for both companies. They adapt upstream and downstream activities to gain a competitive advantage in the energy transition. TotalEnergies is set to be present on the full LNG (i.e. liquified natural gas), electricity, and solar value chain (Investors' day, 2016; Factbook 2017; Annual report, 2021). Over the years, the group has highlighted the necessity for them to develop its presence on the solar value chain (i.e. from production to distribution) to be a leader in the sector, and it implemented this strategy to establish its presence by acquiring companies and developing subsidiaries in solar: "Total is active along the entire solar photovoltaic value chain, from manufacturing cells to developing utility-scale solar plants to installing solar systems on home and commercial rooftops, notably through its affiliate SunPower." (TotalEnergies, Factbook, 2016, p. 115). These last years, TotalEnergies has decided to create an FSA around electricity from renewables: "TotalEnergies is deploying across the entire renewable electricity value chain, from production and storage to trading and sales, in accordance with a selective, profitable approach." (TotalEnergies, Annual report, 2021, p. 14). TotalEnergies intends to maintain the same business model for its new integrated value chain activities (Annual report, 2017; Sustainability report, 2020). As for Equinor, even if the company is less attached to covering all the value chain of new activities in renewables and low-carbon energies, the group is still looking at how to integrate them into its value chain: they are exploring measures for "further electrification projects, consolidation of infrastructure as well as opportunities to develop new technologies and value chains" (Sustainability report, 2019, p. 11).

Specific assets and capabilities. "Equinor believes that our oil and gas competence can be leveraged to create business opportunities in the energy transition" (Equinor, Sustainability report, 2018, p. 21). Both companies have

long-time experience refining oil and gas products, which can then support the development of biofuels. To develop offshore wind, they can leverage expertise in oil and gas offshore structures.

“We are involved in developing and demonstrating offshore wind power by drawing on our experience from NCS production.” (Equinor, Sustainability report, 2007, p. 30). Regarding offshore structures, Equinor has substantial experience in floating offshore structures, marine operations and offshore maintenance as it has been at the core of its activities in NCS for oil and gas for 50 years now. So, Equinor is building on its core experience to develop offshore wind: floating wind turbines are familiar with the ones used for oil and gas (Equinor Sustainability report, 2011, p. 63). The company is also leveraging its unique expertise developed for years in carbon capture and storage (CCS), primarily through its Sleipner project, to create and commercialise CCS (Equinor Sustainability report, 2013; 2015; 2016).

Similarly, TotalEnergies is also making the most of its offshore expertise in developing wind energy. Indeed the group relies on offshore expertise trading expertise in oil, gas, and electricity to create new activities and competencies. “Competitive advantages to become a broad energy company: Building on legacy expertise to grow in Renewables and Electricity.” (Sustainability report, 2020, p. 11). TotalEnergies can also benefit from its experience and specific assets in solar by building on its 40 years of expertise in the area and by using its knowledge of certain geographical zones where the Group has a significant presence and can deploy solar (TotalEnergies Annual report, 2005; Sustainability report, 2015).

So, both companies are making the most of this FSA to develop new activities: “Bringing expertise to support new energy growth.” (TotalEnergies, Sustainability report, 2020, p. 12). Their core expertise is at stake when it comes to investing in and developing low-carbon technologies and renewables.

Degree of internationalisation. Both TotalEnergies and Equinor are highly internationalised companies with activities around the world: TotalEnergies is active in 130 countries while Equinor is present in 30 countries (Equinor, n.d. c; TotalEnergies, n.d. a). It appears that TotalEnergies is a more internationalised company than Equinor, with a more significant global footprint explained by its history. Equinor was founded in 1972 to take care of Norwegian interests. It grows and develops itself on the Norwegian Continental Shelf (NCS). Once its

activities in Norway started maturing in the 1990s, the company decided to expand its operations worldwide, and it “[has] utilised [its] expertise to design and manage operations in various environments in order to grow [its] upstream activities outside [its] traditional area of offshore production” (Equinor, n.d. a). On the contrary, TotalEnergies was created with the ambition to represent French oil interests worldwide, with its first oil field discovered in the Middle East in Iraq (TotalEnergies, n.d. b). TotalEnergies also had a strong footprint in Africa since the 1920s, when the group distributed services in Morocco and explored Gabon (La Jaune et La Rouge, 2020).

Overall, even if TotalEnergies is a more internationalised company, it appears that it didn’t give the company a more significant advantage over Equinor in developing capabilities for sustainable activities. Indeed, when Equinor started to internationalise its activities, it recognised the challenge regarding environmental protection and sustainability in entering new markets: “Increased activity outside Norway presents Statoil with new challenges. This applies in particular to our international activities in desert areas and tropical regions where the use of limited water resources and issues relating to emissions require different approaches that are adapted to local conditions” (Equinor, Sustainability report, 2005, p. 45). But the firm is relying a lot on Norway to develop cutting-edge technologies in low-carbon and renewables, especially for CCS: “If we can cut these costs together with good partners, [CCS] treatment technology developed in Norway could become a global tool.” (Sustainability report, 2006, p. 10). Thus, Equinor didn’t need a robust internationalisation of its activities to be a leader in energy transition and is “actively looking for new resources, both in Norway and internationally, with all investment decisions now including the impact on our portfolio carbon intensity as an assessment criterion, along with a carbon price.” (Equinor, Sustainability report, 2017, p.3).

However, the data analysis supports the evidence that the high internationalisation of O&G companies offers an advantage in leveraging local resources for renewables and developing low-carbon technologies in this direction. For example, both companies invested in their first offshore wind projects in the UK (TotalEnergies, Sustainability Climate progress report, 2022; Equinor, Sustainability report, 2009). TotalEnergies is making the most of its international footprint in the Middle East, for example, to deploy solar production, where they have important sunshine and can supply the local market by developing large

projects and increasing its solar expertise. Indeed, in 2022, the group is going to open a solar farm in Qatar that “set[s] to become the world’s largest solar power plant equipped with high-efficiency, half-cut bifacial solar modules” (TotalEnergies, n.d. f). A year earlier, TotalEnergies was investing in the world’s largest solar project developed in India to strengthen its presence and positioning in the renewables market (Sustainability report, 2021). As for Equinor, they started developing capacities and activities in solar internationally in South America, where sun resources are abundant. “In 2018, we made investments in two solar projects in Brazil and Argentina, together with Scatec Solar ASA. [...] Equinor also acquired a 10% share in Scatec Solar ASA to increase our exposure to a fast-growing renewable sector, further complementing our portfolio.” (Equinor, Sustainability report, 2018, p. 23).

Organisational structure. TotalEnergies and Equinor see organisational structure as at stake for developing low-carbon solutions and stepping into the energy transition. Indeed, they both reorganised these last years (and through time, too) their structure in the most efficient way to maximise the utilisation of expertise and resources across the company and enable better cooperation between business areas. For example, TotalEnergies was restructured in 2016 “to achieve its ambition to become the responsible energy major” (TotalEnergies Sustainability report, 2017, p.5). So the main changes were creating new corporate divisions (Strategy & Innovation and People & Social Responsibility) and a new segment called Gas, Renewables & Power. Regarding knowledge and innovation transfer in the company, Equinor is favouring innovation at the corporate level and development of expertise on NCS, and then if it’s proven successful, sharing it with subsidiaries (Equinor Sustainability report, 2018; 2019; 2020).

Approach to risk. TotalEnergies and Equinor are approaching energy transition as at stake to anticipate and mitigate risks on their business model and value creation. They are both involved in climate risk management by ensuring that their business models evolve in parallel with the energy transition, diversifying portfolio mix, improving portfolio resilience, developing low-carbon solutions (seeing them as an opportunity for growth and new value creation), and monitoring the regulatory/market/technological/physical impact of climate change (Equinor Sustainability report, 2019, p.9; TotalEnergies Annual report, 2006 &

2013; TotalEnergies Sustainability report, 2017). They are attentive to risk mitigation by involving themselves in low-carbon solutions and renewables. Indeed, they are, for example, favouring and developing corporate venture capital funding for start-ups whose services and products are not necessarily integrated into their business strategy or operations but nonetheless allow them to have a small stake in renewable energy – Equinor with Equinor Ventures and TotalEnergies with TotalEnergies Ventures (Equinor Sustainability report, 2015, p.44; Equinor Sustainability report, 2021, p.30; TotalEnergies Sustainability report, 2014, p. 42).

Both companies are careful to have a risk approach to the energy transition to preserve and build competitive advantages: “A responsible company is one that deploys the necessary resources, before the final investment decision, to assess not only the opportunities involved but also the risks and its ability to manage them. Looking out for subtle clues so that we can anticipate change and give our teams and suppliers time to adapt also gives us a competitive advantage.” (TotalEnergies, Sustainability report, 2013, p. 5).

Corporate culture. Equinor and TotalEnergies have introduced sustainability and energy transition in their corporate cultures over the years. Equinor states that what is caring its way of doing business and work is its culture and the following values: open (transparency and integrity), courageous (innovative, manage risk), collaborative (respect, trust and share knowledge) and caring (sustainability and zero harm to people). The company wants to create long-lasting values for the community and put safety first to run the business responsibly and sustainably (Equinor Sustainability report, 2019, p.9; Equinor, n.d. b). For TotalEnergies, there are five central values at the core of the company which are driving its goal to be a world-class player in the energy transition: safety, respect for each other, a pioneer spirit, the need to stand together and a performance-minded attitude (TotalEnergies, n.d. d).

The data analysed gives us little information on managerial style, decision-making, and work culture. Thus it isn't easy to evaluate the impact of corporate culture on sustainability strategy-making in the companies. Nevertheless, for Equinor, “our values and commitments guide us in our decisions” (Equinor Book, 2022, p. 9) and so are at stake when making choices for the energy transition.

Historical involvement with alternative products. Equinor has, since its creation, due to Norwegian governmental standards about how to conduct activities in the oil sector, included environmental considerations in its decision-making as it is committed to no harm through activities to the Norwegian wildlife (especially coastal fisheries) (Equinor Sustainability report, 2001, p.8). Moreover, Equinor has been involved in CCS technology for a long time in the North Sea with its pioneering Sleipner project launched in 1996 (Equinor Sustainability report, 2005, p. 8; 2013, p. 16). The company has been the leader in CCS for decades now and can share its expertise in the area with other companies (Sustainability report, 2006). On the other hand, TotalEnergies has successfully developed solar energy for more than 45 years, with photovoltaic solar power and storage solution. The group designed and tested its first solar panels in 1975 and built a research centre in 1982 to develop solar energy, a growing market. Through first its subsidiary Tenesol and then SunPower (acquired in 2011), TotalEnergies has successfully developed and commercialised solar energy (TotalEnergies Annual report, 2006, pp. 45-46; Annual report, 2012, p. 53; TotalEnergies, n.d. a).

This long-term involvement and the success that Equinor and TotalEnergies have respectively met in CCS and solar have encouraged them to keep investing in low-carbon technologies and renewable energies.

Environmental citizenship. While TotalEnergies published a scientific warning about climate change in 1971, in the following decades, the company was actively involved in disputing climate science, weakening controls on fossil fuels, and lobbying against policies for GHG emissions reduction (Bonneuil et al., 2021). But by the mid-2000s, TotalEnergies started to intensify efforts to act against climate change. Over the years, the company increased its environmental citizenship: release of its first sustainability report in 2012, implementation of environmental performance indicators (for air, water, waste recovery, carbon intensity, biodiversity,...), training programs (for ex. “Transforming with our People” program in 2021), establishing transparency policies (TotalEnergies Results & Outlooks, 2017, p. 3; Integrating Climate into strategy, 2017, p. 8; Sustainability Climate progress report, 2022, p. 53). As for Equinor, the group has been developing its environmental citizenship for longer. Indeed, the group acknowledged the problem of human-induced climate change in the early 1990s,

invested in clean energy technology in 1996 with the Sleipner project, implemented self-imposed GHG emissions reduction targets after Kyoto Protocol, and released its first Sustainability report in 2001. Over the years, Equinor also implemented environmental performance indicators, training programs, and transparency policies (Equinor Sustainability report, 2012, p. 37; Sustainability report, 2014, p. 8; Climate Roadmap, 2017, p. 26; Sustainability report, 2021). Today, both companies support the Paris Agreement and the UN Sustainable Development Goals.

These last years, Equinor and TotalEnergies have increasingly developed their environmental citizenship to maintain their reputation and build competencies in areas that will be at stake for winning or maintaining a competitive advantage in the energy industry. For example, TotalEnergies emphasises its rankings for sustainability. In 2013, the group highlighted its sustainable actions and position in the O&G sector, saying, “TOTAL was selected for the tenth consecutive year in the DJSI [Dow Jones Sustainability Index] World and is the only major in this index” (Factbook, 2013, p. 8). We see here how integrating sustainability is critical for TotalEnergies. As for Equinor, the company defined company reputation as a risk to tackle because of the following factors: “Talent attraction and retention, Investors’ perception of oil, gas and renewables investments, climate-related litigations, license to operate, transparency and disclosures of performance, governance and ambitions, external engagement and communication.” (Sustainability report, 2019, p. 9). Thus, environmental citizenship appears to be a critical advantage for Equinor for long-term sustainable business and value creation, so integrating energy transition in its strategy is paramount.

Analysis of the shift: TotalEnergies and Equinor strategies

Through this section, we will analyse how in the light of CSAs and FSAs, Equinor and TotalEnergies are shaping their energy transition strategies.

Timeline of strategy evolution

Equinor. Overall, Equinor has been concerned about integrating sustainability into its strategy for 20 years, with the first realisation after the Kyoto Protocol. Over the years, the company has shifted toward energy transition progressively by increasingly integrating and investing in renewables and low carbon solutions.

The group has been at the forefront of the energy transition, being one of the first O&G actors to act, primarily through the development of CCS. However, the COP21 in 2015 has been a watershed for Equinor, which after that stepped up with more significant commitments for the energy transition. The focus has always been on oil and gas, with more and more emphasis on LNG. Through the years, offshore wind has appeared as a vital area of focus, while solar, hydrogen and biofuels have emerged as energies to pre-empt the group more recently.

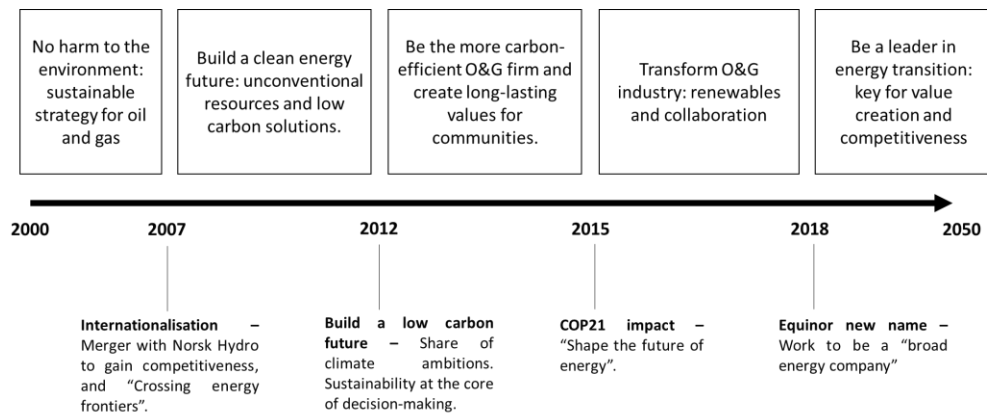


Figure 2 - Equinor timeline of emphasised energies. Source: author.

At the start of the 2000s, Statoil worked to integrate sustainability into its business after the Kyoto Protocol landmark. Since its creation, Statoil has been responsible for the environment at its core, so its goal is “zero harm to the environment” (Sustainability report, 2001, p. 8).

The company is at the forefront of sustainability action in the O&G industry; it is predominantly a leader in carbon efficiency and carbon capture storage (CCS). Statoil created a new energy business development unit to explore and develop renewables and low carbon solutions. For now, the focus in these areas is carbon management and hydrogen; the firm is also interested in biofuels.

In 2007, Statoil merged with Norsk Hydro to “strengthen our international competitiveness” (Sustainability report, 2007, p. 8). For the following years, the goal for Statoil will be to internationalise operations, and the challenge is to continue developing a sustainable business. The strategy of Statoil is “to remain a competitive and sustainable group, develop new business opportunities in oil and gas, and search for other sources of energy” (Sustainability report, 2007, p. 28). Oil and gas are at the core of the business. LNG is benefiting from a strong focus as a value creator playing on core strengths, representing also “low emission transition to a low-carbon future” (Sustainability report, 2009, p. 3). For this low-carbon future, the development of CCS technologies is the main focus, but

renewables are increasingly being looked at. Indeed, Statoil has decided to invest in wind power and focus on offshore projects to play on its core competencies.

In 2012, sustainability was integrated more into the corporate strategy of Statoil, which aims to be the global leader in carbon efficiency (strong of its experience in CCS) and sees sustainability as an opportunity for innovation and business development. Statoil's actions for energy transition are based on cutting carbon emissions and exploring new energy opportunities. "Our renewable energy business focuses on developing business in areas where we have a competitive edge as a result of our offshore oil and gas expertise" (Annual report, 2013, p. 49). So Statoil is focusing on wind offshore and CCS.

In 2015, we noticed a shift in Statoil's strategy regarding energy transition with this vision: "Staying competitive at all times; Transforming the oil and gas industry; Providing energy for a low carbon future." (Sustainability report, 2015, p. 9). Clean energies are emphasised more and a business unit "New Energy Solutions" has been created (after the disappearance some years before of the New Energy unit) to grasp growth opportunities. The goal is to integrate increasingly low-carbon energies and renewables in the portfolio mix as core activities complementary to oil and gas assets so that Statoil can meet with this ambition to "shape the future of energy" (Annual report, 2016, p. 10). Partnerships, R&D and international initiatives are central for Statoil to act on climate change. Regarding renewables, they are mainly focusing on the offshore wind (in which they are leveraging core competencies), but in 2017 Statoil made its first investment in solar.

When changing its name to Equinor in 2018, the company entered a new phase regarding its shift toward energy transition. Its ambition: be "a broad energy company" (Sustainability report, 2018, p. 2) and "become a net-zero energy company by 2050" (Sustainability report, 2020, p. 18). There is a bigger focus now on electricity production and EVs, and they are "scaling up investments in new energy solutions" (Sustainability report, 2018, p. 15) as they are noticing increasing disruptions from new entrants and game-changing technologies and stricter climate policies. Equinor wants to position itself "to be an industry leader in offshore wind" (Sustainability report, 2019, p. 4) by leveraging its core competencies. By investing in different projects, Equinor is also tackling growth in hydrogen, "which offers large-scale opportunities for zero-emission energy while leveraging existing infrastructure" (Sustainability report, 2019, p. 14), while

they are unprioritised in the last years. Equinor wants to grow its onshore renewables portfolio with wind, solar, and energy storage solutions to make its portfolio more flexible.

TotalEnergies. Overall, until the COP21 landmark, TotalEnergies has been acting to be a responsible major and preparing the energy future by implementing targets of GHG emissions reduction, prioritising LNG as clean energy (and biomass to a lesser extent), and investing in renewables, mainly through solar (in which they are developing since 1983). But the watershed for TotalEnergies to move towards energy transition and when it stepped up was after Paris Agreement. Indeed, the group stopped its most controversial and polluting activities (coal and nuclear) and invested in developing and diversifying its portfolio energy mix through wind energy, electricity, biofuels, and carbon sinks.

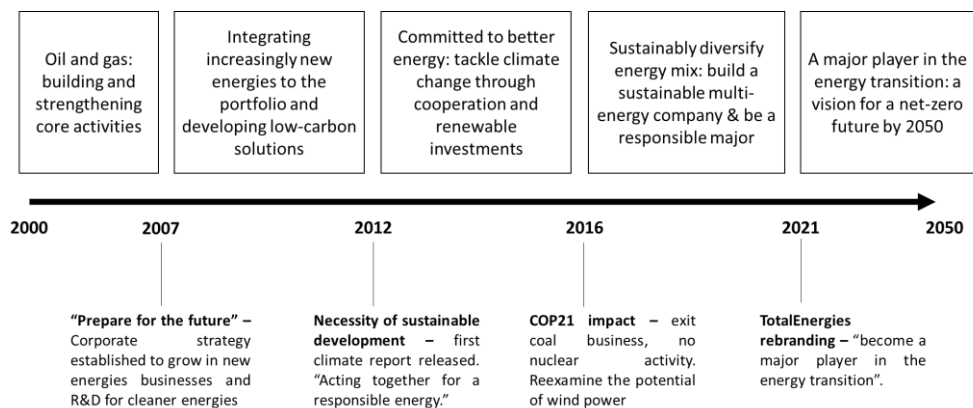


Figure 3 - TotalEnergies timeline of emphasised energies. Source: author.

At the start of the 2000s, Total’s strategy is to grow and focus on oil and gas exploration and production activities. To be prepared for the future of energy, the firm is investing in R&D and starting developing positions in solar and wind as renewables and biofuels as alternative solutions to fossil fuels (marine energy is also monitored). Due to stricter regulations, especially in the EU, Total is implementing targets to reduce greenhouse gas (GHG) emissions and develop carbon capture storage (CCS) technologies.

In 2007, a new phase started with a shift in the strategy of Total regarding energy transition. Sustainability is now part of the corporate strategy, which relies on five pillars: oil and gas exploration and production, growing petrochemicals, developing refining systems, expanding energy offerings including “growing new energies business”, and finally, “intensifying research and development to develop ‘clean’ sources of energy and contribute to the moderation of energy demand and the fight against global warming” (Factbook, 2007 p. 2). To act on the new pillars

and seek opportunities, Total created the Gas & Power unit that works on CCS, coal, natural gas and LNG, biomass, solar, other new energies (wind and marine), and energy storage. By investing in new sectors, the goal for the group is to anticipate and develop technologies and solutions for the future of energy. LNG is at the forefront of focused areas for development, as it's considered clean energy for sustainable development and presents promising growth opportunities. Total is also still acting to limit GHG emissions and reduce flaring. During this phase, solar and biomass are the renewable energies looked after by the group, which is exploring them mainly through partnerships in projects and R&D. In solar energy, a shift happened in 2011 with the acquisition of the American company SunPower, enabling Total to be present along the solar value chain.

Total is noticing the growing social pressure for less polluting and safer energies. So, it is stepping up in energy transition and claims the ambition to be an “actor of the energy transition” (Sustainability report, 2012, p. 5) and that it is “committed to better energy” (Investors' day, 2014, p. 3). In 2012, for the first time, Total released a sustainable report, showing the importance granted to the subject now, with this central idea: “together we act for a responsible energy” (Sustainability report, 2012, p. 1). The priorities are still fossil fuels, but climate change is now at the core of decision-making. The goal for Total is “to be a global integrated energy company – a leading international oil company and a world-class operator in gas, petrochemicals, solar energy and, tomorrow, biomass” (Annual report, 2014, p. 12). R&D investments, strategic partnerships, and international collaboration (Total joined OGCI in 2014) are essential for Total to be a key player in the energy transition.

Paris Agreement in 2015 was a watershed for Total and the O&G sector to accelerate the shift toward energy transition. For Total, the goal is to be more proactive and reshape the company using the IEA 2°C scenario as a baseline. In this way, for a more sustainable business model, Total decided in 2016 to go beyond oil, gas, solar and biomass by investing in energy storage (acquisition of Saft) and emphasising more electricity. The goal is to diversify the portfolio energy mix. The group is also taking a solid commitment to exiting the coal business, having no nuclear activity in the future, and re-examining the potential of wind power after having neglected it for some years. In this phase, Total is accelerating its shift toward energy transition quickly, more than ever. It has three main areas of action: oil and gas projects with low breakeven, expanding along

the gas value chain (“we will increase the proportion of gas in our mix because it is the fossil fuel with the lowest emissions” (Sustainability report, 2016, p. 7)), and growing profitable low-carbon business. Total is investing heavily now in wind power, and developing biofuels and carbon sinks are at the core of the clean energy strategy.

In 2021, a watershed took place to establish the group’s long-term strategy regarding energy transition and to create a net-zero future by 2050. Indeed, in May 2021, Total decided to change its name to TotalEnergies with the idea that “energy is reinventing itself, so are we” and with now the following vision: “TotalEnergies’ purpose is to supply more affordable, more available and cleaner energy to as many people as possible.” (Investors’ day, 2021, p. 4). For the first time, oil is no longer presented as the most critical energy in the group’s energy mix, and Total established a goal to reduce its share. Gas and electricity are the energies of the future for Total, which increasingly emphasises electric mobility and renewables, especially wind offshore (even if solar is still the main renewable business for the group).

Strategic choices for a shift and recombination toward energy transition

This section goes through the main areas of action that Equinor and TotalEnergies have adopted in their strategies to move toward energy transition.

Implementation of emissions reduction targets and sustainability performance indicators. Since the Kyoto conference in 1997, Equinor and TotalEnergies have implemented targets for carbon emissions reduction. It has been a strategy at the core of their recombination and integration of sustainability. Then along the years, both companies – influenced by COP15 in 2006, COP21 in 2015, and other central macro-level policies – have adapted and reworked their targets in the short, medium and long-term, with a strong commitment to being engaged for a net-zero emissions future by 2050 (a goal presented in 2020 by TotalEnergies and Equinor) (Equinor, Sustainability report, 2020, p.3; TotalEnergies, Investors’ day, 2020, p. 41). They are also both endorsing the United Nations’ Sustainable Development Goals. The implementation of environmental performance indicators (GHG emissions called at Equinor “CO₂ emissions reduction indicator”, flaring intensity, “Energy waste” at TotalEnergies)

enable the companies to measure progress toward carbon intensity targets and provide transparency to shareholders (TotalEnergies, Results & Outlook, 2017, p. 3; Equinor, Sustainability report, 2015, p. 14).

International initiatives and collaboration. Over the years, Equinor and TotalEnergies have increasingly given importance to international collaboration. They now believe that to accelerate the energy transition and scale it up, global initiatives and collaborations inside and outside the O&G industry are paramount (Equinor, Sustainability report, 2020, p. 5; Equinor, Energy Transition plan, 2022, p. 4; TotalEnergies, Results & Outlook, 2017, p. 3). For the companies, cooperation and knowledge sharing are at stake for shifting toward energy transition quickly. “We work with governments and other organisations to support climate and energy policies that encourage fuel switching from coal to gas, growth in renewables, the deployment of carbon capture, usage and storage (CCUS) and other low carbon solutions, as well as efficient production, distribution and use of energy globally.” (Equinor, Sustainability report, 2016, p. 19). To develop international cooperation, they are then both taking part in the following collaborations between many others: Climate and Clean Air Coalition’s Oil & Gas Methane Partnership (to measure, manage and mitigate methane emissions during oil and gas production), The World Bank’s Zero Routine Flaring by 2030 initiative, The United Nations Global Compact’s Business Leadership Criteria on Carbon Pricing (which encourage companies to set internal carbon prices), etc.

Industrial initiatives and collaboration are also at stake for Equinor and TotalEnergies for an evolution of the O&G industry. For this purpose, TotalEnergies co-created with other companies in 2014 the Oil & Gas Climate Initiative (OGCI) to reshape the industry in the direction of the energy transition. TotalEnergies was actively involved in shaping and launching it, and Equinor joined the coalition in 2015. It is “a global industry partnership including eight major international energy players. The aim is to share experiences, advance technological solutions and catalyse meaningful action to assist the evolution of the energy mix in a manner compatible with climate change issues.” (TotalEnergies Factbook, 2015, p.9).

Developing cooperation is at stake to accelerate the development of new areas such as renewables but also to define common goals. “[TotalEnergies] typically cooperates with these organisations on technical matters, but some take public

stances on other issues, such as climate. The Company ensures that these organisations hold positions aligned with its own, and regularly reviews each organisation’s stance on the climate” (Sustainability Climate progress report, 2022, p. 43).

Investments in new business areas. Investments are at stake in companies’ strategies to build a long-term sustainable business and create value. Already in 2009, TotalEnergies was explaining that its strategy “is based on a model for sustainable growth combining the acceptability of operations with a sustained, profitable investment program” and that it aims primarily at “expanding hydrocarbon exploration and production activities, [...] progressively expanding TOTAL’s energy offerings and developing complementary next-generation energy activities (solar, biomass, nuclear), [...] pursuing active research and development to develop “clean” sources of energy, contributing to the moderation of the demand for energy, and combatting climate change.” (TotalEnergies, Annual report, 2009, p. 12). And Equinor was also recognising the necessity of recombining investment activities to make the most of renewables and low-carbon technologies: “Renewable energy production is still a young industry that will need big investments and a great deal of technological development to become efficient and competitive” (Equinor, Sustainability report, 2009, p. 3). Hence, both companies have focused on two types of investments over the years: increased CAPEX dedicated to new solutions and energies and corporate venture capital.

Increase of CAPEX share dedicated to low-carbon solutions and renewables.

While these areas are increasingly perceived as less risky and more profitable for future growth, TotalEnergies and Equinor are increasingly saving investments in these businesses (Figure 4). Equinor increased the share of its gross assets from 4% to 11% in “Renewables and low-carbon solutions projects” from 2018 to 2021. Still, the company will step up with strong ambitions: “50% of annual gross CAPEX to renewables and low carbon solutions by 2030” and 30% by 2025 (Sustainability report, 2021, p. 5). As for TotalEnergies, while in 2015, the investments in the Gas, Power & Renewables unit only represented 2% of total CAPEX (Factbook, 2016), now the group is currently investing 25% of their CAPEX in renewables and electricity and intends to devote more than 30% soon

to decarbonised energy (includes new molecules) (Sustainability Climate progress report, 2022, p. 5)

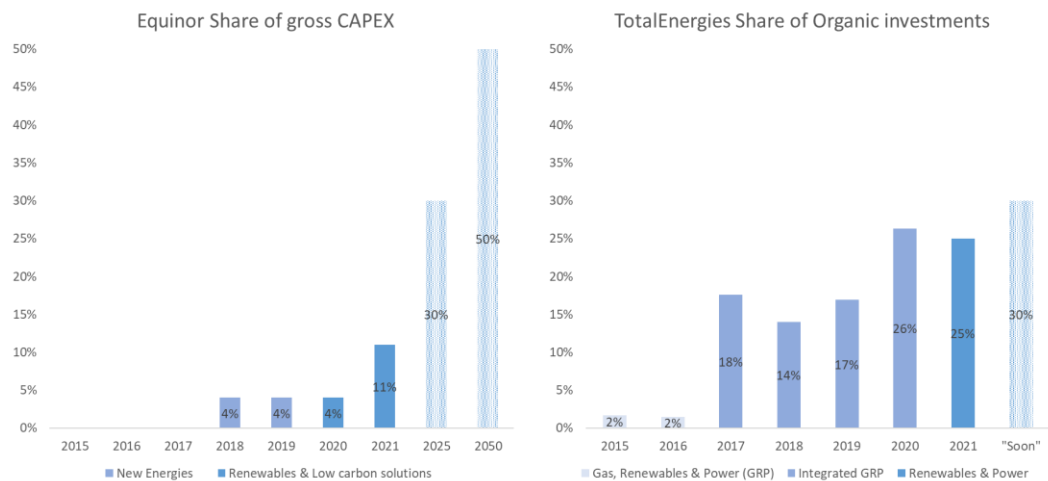


Figure 4 - Evolution of TotalEnergies and Equinor CAPEX investments. Source: author on TotalEnergies and Equinor data analysis.

Corporate venture capital. Equinor and TotalEnergies develop this type of investment to monitor new technologies development and so benefit from knowledge and expertise transfers from the start-ups they are invested in, enabling them to build competitive advantages in the new energies. The increasing role of TotalEnergies Ventures is “to capture the best opportunities to drive our growth while providing solutions to future energy challenges, whether they involve alternative energies, energy efficiency, greenhouse gas emission reduction, energy storage and networks or new energy services” (TotalEnergies, Sustainability report, 2014, p. 42). Over the year, TotalEnergies has focused more and more on its investments for the energy transition. Since 2019, venture capital has been entirely dedicated to carbon neutrality projects (TotalEnergies, Sustainability report, 2020, p. 42). As for Equinor, through Equinor Ventures, the firm wants “to step up investments in growth companies in low carbon and new energy solutions while we continue to invest in oil and gas-related technology start-ups.” (Equinor, Sustainability report, 2020, p. 28). Equinor Ventures was launched in 2016 “to test new ideas and help progress new sustainable solutions” by investing in businesses “to develop disruptive solutions within oil and gas, renewables, new business models and digitalisation.” (Sustainability report, 2018, p. 25).

R&D investments in low-carbon solutions and new technologies. “R&D is a key to anticipating the future of energy and innovation is one of the drivers of

sustainability” (TotalEnergies, Factbook, 2013, p. 8). Over the years, Equinor and TotalEnergies have massively increased the share of R&D dedicated to renewables and low-carbon solutions. “Leveraging our research and development (R&D) and innovation capabilities will be key to developing low carbon solutions at an acceptable cost” (Equinor Sustainability report, 2016, p. 27). Thus, for both companies, R&D investments are crucial to developing state-of-the-art technologies and competencies that will enable them to seize new business opportunities and be competitive. R&D is key to developing expertise in renewables and low-carbon technologies. “Backed by its transformation strategy, [TotalEnergies] has substantially re-oriented its R&D since 2021; today, more than 50% of its R&D focuses on new energies (renewables, biomass, batteries, etc.) and reducing its environmental footprint (methane, CCUS, water, biodiversity, etc.), compared to less than 30% five years ago.” (TotalEnergies, Sustainability climate progress report, 2022, p. 23). For Equinor, the company was dedicated 25% in 2020 of its R&D to renewables and low carbon solutions and aims to 40% by 2025 (Equinor, Sustainability report, 2021, p. 30). R&D investments aim to assess the impact of oil and gas activities and develop technologies that can be commercialised and enable to reduce of costs of renewables (Equinor, Sustainability report, 2016, p. 27; Equinor, Climate Roadmap, 2017, p. 13; TotalEnergies, Annual report, 2010, pp. 56-63). The companies invest not only in new energy-related areas but also in digitalisation and new technologies such as AI (Equinor, Sustainability report, 2017, p. 9; TotalEnergies, Sustainability Climate progress report, 2022, p. 23). While this last decade, TotalEnergies and Equinor have progressively increased their R&D spending dedicated to low-carbon solutions and clean energies, since 2020, they have shifted into high gear with more capital devoted and bigger ambitions for the future (Figure 5).

In addition, to internal R&D, Equinor and TotalEnergies are investing in R&D in two other ways: “To accelerate this transformation in its R&D, TotalEnergies forges partnerships with industrial firms and academic researchers.” (TotalEnergies, Sustainability Climate progress report, 2022, p. 23).

Partnerships with academics and researchers. Both companies foster this strategy to accelerate the transformation. For example, the Academia programme implemented by Equinor “entails long-term collaboration between key universities and Equinor to stimulate research, competence development and

education within areas of strategic importance for both parties.” (Equinor, Sustainability report, 2018, p. 25). As for TotalEnergies, it has several partnerships with research institutes in France and abroad “to [develop] innovative technologies to improve its portfolio of solar projects.” (TotalEnergies, Sustainability report, 2010, p. 30).

R&D partnerships with other companies. This approach enables the companies to benefit from knowledge transfer and expertise from synergies with other companies in areas critical for the energy transition. However, they cannot rely on their FSAs and must create new ones. For example, TotalEnergies developed, in 2010, an R&D project in biomass and biotechnologies with the company Amyris specialised in biotechnologies (TotalEnergies, Factbook, 2013, p. 8). And Equinor launched 2015 “The Powering Collaboration programme” with General Electric that “aims to drive an industrial response to significant challenges associated with global energy production, including CO₂ and methane emissions and water usage. Leveraging the companies’ collective resources and competencies, the programme focuses on developing new approaches to create efficient, low-cost technologies that can be broadly implemented.” (Equinor Sustainability report, 2015, p. 26).

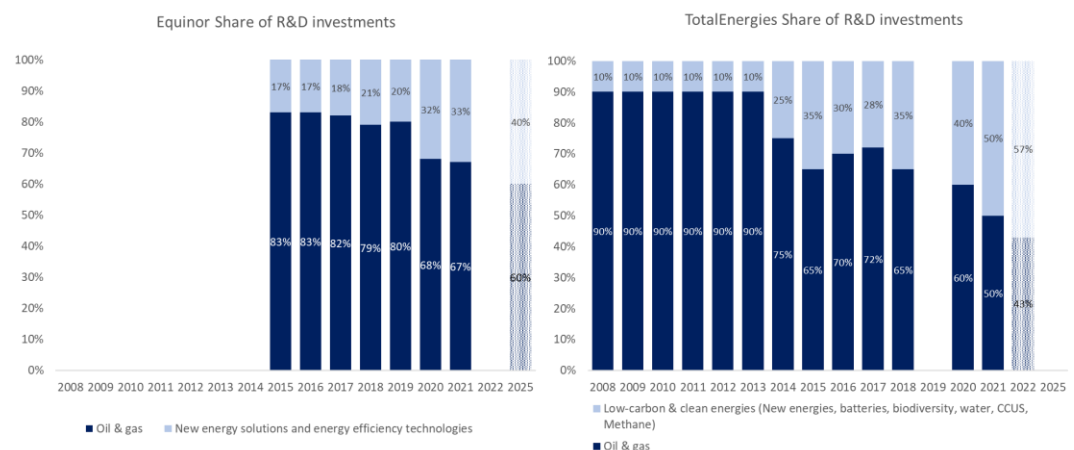


Figure 5 - Evolution of TotalEnergies and Equinor R&D investments. Source: author on TotalEnergies and Equinor data analysis.

Developing new activities by building on core competencies. TotalEnergies and Equinor prioritise new energies and low-carbon solutions where they can build on core competencies, strengths and traditional activities. TotalEnergies is playing a lot on its two strengths, Deepwater and LNG, and on its technical expertise in them. For TotalEnergies, “the Group’s goal is to be a global integrated energy company – a leading international oil company and a world-class operator in gas,

petrochemicals, solar energy and, tomorrow, biomass. To realise this goal, TOTAL leverages its integrated business model, enabling it to capture synergies between the different business segments of the group” (TotalEnergies, Annual Report, 2014, p. 12). As explained by Equinor, “Our renewable energy business focuses on developing business in areas where we have a competitive edge as a result of our offshore oil and gas expertise. Offshore wind and carbon capture and storage are key areas.” (Equinor, Annual report, 2013, p. 49).

LNG and natural gas. First, both of them emphasise the necessity to develop and strengthen LNG. They want to position themselves as leaders for this energy (TotalEnergies is currently the 2nd largest worldwide player, and Equinor is the leader in Europe). The companies want to establish themselves as leaders in LNG by building on current strengths in the area and traditional gas activities (Equinor, Annual report, 2008, p. 24; TotalEnergies, Investors’ day, 2011, pp. 41-44; TotalEnergies, Annual report, 2018, p. 88; TotalEnergies, Results & Outlook, 2019, pp. 3-19).

Offshore wind. Equinor is the leader in offshore wind energy. For that, it is “using [its] offshore expertise in marine operations and offshore maintenance to sharpen [its] competitive edge in offshore wind projects” (Equinor Sustainability report, 2011, p. 63). “Our renewable energy strategy focuses on offshore wind, where we can leverage our core competencies.” (Equinor Sustainability report, 2014, p. 16). “Statoil currently focuses on offshore wind, using decades of offshore experience to develop large-scale wind farms and innovative floating platform technology.” (Equinor Sustainability report, 2017, p. 12). The goal is to leverage engineering competencies to build an offshore wind business in a safe, innovative and profitable way (Equinor Sustainability report, 2017, p. 26). And that is why Equinor was also focused more on developing offshore wind projects than onshore for several years because it can build on its long-time operational experience (Equinor, Sustainability report, 2011, p. 63).

Solar. Total has been developing its solar energy business for a long time and decided to make it its main area of focus and development for renewable energy as it can play on historical expertise and capabilities in this area. Indeed, in 2006 the group was already saying: “TOTAL is developing its position in renewable energy, with a particular focus on solar-photovoltaic energy” (TotalEnergies, Annual report, 2006, pp. 45-46) in which it has been operating since 1983. The goal for Total is to be a solar leader and “to consolidate a market-leading position

in solar energy by leveraging SunPower's cutting-edge technology for distributed generation applications and through the growth of our affiliate Total Solar in utility-scale solar power plant projects" (Sustainability report, 2017, p. 6)

Carbon Capture Storage. Its 25 years of development of CCS expertise, mainly thanks to the Sleipner project, enables Equinor to now be a leader in the sector and to se expertise with many other companies. In 2006, Equinor was already "regarded as a world leader for capturing and storing carbon dioxide. Many of the roughly 15-20 power station projects launched by other companies over the past two years with such carbon management schemes have benefited from our experience." "We have gained experience of capturing carbon dioxide from natural gas under very high pressure in the Sleipner area of the North Sea." (Equinor, Sustainability Report, 2006, p.39).

Developing projects in renewables and low-carbon technologies through partnerships and acquisitions. Acquisitions and industrial partnerships are the main levers for Equinor and TotalEnergies to develop competencies and expertise in new business areas where they cannot rely on internal core skills and experience and need to build knowledge through synergies. It's at stake to step up and develop quicker low-carbon solutions and renewables. But also enables the company to mitigate risks by sharing them and mobilising fewer assets. For example, Equinor has for ambition to become the global leader in offshore wind, and to achieve this in 2020; they created a partnership with BP for new offshore wind with different objectives: financial flexibility (share risks), "leveraging capabilities, scale and synergies", and show the attractiveness of wind portfolio (Equinor, Business Update, 2020, p. 29).

Acquisitions. Acquisition has been a strategy adopted by TotalEnergies to expand its expertise and portfolio in renewables, and scale up quickly the development of new businesses. These last years, the group has acquired numerous companies specialising in clean energies and low-carbon technologies, such as SunPower in 2011, Saft in 2016, GreenFlex in 2017, Direct Énergie in 2018, and Clearway in 2022. TotalEnergies perceives solar energy as the "most technologically and economically promising renewable energy to help create a more diversified, lower-carbon energy mix." (TotalEnergies, Sustainability report, 2014, p. 27). And the main watershed was the acquisition of SunPower in 2011 to accelerate the development of solar activities and integration in the group. Indeed, this

involvement in SunPower enables the group to be present along the solar value chain and to accelerate TotalEnergies' ambition to be a leader in solar and renewables. "Since our acquisition of SunPower in 2011 and the recent creation of Total Solar, we have been channeling investment toward the deployment of new production capacity and the development of even more efficient technology." (TotalEnergies Sustainability report, 2017, p.33). SunPower's position in the solar market and its experience influenced the group's strategy to develop renewable energy. Moreover, going deeper into its acquisition strategy, TotalEnergies wanted to create a leading position in energy storage: energy storage technology is "essential for integrating renewables into the grid and developing solutions for distributed generation." (TotalEnergies Sustainability report, 2017, p.33). So the group decided to acquire the company Saft in 2016, a specialist in high technology batteries.

License. Regarding offshore wind, Equinor keeps developing licensing "to further develop floating offshore wind technology, reduce costs and make the solutions more competitive" and gain expertise and knowledge (Sustainability report, 2016).

Partial ownership. Equinor and TotalEnergies acquired ownership in several wind and solar projects to grow their renewables portfolio and exposure in a fast-growing area. For example, Equinor took ownership of multiple offshore wind farms in the UK to develop expertise, with the Sheringham Shoal Offshore Wind Farm in 2011 and the Dudgeon Offshore Wind Farm in 2017 (Equinor, Sustainability report, 2014, p. 16). It's a way for Equinor and TotalEnergies to monitor knowledge and a product without investing too many assets. That is how TotalEnergies monitored and assessed wind and marine powers for many years by having ownership of small interests in projects (TotalEnergies, Annual report, 2009, p. 41).

Joint-venture. Collaboration in renewables and low-carbon projects through joint ventures (JVs) is an advantage for companies to develop projects and businesses in line with the energy transition, as it limits the risks and assets engaged in each project for the companies. Equinor developed its expertise and business offshore through this strategy by investing in different wind farms over the years: "In 2009, Statoil joined forces with the Norwegian utility Statkraft to develop the offshore wind farm Sheringham Shoal in the UK. [...] This project will draw on know-how from Statoil's longstanding offshore activities and Statkraft's expertise in

renewable energy.” (Equinor Sustainability report, 2009, p. 4). Another interesting example is an important project for Equinor and TotalEnergies that they share: the “Northern Lights” project launched in 2020. Located in Norway, it’s a partnership between Equinor, TotalEnergies and Shell and is at stake for developing and deploying CCUS technology. “The Northern Lights projects, representing the start of commercial CCS in Europe, is on track to demonstrate that CCS is a valid decarbonisation solution for important industry sectors.” (Equinor Sustainability report, 2020, p. 26). Moreover, a joint venture is also a way for a company to push deeper into a partnership. In this way, TotalEnergies launched, in 2013, a joint venture in biomass with its long-time partner Amyris (TotalEnergies, Factbook, 2012, p. 8).

Discussion

The study explored the influence of FSAs and CSAs on oil and gas companies Equinor and TotalEnergies regarding energy transition, linking strategies' evolution and recombination with prior theory in the internalisation theory and energy transition literature (Figure 1). Following the analysis, this section intends to illuminate this paper's central findings and observations regarding the factors that influence the shift of O&G companies toward energy transition. Hence, a deeper understanding of the research question is provided by discussing significant factors that may lead to differences in the energy transition strategies of oil and gas companies. The data analysis indicated the validity of several factors presented in the literature. We will emphasise in the following part the main drivers identified that are simplified here in a framework (Figure 6).

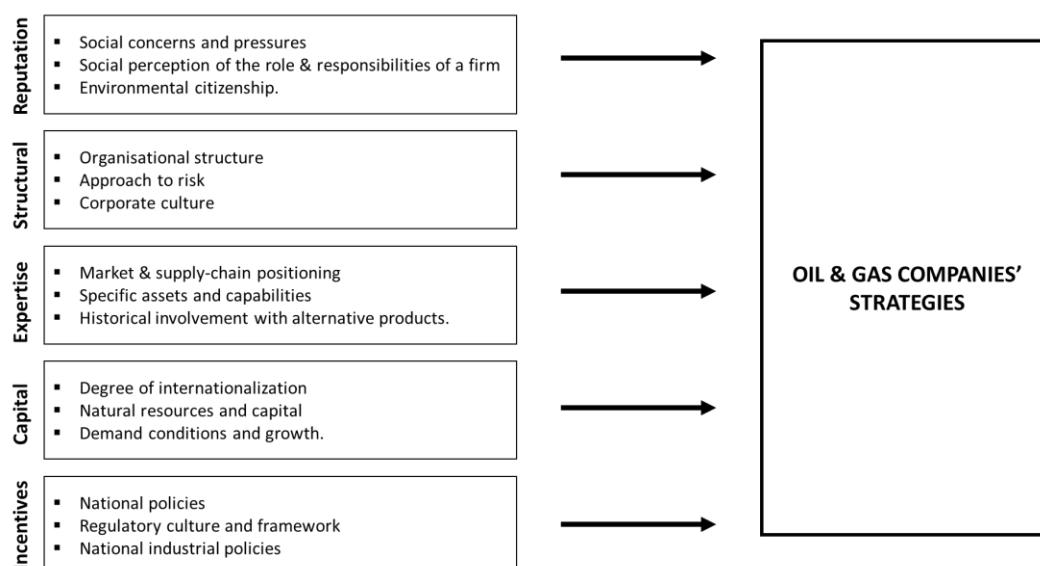


Figure 6 - Main drivers of energy transition strategies by type. Source: author

Macro-level policies have been central in the decision for Equinor and TotalEnergies to move toward energy transition and recombination of their activities. Global regulations, led by the UN, and regional regulations, led by the European Union, have shaped the way companies implement more sustainable strategies, especially carbon emissions reduction targets. As Equinor explained it already two decades ago, the macro-level framework is at stake in decision-making: “For more than 20 years now, Equinor’s strategy is to comply with national and international regulations and apply the precautionary principle, and for that, they invested and developed new technologies” (Equinor, Annual report,

2002). We saw how the implementation of emissions reduction targets and sustainability performance indicators, as well as the development of international initiatives and collaboration, are at stake in the shift of O&G companies' strategies.

The question arising here is: why do the companies decide to comply with non-binding global sustainability policies and even go beyond objectives sometimes? The data analysis shows us the importance of **reputational factors**. So here, this paper identifies the intertwining of FSAs and CSAs as an answer to the question below and leads the shift for the energy transition. These factors are *social concerns and pressures, social perception of the role & responsibilities of a firm, and environmental citizenship*.

The analysis of these 2 CSAs and this FSA is aligned with what the literature describes. Indeed, facing in their home countries and worldwide growing normative pressures, citizens' expectations for more engagement in the energy transition and involvement in Corporate Social Responsibility, Equinor and TotalEnergies increasingly developed and recombined their environmental citizenship to maintain competitive advantage (by building competencies in clean energies activities that will be paramount in future energy market) and preserve their company's reputation. These reputational factors have highly motivated the implementation of emissions reduction targets, sustainability performance indicators, and the development of renewables. And to show their commitment to the energy transition, Equinor and TotalEnergies have also been actively involved in developing international and industrial collaborations.

Moreover, both companies have reshaped their activities and strategies in light of **structural factors**: their *organisational structure, approach to risk, and corporate culture*. Equinor and TotalEnergies integrated new approaches into these FSAs and recombined them to maintain a competitive advantage in the energy transition. They reorganised their structures and corporate cultures to better tackle energy transition by devoting departments to it, integrating sustainability topics and approaches to managerial decision-making, and developing more easily strategies aligned with energy transition.

While the reputational and structural factors have led to similar evolution and recombination for Equinor and TotalEnergies in the energy transition, on the

contrary, three other main factors have led to different paths in the direction of the energy transition, shedding light on the importance of differentiated CSAs and FSAs and how their interactions led to specific strategies.

First, **expertise factors** have been proven during this study to be paramount in recombining O&G companies. In these factors, this paper includes *market & supply-chain positioning, specific assets and capabilities, and historical involvement with alternative products*. Aligned with the literature, the development of new activities in low-carbon technologies and clean energies have leaned on the core competencies and knowledge of the companies. Hence, Equinor and TotalEnergies are sharing similar market and supply-chain positioning. Still, they identified different priorities in energy transition due to differences in the following advantages: specific assets and capabilities and historical involvement with alternative products. Indeed, Equinor's traditional activities in oil and gas are offshore production, so it decided to focus its recombination and new strategies on developing offshore wind energies. The company is also focusing on CCS technology because of its successful historical involvement in this activity, enabling it to leverage expertise and share competencies worldwide. As for TotalEnergies, its presence in offshore and onshore production and distribution of oil and gas has enabled the company to leverage expertise in these activities to develop natural gas, biomass and offshore wind. But if the group has given such a strong focus to solar energy and has been a leader in it, it's due also to its historical involvement with this energy and activity that enables TotalEnergies to build strong competencies in solar energy compared to its O&G counterparts.

Also, while TotalEnergies is highly focused on building new activities and being present on the whole value chain of these new markets (i.e. the group wants to make an entire presence in the solar, gas, and electricity value chain), Equinor prefers to develop more progressively these activities by focusing mainly on downstream businesses with the development of offshore wind and solar energies production. Thus, it shows us that the firms don't take the same direction in the recombination of the FSA linked to their market positioning and value proposition: TotalEnergies profoundly believes that it needs to be a fully integrated company in all its activities, and Equinor is instead focusing on downstream business to tackle the energy transition.

Secondly, these expertise factors are highly linked to the following **capital factors** when it comes to strategic evolution and recombination in novel ways for O&G companies: *degree of internationalisation; natural resources and capital; and demand conditions & growth*. Indeed, this intertwining between these CSAs and FSA factors is influencing how O&G companies adapt their strategies and recombine their activities to tackle energy transition. In line with the literature, the more the companies are internationalised, the more they benefit from location advantages enabling renewable energy development. TotalEnergies and Equinor have a great time making the most of their international footprint to develop solar activities (in South America for Equinor and Asia, the Middle East and the US for TotalEnergies), wind activities (especially in the UK for both companies), and other activities relying on resources not available in their home country (e.g. for several years Equinor was focusing on developing oil sands operations in Canada). However, Equinor and TotalEnergies' strategies have also been shaped and have evolved according to their home countries' capital and demand CSAs. The companies are developing many of their low-carbon and clean energy projects in France and Norway, where they benefit from the national capital and growing demand.

Finally, these last factors are linked to critical national factors that are **incentives factors**, especially from their home countries: *national policies, regulatory culture and framework, and national industrial policies*. The data analysis has highlighted the impact of these CSAs on Equinor and TotalEnergies' strategies. They explain why we notice different strategies for emphasising renewable and low-carbon energies. For example, the decision of Equinor to focus on CCS technologies and develop them in Norway has been motivated by the Norwegian government's critical incentives, support and regulations in this direction (e.g. the participation of Equinor in the Technology Centre Mongstad). These factors have also influenced Equinor and TotalEnergies to implement emissions reduction targets and sustainability performance indicators.

Conclusion, managerial implications, and limitations

Key findings

These last year, with increased awareness about climate change and its impact on our planet, the energy transition has been increasingly seen as an unmissable topic that companies tackle, especially in the O&G industry where MNEs are shaping the energy market and are huge CO₂ emitters. This paper intends to contribute to the understanding of the choices of O&G companies in this context: how they are recombining their activities, how they are adopting novel ways of doing business, how they are adapting their business model, and how their strategies are evolving. Through an in-depth analysis of Equinor and TotalEnergies' reports, documents and communications in the last two decades, this study explored the rationale behind their strategies in the light of energy transition, adopting literature lenses of the internalisation theory. This research builds on the existing firm-specific and country-specific advantages defined in the literature, and how their interlinkage shapes O&G companies' strategies. Hence, five main factors have been identified – displayed and summarised in Figure 6 – as at stake regarding the ways Equinor and TotalEnergies are reshaping their strategies and recombining their activities toward energy transition: reputational, structural, expertise, capital, and incentives factors.

The findings and the discussion showed how reputational and structural factors had led Equinor and TotalEnergies to adopt similar strategies and recombine their organisations. Macro-level policies have indeed highly pushed both companies to accelerate their shift toward energy transition. By doing business inside the European Union, they need to adopt strategies and approaches to risk that fit with the regional regulations on climate change. On the contrary, the data analysis showed us how expertise, capital, and incentives factors had led both companies to different paths toward energy transition and ways of recombining their businesses. The results highlighted that the country-specific advantages in the home countries of Equinor and TotalEnergies (i.e. Norway and France) influence how companies approach and are sensitive to implementing energy transition strategies and sustainable activities. However, the existing expertise and resources from traditional oil and gas activities have proven to be one of the main factors responsible for differences in strategies and recombination between Equinor and

TotalEnergies. Indeed, this paper emphasises how the combination of these different factors has led both companies to adopt different approaches to energy transition in reorganising their activities: Equinor focuses mainly on offshore wind, CCS, and LNG, and TotalEnergies focuses primarily on LNG, solar, and biomass.

Therefore, individually and interconnectedly, these factors may lead to differences in strategic approaches to energy transition among O&G companies.

Managerial implications

The notion of recombining firm-specific advantages, changing the nature of country-specific advantages, and the link between FSAs and CSAs, are already established in the literature, but analysing them and their intertwinement in the light of energy transition and O&G industry has been more neglected. Thus, this study brought them together and investigated how FSAs and CSAs are evolving with energy transition and how it affects O&G companies' strategies and activities. Hence, this paper offers managers factors and areas to tackle in their companies when it comes to maintaining or building a competitive advantage in the energy transition. It also highlights the interlinkage between CSAs and FSAs and their influence on companies' decision-making, which should be in the mind of managers when they are elaborating their strategies.

Limitations & avenues for future research

This research has various limitations that may provide for future research when exploring FSAs and CSAs in the energy transition.

First, due to the method chosen for this paper, we lack information and analysis on structural factors. Indeed, the strength of building on data from reports and communication documents is that they are reliable and similar information over time. However, it lacks analysis of the feedback and perceptions of managers, especially about how decision-making is made inside the company, how do they perceive their actions regarding energy transition and sustainability versus their competitors, and how do sustainability is implemented in the daily activities and business, how independent subsidiaries are from the headquarter to apply energy transition in adequation with the local market, and how innovation and transfer of

knowledge are managed inside the company between headquarters and subsidiaries.

Secondly, linked to the previous point, this study lacks analysis from external and independent sources on the behaviours and strategies of the companies. Future research will benefit from balancing data analysis with external data independent from the O&G companies to position their actions versus the other actors in the industry and to analyse if some actions not highlighted in their communications are going against their communicated strategy. A reason for that is that at the moment of the redaction of this thesis, TotalEnergies is highly criticised by activists and French media for its EACOP and Tilenga projects in Uganda for its environmental impact as they are expected to emit six times more CO₂ than what Uganda is emitting in one year (Le Monde, 2022). These projects are then for opponents a proof that the company has doublespeak regarding the sustainability of its activities and is engaged in the energy transition.

Thirdly, the context of this study of a two-cases analysis has another limitation. By focusing only on Equinor and TotalEnergies, which are O&G companies at the forefront of the energy transition, the study could benefit, from a more accurate and deeper understanding, from an extension of the scope to other O&G companies to see if these factors are also proven in less committed companies (such as ExxonMobil or Chevron Corporation) and state-owned companies (e.g. Aramco and Petrobras). It will be interesting for future research to analyse why some companies don't shift quicker toward energy transition and why they prefer to maintain and focus on traditional oil and gas activities instead of recombining their businesses.

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