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The Oil Industry and The Transition towards Renewable Energy Resources
The Norwegian Case

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EXTENDED ABSTRACT / RIASSUNTO ESTESO

"Norway will have to decide the legacy it wishes to bequeath its future generations: Norway the oil power, or Norway the global champion for peace, development and environmental sustainability"

(Jonathon Moses & Bjørn Letnes.
Managing Resource Abundance and Wealth: The Norwegian Experience.
Oxford University Press. 2017: 227)

Lo scopo di questa tesi di Laurea è di analizzare il caso della Norvegia come esempio di potenza petrolifera la quale non solo è riuscita a sviluppare un efficiente sistema di management della proprie risorse naturali, ma che, visto l'avanzare dell'emergenza climatica degli ultimi anni, sta attualmente cercando di fornire un contributo attivo nel processo di transizione energetica, abbandonando gradualmente gli idrocarburi e lavorando allo sviluppo di nuove tecnologie per lo sfruttamento di fonti di energia rinnovabili. A differenza di ciò che molti ritengono, la base della ricca economia di successo norvegese non deriva interamente dalla produzione petrolifera. Difatti, la Norvegia è stata dotata di un buon settore industriale, di una solida economia e di un soddisfacente sistema di sussidi pubblici, ben prima della scoperta dei giacimenti di idrocarburi nella propria piattaforma continentale.

Già nel 1814 i primi sforzi per la creazione di una società edotta e dinamica furono messi in pratica. La costituzione Norvegese, scritta proprio in quell'anno, era caratterizzata da una natura liberale e garantiva al 40% della popolazione maschile adulta il diritto di voto. Un diritto che fu esteso a tutti gli uomini nel 1898 e alle

donne nel 1913. Inoltre, la maggior parte della popolazione aveva accesso a un livello base di istruzione il quale ha permesso una più facile comprensione e accesso alle normative nazionali per la gestione territorio locale. Ciò ha favorito anche lo sviluppo di una solida fiducia nella burocrazia statale, il cui sistema amministrativo pubblico è da allora sempre stato considerato onesto e competente [1].

Prima dell'arrivo del settore petrolifero nell'economia nazionale, le autorità norvegesi ebbero modo di dimostrare la propria competenza manageriale tramite una saggia gestione delle risorse energetiche naturali domestiche. Durante il 1900 il paese costruì la propria economia sulla base di un modello liberale, ad eccezione del settore idroelettrico, che rimase per gran parte di proprietà di investitori stranieri fino al 1906. Ciò preoccupò le autorità politiche norvegesi, le quali decisero proprio in quell'anno di attuare le *Konsesjonslovene* [2], rendendo le concessioni governative obbligatorie per tutte le compagnie private ed enti stranieri operanti in ambiti inerenti allo sfruttamento di risorse idriche e geologiche. L'anno seguente, nel 1907, il parlamento norvegese aggiunse alle leggi lo *Hjemfallsrett* [3], in modo che le proprietà incluse nelle concessioni ritornassero sotto la pertinenza dello stato dopo un periodo di circa 60-80 anni (durata media della concessione). In questo modo gli investimenti stranieri non furono drasticamente trattenuti, ma semplicemente sottoposti ad un maggiore controllo da parte delle autorità locali, le quali non corsero più il rischio di perdere il governo del proprio territorio [4].

L'avventura della Norvegia nel settore petrolifero ebbe inizio nel 1959, dopo la scoperta di un ricco giacimento di gas a Groningen (Paesi Bassi), evento che confermò la presenza di idrocarburi nel Mare del Nord, e diede inizio all'esplorazione dell'area da parte di tutti i paesi della regione. La Norvegia non fu da meno. Dopo un crudo dibattito con le autorità britanniche circa la definizione della

linea di confine tra le piattaforme continentali dei due paesi nel Mare del Nord, la Norvegia procedette con la divisione della propria area di competenza in quadranti e blocchi e a promosse le prime attività di esplorazione. Il primo ente a tentare la fortuna fu la compagnia petrolifera americana *Phillips Petroleum* [5], che chiese il permesso alle autorità norvegesi di avviare le ricerche nell'ottobre 1962. In quegli anni la Norvegia non aveva ancora costituito una compagnia petrolifera nazionale forte e competitiva, pertanto il governo decise in un primo momento di assegnare alle società straniere il compito di procedere con le esplorazioni. Lo scopo di questa mossa era di prendere tempo, consentendo alle compagnie internazionali di trovare dei giacimenti redditizi, incoraggiandole al contempo ad assumere personale norvegese, al quale trasmettere le conoscenze necessarie per costituire un team tecnicamente competente e specializzato [6].

Le esplorazioni nel Mare del Nord diedero i primi frutti nel 1969, quando la *Philipps Petroleum* trovò il giacimento *Ekofisk* [7]. Nel 1972 venne creata la prima vera compagnia petrolifera nazionale in grado di porsi come forte concorrente di fronte alla massiccia presenza di enti stranieri nella piattaforma continentale norvegese: *Statoil* [8]. In questo modo la Norvegia si presentò finalmente come una potenza petrolifera competente, pronta a gestire la risorsa in tutte le fasi del processo di esplorazione, trasporto, raffinazione, utilizzo e vendita, rendendo la presenza norvegese nell'industria petrolifera influente. Lentamente la Norvegia iniziò a recuperare il controllo sulla propria piattaforma continentale, indebolendo l'influenza delle compagnie petrolifere internazionali tramite apposite leggi e rafforzando il potere dello Stato nel settore.

Nel suo processo di formazione, il paese scandinavo non solo fu in grado di contenere gli effetti del *Resource Curse* e del *Dutch Disease* [9] ma, diversamente dalle altre potenze petrolifere, evitò anche che l'improvvisa e abbondante ricchezza generata dal petrolio generasse un aumento della corruzione o portasse all'ascesa di

un regime autocratico. Ciò fu reso possibile grazie alle politiche economiche adottate dal governo e ad una saggia gestione delle entrate generate dall'industria petrolifera, rappresentata dall'istituzione di un fondo, l'*Oljefondet* [10]. Difatti, una volta rivendicata la sovranità sulla piattaforma continentale norvegese nel 1960, l'allora Primo Ministro Einar Gerhardsen aveva già previsto ciò e proposto un'idea di gestione dei ricavi simile, la quale fu tuttavia attuata solo nel 1990. Da allora lo scopo del Fondo è di fornire sicurezza economica per le generazioni future e finanziare progetti inerenti allo sviluppo sociale e tecnologico. Una nuova normativa fiscale del Fondo fu introdotta dal parlamento norvegese nel 2001, secondo la quale il governo deve assicurare che almeno il 4% del Fondo sia completamente indipendente dal *Etikkrådet* [11] e possa essere trasferito in bilanci statali. Un ruolo di rilievo va riconosciuto anche al Mare del Nord, le cui rigide condizioni meteorologiche e sottosuolo difficile da penetrare hanno contribuito alla salvezza del paese dal *Dutch Disease*, obbligando le industrie a limitare il loro focus sul petrolio e a sviluppare nuovi prodotti di alta tecnologia per condurre le operazioni richieste.

Dal punto di vista politico-legale si può affermare che l'industria norvegese degli idrocarburi si basi su due pilastri, i *Ten Oil Commandments* [12] e il *Petroleum Act* [13]. I primi furono presentati al Parlamento norvegese il 4 giugno 1971 ed elencano le linee guida da seguire al fine di garantire che i guadagni ottenuti dall'industria petrolifera vadano a beneficio dell'intera nazione e di tutte le sue generazioni. Il *Petroleum Act* invece fu emesso il 29 novembre 1996 e porge un'attenzione particolare alle procedure per la tutela degli interessi ambientali, sociali e finanziari, e al sistema di licenze, specificando che il diritto proprietario ai depositi petroliferi sottomarini nella piattaforma continentale norvegese appartiene solo ed esclusivamente allo Stato norvegese.

Sul piano amministrativo, La suddivisione delle responsabilità nel settore petrolifero coinvolge molti organi politici interconnessi attraverso una relazione gerarchica con a capo il Parlamento. Questa collaborazione si basa su un accordo multilaterale stipulato all'interno del governo nazionale, il quale obbliga le parti ad assicurare una proficua gestione delle risorse naturali e a fornire un ambiente confortevole per le aziende che operano nella piattaforma continentale norvegese. Gli interessi da coordinare e mantenere efficienti sono di natura economica, politica e gestionale. Queste tre aree d'influenza sono rappresentate attraverso il Direttorato del Petrolio Norvegese (per il controllo dei regolamenti), *Equinor* (come ente commerciale) e il Ministero del Petrolio e dell'Energia (responsabile della sfera politica) [14].

Per quanto concerne il rapporto tra la Norvegia e l'Unione Europea, a seguito di due *referenda* tenutisi nel 1972 e nel 1994, nei quali la popolazione norvegese ha espresso il suo rifiuto di aderire alla CEE / UE, la Norvegia intrattiene attualmente strette relazioni economiche con l'UE, soprattutto dopo che il paese è divenuto parte dell'Associazione Europea di Libero Scambio (EFTA), dello Spazio Economico Europeo (EEA) e dell'area circoscritta nell'Accordo di Schengen. Attualmente la Norvegia contribuisce attivamente ad eliminare le disparità economiche all'interno dell'Unione attraverso le *Norwegian Grants* [15] le quali forniscono finanziamenti a 15 dei paesi europei più in difficoltà, con l'obiettivo di rilanciare le loro economie e migliorare le relazioni bilaterali.

L'influenza dell'Unione Europea si fa sentire anche nell'industria petrolifera norvegese. Il settore infatti è attualmente soggetto alle leggi, politiche e accordi dettati sia dall'UE che dell'Organizzazione Mondiale del Commercio (OMC) e la Norvegia, in quanto membro dell'EEA e dell'EFTA, deve rispettarli [16]. Difatti, ogni legge nazionale relativa ai giacimenti petroliferi deve essere approvata dai tribunali

nazionali e dalla procedura di sorveglianza EFTA, in modo da assicurandosi che tali leggi siano conformi alle linee guida dell'OMC e dell'UE, in particolare quelle relative al sostegno diretto dello Stato, alla concorrenza e alle normative non discriminatorie. Le direttive più importanti riguardanti il settore petrolifero norvegese sono la Direttiva 92/22/EF del 30 maggio 1988, riguardo i diritti di esplorazione, e la Direttiva del mercato 98/30 / EF del 22 giugno 1988, circa la gestione del mercato degli idrocarburi [17]. Tra il 2001 e il 2002 la Norvegia ha modificato le regole alla base del suo mercato degli idrocarburi per renderlo conforme alla *European Competition Law* [18] e alla *Gas Directive* [19]. Inoltre, nel 2008 il paese ha anche migliorato il proprio impegno a limitare le emissioni di gas a effetto serra, aderendo al sistema di scambio di quote di emissioni dell'UE.

La Norvegia è membro del Consiglio Artico e del Consiglio Euro-Artico di Barents. Entrambi i Consigli si occupano di tematiche di interesse comune per i propri Stati membri, quali il coordinamento e l'interazione politica, la cooperazione economica, lo sviluppo sostenibile, l'ambiente, il benessere della società artica, la ricerca, le infrastrutture e i diritti delle popolazioni indigene. Uno dei tentativi più importanti del Consiglio è rappresentato dalla *Arctic Environmental Protection Strategy* – AEPS istituita il 14 giugno 1991, attraverso la quale è stato proposto un elenco di obiettivi per lo sviluppo sostenibile nell'area.

Una saggia ed efficiente amministrazione delle regioni artiche è fondamentale per l'economia norvegese, poiché l'area è una delle più ricche di risorse naturali nel pianeta. L'interesse per l'Artico è cresciuto, soprattutto negli ultimi cinquant'anni, dopo la scoperta di ampi campi di idrocarburi e minerali. In effetti, secondo Alastair Fraser, un geo scienziato dell'Imperial College di Londra, nel circolo polare artico si stima che sia localizzata una quantità di petrolio pari a 90 miliardi di barili, il che

significa circa il 13% delle riserve totali del pianeta [20]. La Norvegia diede inizio alle prime esplorazioni nella regione artica durante gli anni '80, portando all'apertura di alcuni pozzi petroliferi nel Mare di Norvegia nel 1993, e nel Mare di Barents nel 2007, dove si trovano attualmente attive le piattaforme petrolifere Goliat [21] e Snøhvit [22].

La regione Artica è attualmente zona di conflitto di interessi tra le popolazioni locali e le compagnie operanti sul territorio, le quali, insieme a parte delle autorità nazionali, intravedono la possibilità di grandi profitti nell'area. Difatti, nel 2005 il *Nordland Research Institute* (NRI) ha presentato per del WWF una ricerca sulle opportunità di lavoro e lo sviluppo economico nelle regioni più settentrionali della Norvegia nel corso dei successivi 35 anni, nel quale è stata data particolare enfasi alla pesca e al turismo [23]. Ciò non ha fermato le compagnie petrolifere dal proseguire le proprie attività e, all'avvio delle esplorazioni, i pescatori locali hanno temuto delle possibili ripercussioni negative sui propri affari a causa di queste operazioni.

A supporto della causa sollevata delle comunità residenti l'articolo 14 della Convenzione ILO 169 [24] esorta il governo norvegese a proteggere in *primis* gli interessi di questi ultimi "*1. The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognized. In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities. Particular attention shall be paid to the situation of nomadic peoples and shifting cultivators in this respect*" [i]. Inoltre, secondo i punti 2, 3 e 4 del Finnmark Act [25], la legge nazionale garantisce non solo la salvaguardia della cultura Sámi, ma anche uno sviluppo ecologico e sostenibile dell'area, mirato a promuovere un positivo sviluppo

[i] C169 - Indigenous and Tribal Peoples Convention, 1989 (No. 169); 14.

industriale. Un'altra argomentazione circa i diritti di proprietà e la gestione delle risorse presenti nel sottosuolo artico è stata sollevata da Aili Keskitalo, presidente Sámi dell'Associazione nazionale norvegese Sámi (NSR) tra il 2008 e il 2013. Keskitalo, sulla base della Convenzione internazionale sui Diritti Civili e Politici (ICCPR) [26], del Protocollo addizionale alla Convenzione per la salvaguardia dei Diritti dell'Uomo e delle Libertà fondamentali [27], della Convenzione sull'Eliminazione di tutte le Forme di Discriminazione Razziale [28], e degli articoli 14 e 15 della Convenzione ILO 169 ha dichiarato "*The international law gives the Sámi people (..) rights to oil and gas resources in our area. I am not claiming that we have sole rights to the petroleum resources in the northern areas, but the Sámi people do have such rights as indigenous people"* [ii].

La tematica ha coinvolto anche l'industria legata alle energie rinnovabili, la cui presenza sembrerebbe mettere in difficoltà il mantenimento e la crescita degli allevatori di renne residenti nelle aree di interesse per l'installazione di turbine eoliche. Difatti, richiedendo un'ampia quantità di spazio, i campi eolici sono spesso visti di cattivo occhio da parte delle comunità locali, il cui sostentamento dipende principalmente dai pascoli. il giornalista delle Nazioni Unite esperto in Diritti Umani, David Boyd, ha sottolineato nel suo reportage [29] l'importanza della questione: "*Reindeer herding is at the heart of Sámi culture and provides a livelihood for thousands of people. By redoubling its efforts to secure the free, prior, and informed consent of the Sámi before making any decisions that affect their rights, Norway could provide a model for the world in protecting the rights of Indigenous peoples, protecting the environment, and highlighting the connections between human rights, healthy ecosystems, and healthy people"*[iii]. Tutt'ora (gennaio 2020) si sta

[ii] Aili Keskitalo, intervista."Nordlys" (Agosto 2006). Fonte: Aslaug Mikkelsen & Oluf Langhelle. Arctic Oil and Gas - Sustainability at Risk. Routledge. 2008: 224; 237.

[iii] David Boyd; Norway- End of Mission Statement; United Nations Special Rapporteur on human rights and the environment. September 23rd, 2019. United Nations - Human Rights, Office of the High Commissioner

cercando una soluzione che possa portare ad una proficua convivenza delle due parti.

Le autorità norvegesi hanno spesso cercato di dimostrazione l'interesse della nazione verso le politiche per la salvaguardia ambientale. Nel 1978 fu fondata la *'Norsk Oljeverforening For Operatørselskap'* (NOFO) [30], con la missione di fornire piani e azioni per la sicurezza dell'ecosistema marino in caso di fuoriuscite di petrolio nella piattaforma continentale. L'anno seguente, la Norvegia ratificò il Protocollo di Göteborg (modificato in seguito nel 1999) e, con l'istituzione del *Pollution Control Act* [31] nel 1981, il governo norvegese garantì di limitare i livelli di emissioni e rifiuti domestici. Nel 1997, il paese aderì a entrambi i periodi di impegno previsti del Protocollo di Kyoto vincolandosi a ridurre le proprie emissioni complessive di oltre il 20% entro il 2020. Inoltre, nel 2004 la Norvegia ha accettato le direttive dettate dal *Greenhouse Gas Emission Act* [32] e, dal 2016, il paese ha ratificato l'Accordo di Parigi.

Ciò nonostante, le politiche attualmente applicate dalla Norvegia sono insufficienti e i nuovi piani di esplorazione non appaiono coerenti con l'Accordo di Parigi [33]. I piani hanno affrontato una forte opposizione da parte di molte figure. Il governo norvegese è stato criticato in particolare dai sostenitori del clima affiliati *a Greenpeace Norway e Nature and Youth*. Tra il 5 e il 14 novembre 2019, il governo è stato richiamato da entrambi i gruppi presso la Corte d'Appello di Oslo. Secondo Frode Pleym, capo di *Greenpeace Norway*, ciò che preoccupa di più in queste attività è la quantità di emissioni derivanti dalla combustione del petrolio una volta estratto[34], poiché i loro effetti stanno avendo un grande impatto nell'area artica.

Tuttavia, i problemi non si estendono solo a nord. Il 24 aprile 2019, Equinor ha presentato alla National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) australiana il progetto per la conduzione di

attività esplorative nella Grande Baia Australiana, a 370 chilometri al largo della costa meridionale dell'Australia. L' azione andrebbe contro la legislazione norvegese circa l'apertura di nuovi pozzi, poiché, in caso di incidente nella zona di interesse, i danni a livello ambientale sarebbero immensi [35]. La più grande obiezione è stata sollevata dalla ONG *Greenpeace*, che ha avviato una guerra legale contro *Equinor*, al fine di impedire alla compagnia di procedere con il proprio piano. Un'altra voce importante è arrivata da David Boyd, esperto di Diritti Umani e Ambiente per le Nazioni Unite, il quale ha apertamente criticato il paradosso norvegese [29]. Di fatti, La legge norvegese comprende numerosi articoli e atti il cui scopo è di proteggere l'ambiente artico dallo sfruttamento industriale e dall'inquinamento ad esso collegato. Alcuni esempi sono *l'Act of December 21st, 1990 No. 72 relating to Tax on Discharge of CO2 in the Petroleum Activities on the Continental Shelf* [36] e *l'Act of June 21st, 1963 No. 12 relating to Scientific Research and Exploration for and Exploitation of Subsea Natural Resources other than Petroleum Resources* [37]. Oltre a questi, due Atti sono significativamente importanti in questo argomento: il *Petroleum Act* e il *Pollution Control Act*. Nonostante ciò, come descritto in precedenza, la Norvegia al momento non eccelle come modello perfetto da seguire nel contesto delle emissioni prodotte dall'industria estrattiva, specialmente se si tiene in considerazione che il governo non sta attualmente ponendo molti ostacoli al proseguimento delle attività di produzione di idrocarburi.

Il popolo e il governo norvegese non sono rimasti indifferenti a queste accuse e al rafforzamento riscontrato negli effetti del cambiamento climatico. Invero, durante il 2019 il paese ha dato maggiore prova del proprio impegno nella lotta contro le emissioni inquinanti attraverso due azioni: la forte e sentita partecipazione al movimento '*Strike for Climate*' [38] e la decisione del Partito Laborista norvegese di aumentare l'uso di fonti di energia rinnovabile, limitando al contempo gli investimenti nelle industrie carbonifere e petrolifere [39]. A tal fine, il parlamento

norvegese ha bloccato i piani di trivellazione nell'arcipelago delle Lofoten e votato a favore di nuove politiche relative al taglio degli investimenti proveniente dal Fondo, al fine di limitare le aziende carbonifere e petrolifere e avvantaggiare i progetti orientati verso lo sviluppo di tecnologie per lo sfruttamento di energia pulita. Di conseguenza, a partire da giugno 2019 le società coinvolte nel campo del carbone, del metano e del petrolio hanno dovuto rallentare la propria produzione, data la mancanza di capitale che avrebbero dovuto ottenere dal governo attraverso il Fondo [40]. La mossa attuata dalle autorità norvegesi ha avuto ripercussioni anche a livello internazionale, poiché ha influenzato l'attività delle società energetiche il cui partner e fonte di investimento era proprio la Norvegia.

Come risaputo, una delle principali cause delle emissioni di gas inquinanti sono le auto diesel, le quali producono una grande quantità di diossido di nitrogeno (NO_2). Al fine di risolvere il problema, il governo norvegese sta attualmente cercando di incoraggiare le persone ad acquistare auto elettriche o ibride e sembra che lo stia facendo con successo.

Già dal 2018 le autorità norvegesi hanno avviato un progetto a livello nazionale per la riduzione delle emissioni di gas a effetto serra prodotte dai mezzi di trasporto. Il piano verrà portato a termine nel 2029, anno nel quale il governo spera di poter raggiungere la totale decarbonizzazione del sistema di trasporto pubblico in tutta la Norvegia. Nel 2019 i settori ferroviari e dei bus di linea urbana ed extra-urbana hanno registrato un aumento degli investimenti di circa il 6%. Un altro importante obiettivo è stato raggiunto nel trasporto privato, dove nel 2018 il mercato nazionale ha registrato una quota del 31% di auto elettriche e del 18% di veicoli a motore ibrido [41]. Ciò è stato reso possibile anche grazie al sistema fiscale applicato ad automobili ed emissioni, il quale ha reso economicamente più conveniente

possedere un veicolo a emissioni zero, poiché maggiore è il livello di emissioni prodotte dall'auto, maggiore è l'ammontare delle tasse da pagare. Inoltre, l'imposta è progressiva e i contributi aumentano in relazione al peso del veicolo e alla quantità di emissioni di CO_2 e NOx [42] rilasciate, rendendo le grandi auto a diesel o benzina estremamente costose da mantenere [43].

Uno dei migliori esempi di limitazione delle emissioni prodotte dai veicoli è la città di Trondheim, nel Trøndelag. Essendo Trondheim una delle città più grandi della Norvegia, è importante analizzare la sua attuale politica ambientale, poiché le sue prestazioni hanno un ampio risonanza sulla scena nazionale. Da maggio 2017 il comune ha adottato un nuovo piano energetico e climatico che durerà fino al 2030, anno nel quale si spera di aver ridotto le emissioni di gas serra dell'85% rispetto ai valori registrati nel 1991. Nel 2018 i veicoli elettrici contavano solo il 9% nel registro di tutte le autovetture presenti a Trondheim, una percentuale che è cresciuta nel 2019, raggiungendo il 49%. Un fattore che ha contribuito a questo aumento è stata la trasformazione del sistema di trasporto pubblico, avvenuta il 3 agosto 2019. Da questa data, ogni autobus in circolazione nel comune è privo di carburanti fossili. Entro il 2020, il piano dovrebbe portare Trondheim a ridurre le emissioni di gas serra prodotte dai propri veicoli del 10% rispetto ai livelli del 1991, tagliando anche le emissioni delle attività di costruzione del 75% [44].

Di questi temi si è discusso durante la '*Energy Transition Conference*' tenutasi a Trondheim il 26 marzo 2019. Qui Liv Lønnum, la Segretaria di Stato norvegese per il Ministero del Petrolio e dell'Energia, ha descritto come il percorso della Norvegia stia procedendo verso la decarbonizzazione, al fine di diventare una nazione a emissioni zero entro il 2030. Lønnum ha proseguito il suo intervento spiegando come il governo norvegese stia incoraggiando lo sviluppo di motori alimentati a

idrogeno, ottenuto dal processo di cattura e stoccaggio del biossido di carbonio (CCS) [45]. Secondo le parole della Segretaria di Stato, questa soluzione contribuirebbe a ridurre il livello di emissioni inquinanti, poiché consentirebbe di perseguire lo sfruttamento dei giacimenti di metano dei quali il sottosuolo norvegese è ricco, eliminandone il fattore inquinante. Ciò permetterebbe di avere accesso ad una risorsa energetica pulita e, a differenza delle forme energetiche rinnovabili, sempre disponibile, dal momento che può essere impiegata in qualsiasi condizione metereologica. Pertanto, il governo norvegese sta attualmente supportando la collaborazione tra l'istituto di ricerca SINTEF [46] e l'Università Norvegese della Scienza e della Tecnologia [47], entrambe con sede a Trondheim, per mantenere attivo lo sviluppo e la ricerca delle tecnologie che dovrebbero essere impiegate nel settore. Lønnum ha concluso l'intervento esprimendo il proprio ottimismo circa il futuro dell'industria energetica norvegese con le seguenti parole *"(..) I am sure that the government will keep to push forwards making CCS an important part of the global solution. The Norwegian government is committed to realizing full-scale CCS providers, as that the project leads to technology development internationally. A successful CCS project could be the key to unlock considerable emission cuts from industry and power production in Europe. For that to happen, we need strong engagement from the European Commission, the European Member States, and the European industry and power entities. (…) It is not as if we go to bed in the petroleum age and wake in the age of renewable energy. The path toward decarbonization and the low emission society will take time."* [iv]

Tramite i dati forniti e le valutazioni sollevate in questo studio si spera di rendere chiara la rilevanza del ruolo della Norvegia nel mercato energetico internazionale.

[iv] Liv Lønnum; Segretaria di Stato norvegese per il Ministero del Petrolio e dell'Energia. Energy Transition Conference; Trondheim 2019.

L'obiettivo della presente tesi è di spingere il lettore a mettere in discussione l'etica e gli interessi che stanno muovendo le azioni dei politici norvegesi nel tentativo sia di sfruttare le risorse energetiche naturali presenti nel territorio, sia di soddisfare gli impegni da loro stessi presi nel rispettare il Protocollo di Kyoto, l'Accordo di Parigi, e nel rendere la Norvegia una società a emissioni zero entro il 2030. In breve, si desidera incoraggiare il lettore ad esaminare le informazioni fornite, spostando la sua curiosità su quali saranno le prossime mosse previste dalla Norvegia e quali conseguenze queste potranno avere nella comunità internazionale.

"The Norwegian government can no longer ignore the dangerous impact its exported oil is having on the climate. Climate change knows no borders. ***Oil is oil, no matter where it is burned.****"*

(Frode Pleym, capo di Greenpeace Norway.
Oslo. 5 novembre, 2019)

Annotazioni

1- Fonte: Dugstad & Sandvik; "Avoiding the resource course? Democracy and natural resources in Norway since 1900"; 2015 (in Badia-Miro, Pinilla and Willebald, 2015: 314)

2- traduzione: Leggi di Concessione

3- traduzione: Diritto di Revoca

4- Fonte: Dugstad & Sandvik; "Avoiding the resource course? Democracy and natural resources in Norway since 1900"; 2015 (in Badia-Miro, Pinilla and Willebald, 2015: 316) _ Sanders & Sandvik "Regulation of Natural Resources in Nordic countries (1880-1940); Storil, 2016: 9

5- La compagnia petrolifera americana, meglio conosciuta come Phillips 66, fu fondata da Frank Phillips nel 1917. Nel 2002 la società si fuse con la 'Conoco' (Continental Oil Company, fondata nello Utah nel 1875), dando vita alla "ConocoPhillips"

6- Fonte: Dugstad & Sandvik "avoiding the resource course? Democracy and natural resources in Norway since 1900"; 2015: 314 (in Badia-Miro, Pinilla and Willebald, 2015).

7- Il primo giacimento petrolifero redditizio trovato nel 1969 nella piattaforma continentale norvegese.

8- nome intero: Den Norske Stats Oljeselskap AS. Il 15 maggio 2018 la compagnia cambio' il proprio nome in Equinor, combinando le componenti "equi", ossia 'equale', e "nor", in onore alla Norvegia.

9- La 'maledizione delle risorse' o 'paradosso dell'abbondanza' e' una condizione economica nella quale "countries with an abundance of natural resources, specifically (…) non-renewable resources (such as petroleum), tend to have lower rates of economy growth" (Moses and Letnes. Managing Resource Abundance and Wealth. The Norwegian Experience. 2017: 247). Il 'male olandese' denota sempre "a negative economic consequence, mostly a real appreciation, that arise from large increases in a country's income" causate da "natural resource discoveries (…), foreign direct investment or foreign aid" (Moses and Letnes. Managing Resource Abundance and Wealth. The Norwegian Experience. 2017:243)

10- traduzione: Fondo Petrolifero. Nel 2006 il nome del Fondo fu convertito in 'Government Pension Fund Global' (GPFG) poiche' parte delle collocazioni attuate con il denaro in esso contenuto e' attualmente impiegata anche per supportare i paesi in via di sviluppo che hanno intenzione di investire nel rinnovabile.

11- Il ruolo del Consiglio per l'Etica per il GPFG è di valutare se un investimento in una compagnia specifica sia compatibile o meno con gli orientamenti etici del Fondo.

12- De ti oljebud, innst. S. nr. 294 (1970–1971). visione completa a pagina 73 (capitolo 2) della presente tesi.

13- Tramite il presente link è possibile prendere visione dell' Act of 29 November 1996 No. 72 relating to petroleum activities: https://www.npd.no/en/regulations/acts/act-29-november-1996-no2.-72-relating-to-petroleum-activities/

14- Fonte: The Norwegian Petroleum Directorate; Norsk petroleum. "State Organisation Of Petroleum Activities".

15- Traduzione: sovvenzioni norvegesi.

16- Fonte: EFTA, Relations with the EU-policy areas; https://www.efta.int/ .

17- Fonte: Dośpiał-Borysiak, K.; "Model of State Management of Petroleum Sector – Case of Norway"; International Studies. Interdisciplinary Political and Cultural Journal; 2018: 103.

18- I principali obblighi connessi alle politiche di concorrenza europee sono elencati negli articoli da 101 a 109 del Treaty on the Functioning of the European Union (TFUE), del Protocollo n.27, relativo al mercato interno e alla concorrenza; il Protocollo 26 sui Servizi di Interesse Generale; e nell'articolo 36 della Carta dei Diritti Fondamentali. Fonte: Parlamento europeo, www.europarl.europa.eu

19- Tramite il presente link è possibile prendere visione della European Gas Directive: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02009L0073-20190523&from=EN .

20- Fonte: Alastair Fraser, citato in "Why Is There So Much Oil in the Arctic?", articolo di Emma Bryce - Live Science Contributor (3 agosto 2019). https://www.livescience.com/66008-why-oil-in-arctic.html

21- Gestito dalla compagnia Vår Enengi AS, per conto di Eni Norway.

22- Gestito da Equinor Energi AS.

23- Fonte: Aslaug Mikkelsen & Oluf Langhelle. "Arctic Oil and Gas - Sustainability at Risk". Routledge; 2008: 217

24- Tramite il presente link è possibile prendere visione della C169 - Indigenous and Tribal Peoples Convention, 1989 (No. 169): https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169

25- Tramite il presente link è possibile prendere visione del Finnmark Act (Finnmarksloven) dal sito lovdata.no (la pagina ufficiale per l'annuncio degli emendamenti riguardanti le leggi e i regolamenti norvegesi): https://lovdata.no/dokument/NL/lov/2005-06-17-85

26- Tramite il presente link è possibile prendere visione della Convenzione internazionale sui Diritti Civili e Politici: https://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx . Fonte: Nazioni Unite.

27- Tramite il presente link è possibile prendere visione del Protocollo addizionale alla Convenzione per la salvaguardia dei Diritti dell'Uomo e delle Libertà fondamentali https://www.echr.coe.int/Pages/home.aspx?p=basictexts&c=fre . Fonte: Consiglio d'Europa.

28- Tramite il presente link è possibile prendere visione della Convenzione sull'Eliminazione di tutte le Forme di Discriminazione Razziale: https://www.ohchr.org/en/professionalinterest/pages/cerd.aspx . Fonte: Nazioni Unite.

29- Fonte: Fonte: David Boyd; "Norway- End of Mission Statement; United Nations; 2019. United Nations Special Rapporteur on human rights and the environment"; United Nations– Human Rights, office of the High Commissioner www.ohchr.org ; 23 settembre 2019.

30- Nome completo: Norwegian Seas Association for Operating Companies.

31- Tramite il presente link è possibile prendere visione del Petroleum Pollution Act: https://lovdata.no/dokument/SF/forskrift/2004-06-01-931 .

32- Tramite il presente link è possibile prendere visione dell' Act of 17 December 2004 No. 99 Relating to Greenhouse Gas Emission Allowance Trading and the Duty to Surrender Emission Allowances: https://www.regjeringen.no/en/dokumenter/greenhouse-gas-emission-trading-act/id172242/ (Governo Norvegese).

33- Tramite il presente link è possibile prendere visione della Convention on Climate Change: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement (Nazioni Unite).

34- Fonte: Jillian Ambrose. "Campaigners try again to stop Norway drilling for oil in Arctic". The Guardian. 5 novembre 2019.

35- Fonte: Professor Tia Soliman Hunter, Direttrice del Centre for Energy Law presso l' Universita' di Aberdeen (2019). Citato in: Nathaniel Pelle, senior Campanier per Greenpeace Australia Pacific; "Equinor's plan to drill for oil in the Great Australian Bight would be illegal in Norway"; aprile 2019. Greenpeace; https://www.greenpeace.org/global/

36- Tramite il presente link è possibile prendere visione dell' Act of December 21st, 1990 No. 72 relating to Tax on Discharge of CO2 in the Petroleum Activities on the Continental Shelf: https://www.npd.no/en/regulations/acts/co2-discharge-tax/ . (Norwegian Petroleum Directorate)

37- Tramite il presente link è possibile prendere visione dell'Act of June 21st, 1963 No. 12 relating to Scientific Research and Exploration for and Exploitation of Subsea Natural Resources other than Petroleum Resources: https://www.npd.no/en/regulations/regulations/petroleum-activities/ (Norwegian Petroleum Directorate).

38- Questo movimento, identificato anche attraverso l'ashtag #FridaysForFuture, ha avuto origine nell'agosto 2018, quando l''adolescente svedese Greta Thunberg ha deciso di esprimere il suo dissenso contro la scarsità di politiche per combattere attivamente il cambiamento climatico, sedendosi di fronte al palazzo del parlamento svedese a Stoccolma. La protesta si è svolta per un periodo di tre settimane, nelle quali la ragazzina ha saltato le lezioni scolastiche e condiviso la sua attività sui social media. Così facendo, la sua iniziativa è diventata virale e altre persone hanno preso parte alla sua causa, non solo a Stoccolma, ma in tutto il mondo. Al momento (gennaio 2020) due scioperi si sono svolti a livello globale: il 15 marzo e il 20 settembre 2019, entrambi di venerdì.

39- La Norvegia, insieme agli altri stati membri dell'EEA e dell'UE, si è vincolata a raggiungere l'obiettivo della neutralità delle emissioni entro il 2030. Il paese ha inoltre ratificato sia il secondo periodo del protocollo di Kyoto, che l'Accordo di Parigi. Al fine di rispettare gli impegni presi, il parlamento norvegese ha votato a favore di nuove politiche riguardanti il GPFG, al fine di limitare le emissioni future e fornire un terreno economico più fertile per l'industria delle energie rinnovabili.

40- Fonte: Rob Davies; "Norway's $1tn wealth fund to divest from oil and gas exploration ». The Guardian. 8 marzo 2019. https://www.theguardian.com/world/2019/mar/08/norways-1tn-wealth-fund-to-divest-from-oil-and-gas-exploration

41- Fonte: Climate Action Tracker- Norway: https://climateactiontracker.org/countries/norway/

42- Sigla che comprende tutti gli ossidi di azoto e le loro miscele.

43- Fonte: norsk elbil forening - The Norwegian Electric Vehicles Policy; https://elbil.no/english/norwegian-ev-policy/

44- Fonte: Trondheim Municipality news; environment and the Climate Plan; https://www.trondheim.kommune.no/aktuelt/utvalgt/andre-omrader/miljo/Klima/klimaplan

45- Carbon Capture and Storage.

46- Nome completo: Stiftelsen for industriell og teknisk forskning.

47- Nome completo: Norges teknisk-naturvitenskapelige universitet – NTNU.

INTRODUCTION

We are living in an historical moment which is pushing humankind to face the concrete consequences of its past mistakes.

The balances that used to regulate both the environmental and the economical orders have been upset in less than half of a century by an economy of consumption, a frenetic development of industries, a massive and extremely fast demographic growth without precedents, and an always increasing need for energy. The result, as we are currently experiencing on our own skin, is the dramatic increase of intensity of climate change effects, that are not only devastating the environment we are living in, but also are changing the manner in which the younger generations are fronting onto the future.

While the figures at the head of the governments of the most powerful countries seem to be more concerned over social and economic issues, young people are taking concrete actions in showing their worry and their will to try fixing this situation. The period between 2018 and 2019 has been one of the most intense times in the last decades for the take in action of demonstrations and for the reinforcement of the environmental debate on social media. As evidence of this, it can be noticed the increasing rise of even more hostility towards the hydrocarbon energy companies (especially the tension between Equinor and Greenpeace after their last confrontations in Australia [1] and in the Arctic [1]), claimed to be one of the principal culprits for the environmental emergency

However, even knowing it is the only solution, a harsh energetic transition is unfortunately not possible to be promptly put in action with drastically efficient effects. Doing so would mean forcing over 7,73 billion people [2] all around the globe, living in very different circumstances and having disparate economic possibilities, to

homogenize their habits, by adapting them to a fully sustainable lifestyle. Indeed, such move would help us to not overcome the global temperature rise limit of 1.5°C degrees Celsius within the next decades, as set in the Paris Agreement *(2015)* [3], over which the effects of climate change would have permanent repercussions[4] *(Intergovernmental Panel on Climate Change - IPCC).* However, given the current situation, it is very difficult to efficiently reach this target in such a short time.

As it is known, oil is a limited resource, whose extraction and refining processes expose at high dangers the environment of the geographic area where the fields are located. Besides, the final products obtained from petroleum, like plastic and fuel, are on the top of the list of the matters contributing to the increase of environmental pollution rates both in the air (augmentation of the density of CO_2 in the atmosphere) and in the ground of the sea (plastic garbage [5]). As said, in order to limit the future consequences that our dependence on hydrocarbons energy sources is having on the environment, it is necessary to switch to renewable energetic source.

However, why is it so difficult to abandon oil? Is it only a matter of difficulty in applying the energy transition plan into reality on a global scale? Unfortunately, not. Indeed, even being a relatively young industry, the petroleum business has such a powerful influence in the economies of the countries where the fields are situated [6], that to abandon it completely would mean bringing the national economy to its knees. Of course, the natural oil supply is going to be emptied one day, and the manner in which the reserves have been and will be managed varies from country to country, leading to different future scenarios. Nevertheless, it has to be admitted that governments all over the planet are showing their awareness of the current and the predicted situation in the hydrocarbon field, and are trying to mutate their status by implementing their resource in the renewable energy sphere. The aim is to

obtain as much energy and profit as it is currently possible with oil, but limiting the environmental impact. One country in particular is showing to be able to accomplish this ambition efficiently both on the social and economic level: Norway.

This Scandinavian country can be considered as one of the most successful examples among the oil producing countries, and this is what makes it an interesting case of study. Its future-oriented resource management and its dynamic research in this field helped the country building a rich, stable, diversified, and competitive economy: "*(..) in Karl's (1997) book, Norway is highlighted as a unique case of a state that has largely managed to avoid the Paradox of Plenty [7]: it has lots of oil/gas, it is become increasingly reliant on those resources; and yet its economic and political system continue to function remarkably well*" [v]. Anticipating what is going to be explained more in the detail in the following chapters, the winning factors which distinguish the Norwegian case from the other oil countries, and contribute in making it a model in the sector lie specifically in three managerial moves.

Firstly, Norway never focused its economy completely on oil; instead the country kept active its traditional pre-oil economic activities, so that to hold a diversified economy. Secondly, the creation of a "Tripartite Model" [8] in the management of the hydrocarbon industry, so that to divide and keep a balance of powers among the three spheres of influence playing in this field: policy, commerce and regulation. Thirdly, thanks to the decision of the Norwegian government in 1990 to save part of the revenue obtained by the oil and gas resources in the Government Pension Fund [9], Norway at last guarantees a steady support for future generations, so that to not limit the benefits gained by the energy industry to a short-term time frame.

[v] Jonathon Wayne Moses and Bjørn Letnes. *Managing Resource Abundance and Wealth: The Norwegian Experience.* Oxford University Press. 2017 :9

Having spent more than one year in this country, I had the opportunity to experience on my own skin the concrete result of the listed points, living in the (almost) oil-based Norwegian wealth fare. Undoubtedly, it cannot be denied that my 1-year-long Erasmus+ mobility at the Norwegian University of Science and Technology (NTNU) [10] did profoundly influence my opinion, enriched my knowledge, and pushed me to look for more information about the subject of the Energy Industry and the role of governance in the process of transition towards renewable resources, especially within the Norwegian context. Indeed, these topics have often been taken into discussion in every course I attended during my exchange period at the NTNU, helping to increase my awareness and concern about climate change and the energetic crises. Debating, analyzing and making us students reflect on these themes is the base of the teaching approach practiced at NTNU. This *athenaeum* is dedicated principally to the teaching and development of eco-friendly technologies[11]. However, also in the other faculties it is discussed about how to concretely employ our capacities and knowledge for successfully entering in the energy transition process. Moreover, NTNU is officially recognized as the 1st best university in Norway for its excellence in the field of Innovation Research [12], and this gives even more strength to the opinions and researches which are developed: "*NTNU is truly the beating heart of technology research in Norway shaping markets and industries*" [vi]; "*being an university heavily focused on the Natural Science and Technology, makes NTNU interested in developing new ideas*" [vii].

One course in particular inspired me in starting this research and helped me in finding the information I needed to start writing: "Petroleum management: the Norwegian model", held by Professor Jonathon W. Moses from the department of Sociology and Political Science. Here I had the chance to obtain a complete and detailed overview about both the technical and the social aspects of the

[vi] Martin Steinert, professor of Engineering, Design and Innovation; NTNU. 2017
[vii] Terje Lohndal, professor of English linguistic; NTNU. 2017.

development of the oil industry in Norway. It was very interesting to follow the smart evolution path that Norway walked from being a complete inexperienced country in the oil area, to become one of the most efficient and future-oriented actors in this sphere. A unique case on a worldwide scale.

As it is going to be explained in detail in chapter 4 of this thesis, living in Norway while studying gave me the possibility to be more aware of the influence that the oil industry has on the everyday life of the Norwegian society, especially the company Equinor [13] (which has a headquarter right in the close bucolic periphery of Trondheim, in Rotvoll). NTNU in first place has many partnerships with Equinor, which not only offers the possibility to students to apply for internships within the company, but also finances some of the research activities of the university. This last detail is not appreciated by many students who often contest the decision of NTNU to accept the money offered by Equinor, claiming that it would be better to invest money in the environmentally friendly research, instead of accept fund from a company moved by interests strictly connected to the oil sector. The debate has been brought to a heated level in March 2019, when NTNU accepted a donation of 100 million NOK -Norwegians Krones (about 9.996.483,75 EUR [14]) to be invested specifically in the energy and petroleum fields during the next 5 years. The case was also exposed on the official student newspaper 'Under Dusken', which published an article hyronically entitled "*kunnskap for en bedre olje*" [15] after NTNU's motto "*kunnskap for en bedre verden*" [16]. Mentioning Sigrid Solheim, student herself and author of the article, "*når pengene kommer fra en kilde med så klare interesser som Equinor, bør vi tenke oss om to ganger før vi lar pengene styre hvilken retning forskningen skal ta. (...) Spørsmålet blir så om dette vil være 'kunnskap for en bedre verden" eller bare "kunnskap til Equinor fortjeneste*'? [17]" [viii]. Nevertheless the controversial aspects of the case, the chancellor of the university, Gunnar Bovim,

[viii] Sigrid Solheim. *Kunnskap for en bedre olje*. Under Dusken. March 2019: 15.

accepted the money offered by Equinor and validated his decision during an interview with the national academic newspaper 'Khrono'. Bovim claimed: "*På NTNU tror vi på kunnskap. Ikke bare for meg og deg - men for en bedre verden. Som universitet har NTNU sine egne mål, men sammen i denne akademia-avtalen med Equinor kan vi nå få resultater som gir konsekvenser langt ut over våre egne virksomheter og landegrenser, nemlig ut i verden (...) Vi synes det er veldig gledelig at Equinor ønsker å satse så sterkt på kunnskapen fra NTNU. Derfor tror jeg også at akademia-avtalen mellom NTNU og Equinor har potensialet til å sette spor etter seg i framtiden*" [18] [ix].

This debate is still currently in process, nevertheless the majority of the students attending the *athenæum* are more favourable to deepen their researches in the development of environmentally friendly energy obtained from renewable resource, then to contribute enduring the petroleum industry.

In this study it is also going to be taken in consideration one specific area belonging to the Norwegian national territory, where the fight between oil companies (both national and international), Non-Governmental Organizations (NGOs), and the local communities, has become harsher during the last years: the Arctic.

The Arctic is currently facing one of the most delicate moment in its history, given the increment of the effects of climate change in the area, the discovery of rich oil fields in the Lofoten region, and the placement of the oil fields Goliat [19] and Snøhvit[20]**.** Those last listed are subject to objections from NGOs, the scientific community (especially from the University of Tromsø, UiT) and part of the population, since drilling activities and the risk of possible accidents on the platforms contribute to increase the speed and the intensity of the effects of climate

[ix] Gunnar Bovim,ex- Rector at NTNU 2019. Article by Karoline Ravndal Lorentzen. *100 millioner til energiforskning*. NTNU Nyheter. Februar 1st,2019.

change, endangering also the closer local communities. Nevertheless, part of the local residents still supports the oil activities in the North and the debate continues.

However, it is important to underscore that Norway is not completely free to act according to its own will in these circumstances. Indeed, as it going to be analyzed in the committed chapter of this research, being the country part of both the EEA [21] and the Arctic Council [22], it has some defined rules that it has to follow in order to operate in its fields located in the North, respecting the signed agreements.

Given this general overview, it is possible now to switch on the organization of the content present in this study, which is composed by four chapters.

The first chapter introduces the historical background of the Norwegian adventure in the gas & oil field, starting from the first researches conducted in the North Sea during the 1950s, up to the current times (2019). The content is divided in two different analysis levels: the temporal (Norway before, during and after the discovery of the Ekofisk field in 1969, the turning point of the Norwegian oil history) and the geographical (where the most important centres of the industry are located: the North Sea, the city of Stavanger, the region of Trøndelag, and the Arctic).

The second chapter discusses the position of Norway in the economic and political areas. Here the focus is on the procedures adopted by the Norwegian government throughout the decades in order to reach the current success, leading Norway to be recognized as one of the best models of oil management. Great importance is also given to the role of the European Union, of international agreements and of NGOs, having all a great influence in the freedom of action of Norway. Two study cases concerning these two international actors are brought under analysis: the case of the *referenda* for joining the EU (Norwegian European Communities membership referendum in 1972 and the Norwegian European Union membership referendum in

1994), and the case of Equinor *versus* the NOG Greenpeace, which opposed itself to the drilling activities by the Norwegian oil organization in the Arctic in April 2019.

The third chapter brings the focus right on the Arctic area, discussing about the reasons that make this region so appealing to the energy companies belonging to both the gas & oil sector and the renewable sources, explaining how the zone is also a very important centre of research for the energy industry. Another important aspect analyzed in the chapter, is the influence that the oil activities have on climate change and the risk to which they expose the Arctic local environment. Much space in the chapter is also dedicated to the influence of national and international policies in the manner in which Norway is managing its northernmost region, using as a concrete example the study cases of the platforms Goliat and Snøhvit, and the effect that the international gas & oil agency ENI [23] is currently having in the area.

Last but not least, the fourth chapter is dedicated to the analysis of the path that Norway is walking in order to become a zero-emission society by 2030, and to how the political, scientific and local forces are facing the current development of the domestic energy industry. Following, it is explained how these changes are influencing the life and opinion of the Norwegian citizens, that are divided between those who are pro renewable resources and those who do not want to leave the petroleum industry. Moreover, the section dedicated to the future plans of Norway in the energy sector reports the speech held by the State Secretary for the Ministry of Energy and Petroleum, Liv Lønnum, at the Energy Transition Conference, on March 2019. Here the State Secretary illustrated the future political and economic plans, the actions programmed, and the research currently under consideration to apply in the closer future in order to lead Norway into being a full- renewable energetic power. The last part of this chapter reports the city of Trondheim as a case study to report an example where people are facing the direct consequences of the

Energy Revolution, since the local municipality is trying to apply only eco-friendly energy resources in its activities and in the public transportation.

The conclusion summarizes the content of the thesis, highlighting its most important points. Some space is given also to queries concerning the future plans of the Norwegian energy sector, and the constant ascendancy of the oil industry in the domestic economy, even now that the Norway is recognized as one of the most advanced countries in the renewable energy field [24].

Through this work, it is hoped to move the reader to question on the ethics and interests that are moving Norwegian policymakers in trying to meet the commitments of the Kyoto Protocol, the Paris Agreement, and the auto-set target to make the country become a zero-emission society by 2030. The study is supposed to bring a wider awareness of the current situation in the Arctic area, one the most precious zones for the health of our planet, but extremely affected by climate change, to which the energy industry is strictly connected and responsible for. In this background, Norway is the 2nd oil producer and exporter in Europe [7], and one of the most developed country in the study and application of renewable resources. Therefore, it has an important role in this context, since its position toward the energy industry is fundamental for the destiny of the Arctic area under its national territory, and the promotion of alternative energy resources at a national and international level.

Notes

1 - April 24, 2019: Equinor has presented a plan to start drilling activities in the Great Australian Bight. This decision has been contested by professor Soliman Hunter (Director of the Centre for Energy Law at the University of Aberdeen), the NOG Greenpeace, and different popular demonstrations. Source: https://www.greenpeace.org.au/news/equinors-plan-to-drill-for-oil-in-the-great-australian-bight-would-be-illegal-in-norway/

2017-2019:is currently conducting some explorations in the Barents Sea, with the purpose to find new possible fields within the Norwegian continental shelf, while two fields are active since 2006 and 2007: Goliat and Snøhvit Source: https://www.equinor.com/en/what-we-do/exploration/our-activities-in-the-north.html

2 - source: Department of Economic and Social Affairs of the United Nations (June 17, 2019)

3 - 2015, Paris Agreement, article 2, 1(a)

4 -Some of the effect that risk to manifest are the following: a rise of intensity and frequency of weather extreme, which are strictly connected to water availability in some region ; a global rise of sea level, which is supposed to be around 0.1 m (0.04 – 0.16 m) ; an acidification of oceans and changes to carbonate chemistry, putting in danger the populations living of fishing and aquaculture , and bringing large-scale changes in ocean ecosystems; a rise of risks of local flora and fauna species losses; a worsening of air quality in urban areas. Source: International Panel on Climate Chang; Special Report: ' Global Warming of 1.5°C'; Summary for policymakers: chapter 3; October 2018

5 - The Great Pacific Garbage Patch is an offshore plastic accumulation floating in the eastern area of Pacific Ocean. The Patch is supposed to have an area of 1.6 million square kilometres. Source: The Ocean Cleanup (a non-profit organization founded in 2013by the Dutch student Boyan Slat, with the aim to develop advanced technologies in order to clean the oceans from plastic) https://theoceancleanup.com/great-pacific-garbage-patch/

6 -Here the current ranking : 10. United States - 39,230 million barrels 9. Libya - 48,363 million barrels 8. Russia - 80,000 million barrels 7. United Arab Emirates - 97,800 million barrels 6. Kuwait - 101,500 million barrels 5. Iraq - 142,503 million barrels 4. Iran - 158,400 million barrels 3. Canada - 169,709 million barrels 2. Saudi Arabia - 266,455 million barrels 1. Venezuela - 300,878 million barrels . Source: Dillinger, Jessica. "The World's Largest Oil Reserves By Country." WorldAtlas, Jan. 8, 2019.

Norway is the 2nd oil producer in EU. Source : Sawe, Benjamin Elisha. "The Top Oil Producing Nations In Europe." WorldAtlas, Sept 20, 2017.

7 - Situation which sees the coexistence of great abundance of a natural resource whose presence might enrich the local economy, and at the same time great poverty among the local population. As explained by Letnes and Moses (Managing Resource Abundance and Wealth- The Norwegian Experience; 2017: 6-8), the causes of this discrepancy between these two elements are due to the following attitudes that a government maybe without experience in the management of a great amount of a natural resource, decides to apply the wrong model of governance in the field: Decrease competitiveness, poorer economic performance (which can be canalised in two sub-effects: lower growth rates and bigger government expenditures), and rent-seeking (briefly, the local authorities look for the support of International Oil Companies, which tend not to be really interest to the local dynamics and wealth).

8 - The division of powers which took place during the organization of the management of the new natural resource which Norway found under the soil of its sea. Each sphere of power (operational, policy and regulatory) is strictly responsible for its own domain and has to collaborate with the other two spheres in order to keep an efficient management of the resource (source: Moses and Letnes; 2017 : 61) .

9 -The Government Pension Fund Global was set up in 1990 to underpin long-term considerations when phasing petroleum revenues into the Norwegian economy. (source: Norges Bank- Investment Management. https://www.nbim.no/).

10 - Norwegian University of Science and Technology- First established in 1910 under the name of as 'Norwegian Institute of Technology' (NTH), established in 1910, became then in 1996 NTNU, "after the merger of six research and higher educational institutions in Trondheim" (source: https://www.ntnu.edu/facts). The University is currently specialised in 4 strategic research areas (health, energy, oceans, and sustainability) and is divided in 8 faculties : Economics and Management (OK); Social and Educational Sciences (SU); Natural Sciences (NV); Medicine and Health Sciences (MH);, Engineering (IV); Information Technology and Electrical Engineering (IE) (which includes in its field the Department of Geoscience and Petroleum, and of Ocean Operations and Civil Engineering); Humanities (HF); and the Faculty of Architecture and Design (AD).

11 - One of the main example of the commitment of NTNU in the field of sustainability is the following: "From June 2017, NTNU Sustainability restructured its strategy. NTNU Sustainability consists of several core partners from research environments that excel within the field of environmental sustainability. In addition, other actors are affiliated partners on a project basis. (...)The program will focus on four main areas of research (...), each of these main areas should combine elements of research across three interlinked dimensions: research on innovative, methods solutions and technologies; research on modelling, analysis and environmental impact assessment; research on behaviour and governance for realizing improvement potential" (source: https://www.ntnu.edu/sustainability)

12 - The second recognised is Universitetet i Oslo, and the OsloMet- storbyuniversitetet. Source: Statiskisk sentralbyrå (statistics Norway), Aug 19, 2019

13 - Equinor is an international energy company established in 1972 with head center is located in Stavanger, Norway. Initially the company was named 'Den Norske Stats Oljeselskap AS—Statoil (the Norwegian State Oil company)',but the name has been switched into "Equinor" in 2018. More information in chapter 1.

14 - exchange rate from september 2019 (source: European Central Bank)

15 - "knowledge for a better oil"

16 - "knowledge for a better world"

17 - "When the money comes from a source with such clear interests as Equinor, we should think twice before letting the money control the direction the research should take. (...) The question then becomes whether this will be "knowledge for a better world" or just "knowledge for Equinor profits"? (S. Solheim 2019)

18 - " At NTNU we believe in knowledge. Not just for me and you - but for a better world. As a university, NTNU has its own goals, but together in this akademia- agreement with Equinor we can now have results that have consequences far beyond our own businesses and borders, namely in the world (...) We think it is very gratifying that Equinor wants to invest so strongly in the knowledge from NTNU. Therefore, I also believe that the akademia-agreement between NTNU and Equinor has the potential to leave a mark in the future" (G. Bovim 2019)

19 - Oil field under the control of the operator 'Equinor'. The field, discovered in 1981, is located in the Barent Sea and is active since 2006 (source: Norsk Petroleum The Norwegian Petroleum Directorate) . More information in chapter 3.

20 - Oil field under the control of the operator 'Vår Energi AS'. The field, discovered in 2000, is located in the Barent Sea and is active since 2007 (source: Norsk Petroleum The Norwegian Petroleum Directorate). More information in chapter 3.

21 - Norway became part of the European Economic Area in 1994, after the signature of the EEA Agreement. More information in chapter 2.

22 - ARCTIC COUNCIL . Established in 1996, "A high level intergovernmental forum to provide a means for promoting cooperation, coordination and interaction among the Arctic States" (https://arctic-council.org/index.php/en/) "An administrative secretariat for the Arctic Council was established in 2013 and is based in Tromsø" (https://www.regjeringen.no/en/topics/high-north/arctic-council/id2008503/) .More information in chapter 3

23 - the 'Ente Nazionale Icarburi'- ENI (National Company for Hydrocarbons) is an International oil and gas company founded by Enrico Mattei in 1953 and currently headquartered in Rome, Italy. Today the company operates in 67 countries worldwide (including Norway). More information in chapter 2 and 3.

24 - In Norway, 98% of the electricity production come from renewable energy source, especially from hydropower. Moreover, the Norwegian independent research organisation SINTEF is currently working in developing its research in areas: batteries, bioenergy, energy system, electric power components, hydrogen, hydropower, smart grids, solar energy, and wind power. Source: Norge Statministerens Kontor; 2016; https://www.regjeringen.no/en/id4/ ; *SINTEF: https://www.sintef.no/en/renewable-energy/*

CHAPTER 1- THE DEVELOPMENT OF THE NORWEGIAN ENERGY INDUSTRY (1950s-2019)

Key words: The Norwegian continental shelf; IOCs; Dutch disease; society change; revenue management.

Introduction

Managing natural resources in the best manner possible in order to satisfy both the interest of the concerned companies, and the needs of the nation, is not a simple task, especially if we consider resources which require a big technical effort for being found, extracted, transferred and made ready for the sell and the use.

Petroleum and natural gas are a good example of this kind of resource. Even though neither of them is sustainable [1], states and national/international oil companies (NOCs and IOCs) from any point of the world are fighting to obtain as much control as possible over them. Indeed, petroleum has been, and unfortunately still is, one of the principal centres of attraction for governments and enterprises willing to make their own business grow. Taking in consideration the European continent, the oil market has developed at a very high speed in this area, especially during the second half of the XX century, after the end of World War 2 [2]. Obviously, this industry went through a different evolution process from country to country; however, it can be said that the energy sector faced generally a good and stable development during the period between 1945 and the first decade of the new millennium.

As preannounced in the introduction to this study, Norway can be claimed to be one of the most successful examples among the European countries in the management of natural resources, given especially its triumphal and efficient path into the oil and hydrocarbon sector. Escaping from the traps of Dutch disease and corruption, while adapting a wisely future-orientated management of the revenues obtained by the oil industry [3], Norway demonstrates that it is possible to manage oil resources with long-term favourable effects to both the people and the state. Many other lands involved in the hydrocarbon industry tried to emulate the Norwegian model [4], but none of them has been able to reach such a high wealth level as Norway did until now.

In this chapter, Norway's path to reach its current status in the petroleum industry is analysed. The content is divided into two main analysis criteria: temporal and geographical, both subdivided into smaller sections, each considering a specific time period and a geographical area. The first part is dedicated to the evolution of the Norwegian oil industry, analyzing how the country coordinated its actions in the natural resources business before, during, and after the discovery of the Ekofisk oil field in 1969 [5]. Moving to the second part of the chapter, the focus here is on the most important areas of the country for the hydrocarbon industry, both for the production and the research sector: the North Sea, the city of Stavanger, the region of Trøndelag, and the Arctic area.

By displaying these topics, it is hoped to make clearer how Norway reached its current status of affluent, stable and competitive oil power in such a short period of time: "*When the first production licences were awarded in the mid-1960s, hardly anyone realised what a huge impact the industry would have on the Norwegian economy. Fifty years later, it is more important than ever*."[x].[6]

[x] The Norwegian Petroleum Directorate. *Norway's Petroleum History.* www.norskpetroleum.no

1.Timeline: How did the Norwegian Oil Industry Developed?

1.1. Norway Before the Discovery of Oil (1900s-1950s)

"Three unique aspects of Norway's experience:

1. *Norway was already wealthy and industrialized before oil was discovered;*
2. *Norway already enjoyed a well-established democracy, and an efficient and professional bureaucracy prior to discovering oil. (...)*
3. *The Norwegian economy was reliant on natural resources before oil, and had developed institutions to deal with the pressure of competing as an export-based, natural-resource economy."*

(Moses and Letnes, 2018)

Norway is a relatively young independent country. After the secular union with Denmark, in 1814 Norway passed under the political control of Sweden up to October, 26th 1905, when the country obtained the official recognition of its independence and Håkon VII became king of the new born monarchy [7]. Within this framework, even during the years of the dependence from Denmark and Sweden, Norway had developed strong political and economic traditions. Already in the XIX century the Nordic country was applying principles of democratic nature in its politics. The constitution written in 1814 was characterised by a liberal nature and granted to the 40 per cent of the adult male population the right to vote, a right which was extended to all men in 1898, and women in 1913. Moreover, despite the difficulties presented by the geography of the country, the majority of the population had access to a basic level of instruction. This granted an easier understanding of the national regulations for the local territory, and a solid trust in

the state bureaucracy, whose public administrative system was considered honest and competent [8].

In this safe social and political context, the Norwegian economy had the possibility to develop properly in its traditional fields: forestry, fisheries, mines and hydroelectric power. At the beginning of the XX century, both forestry and fisheries were the main sectors at the base of the national economy motor, since their products accounted for more than half of the Norwegian exports. During the course of the decades, the country developed a well-working hydroelectric industry, by exploiting the numerous waterfalls located all over the mountainous territory, which offered to the energetic industry and abundant amount of energy source at a very cheap price. Also, the mining sector faced a small growth during the beginning of the XX century, thanks to the development of new technologies to facilitate the extraction [9].

However, by the first years of 1900s, more than three quarters of the hydroelectric sector was under the influence of international investors, that had the monetary means to finance and gain the ownership of these industries, causing some alarmism in the county [10].

To prevent the foreign companies from gaining too much control over the Norwegian natural resources and territories, in 1906 the government established a set of laws, whose introduction brought a radical new legislation on the property of natural resources. These “concession laws” made all acquisition of water right and territories effectuated by foreign/ joint stock companies dependant on a government concession [11]. When in 1917 the public investment in the natural resource industry growth again, these laws were modified, in order to adapt them to the new circumstances

During the years of World War I, Norway kept its political and economic status safe from the devastation caused by the conflict, by declaring itself neutral. Despite this, the country kept its exports activities with Great Britain effective, in exchange for imports of carbon.

After the war came to an end in 1918, the country faced two years of economic euphoria. However, between 1920 and 1930, the post-war depression hit also the Norwegian natural resource industry. *"Foreign investments fell dramatically. Many contemporaries came to blame the concession laws for having scared off foreigners and stifled investments with rules and unreasonable taxes"* [xi]. The effects of the depression were so devastating to bring the investors to stop their activities in the resource-based industries up to the end of World War 2, in 1945, slowing down the development of the sector [12].

A great change occurred in 1945, when the Labour Party (*Arbeiderpartiet)* won the elections and began its path in ruling Norway from 1945 to 1965 [13]. The party had an important influence in the construction of the liberal economic model of natural resource management in Norway. Indeed, it is this model that, after the discovery of petroleum in the Norwegian continental shelf (NSC), brought the country to have a great success in the industry. During its governments the Labour Party "*believed that state planning and state led industrialization would speed up growth, help finance social reforms and thus create a fairer, more egalitarian and prosperous society."* [xii]. Nevertheless, the government did not proceed with the nationalization of the household industries. Instead, it accepted private interests to own enterprises in respect of the national regulations, so that they could contribute to the development of research and productivity [14].

[xi] Wilhelm Keilhau. *Det norske folks liv og historie: i vår egen tid*. H. Aschehoug, 1938.1938, pp139-158

[xii] Andreas R. Dugstad Sanders, Pål Thonstad Sandvik, Espen Storil (2016*). Regulation of Natural Resources in Nordic countries (1880-1940)- The Political Economy of Resource Regulation: An International and Comparative History, 1850-2015*. University of Trondheim. Norway.2015:322.

1.2. Norway During the Discovery of Oil (end of 1950s- early 1970s)

"At the end of the 1950s, very few people believed that there were rich oil and gas deposits to be discovered on the Norwegian continental shelf. The Geological Survey of Norway even wrote to the Ministry of Foreign Affairs in 1958 stating that the possibility of finding coal, oil or sulphur on the continental shelf off the Norwegian coast could be discounted."

(Oljedirektoratet, *Norway's Petroleum History*. 2020)

As explained above, even before the discovery of oil under the soil of the Norwegian sector in the North Sea, Norway was a rich and healthy country. An economy based on fishing, hydroelectric power, aluminium and wood, assured Norway a stable economy and an equilibrate welfare system. However, it was especially thanks to the discovery of the petroleum fields in the Norwegian continental shelf (NSC) that the country achieved its current wealth.

Norway's adventure in the oil business began in 1959, after the discovery of a rich gas field in Groningen (the Netherlands) [15], an event which gave proof of the presence of hydrocarbons in the North Sea.

The first who groped luck looking for oil in the Norwegian offshores was the American oil company "Phillips Petroleum" [16], which asked the permission to the Norwegian authorities to start its exploration activities in that zone in October 1962. The company offered 160.000 US dollars per activity-month to the Norwegian government, which accepted the offer, but on condition that also other companies should have had the right to operate on the shelf. The reason for this clause was

that the government did not want to leave too much power only to the American oil company, being afraid it would become too influential in case of success.

Before starting the exploration on the Norwegian Continental Shelf, it was necessary to define its precise extension first. After a rough series of political disputes between the Norwegian and the British governments about the delimitation of the two shelves, on May 31st 1963, under the government of Einar Gerhadsen, Norway affirmed its sovereignty over the NSC. The boundary between the UK and Norway set according to the median line principle[17], while the NCS area was divided into 12 blocks and quadrants. In the same year, 22 production licenses with a coverture of 78 areas provided the right to "*explore, drill and extract oil and gas in the areas to which they applied*"[xiii] were released. In 1965 exploring activities finally began [18].

From the first day of drilling activities to 1966 the results were not satisfying, since the amount of oil extracted was not sufficient to assure an economic profit. The first spill came out in 1967 during the exploration of the Balder field [19]. The field was not profitable at that moment, but it turned out to be cost-effective only in 1997

The situation reached a turning point when, on December 24th 1969, oil was found in the Ekofisk field [20], close to the southern border to the British block. The field has been recognised as one of the biggest offshore grounds found. After the beginning of production from it on June 15th, 1971, Ekofisk is currently still supplying oil. During the 1970s many other fields have been discovered in the North Sea, helping to make Norway one of the most powerful and rich economies in the world.

As it is going to be analysed in the further section, what was really amazing about the Norwegian case is not the discovery of oil itself, but more the efficient and brilliant manner in which the Norwegian authorities managed the resource

[xiii] Norsk petroleum, Oljedirektoratet. *Norway's Petroleum History.* 2020

providing benefits to the population, and accomplishing the needs of the state. Indeed, avoiding Dutch Disease, Resource Curse, and corruption, while promoting innovation and limiting inflation, Norway is the most successful oil country so far.

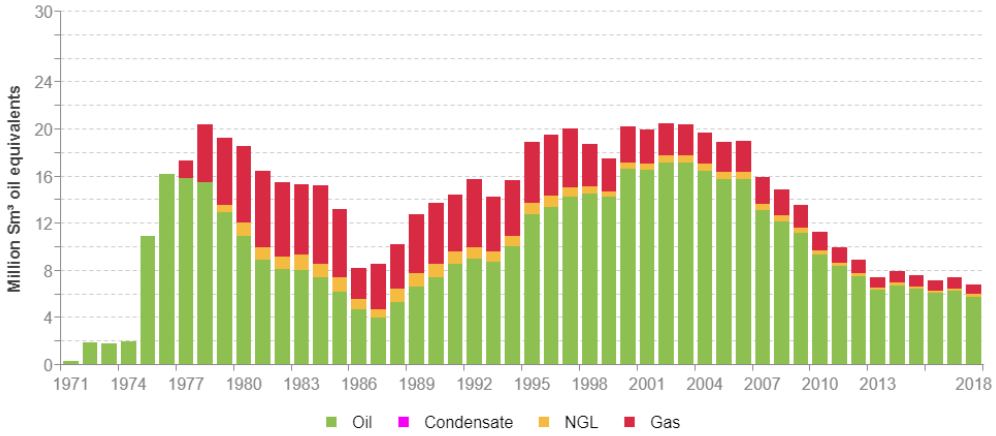

Figure1. Production from the Ekofisk field
Source: The Norwegian Petroleum Directorate

1.3. Norway After the Discovery of Ekofisk (1970s- 2000s)

After the discovery of oil in the NCS, many IOCs started their activities in that area, dominating the oil industry sector. In 1971, with the launch of production in the field, the country started its profitable path on the petroleum business.

From that year, up to nowadays, the explorations continued all around the Norwegian continental shelf where other fields like Troll, Statfjord, Gullfaks and Oseberg were discovered later on, strengthening the Norwegian economy even more. The last researches have been conducted also in the Barents Sea and in the Norwegian Sea, over the 62nd parallel [21].

Differently from the other northern European countries dealing in the hydrocarbon field, Norway's experience in the management of natural resources was founded on solid bases, and it already proved its efficiency during the beginning of the XX

century. However, when oil was found, the state came to face a completely new challenge, since no national body had any kind experience in the petroleum management sphere. In these circumstances, the other neighbouring countries owning natural gas and oil fields in the North Sea, such as Denmark and the Netherlands, gave indirectly an important help to Norway. Indeed, by observing and learning from their previous mistakes, the Norwegian blended the foreign experience with their domestic path dependant managerial method.

From the Dutch experience, Norway braced itself to avoid both the Resource Course and Dutch Disease. To be clearer, the term 'Resource Course' (also known as 'Paradox of Plenty') refers to an economic condition in which "*countries with an abundance of natural resources, specifically (…) non-renewable resources (such as petroleum), tend to have lower rates of economy growth*" [xiv]. The cause of this phenomenon lies in a bad management of the domestic economy, which is directed to concentrate all the production forces on the new manufacturing, while discarding the other industries. On the other side, the concept of 'Dutch Disease' was coined in 1977 when the magazine 'The Economist' used it to refer to the sad experience lived by the Netherlands' manufacturing industry after the found of natural gas close to their coastlines in 1959. In short, after the discovery the country invested a lot in oil and began a massive export of the resource, leading to a rise in value of the Dutch currency. As consequence, the domestic non-oil manufactures lost competitiveness on the international market, investments declined and unemployment increased. In short, Dutch Disease is a "*negative economic consequence, mostly a real appreciation that arise from large increases in a country's income*" originated from "*natural resource discoveries (…), foreign direct investment or foreign aid*" [xv].

[xiv] Moses and Letnes. *Managing Resource Abundance and Wealth. The Norwegian Experience*. 2017: 247.
[xv] Moses and Letnes. *Managing Resource Abundance and Wealth. The Norwegian Experience*. 2017:243.

Differently from the Netherlands, Norway did not focus all its energies on the hydrocarbon field. Instead, it kept the other industries active, and used the new oil business to create new working positions and specialization. Moreover, as it going to be explained more in the detail in the next chapter, the Norwegian government adopted wise and efficient solutions to manage the revenues obtained by both rents and exports [22].

Another important lesson which Norway learned from the other European oil countries was the importance of having a national company to use as competitor to the IOCs. Indeed, the Norwegian authorities did not repeat the same mistake made by Danish government. Indeed, the Danes assigned their continental shelf only to one private company [23] since, as in the case of Norway, the country did not have the technical knowledge and the capital to manage the new natural resource. On this background, the Norwegian authorities developed a brilliant plan.

At the beginning of its oil adventure, Norway did not have a strong and prepared NOC, and the hydrocarbon industry was not developed in the country. Therefore, during the first years after the discovery of Ekofisk, the government decided in a first moment to allocate international companies [24] in the exploration of the continental shelf. The domestic authorities offered also generous licence terms and lower taxes, making, however, some pressure on the companies, in order that the majority of the staff members and the machineries were Norwegian [25]. The aim of this move was to take time in order to allow IOCs to find oil, and to provide to the Norwegian staff the knowledge needed to establish a technically competent and specialised team, so that they could develop a national hydrocarbon industry.

This plan started to take a concrete shape already before oil was found. In 1965 the domestic company Norsk Hydro was established, with the aim to strengthen the Norwegian government influence over the national own territory. The company had

an important role after the beginning of the extractions from the oil field, since it invested a lot in the offshore activities and became one of the stakeholders of Ekofisk in 1969.

The circumstances changed in the course of the 1970s, when the Norwegian government, took the decision to take a wider control also over Norsk Hydro, which was exposed to the risk to finish under the influence of foreign companies. In that period the shareholding of the state in Norsk Hydro increased from 43 per cent to 51 per cent [26].

It was only in 1972 that the Norwegian presence in the oil industry became influential, after the creation of a strong domestic competitor to face the massive presence of IOCs on the NSC. Indeed, with the establishment of Den Norske Stats Oljeselskap A/S, known as Statoil (currently Equinor). Now Norway was introducing itself as a competent oil country, ready to manage its natural resource from the exploration activities to the final sell of the product. After being established, the company quickly obtained a strong position in the domestic oil industry. "*It had particularly strong support from the Labour Party governments (1973-81). Statoil was however organized as a limited company and had an independent management. This made Statoil stand apart from many state oil companies in PEC countries, where there were less clear distinctions between the government administration and the state oil companies*"[xvi]. The establishment and strengthen of NOC seemed to lead to a preference for them by the national authorities, who manifested the interest to maintain the status quo. Still, the Nordic country applied some modifications in its domestic oil policy, in order to prevent a concentration of power from both sides (government and NOC) [27].

[xvi] Johnsen 1989; Ryggvik 2009.

During the course of the 1970s and 1980s Norway showed to be able to keep a stable development of its domestic oil industry, which contributed to a brilliant economic growth, making Norway one of the most rich and affluent countries in Europe in the 1980s [28].

In order to expand the chances to find new oil fields, in 1972 the exploration activities were extended above the 62nd parallel on the NCS. This event marked the beginning of the hydrocarbon production in the Arctic, by the opening of exploration in the Barents Sea in the early 1980s. The increase in the number of active fields and exports brought oil to be one of the main sources of income for the country, which, in 1985 counted the 17 per cent of its gross national product (GNP) on petroleum [29].

The circumstances faced an abrupt change in the course of the second half of the 1980s, when the price of oil collapsed internationally (1986) [30] and the government had to come with some policy changes. Nevertheless, it was still very difficult for Norway to keep a good competitive profile than its adversaries, which seemed to adapt cheaper fiscal and monetary policies. Therefore, in order to stabilize the domestic economy and to make the domestic oil industry keep on growing, the Norwegian authorities agreed to reinforce competition while weakening protectionism, by the allocation of new licenses for the Arctic area on the NCS [31]. Thanks to these measures the Norwegian economy maintained a stable growing rate.

At the beginning of the 1990s the government applied a reduction in the taxes concerning the new exploration and drilling areas in the North Sea, and opened the production in the Norwegian Sea in 1993, implying a higher growth of the national oil industry. In order to keep the extremely high revenues inflowing from the hydrocarbon sector under control, the government proceeded with the creation of a

Fund, so that to provide a stable economic base for the future generations and to prevent the rise of corruption: the Petrolem Fund (Oljefondet).

At the dawn of the new millennium, Norway was basing almost one quarter of its GNP on oil, especially after the production began in the Barents Sea in the Snøhvit field in 2007. During the first decade of the XXI century, the highest rate was reached in 2008, when the petroleum sector accounted for 24 per cent of domestic GNP, 53 per cent of exports, and 35 per cent of state revenues [32]. Under these circumstances, the government decided to modify its relationship with the national company Statoil, after that 33 per cent of the company was sold to private investors in 2001: "*The aim was (..) to make Statoil more competitive by introducing "stock market discipline". When shares first traded, the government stated that it would not interfere in the company's activities* (..)" [xvii]. With the ambition to strengthen the company on the international market, Norsk Hydro's oil division was absorbed by Statoil In 2007. This move increased the dimension of the company, which now was controlling the 70 per cent of the domestic oil industry, making Statoil the 11th most large petroleum company worldwide in 2012. On May 15th 2018, Statoil changed its name in Equinor [33].

Currently the Norwegian oil industry is still evolving. However, being the state aware of the limited availability of oil resources, and given the growth of intensity of environmental movements against the hydrocarbon sector, the country is investing a lot in the research for a wider employment of the renewable resources. In this manner the environmental impact caused by the petroleum and gas industry would be limited and, being Norway already rich in renewable resources and having a strong experience in their management, the country economy is supposed to not be drastically affected in case the oil industry would fall.

[xvii] Andreas R. Dugstad Sanders & Pål Thonstad Sandvik Avoiding the resource course? Democracy and natural resources in Norway since 1900. In Badia-Miro, Pinilla and Willebald. Natural Resources and Economic Growth. Learning from History (chap 15). Routledge. 2015: 230

2. Geographical Subdivision of the Main Areas of Interest for the Norwegian Oil Industry

2.1. The North Sea

It is clear that Norway's path in the hydrocarbon industry would not have taken place without the fundamental role played by the North Sea, which is recognised for being one of the richest points of exploration and production for the gas and oil industry. Indeed, this minor section of the Atlantic Ocean [34] situated in the north-western side of Europe had a very strong influence in shaping the markets of its coastal countries: northern France, Great Britain, the Netherlands, Denmark, and Norway. Indeed, the northernmost Nordic country managed to open an extremely high number of oil fields in the North Sea, 57 of which are still producing and offering employment to about 170.200 people [35].

The weather and stream conditions of the North Sea have put in serious difficulty the operations of exploration and extraction, demanding extremely high costs and taking also many lives. However, it was partly thanks to these aspects of the natural environment, that Norway avoided the Dutch Disease and developed its industry in a smooth political environment. Indeed, in order to face the demanding environmental conditions of the North Sea successfully, the IOCs operating on the NCS started improving their equipment and working methods, while the Norwegian industry had to limit the productivity growth, since "*the challenging climate and deep-sea drilling have necessitated the development of a new high-tech industry*" [xviii]

[xviii] Halvor Mehlum, Karl Moene, Ragnar Torvik (2008). Mineral Rents and Social Development in Norway. Department of Economics, Univeristy of Oslo. Departments of Economics, NTNU.

The local authorities played an active role in helping the companies reaching their goals and developing new technologies, since their success in finding new fields meant success also for the Norwegian state. "*What the Norwegian government did, was to facilitate a marriage of convenience between the demands of Norway's special circumstances and the specialized competencies that lay just outside the reach of the global petroleum industry"* [xix].Nevertheless, the work circumstances on the platforms were not safe. Indeed, employees have often described their situation as "*stressful, with psychosocial stressors such as a difficult working and living conditions"* [xx], exposing the mental and physical health of employees at high risks, leading also to an increase of the possibility of accidents caused by human mistakes. Mistakes that, at an offshore distance included between 40 and 185 miles (64 and 296 kilometres), led to massive disasters for both the staff living on the platform, the structure itself, and the environment safety [36].

After that the number of serious accidents increased at the beginning of 1990s, the Petroleum Safety Authorities Norway (PSA, in Norwegian *Petroleumstilsynet)* launched the project "Trends in Risk Levels on the Norwegian Shelf" in 1999. The ambition of the project was (and still is) to estimate how the health and security factors influence work condition, so as to find which adjustments to apply in order to reduce the number of casualties and improve the living conditions of workers [37]. Currently (2019) the health, security and environmental (HSE) working conditions on the Norwegian platforms present in the North Sea have improved [38].

[xix] Jonathon Moses & Bjørn Letnes. *Managing Resource Abundance and Wealth: The Norwegian Experience*. Oxford University Press. 2017 :152.
[xx] Mears at al. 2003.

2.2. The City of Stavanger

Stavanger is a coastal city located in Rogaland, in south-eastern Norway, and, with a population of about 132.900 inhabitants, it is the fourth biggest city of the country[39].

This municipality is the bases for the oil activities in Norway, and it is known to be one of the richest cities in the country, thanks especially to its bright past as centre for the management, trade and research in the petroleum sector. Today the city is the location of the Norwegian Petroleum Directorate (NPD) and the Petroleum Safety Authority Norway (PSA). The presence of these bodies makes Stavanger one of the world's main clusters in the energy field.

At the beginning of Norway's adventure in the oil field, Stavanger had the luck to be both located in a favourable position for installation of the American onshore business centres, and to be home of open-minded people with interests in the commercial sector, and ready to face changes.

This is how the city began its path in becoming the fulcrum for the Norwegian hydrocarbon industry in 1965, during the first allocation round. During this period the city was subject to many changes. Houses, offices, schools, new infrastructures were built over few years, in order to welcome the new arrived employees in the petroleum industry (both in the technical and managerial areas) and their families. Also the landscape changed a lot. In the past Stavanger was rich with agricultural fields and focused its economy on fisheries, and the incomes were poor compared to the national average. After the beginning of oil activities, the fields were replaced by industries and massive infrastructures, while, thanks to the oil activities, the per

capita income growth incredibly fast, leading the Stavanger to become the richest city in Norway.

When the Ekofisk field was found in 1969 and the first production was started in 1971, the city saw its status as a point of reference for the industry confirmed [40].

Oil has had such an important influence on the live of the city, that in 1999 the municipality opened a museum dedicated to it: the "Norwegian Petroleum Museum Foundation" (*Norsk Oljemuseum*). Moreover, since 2018 the Norwegian Broadcasting Corporation (*Norsk rikskringkasting*; NRK) is producing a dramatic Television-series named "Lykkeland" [41], which narrates about how the petroleum industry drastically changed the life of people in Stavanger.

Currently, (2019) Stavanger hosts many international operators in the energy field[42]. Stavanger is also a very important point for the research in the field of renewable sources, especially for the hydroelectric power, since in the region the number of wind farms is increasing very quickly. In this way, in order to not be too dependent on oil, the city would be able to provide clean energy to its inhabitants up to the 100% by the next 5 years [43].

2.3. The Region of Trøndelag

Trøndelag is a region located in the middle of Norway, and hosts the fourth biggest city of the country: Trondheim. This region covers an important role in the technical development of the domestic hydrocarbon industry, especially in the localities of Orkanger, Verdal, Stjørdal and Trondheim, where Equinor has a headquarter in the zone of Rotvoll, not far away from the city centre. Trøndelag is also one of the founders of the "Norwegian Council", a body established in 2010. The aim of the council is to offer a favourable environment in which its members [44] can work

together in the management of local energy resources, so that to increase the offer of job positions and revenue in their territories. The project seems to work efficiently in Trøndelag, since in 2016 the hydrocarbon industry offered more than 9.000 new vacations in the region, plus 15.000 supplementary services related to the same field [45].

The region also hosts the "Norwegian Sea Conference", a meeting about the employment and management of the hydrocarbon resources located in the NCS, taking place every year. In the most recent years, the conference switched its focus from the national scene, to a global overview [46].

Many research centres are located in Trøndelag. These centres have played a primary role in the development of the Norwegian oil industry, by educating and training its future technical and administrative staff. Indeed, as already specified in the introduction to this study, the Norwegian University of Science and Technology (NTNU) is recognised to be one of the main poles in the country for the research in the energy field, and to be a source of specialized staff for the national scale-intensive enterprises [47]. However, the institution was not created to serve specifically the hydrocarbon field, since its establishment took place in 1910 as The Norwegian Technical College (Norges Teknisk Høgskole; NTH). In that period, the domestic policies aimed to increase the potential of Norway during the industrialization, in order to call future investments and strengthen the economy of the country. This took place through the direct support of the government [48].

Currently, NTNU has some accords with Equinor, which accepts students for internships and research programmes, while financing some of the Athenaeum's activities (as previously explained in the introduction, this latter point created a strong debate among students and administrative staff). Nevertheless, the faculty is

more inclined to foster the research for renewable energy resources, than to hydrocarbons, contributing to the rise of the region's active role in this specific field.

2.4. The Arctic Area

As it is going to be shown more in-depth chapter three, after oil was found in the Barents Sea, the Arctic area is acquiring an increasingly important role in the Norwegian energy industry. However, given some issues of both cultural and environmental character, the activities linked to the exploration, extraction and transfer of the natural resources are facing some opposition.

2.4.1 Finnmark

Finnmark is the northernmost region of Norway, at the border with northern Finland and north-western Russia. It covers an area of about 47.000 km² and is home of five municipalities[49] of Sámi ethnicity (who includes the majority of the local population). The relationship between Sámi and the Norwegian government has always been marked by tension from both sides, since the first aims to have a stronger voice on a national level, while claiming that the government does not deal with the ethnic minority at the same level as with the rest of the Norwegian population. An opinion which did not change even after the recognition in the Norwegian Constitution in of Sámi people's duties and rights 1988[50].

The dispute reached its highest point in 1997, after some issues concerning the management of natural resources present on the local territory. This made unclear where the sovereignty over the regional area was a matter concerning the national government, or the Sámi community living on it. The Sami Rights Commission

worked hard for raising the awareness about the situation from the point of view of the local population.

In order to find a solution to this issue, while respecting the obligations taken by Norway under ILO 169[51], the Norwegian Minister of Justice established the Finnmark Act (*Finnmarksloven*) in 2005[52]. The Act, still valid, assures an equal treatment of all citizens in the country, without ethics discriminations. It safeguards the Sámi culture through the promotion of activities on the local territory in the respect of ecological sustainable development. The Finnmark Act also made title issues explicit, so that to create a solid base for a positive industrial development[53]. Moreover, it led to an extension of land ownership to the people resident in the region, both Sámi and Norwegians, removing the property possession rights from Statskog[54], who used to have the control over the territory. In short, the Finnmark Act brought greater power to the regional bodies in the management of natural resources, giving to the local authorities wider rights of control over the hydrocarbon industry activities.

During that period, the role of oil and gas resources acquired great importance in the Finnmark, since the sector was growing quickly, making vital for the local authorities to take advantage of the situation for the best of their region. Indeed, in 2006 a local member of the Social Left Party claimed "*One thing must be clear. If the public and private working places generated from the oil and gas industry do not appear along the coast of Finnmark, I will be against oil and gas exploration and production in the North. We must get the working places that are generated by the oil and gas activity*" [xxi]. A statement supported also by Synnøve Søndergaard, from the Troms country council, who claimed "*we will not be a raw material deliverer*" [55].

More details about the current situation in the area will be given in the chapter three of the dissertation.

[xxi] ENI Board Leader, Sverre Bore, at the Dialogue Meeting, September 7, 2006 in Tromsø.

2.4.2 Goliat and Snøhvit

Goliat and Snøhvit are two of the northernmost located oil fields currently active on the NCS.

Goliat (managed by the operator Vår Energi AS), is one of the most recently opened oil fields and also one of the most contested rigs, after some environmental and technical security issues in 2017 and 2018. Goliat was discovered in 2000. The production started on March 12th, 2016, after that the plan for development and operation (PDO) was approved in 2009. For the first two years the manufacturing started with results far below expectations. Indeed, given many complications implying the rig maintenance, the production was shortly interrupted in 2017 (continuing however in the Snadd cistern). In 2018, production started again with the installation of two additional wells, leading to the gain of additional resources. Currently, new enlargements and investments (about 3. 828 million Norwegian Krones) are planned [56].

The field of Snøhvit is located 31 miles (50 kilometres) further north.

Snøhvit is the first oil field opened in the Barents Sea by the operator Equinor Energy AS (at the time, Statoil). It was discovered in 1984 located in the area of the Hammerfest Basin, but the approval for starting the operations in that area was released only 18 years later, in 2002, letting the production begin in August 21st, 2007. Three oil rigs are currently operating on the field: Askedall, Snøhvit and Albatross, built during different phases. The aim is to install 19 new production wells and one CO2 injection well. For doing so, in 2018 it was introduced an investment of 21.843 Norwegian Krones (NOK)[57].

Conclusion

In this chapter, the development of natural energy resources in Norway has been analysed, both on a temporal and a geographical scale.

In the first part it has been showed how the Scandinavian country changed its character throughout the decades. It successfully adapted to changes and external factors, bringing the new discovered oil industry to become one of the main revenue resources for the country. Indeed, before the beginning of XX century, Norway's GDP per capita was not more than three-quarters of the Western European average, a level successfully reached by 1973 [58] and overcome by 2000, when becoming one-quarter higher than the Western European average, and the highest in the world [59].

This chapter has also outlined how path dependency[60] has been important in the evolution of the Norwegian model of natural resources management. However, path dependency has not been the only reason at the base of the Norwegian modernization plans' success. Indeed, as claimed by Fagerberg "*the development of these systems is affected by more than past developments alone. Innovation systems are open systems; new initiatives do appear within them, and the selection processes that winnow out these initiatives are complex and operate at multiple levels*" [xxii] . Actually, Norway before, during and after the development of the hydrocarbon industry and its entrance in the international arena of gas and oil exports, kept an open profile to changes on both the political and economic side, while safeguarding its domestic interests.

Before the discovery of oil in the North Sea, the Nordic country founded its economy on the exploitation of natural resources as forestry, mines, hydroelectric power and fisheries. Many foreign investors saw in Norway the chance to improve

[xxii] Jan Fagerberg, David C. Mowery, Bart Vespagen (2009). The evolution of Norway's national innovation system. 2009: 434.

their gain by the acquisition of domestic energy resources (as waterfalls, mines, industries, etc.). The Norwegian authorities perceived the risk of losing the power over national resources and territory. Therefore, with the establishment of Concession laws in 1906, the government was able to keep the situation under control. As the rest of the European countries, between 1918 and 1945 the country faced the consequences of the economy up and down due to the economic crisis of 1929 and World War II, reacting however in a positive way to these challenges. In 1945 the Labour Party won the elections and ruled Norway for almost twenty years, promoting a liberal economic model of management of natural resource in Norway, which, after the discovery of petroleum in the Norwegian continental shelf (NCS), brought the country to have great success in the industry.

Once oil was discovered in the North Sea during 1950s, the American oil company "Phillips Petroleum" obtained the permission to the Norwegian authorities to start its exploration activities on the NCS in 1962. The drilling activities began in 1966, but oil was found only in 1969, when the Ekofisk oil field was discovered. In 1971 the production on the field was officially opened.

After oil was found on the NCS, many IOCs started their activities on the area, conducting explorations also in the Barents Sea and in the Norwegian Sea. At the same time, the Norwegian authorities tried to safeguard the domestic economy from the Dutch Disease and from the risk that IOCs could take the monopoly over the resource. Indeed, after the opening of Ekofisk, the government first gave the permission to conduct activities to international companies, so that to have the time to form domestic experts and a national company (Norsk Hydro). In 1972, a new NOC named Statoil was established, strengthening the position of Norway on the international oil market. During the following twenty years the Nordic country showed to be able to keep a stable development of its domestic oil industry, which at the beginning of the 2000s covered almost one quarter of the national GNP.

In this scenario, four areas in the country have been deeply influenced by the hydrocarbon industry: the North Sea, the city of Stavanger, the region of Trøndelag, the Arctic area (Finnmark in particular).

The North Sea had a very important role in the formation of the Norwegian oil industry and in saving the economy from the trap of Dutch Disease. Indeed, North Sea's weather conditions have put in serious difficulty the operations in it, demanding an improvement of the technologies to conduct the exploration, drilling and transport activities safely.

On the mainland, Stavanger has been one of the municipalities most affected by the new energy industry. The city had the luck to be located in a favourable position for the installation of onshore business centres, making it a point of interest for international investors. When the production started on Ekofisk in 1971, the city was already a confirmed point of reference for the oil industry. Currently, (2019) Stavanger not only is the headquarter of many energy resource centres in both the hydrocarbons and renewable sources field.

An important role is also covered by the region of Trøndelag, which is one of the founders of the "Norwegian Council" (2010). It is in this region that the "Norwegian Sea Conference" is held, with the intent to update and plan the management of the hydrocarbon resources located on the NCS. Trondheim, the capital city of the region, has played a primary role in the development of the Norwegian oil industry. Indeed, during the development of the hydrocarbon industry, the Norwegian University of Science and Technology (NTNU) has been and still is today one of the main poles in the country for the research in the energy field, and a source of specialized staff for the national scale-intensive enterprises.

Further north, in the Arctic area, the region of Finnmark is acquiring an increasingly important role in the energy industry after the found of oil in the Barents Sea.

However, the activities in this area and still are facing some difficulties. Indeed, the relationship between Sámi and the Norwegian government is not one of the most peaceful. The Norwegian government recognised the rights and duties of the Sámi people in the national constitution in 1988, but disputes concerning the territorial sovereignty continued. The situation reached a positive turning point in 2005, when the Norwegian Minister of Justice established the Finnmark Act (*Finnmarksloven*).

Currently, Norway is one of the richest countries in Europe. The country is still continuing its activities on the NCS, moving more and more further north (the fields of Goliat and Snøhvit are an example). Norway is also developing an efficient industry specialised in the development of renewable resources. The ambition is to limit the production of oil, given the consequences of the hydrocarbon industry on global warming.

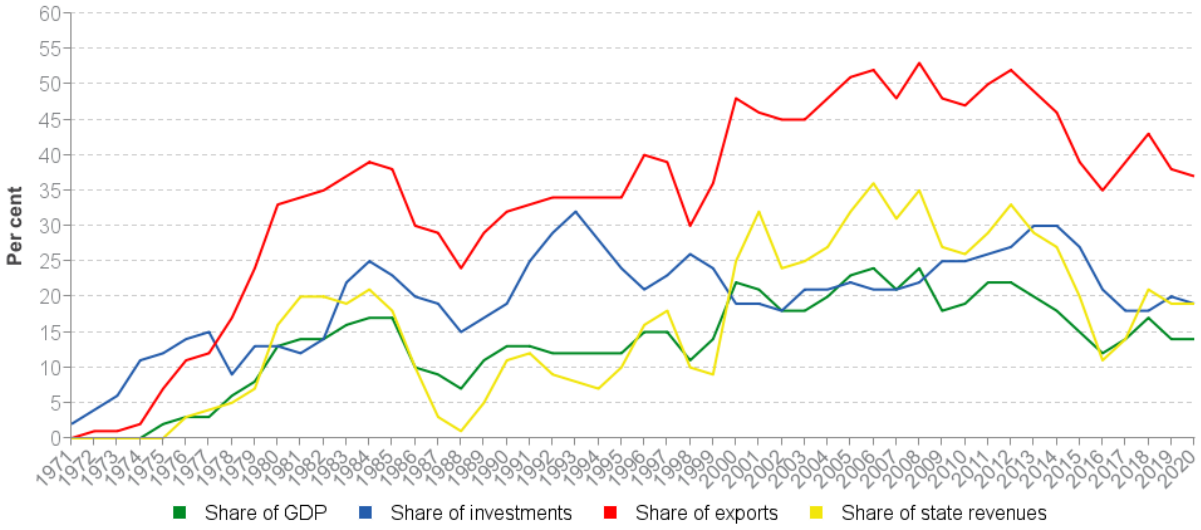

Figure 2. Macroeconomic indicators for the petroleum sector, 1971-2020
Source: Statistics Norway (National accounts), Ministry of Finance (The national budget 2020)

Notes

1- It means a form of energy which is supposed to last for a long time period, while not causing almost no damage to the environment

2- "Drilling technologies developed during Britain's first oil boom, together with the extrapolation of the onshore geology of the East Midlands oil fields and of the Dutch gas fields, led to the discovery of the huge oil and gas resources beneath the North Sea in the 1960s and 1970s, which enabled Britain, Norway, Denmark and The Netherlands to be largely self-sufficient in oil and gas from the late 1970s until production began to decline rapidly in the early 2000s" (source: Craig, Gerali, MacAulay and Sorkhabi; Geological Society; 2018: abstract)

3- see: INTRODUCTION/ NOTES/ point 9.

4- Many other lands involved in the hydrocarbon industry tried to emulate the Norwegian model (especially those who took part at the Oil for Development programme in 2005: Angola, Democratic Republic of Congo, Ethiopia, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nigeria, Somalia, South Africa, South Sudan, Sudan, Tanzania, Uganda, Zambia, Zimbabwe, Afghanistan, Bangladesh, India, Indonesia, Myanmar, Nepal, Pakistan, Sri Lanka, Vietnam, Brazil, Haiti, Nicaragua, Lebanon, Palestine, Syrian Arab Republic. (source: https://norad.no/en/front/)

5- The discovery of the oil field Ekofisk in 1969 is recognised as the event which marked one of the biggest turning point in the history of Norway.

6- Source: The Norwegian Petroleum Directorate.

7- The union between Norway and Denmark began in 1390. The union came to an end with the Treaty of Kiel in 1814. The treaty decreed that Norway had to pass under the control of Sweden. However, Norway did not recognise this second union and, during the Swedish-Norwegian war in 1814, the country resisted to the foreign authority. Later on the relationship between the two countries became more peaceful and equal. In 1905 the union was dissolved and both Sweden and Norway became two fully independent kingdoms.

8- Source: Dugstad & Sandvik "avoiding the resource course? Democracy and natural resources in Norway since 1900" ; 2015: 314 (in Badia-Miro, Pinilla and Willebald, 2015) .

9- Dugstad & Sandvik "avoiding the resource course? Democracy and natural resources in Norway since 1900" 2015 (in Badia-Miro, Pinilla and Willebald, 2015).

10- Sources: Stonehill; 1965: 33-4) _ "Regulation of Natural Resources in Nordic countries" (1880-1940) ; Sanders, Sandvik, Storil; 2016: 9

11- Sources: "Avoiding the resource course? Democracy and natural resources in Norway since 1900" ; Dugstad & Sandvik ;2015 (in Badia-Miro, Pinilla and Willebald, 2015: 316) _ "Regulation of Natural Resources in Nordic countries (1880-1940)" ; Sanders, Sandvik, Storil ; 2016: 9

12- "Regulation of Natural Resources in Nordic countries (1880-1940)"; Sanders, Sandvik, Storil; 2016

13- With exception only for the year 1963.

14- Source: "Avoiding the resource course? Democracy and natural resources in Norway since 1900"; Dugstad & Sandvik; 2015 (in Badia-Miro, Pinilla and Willebald, 2015: 322-24)

15- In 1959 the Nederlandse Aardolie Maatschappij (NAM; the Dutch Petroleum Company) discovered the gas field in Groningen while searching for oil. The production from the field started in 1963 and it is currently still continuing.

According to NAM, a gradual decrease in the field availability should lead to its complete emptying by 2030 (source: NAM website, www.nam.nl; Relinde Van Loo; 2018; www.eecc.eu)

16- The American oil company, better known as Phillips 66, founded by Frank Phillips in 1917.In 2002 the company merged with Conoco (Continental Oil Company, founded in Utah in 1875), establishing "ConocoPhillips"

17- Also known as 'principle of equidistance'. The term was defined in the 1958 Geneva Convention on the Territorial Sea Convention as "the line every point of which is equidistant from the nearest points of the baselines from which the breadth of the territorial sea of each of the two States is measured". This method of definition of the national boundaries was made obligatory after the Convention in case of *absence of an agreement between the countries involved, or the lack of historical titles (source: Article 12. 1958 Geneva Convention on the Territorial Sea and Contiguous Zone. Article 6. 1958. Geneva Convention on the Continental Shelf).*

18-Source: Moses & Letnes 2018 _ The Norwegian Petroleum Directorate

19- The Balder field was found in the North Sea in 1967. The Production on the field started in 1999 and is currently still operating under the control of the operator Vår Energi AS (source: The Norwegian Petroleum Directorate)

20- The first economically profitable oil field discovered on the NCS in 1969.

21- Before 1970s the exploration and drilling activities were concentrated in the areas under the 62 parallel. Things changed in 1972 when at the 9th point of the Ten Oil Commandments, it was established that "A pattern of activities must be selected north of the 62nd parallel which reflects the special socio-political conditions prevailing in that part of the country". The activities started in 1979. (source: The Norwegian Petroleum Directorate)

22- The main example is the Government Pension Fund, adopted from 1990.

23- Nordsoefonden (Denmark).

24- Phillips Petroleum was the main one in 1962.

25- Source: "avoiding the resource course? Democracy and natural resources in Norway since 1900"; Dugstad & Sandvik; 2015 (in Badia-Miro, Pinilla and Willebald, 2015: 325)

26- Source: "avoiding the resource course? Democracy and natural resources in Norway since 1900"; Dugstad & Sandvik ;2015 (in Badia-Miro, Pinilla and Willebald, 2015)

27- Source: "Avoiding the resource course? Democracy and natural resources in Norway since 1900"; Dugstad & Sandvik; 2015 (in Badia-Miro, Pinilla and Willebald, 2015: 327)

28- The first richest country in that period was Luxemburg, with an annual growth of GDP of +6,2% between 1980 and 1984.AT the same time, Norway reached 'only' the + 6 %, overcoming Sweden which faced a growth of the +4;4% (source: World Bank national accounts data, and OECD National Accounts data files).

29- Source: The Norwegian Petroleum Directorate

30- The reason behind this oil price drop is found in "the increasing non-OPEC oil supplies, especially from Alaska, Mexico and the North Sea". This small crisis lasted 82 days, from November 1985 to March 1986, leading to a drop of the petroleum price down to a -66% (source: World Bank; "Special focus- anatomy of the last four oil prices crashes", 2015: 8)

31- Lie 2005, 2012: 153-154.

32- Source: The Norwegian Petroleum Directorate

33- The name is the combination of the two parts "equi", meaning equilibrium/equality, and "nor", referring to the home nation of the company: Norway.

34- Located at 56°N 03°

35- Source: Ministry of Petroleum and Energy, 2017.

36- Source:" What is the most important for safety climate? The company belonging or the local working environment? - a study from the Norwegian offshore industry" Høivik, Tharaldsen, Baste, Moe; 2009.

37- Source: Petroleum Safety Authority Norway, 2006.

38- "The Petroleum Safety Authorities Norway specifies in its regulations that enterprises must have a sound Health, Environment and Safety (HSE) culture" (source: Dordi Hoivik (Statoil Hydro); "HSE and Culture in the Petroleum Industry in Norway"; 2010: abstract

39- The biggest city in Norway is the capital Oslo (about 1.000.450 inhabitants), followed by Bergen (about 255.4500 inhabitants) and Trondheim (about 197,000).

40- Source : https://www.norskolje.museum.no/forside/kunnskap/publikasjoner/artikler/oljebyen-stavanger/

41- Translation from Norwegian to English: "country of happiness"

42- Currently there are approximately 300 oil service companies with seat in Stavanger.

43- Source: World Energy Cities Partnership official website (https://energycities.org/); Member cities- Stavanger;(https://energycities.org/member-cities/stavanger-norway).

44- The regions of Nordland, Nord-Trøndelag, Møre and Romsdal and Sør-Trøndelag and the municipalities of Bodø, Alstahaug, Brønnøy, Vikna, Verdal, Stjørdal, Hemne, Hitra, Aure, Kristiansund and Aukra.

45- Source: Impello Management AS report 2016.

46- Source : https://www.trondelagfylke.no/vare-tjenester/naring-og-innovasjon/Energi-industri-og-mineraler/olje-og-gass/

47- Source: the evolution of Norway's national innovation system (Fagerberg, Mowery, Vespagen; 2009: 440)

48- Source: Moses & Letnes, 2018: 43

49- Porsanger, Kautokaino, Tana, Karasjok, and Nesseby.

50- The adoption of the "Sámi Article" in the Norwegian Constitution of 1814 (..) took place in 1988 as a constitutional amendment signed by the Norwegian Parliament. It commits the state of Norway to protect the language, culture and way of life of the Sámi people: "It is the responsibility of the authorities of the State to create conditions enabling the Sámi people to preserve and develop its language, culture and way of life" (source: øyvind Ravna, Cahiers d'anthropologie du droit 2011-2012: 266)"

51- ILO-C 169 (the Indigenous and Tribal Peoples Convention) is an International Labour Organization Convention held on June 7th, 1989 in Geneva (source: www.ilo.org) .

52- Here the link to the last updated version of the Finnmark Act (Finnmarksloven) from Lovdata.no (the official webpage of announcement of amendments concerning the Norwegian laws and regulations): https://lovdata.no/dokument/NL/lov/2005-06-17-85

53- Source: Bankes, "Legal and institutional framework" (in "Arctic oil and gas- sustainability at risk?"; Mikkelsen & Langhelle; 2008: 126).

54- Statskog SF is a state-owned company whose role is to manage the Norwegian forest and mountain properties.

55- source: Hansen & R. Midtgard, "Going North- The new petroleum province of Norway" (in "Arctic oil and gas- sustainability at risk?"; Mikkelsen & Langhelle; 2008: 207).

56- Source: The Norwegian Petroleum Directorate.

57- Source: The Norwegian Petroleum Directorate.

58- Year of the OPEC oil embargo

59- Source: Maddison, 2003.

60- According to the definition provided by Ian Greener, Professor at the School of Applied Social Sciences, and Executive Director at the Wolfson Research Institute for Health and Wellbeing (Durham University), the term 'Path dependency' refers to "the tendency of institutions or technologies to become committed to develop in certain ways as a result of their structural properties or their beliefs and values." In short "path dependence is based on the straightforward assumption that "history matters.".

Source : Encyclopædia Britannica, https://www.britannica.com/

CHAPTER 2- THE POSITION OF NORWAY IN THE ECONOMIC AND POLITICAL ARENA

Key words: the Tripartite Model; Government Pension Fund; The European Union; ONGs.

Introduction

As claimed in the previous chapter, Norway is one of the best case studies for analysing how a natural resource rich country has been able to handle resource abundance, not only in the oil field, but also with other resources. Indeed, "*not only has Norway been a stable democracy for well over a century, but its economy relied on natural resources long before North Sea oil*"[xxiii]. By saying this, it is not meant to claim that Norway has completely avoided the Dutch Disease and the Resource Curse. On the contrary, the country did face some moments of economic incertitude and instability [1]. International market crises throughout the 1900s, technical difficulties during the beginning of the exploration of the North Sea, and the ups and downs of the domestic economy contribute in helping the Norwegian government and enterprises to strengthen, while passing through these challenges.

While still maintaining a focus on the economic side of the context, it is important to underscore that Norway also did a good job on the political level. Indeed, the Nordic country not only limited the effects Resource Curse, but, differently from other oil

[xxiii] Andreas R. Dugstad Sanders & Pål Thonstad Sandvik. *Avoiding the resource course? Democracy and natural resources in Norway since 1900*. In Badia-Miro, Pinilla and Willebald. *Natural Resources and Economic Growth. Learning from History*. Routledge. 2015:313

countries, it also avoided corruption or the replacement of its political system, with an autocratic regime. This was possible thanks to the macroeconomic policies adopted by the country, while promoting a diversification of the domestic economy after the discovery of oil in 1969. One of the most efficient, which is currently still in act, was the establishment of sovereign wealth fund (the Petroleum Fund) [2].

In 1974 one of the most efficient moves had been put into being. The Norwegian government presented a report [3] [35] to parliament containing guidelines on how to manage the new oil industry though a slow development of it, so as to avoid Dutch Disease and obtain as much future benefit as possible from oil. This helped Norway to "*avoid crowding out effects on other industries and (..) Dutch Disease*". A "*rapid and uncontrolled*" growth of private consumption should be avoided. The resource rents should instead be spent in ways that would develop Norway into a "*society of better quality*"[xxiv]

As demonstrated by the country's subsequent success, the plan resulted to be efficient. Indeed, through the 80's the oil industry faced a positive growth in Norway, where it covered up to the 18 per cent of GNP and half of national exports. Moreover, in order to keep the sector powerful and the investment in the North Sea high, the Norwegian government planned a reduction of taxes on new-open oil fields [4]. A situation which kept the domestic economy stable even after the new millennium. Currently (2019), "*Norway holds the largest oil and natural gas reserves in Europe, and provides for much of the oil and gas consumption on the continent*."[xxv]

This chapter analyses the administrative structure of the Norwegian government and the role of international actors, such as the European Union and NGOs (Non-

[xxiv] Andreas R. Dugstad Sanders & Pål Thonstad Sandvik (2015). *Avoiding the resource course? Democracy and natural resources in Norway since 1900*. In Badia-Miro, Pinilla and Willebald. *Natural Resources and Economic Growth. Learning from History*. Routledge. 2015: 328.

[xxv] Jonathon Moses & Bjørn Letnes. *Managing Resource Abundance and Wealth: The Norwegian Experience*. Oxford University Press. 2017:9.

Governmental Organisations), in the oil industry. The content is divided into four sections. The first concerns the economic management and politics at the head of the Norwegian petroleum industry. The second and the third focus on the relationship between Norway and the European Union. Finally, the fourth section underlines the influence of NGOs in the offshore operations conducted by Norwegian oil companies, through the analysis of the conflict between Equinor and Greenpeace in the Barents Sea and in the Great Australian Bight.

1. The Norwegian Legal Framework and Administration of the Petroleum Industry

"When studying Norwegian regulations of natural resources, it is possible to identify three policy goals (..) First, to ensure that natural resources would benefit or be accessible to a large part of the population(..). Second, (..) to secure domestic ownership of the natural resources. (..) Third, (..) to exploit natural resources to foster economic growth"

(Dugstad & Sandvik, 2015: 333)

Norway owes its success in the hydrocarbon industry to the efficient resource policies adopted by the national authorities, which, through the consensus of both the Norwegian people and the international actors involved, has been able to put in action its plans without many difficulties. Most important has been the importance that the government gave to Local Content Policies, in order to assure to the largest part of its population the opportunity to grow a successful domestic business.

During the 1900s the country based its economy on the base of a liberal model, with the exception of the hydroelectric industry which was mostly owned by foreign investor up to 1906 [5]. This worried Norwegian political authorities, who decided to pass in the same year the concession laws, making government concessions mandatory for all private companies or foreign bodies requesting acquisitions of land or water rights. In the following year, the parliament introduced the "right of reversion", so that the properties included in the concession would pass back under the control of the Norwegian state after about 60-80 years (average duration of the concession).

With this background, Norway was not completely unprepared to face the new challenge posed by the oil industry during the second half of the XX century. Moreover, in order to keep under control, the influence of IOCs [International Oil Companies], the domestic authorities pressed to include Norwegian technical and administrative staff in the oil activities. In this way the knowledge transfer from the already more expert IOCs to the new-in-the-field Norway was facilitated [6]. The government also prioritized the interests of the NOC Statoil in 1974, so that to create a stronger national competitor to the IOCs [4]. During these procedures, some technology agreements were established, so that to assure three important points. The aim of these agreement was "*1) to develop the independent Norwegian enterprise, to ensure that Norwegian resources would be developed in a socially-responsible manner; 2) strengthen the competitiveness of Norwegian industry and 3) ensure that petroleum operations would develop in a way that was compatible with Norway's stringent safety and environmental protection regulation*"[xxvi].

During the course of the decades, the Norwegian authorities succeeded in their aim to keep the proprietary right to offshore hydrocarbon resources present on the NCS, without being overpowered by IOCs. Indeed, oil companies now have to pay a tax rate of 78 % on their turnover[7]. This brought the tax revenues from oil to reach an amount of about 104 billion NOK in 2015 [8]. Currently every oil company is strictly obliged to access official permissions for every single phase of their activities.

Focusing on the domestic front, the Norwegian hydrocarbon industry can be said to be based on two pillars: The Ten Oil Commandments and the Petroleum Act. Both elements aim to provide the guidelines for a responsible, efficient and regulated

[xxvi] Jonathon Moses & Bjørn Letnes (2017). *Managing Resource Abundance and Wealth: The Norwegian Experience*. Oxford University Press. 2017: 160

management of the resource, as to assure the safeguard of environmental, political and legal interests.

The Ten Oil Commandments were submitted on June 4th ,1971, when the Standing Committee on Industry submitted in the Parliament a white paper from the Norwegian Ministry of Petroleum and Energy [9]. The listed points provide guidelines to follow in order to assure that the gains obtained by the oil industry would benefit the entire nation, both the at-the-time current generation and the future ones [10].

The Ten Oil Commandments [11]
1. That national supervision and control of all activity on the Norwegian continental shelf must be ensured.
2. That the petroleum discoveries must be exploited in a manner designed to ensure maximum independence for Norway in terms of reliance on others for supply of crude oil.
3. That new business activity must be developed, based on petroleum.
4. That the development of an oil industry must take place with necessary consideration for existing commercial activity, as well as protection of nature and the environment.
5. That flaring of exploitable gas on the Norwegian continental shelf must only be allowed in limited test periods.
6. That petroleum from the Norwegian continental shelf must, as a main rule, be landed in Norway, with the exception of special cases in which socio-political considerations warrant a different solution.
7. That the State involves itself at all reasonable levels, contributes to coordinating Norwegian interests within the Norwegian petroleum industry, and to developing an integrated Norwegian oil community with both national and international objectives.
8. That a state-owned oil company be established to safeguard the State's

commercial interests, and to pursue expedient cooperation with domestic and foreign oil stakeholders.

9. That an activity plan must be adopted for the area north of the 62nd parallel which satisfies the unique socio-political factors associated with that part of the country.
10. That Norwegian petroleum discoveries could present new tasks to Norway's foreign policy

The Petroleum Act [12] was issued on November 29th, 1996 [13] provides the general legal basis for a correct management of petroleum resources and activities, with a special attention to the licensing system, an important element in the industry since it gives companies the rights to conduct their activities on the NCS (Norwegian Continental Shelf). It also specifies that proprietary right to subsea petroleum deposits on the NCS belong only to the Norwegian state. Moreover, the Act includes procedures for the tutelage of environmental, social and financial interests.

Section 1. Scope of the Act [14]

This Act governs the taxation of exploration for and extraction of subsea petroleum deposits, and activities and work relating thereto, hereunder pipeline transportation of extracted petroleum:

1. in internal Norwegian waters, in Norwegian territorial seas and on the continental shelf;
2. in adjacent seas, insofar as concerns petroleum deposits that reach beyond the median line in relation to another state, to the extent that the right to extraction thereof has been conferred upon Norway by agreement with such other state;
3. outside the realm or the seas mentioned in a), insofar as concerns the landing of petroleum, and activities or work relating thereto, to the extent

that the right of Norway to impose taxes on activities and work as mentioned is laid down by general public international law or by special agreement with a foreign state; and

4. within the realm insofar as concerns the transportation of petroleum by pipeline from areas as mentioned in a), b) or c), as well as other activities at loading and unloading facilities as part of the extraction and pipeline transportation of such petroleum. The Act also governs the processing of petroleum in facilities used for extraction or pipeline transportation in areas as mentioned in Sub-section 1, irrespective of whether the petroleum is extracted in such an area.

The Norwegian petroleum management model is structured in such a way to keep a good balance among the three interconnected sectors that are concerned in this field: policy, commercial and regulatory. The first area is represented by the Norwegian Ministry of Petroleum and Energy (MPE), which is responsible that the national energy resource is kept under control. It promotes social and economic development, it must guarantee that the Ten Oil Commandments are respected by both the national and international oil companies (NOCs and IOCs), and it secures that each activity in the resource field is led in an environment-friendly manner. The MPE is also "*responsible for the state's ownership's interests in Equinor ASA (formerly Statoil), Gassco AS and Petoro AS, and also for the State's Direct Financial Interest (SDFI) in the petroleum industry*"[xxvii]. The commercial sector is regulated by the main Norwegian NOC, Equinor, which is responsible for the stimulation of the Norwegian economic activity in the oil industry. 67 per cent of the company is owned by the Norwegian state, so that to assure a national ground for the research and the progress in the oil field conducted by the enterprise [9]. The latter field, the

[xxvii] The Norwegian Petroleum Directorate; Norsk petroleum. "State Organisation Of Petroleum Activities". Last update on 14.03.2019.

regulatory one, is represented by the Norwegian Petroleum Directorate (NPD), an advisory body for the MPE, whose aim is to obtain as much benefits as possible for the Norwegian society from the oil resources, accomplishing also the government's interests.

1.1. The Share of Power and Responsibilities within the Norwegian Government Bodies

Passing to the organizational structure, the Norwegian sharing of responsibilities in the oil industry concerns many political bodies inter-connected through a hierarchic relationship. At the foundation of the collaboration of these bodies there has to be (and there is) a multi-party agreement within the national government, in order to assure a profitable management of the natural resources and to provide a comfortable environment for the companies operating on the NCS.

The highest body in this hierarchical structure is the Norwegian parliament: Storting[15]. Being responsible for the framework regulations, the parliament employs its legislative powers to set procedures and laws linked to the production process of oil, and discusses and states the organization of petroleum activities on the NCS. Moreover, it controls the activity of the Government, which practises an executive power and is designated to accomplish the petroleum policies approved by the parliament, to which it is directly accountable.

At a lower level, the Ministries are involved in the petroleum sector according to their specific area of competence and responsibility. The main reference for the oil industry is the Ministry of Petroleum and Energy. This Ministry, through the application of coordinated energy policies, is responsible for making sure that the

offshore activities and the resource management are conducted in an environmental-friendly and adequate way. Moreover, the Ministry of Petroleum and Energy is in charge of the management of ownership interests concerning the State's Direct Financial Interests and the domestic companies [16].

Another important role is covered by the Ministry of Climate and Environment (MCE), which is charged to promote policies aimed to control the activities of the different actors, whose movements can have consequences in the environmental field. In short, the MCE is supposed to "*create sustainable development, environmental considerations need to be integrated into policy making in all areas of society. The Ministry also acts as promoter and coordinator to ensure that the authorities in the various sectors implement the environmental policies in their particular areas*."[xxviii] The MCE has also the control over the Norwegian Environment Agency, and has the responsibility that each activity and administrative procedure linked to the oil industry is conducted in line with the Pollution Control Act [17].

The Ministry of Finance has the task to control the trend of the Government Pension Fund, and is responsible for the oil taxation system. In doing this, the Ministry is helped by the Petroleum Tax Office, which has the duty to judge and, in case, approve the government's tax proposals. Three other Ministries are involved in the oil industry field. The Ministry of Labour and Social Affairs, through the Petroleum Safety Authority, takes care of the technical and operational aspects of the industry. The Ministry of Transportation and Communication, together with the Norwegian Coastal Administration, has the task to keep oil spills under control, and to assure a safe transport of the product. Last but not least, the Ministry of Trade, Industry and Fisheries takes care of the licenses assignment for conduction of exploration

[xxviii] The Norwegian Government; www.regjering.no . Ministry of Climate and Environment- "About the Ministry", last update on 13.10.2014.

activities, and works for keeping harmonious the relationship between fisheries and oil activities on the NCS.

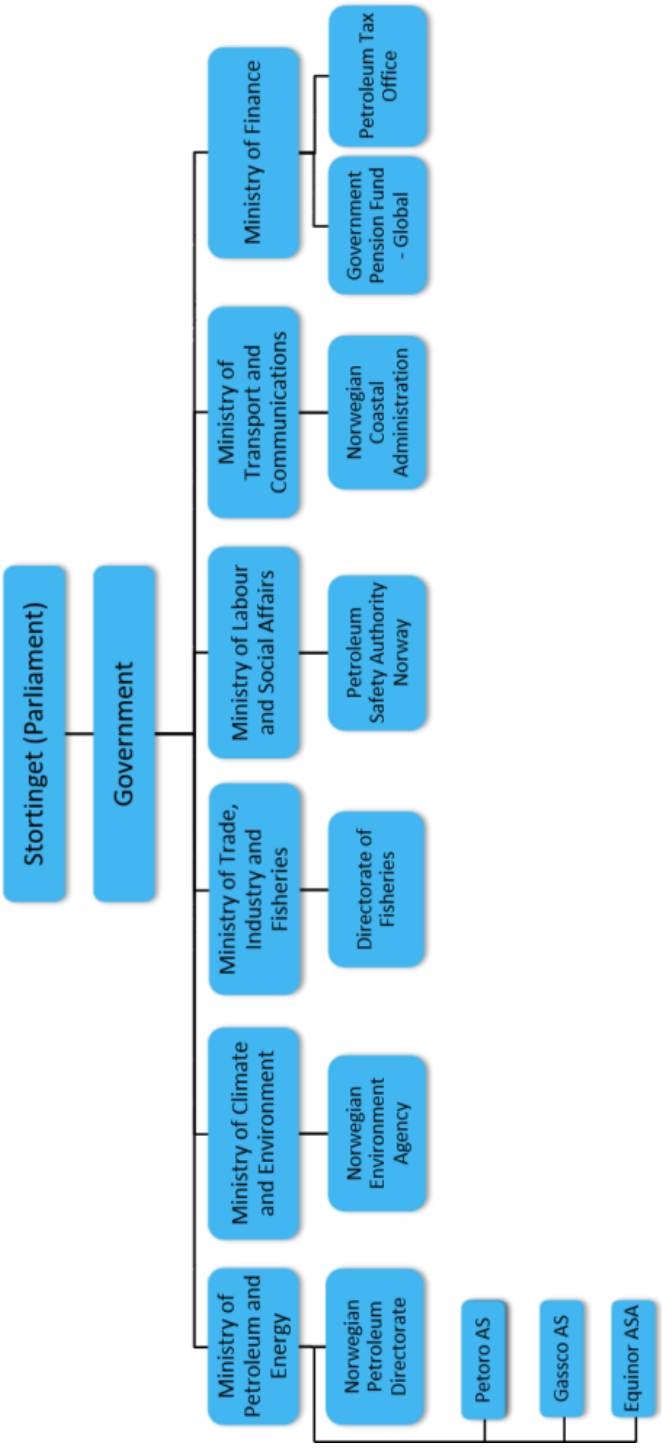

Figure 3. The Norwegian State organization of petroleum activities
Source: The Ministry of Petroleum and Energy

1.2. The Tripartite Model

In a country rich in natural resources, it is important that the domestic administration system is organized in such a way to guarantee an efficient share of responsibilities and autonomy among its bodies. That means, commercial actors, regulators, and policymakers [18] need to be set in a context where their share of autonomy and interdependence is harmonized. The three bodies have different interest and duties to accomplish. The regulators have to monitor and regulate the industries, while also protecting people's rights from too aggressive commercial activities. Policy makers are supposed to pursue activities that would benefit the local population. Last but not least, the commercial actors, aim to stimulate economic activities, so that to realize as much profit as possible from the exploited resource [19].

In order to assure a fully functioning performance, it is necessary that these bodies cooperate in a bilateral way. The regulatory and commercial actors have to collaborate for protecting workers and environment. It is important that the power between the bodies is equally distributed, since if the regulatory side is too powerful, it might restrict commercial possibilities. On the other hand, if the commercial side has the strongest voice, there might be a lack of regulations in the work environment. The policy makers and the commercial bodies have an arm-wrestling relation. They need to control that an equal weight is given to both justice and efficiency, as to both communities needs and profit-making needs. Moreover, if the commercial side is too strong, there might be the risk that the NOC gets out of the control of the government. In the end, the collaboration between regulatory bodies and policy makers is lighter to carry. The policy makers want goals to be achieved, and the regulators have to make sure are accomplished efficiently; the policy makers are more concerned about the safeguard of ethical, moral and democratic aspects of the activities, while the regulatory side takes more care of the

technical-administrative features. However, the two bodies need to cooperate in order to avoid both inefficient policies and technical myopia.

This is an example about how an efficient tripartite model of resource management should be arranged, and this is actually what Norway has done with its domestic oil and gas industry.

In the country the three areas of influence listed are represented through the Norwegian Petroleum Directorate (NPD), for the control of regulations; Equinor, as commercial body; and the Ministry of Petroleum and Energy (MPE), on duty as policy maker. The NDP has the responsibility to maximize the greater value reachable from oil, while also being in charge of the collection of data from the activities on the NCS. Nevertheless, the NPD is subject to the authority of the parliament, which has the power to decide where and when to conduct the exploration, or open a new field. On the commercial side, the national company Equinor is an active proponent of Norway in the international hydrocarbon industry. The MPE should provide an encouraging environment for the commercial activities, so as to allow the industry to grow, while keeping the operational and marketing activities under control, making sure they respect both the 10 Oil Commandments and the national law [9] [20].

1.3. The Pension Fund

"The International Labour Organisation (ILO) has repeatedly criticized the Norwegian government for limiting wage bargaining in the oil sector. However, this has not been a controversial decision in Norway, rather, it is seen as a normal way of limiting bargaining power in a particular sector that otherwise might lead to more wage dispersion"

(Cappelen & Mjøset, 2013:53, from Moses & Letnes 2017)

From the beginning of its activities in the petroleum business, the Norwegian government tried to keep a high level of living standards among the Norwegian population, so that to not create a laceration between a richer and a poorer side of the society (as it happens in other oil countries). The aim was to provide benefits and increase the national welfare in an equal and controlled manner, and, given the current results, Norway was successful.

Involving the population into different fields of the petroleum business [19], the Norwegian government was able to stimulate the domestic economy, preventing the rise of Dutch Disease. However, as the profit from the oil activities is high, it was decided to establish a fund where to keep the profits earned, in order to preserve them for the benefit of the whole country and its future generations.

The first to consider such a thought was a past Norwegian Prime Minister, Einar Gerhardsen. Indeed, once sovereignty over the NCS was claimed in 1960, Gerhardsen already foresaw the importance of managing the profit in such a way as to assure safe investments. Nevertheless, it was finally in 1990 that the government set the Petroleum Fund. In this way revenues coming from exploring licenses, Equinor's remittances, and taxes of companies, have been kept safe from corruption

and inappropriate allocations, and they are going to be a capital source once the oil fields are depleted in the future [21].

A new ethical framework to the Fund was introduced by the Norwegian parliament in 2001, together with the White Paper. Within this fiscal normative, the government has to assure that at least the 4 per cent of the Fund would be completely independent of the Ethics council (which started in 2004) and could be relocated to state budgets. In 2006 the Fund changed its name in "Government Pension Fund Global". Nine years later, in 2015, the parliament decided to block all investments to coal producers, concerning a total of 50 billion NOK[21] [22], so as to focus on the development of renewable energy. The decision was discussed and voted on June, 12th 2019 and was approved unanimously.

Currently, this action is having world-wide consequences, since it is affecting 134 gas and oil companies, becoming one of the biggest fossil fuel disinvestments ever carried out, and proving the power of influence that Norway has on the international hydrocarbon market [23]. Currently (November 2019) the Fund is kept under the tutelage of the "Norges Bank" (the Central Bank of Norway) and its market value reaches about 10 250 billiard NOK[21] [22].

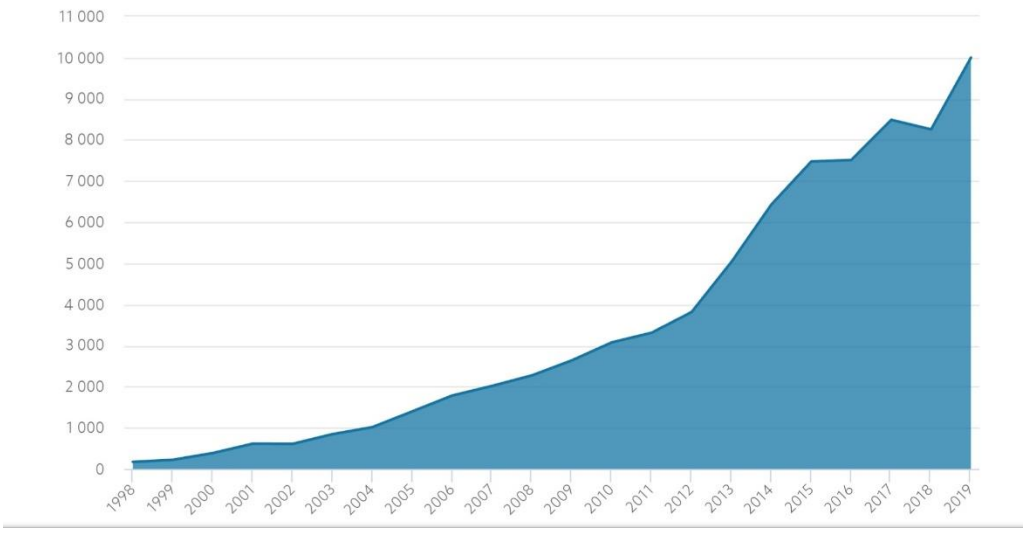

Figure 4. The fund's development in NOK
Source: Norges Bank, Investment Management

2. The Influence of the European Union

Together with Switzerland, Iceland and Liechtenstein, Norway is one of the countries located on the European continent, owning the requisites to becoming part of the European Union, but traditionally contrary to fulfil the adhesion process to the Union. The reason behind this refusal to consolidate is due to the fact that entry into the EU might have led to a weakening of the domestic control of strategies concerning the national economy and the energy sector. Nevertheless, Norway cannot deny or avoid being influenced by the actions and settlements generated by the Union, especially those concerning its Nordic members [24]. Indeed, Norway is economically and politically tied to Europe.

Once it obtained its independence, this Scandinavian country has been characterised by a nationalistic wish to keep as much control as possible over its natural resources and its policies. However, becoming part of the European Union would have led to an increase of exchanges and partnerships with the neighbour European countries, but at the same time this would have meant to accept constraints not only by the obligations established by the Union itself, but also from other international bodies [25].

Between 1972 and 1994, the Norwegian population expressed its refusal to join the EEC/EU through two referenda, even if the difference between the pro and the against was not that significant [26]. However, after the referenda, Norway kept a tight economic relationship with the EU, especially after that the country became part of the European Free Trade Association (EFTA), the European Economic Area (EEA), and became encompassed in the Schengen Agreement area. These agreements partly limit the control by national authorities on some fields of the

domestic economy, especially the organization of the hydrocarbon industry and the market. Indeed, between 2001 and 2002, once the domestic oil industry was stable enough to successfully bear the changes, Norway modified the rules at the base of its hydrocarbon market in order to conform it to the European Competition Law [27] and the Gas Directive [28].

To do so, the government put a hand on the domestic oil and gas system. First, Equinor (*Statoil* at the time) was privatized; second, the Norwegian Gas Negotiating Committee (*Gassforhandlingsutvalget*, GFU) was abolished; third, Norway had to adapt its domestic energy policies to both the European Competition Law and the Gas Directive. In this manner, some of the Norwegian oil market policies lost their validity [29] [30].

Currently, Norway is cooperating with the European Union also on the security policy level. The country is sending domestic military forces to contribute to the peacekeeping operations promoted by the Union. Furthermore, at the social policy level, Norway is actively helping to eliminate the economic disparity inside the union through the Norwegian Grants. These Grants provide funding to 15 of the European countries most in difficulty, aiming to raise their economies back and to improve bilateral relations. Recently, the country has also improved its commitment to limit its greenhouse gas emissions cost-effectively, by joining the EU Emissions Trading System (EU ETS), in 2008 [9].

2.1. The Two Referenda

the Norwegian government gave to its citizens an opportunity to express their preference about the possibility of joining the European Union twice.

The first referendum was held on September, 25th 1972. In case of victory for the pro-EU side, Norway would have had to accept the policies provided not only by the Union, but also by the World Trade Organization (WTO), the World Bank, and the International Monetary Fund (IMF), losing much control over industry management and investments. The Norwegian population was divided into two factions: the pro- and the against-EU. Those who were favourable to membership claimed that if Norway wanted to keep on growing its economic strength also outside the continent, it needed to strengthen its cooperation with the other European nations. To do so, becoming part of the EU would have made the process faster and easier. On the other side, the part of population against the membership was moved by the necessity to protect the interest of the local fishermen and farmers, which, in case of entrance in the Union, would be gravely penalized by foreign competitors offering cheaper goods from other EU countries. Once the referendum was over, 53,5 per cent [26] [31] of the Norwegian population voted against membership, holding the country outside the EU.

The second referendum took place on November, 27th - 28th 1994. This time, about 52,2 per cent of the population expressed its will to not adhere to the European Union, overcoming the pro-side only for a percentage of the 4,4 per cent [26]. The majority of these votes was from people living outside the big centres (such as Oslo, Bergen, Trondheim and Stavanger), in 14 regions, where on the contrary, people was favourable to the EU. These regions were the same who voted against in the previous referendum, with the exception of Østfold, where the majority of the population voted in favour this time. This was not a case, since in these zones the

local communities were much concerned about the potential loss of national control on domestic agriculture and fisheries, being the sectors are vital for the population working in the countryside or along the coast [32]. Becoming part of the EU would have led to a larger centralization of the resources and of the administration, weakening the economies northernmost areas of the country, and contributing to reduce the strength of the local authorities. This would have risked to bring the northernmost local economies to their knees.

This last referendum left the country divided in two strongly rival sides, bringing the campaigns to continue even after the referendum was over. Once Sweden and Finland joined the European Union, the pro-EU campaign denounced the risk for the country to become too isolated from both the closer Nordic countries and the rest of the Europe. The biggest fear for this part of the Norwegian population was to see the country to be “left behind” in a moment of fast economic expansion in the continent. On the other side, the against-EU side of the voters rebutted by underlining that the membership would just have brought a loss of national control on the natural resources field, leading to a loss of control over the oil industry. This last point was one of the most exposed during the campaign fight, counting oil for the 34 per cent of national exports in that year, being therefore still a pillar for the national economy [9] [33].

2.2. Norway in the European Economic Area

Together with Liechtenstein and Iceland, Norway is a member the European Free Trade Association (EFTA), and the European Economic Area (EEA, to which Switzerland belongs as well). The country entered the Area in 1992, but became officially a member on January, 1st 1994. The path for entering in the EEA pushed the Norwegian government to limit some of the measures adapted in its domestic gas and oil industry, since, according to the parameters provided by the Area, they were viewed as too protectionist. In this manner, "*from 1994 the requirement that the state and Statoil should in at 50% of the activities was dropped, and the first allocation that did not include Statoil or the Norwegian state came already in 1996*.". Moreover, "*By the middle of the 1990s IOCs were no longer obliged to establish Norwegian subsidiaries (...) Norwegian goods and services providers could no longer be prioritized (...) Even the government's demand that the oil/gas be landed in Norway was dropped*" [xxix]. Once these procedures were concluded, Norway officially became a member of EEA and obtained the right of free movement of goods, services, capital and people in the EU, while cooperating in the development of the Area's most important sectors, like education, social policy, tourism, research and development, consumer protection, culture, and environment. Moreover, and differently from EU countries, Norway has the freedom to manage its domestic policies with respect to fisheries and agriculture, since these sectors are not included in the EEA Agreement [34].

Moving the focus on the petroleum industry, this sector is currently subject to the laws and policies dictated by both the EU and the World Trade Organization (WTO) agreements, and Norway, as member of the EEA, has to respect them. Indeed, each

[xxix] Jonathon Moses & Bjørn Letnes. Managing Resource Abundance and Wealth: The Norwegian Experience. Oxford University Press. 2017:163.

national law concerning the oil field should be approved by the national courts and the EFTA surveillance procedure, making sure these laws comply with the WTO and EU guidelines, especially those concerning direct state support, competition and non-discriminatory regulations. The most important directives concerning the Norwegian oil sector are the Directive 92/22/EF, May 30th, 1988, which controls the exploration rights, and the Market Directive 98/30/EF, June 22nd, 1988, which administers the internal markets for hydrocarbons [35] .

2.3 The Influence of NGOs: Analysis of the Specific Case of Greenpeace VS Equinor (2019)

On April, 24th 2019, Equinor submitted to the Australian National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) its plans to conduct exploration activities in the Great Australia Bight, 370 kilometres offshore the Southern Australian Coast. The plan is 1. 500 pages long and took two years to be prepared. The company claimed that the area seems to offer good chances to both find hydrocarbons and to set a "*safe, sustainable and valuable offshore oil and gas industry*" [xxx], given the example of two similar cases of The Bass Strait oilfields near Melbourne and the North-West Shelf. Equinor also brought Norway as concrete example of a profitable coexistence of local industries and gas and oil activities.

However, many have been and still are protesting against the intention of the oil company. Professor Tia Soliman Hunter, Director of the Centre for Energy Law at the University of Aberdeen, expressed her opinion by publishing a report on the plan proposed by Equinor. In the report T.S. Hunter expresses her concern about the

[xxx] Equinor -"*A guide to Equinor's draft Environment Plan Exploring safely for oil and gas in the Great Australian Bight*". February 2019: 8.

security issues and environmental risks to which the drilling activities might meet if the proposal would be accepted. The Director claimed "*Equinor's proposal for response measures in the case of a loss of well control in the Great Australian Bight wouldn't be permitted by the Norwegian regulator*."[xxxi] T.S. Hunter declared her concern also against the Australian side: "*I do not have confidence in Equinor's plan nor NOPSEMA's capacity to prevent a well blowout in the Great Australian Bight. (…) Australia is presently the only mature jurisdiction that does not require well inspections during construction and does not require the use of appropriate standards for oil well control in that environment (..). The Great Australian Bight is also a very remote and extreme physical environment for drilling*" [xxxii].

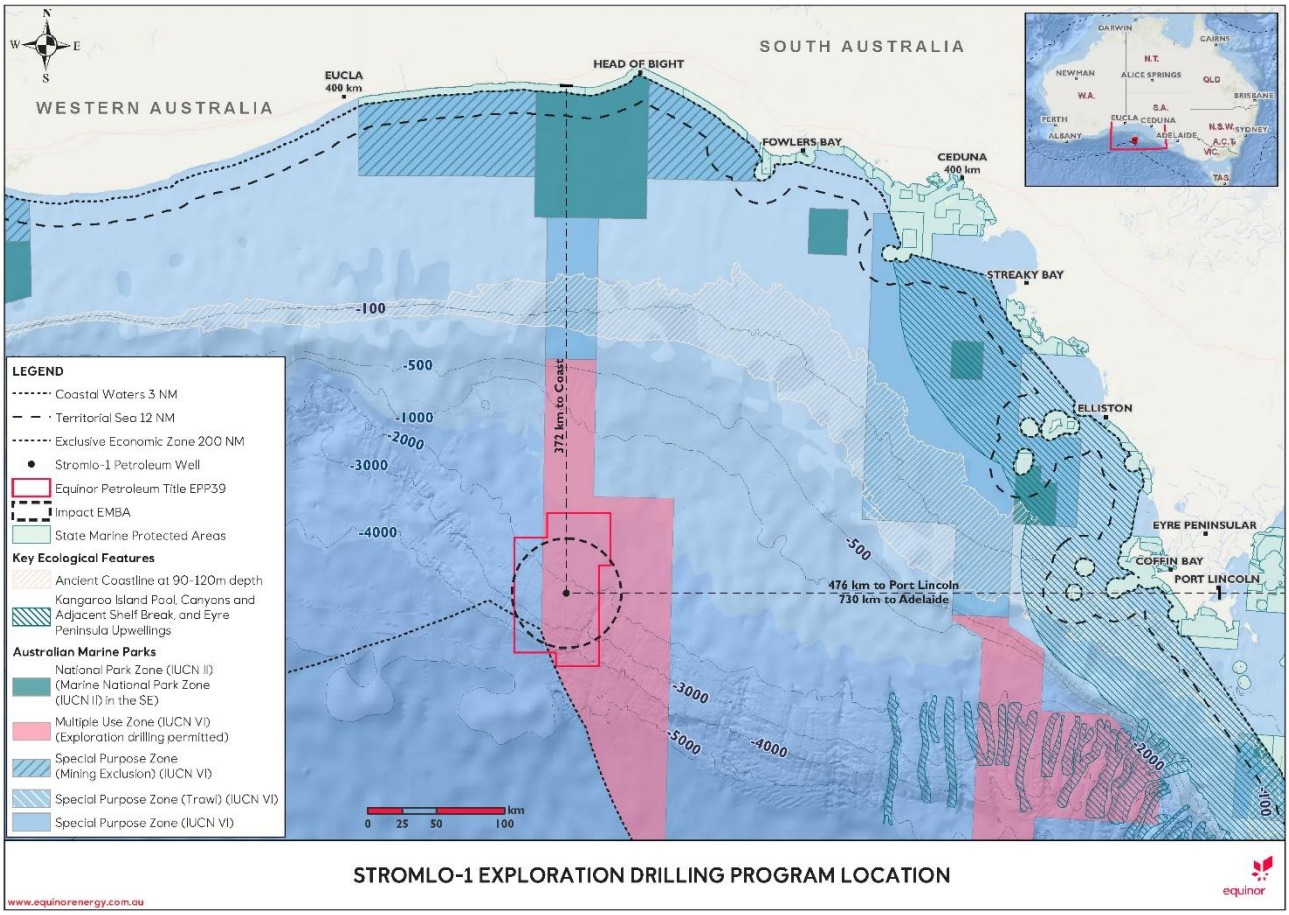

Figure 5. Location map of the exploration plan set by Equinor in the Great Australian Bight
Source : NOPSEMA info.nopsema.gov.au
Illustration : Equinor

[xxxi] Hunter (2019) - Greenpeace; https://www.greenpeace.org/global/ article: "Equinor's plan to drill for oil in the Great Australian Bight would be illegal in Norway"; April 2019

[xxxii] Hunter (2019) - Greenpeace; https://www.greenpeace.org/global/ article: "*Equinor's plan to drill for oil in the Great Australian Bight would be illegal in Norway";* April 2019.

The biggest objection was raised by the NGO Greenpeace, which began a legal war against Equinor, in order to impede the company from succeeding with its plan. Nathaniel Pelle, senior campanier for Greenpeace Australia Pacific, attacked the Norwegian oil company claiming that "*Equinor's own modelling shows that a worst case scenario oil spill on the Bight wouldn't just risk the pristine beauty of the Great Ocean Road, the Twelve Apostles, and Kangaroo Island, it could see oil wash up on Bondi Beach – yet Equinor has no clean up plan for any location."*[xxxiii] . Nevertheless, Equinor kept on promoting its plan by highlighting the benefits that the discovery of oil and the development of a petroleum industry in the Great Australian Bight would lead to the local economy. The company promulgated the data supplied by the Australian Petroleum Production and Exploration Association (APPEA). According to the assumptions based from the data collected from the previous years, the new industry might be able to bring "*A$5.9 billion increase in GDP per year Australia's Gross Domestic Product (GDP) could increase on average by A$5.9 billion per annum. 1,361 jobs In the construction phase, 1,361 FTE workers could be employed (…). A $5.8 billion increase in real output equates to a 6 per cent increase in the size of the South Australian economy"* [xxxiv].

Currently (November 2019), the conflict continues between those who support Equinor and those fighting together with Greenpeace to keep the Great Australian Bight area untouched. Indeed, the oil company has not received permission to start its activities yet. Indeed, NOPSEMA asked Equinor to modify its environmental plan, providing more information about the dangers posed in case of accident or oil spills[36]. In the meanwhile, Greenpeace is continuing to promote its campaign against the oil company, raising great support especially from local people.

[xxxiii] Pelle (2019) - Greenpeace; https://www.greenpeace.org/global/ article: "*Equinor's plan to drill for oil in the Great Australian Bight would be illegal in Norway";* April 2019.
[xxxiv] Equinor -"*A guide to Equinor's draft Environment Plan Exploring safely for oil and gas in the Great Australian Bight*". February 2019: 11.

Conclusion

This chapter has analysed the administrative structure of the Norwegian energy industry and the influence that international actors have in the activities planned by the domestic authorities.

First of all, it has been made clear how Norway has been able to keep a strong oversight over its energy sources, oil in particular. Indeed, the country succeeded in keeping the property rights to offshore fields on NCS, so that to hold the control over IOCs' activities and obtain higher revenues from their operations. The national authorities have been able also to provide a set of guidelines and laws to safeguard both the environment and the interest linked to the benefit of the population. Indeed, the Ten Oil Commandments and the Petroleum Act aim to steer both NOCs and IOCs to an efficient and responsible management of the resource and conduction of their activities. Moreover, through the establishment in 1990 of the Petroleum Fund (currently Government Pension Fund), Norway granted to its future generations a solid welfare, by collecting the revenues gained from the gas and oil industry and preserve them for future needs and investments.

Behind these measures and plans there is a highly detailed administrative structure based on a hierarchical relationship, which connects all the political bodies involved in the management of the energy industry. These bodies have to assure a solid control and an efficient performance of the industry, and they do so by sharing different responsibilities according to their area of influence. This subdivision involves three main areas and interconnected bodies: the commercial area, represented by the NOC Equinor, responsible for the economic activities; the policy-making sector, represented by the MPE; and the regulatory field, controlled by the NPD. Of course, all the bodies have to respect the rules provided by the Ten Oil Commandments, the Petroleum Act, and the Norwegian Parliament. This type of

organization is recognised as “tripartite model” of natural resource management and, among all the oil countries, Norway is the one applying it in the most efficient manner.

Outside the national borders other bodies have a strong voice in the decision-making process of the Norwegian resources. One of the loudest voices comes from the EU, to which Norway is strictly tied on both the political and economic level. The country is not a member of the Union, since the Norwegians refused membership twice, in the referenda held in 1972 and 1994, so that to keep a higher control over its national economy, especially in the energy and agricultural sectors. However, being a member of EFTA and EEA, and belonging to the Schengen area, Norway has to accept some compromises in order to keep its relationship with the Union profitable. Before being accepted in the EEA and in EFTA, Norway had to accept many rules provided by the WTO (another influential actor in the domestic economy), to privatize Equinor, to abolish the GFU, and to adopt policies in line with the European Competition Law and the Gas Directive. Another important international voice influencing the Norwegian activities comes from NGOs, especially Greenpeace. The NGO is particularly active against the activities promoted by Equinor involving the opening of new fields or the offshore exploration. One of the most recent examples involves the fight that the oil company is fighting against the NGO, after the presentation of an exploration plan in the Great Australian Bight. The plan has still not been approved by the Australian authorities, but Greenpeace’s effort to impede the plan to be put into being continues.

The aim of this chapter was to give a highlight on the internal administrative mechanisms moving the Norwegian energy industry, so that to make clearer the reasons behind the success of the country in the management of its natural

resources. Moreover, describing the relationship between Norway and the international bodies involved in this field, it has been showed how it has been important for the country to compromise its policies and wishes to the foreign guidelines and decisions, especially those concerning the safeguard of the environment. This last point is going to be analysed in a deeper manner in the next chapter. Here the focus is going to be turned on the influence that the oil and gas industry is having on the Arctic area, where NGOs, political and economic bodies (both domestic and foreign), and the local population are still discussing about the future of the area.

Notes

1- As stated by Hermod Skånland (1998: 4), manager of the Bank of Norway between 1985-94, Norway faced a sensible course in the same year. Fortunately, the danger was quickly avoided by adopting a different strategy.

2- source: "Avoiding the resource course? Democracy and natural resources in Norway since 1900" Dugstad & Sandvik: 2015 (in Badia-Miro, Pinilla and Willebald; Routledge 2015: 313).

3- Source: Parliamentary Report No. 25 (1973--74); Petroleum Industry in Norway; recommendation by the Ministry of Finance, February 15th, 1974.

4- Source: Ryggvik, The Norwegian Oil Experience: A toolbox for managing resources?", University of Oslo, 2010: 88-91.

5- In this year the concession law was established.

6- International companies also had to accept some other rules proposed by the Norwegian government. For example, all administrative centres had to be headquartered in Norway, and that the main working language had to be Norwegian (both for documents and oral communications).

7- In Norway the ordinary tax base for every company is at 28 %. however, companies involved in oil activities have also to pay and additional special tax base taxed at 50 %, reaching a total of about 78 % of tax (source: Moses & Letnes Oxford University Press, 2017:104)

8- Source: The Norwegian Petroleum Directorate, "Norsk Petroleum- Fakta om norsk olje og gass"

9- Source: The Norwegian Government- Ministry of Finance; Ministry of Petroleum and Energy.

10- Here it is possible to take vision of the complete white paper submitted at the Storting: *https://www.regjeringen.no/globalassets/upload/oed/petroleumsmeldingen_2011/oversettelse/2011-06_white-paper-on-petro-activities.pdf*

11- source: Moses & Letnes, 2017:74; adapted from St. meld. nr 82 (2010-2011), 8

12- Here it is possible to take vision of the full Act: https://www.regjeringen.no/en/topics/the-economy/taxes-and-duties/Act-of-13-June-1975-No-35-relating-to-th/id497635/

13- Recognised as Act 29 November 1996 No. 72 relating to petroleum activities

14- source for adaptation: The Norwegian Government-Ministry of Finance; Act of 13 June 1975 No. 35 relating to the Taxation of Subsea Petroleum Deposits, etc. (the Petroleum Taxation Act). Last amended by Act of 21 June 2013 No. 66. Last updated: 03/05/2018

15- The Parliament of Norway

16- Equinor, Gassco AS, and Petoro AS

17- The Act was established in 1981, but became active on October, 1st 1983. Here it is possible to take vision of the full Act: https://lovdata.no/dokument/NL/lov/1981-03-13-6 .

18- These are the three areas of influence in the petroleum industry management

19- Administration, management, research, manual work.

20- Source: Moses & Letnes, Oxford University Press, 2017: 71

21- Source: Norges Bank¸ www.nbim.no (The Fund)

22- 50 billion NOK = 4,9 billion EUR = 5,4 billion USD; 10 250 billiard NOK= 1 012 billiard EUR= 1 122 billiard USD. Exchange rate update on December 2019.

23- Source: "The Guardian"; J. Ambrose, "World's biggest sovereign wealth fund to ditch fossil fuels ", 12 June 2019.

24- Sweden, Finland and Denmark.

25- Norway had to accept three Agreements from WTO. (1) The Trade Related Investment Measures (TRIM). This agreement comes from Article III of GATT, which states that "a host country to treat foreign investors as they would do with domestic investors in similar circumstances". (2) The General Agreement on Trade in Services (GATS). According to this agreement, a member state promises to not apply discriminatory measures against international service suppliers, to advantage its domestic ones. (3) The Agreement on Government Procurement (GPA). This plurilateral agreement encourages international competitions by prohibiting the governments to apply offsets, that is "measures that encourage local development by means of regulations that affect domestic content, investments and licensing system".

26- Source: Statistisk sentralbyrå www.ssb.no (Folkeavstemningen om EU (opphørt), 1994)

27- The main obligations linked to the European competition policies are listed in the articles 101 to 109 of the Treaty on the Functioning of the European Union (TFEU). "Articles 101 to 109 TFEU and Protocol No 27 on the internal market and competition, where it is made clear that fair competition is included in the objective of the internal market in Article 3(3) TFEU; Merger Regulation (Regulation (EC) No 139/2004. Articles 37, 106 and 345 TFEU for public undertakings and Articles 14, 59, 93, 106, 107, 108 and 114 TFEU for public services, services of general interest and services of general economic interest; Protocol No 26 on services of general interest; Article 36 of the Charter of Fundamental Rights" (source: European Parliament, www.europarl.europa.eu).

28- Here it is possible to take vision of the complete content of the European Gas Directive: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02009L0073-20190523&from=EN (last update: May, 23rd, 2019).

29- After accepting the EU common market policies, Norway had to renounce to four of its policies at the bases of its domestic oil market: the Preferential Treatment; Competition Policy; Procurement Policy, and the Concessions Policy.

30- Source: Moses & Letnes, Oxford University Press, 2017: 83.

31- The majority of the "no" was registered in the regions where the main source of employment was in the fishing or farming sector, with the highest rate registered in Finnmark, while the "yes" votes were collected in the urban municipalities.

32- Indeed, the biggest majority of votes against the EU came again from Finnmark, where 74,5 per cent of the population voted against. Here, the highest level of opposition was met in the municipality of Flakstad, where 93,7 per cent of the local population expressed its hostility to the possible membership with the Union.

33- Source: Norwegian Ministry of Finance.

34- Source: EFTA, Relations with the EU-policy areas; https://www.efta.int/

35- Source: Dośpiał-Borysiak, K.; "Model of State Management of Petroleum Sector – Case of Norway"; International Studies. Interdisciplinary Political and Cultural Journal; 2018: 103.

36- Source: the Guardian- staff and agencies, "Norway's Equinor must change environmental plan to drill in Great Australian Bight", 11 November 2019.

CHAPTER 3- THE ARCTIC CASE

Key words: environment; Arctic; research; climate change; oil fields

Introduction

It is not a secret that the launch of oil activities is not good news for the local ecosystem of the area where the fields are located. The emissions produced during the offshore activities produce a large amount of greenhouse gasses as carbon dioxide (CO2) and NOx [1], that pollute the area by acidifying both water and soil. Moreover, exploration, drilling, extraction and transportation operations expose the shorelines and the sea life to a high danger in case of an oil spill [2].

The Norwegian authorities are aware of this and working to change the oil companies' attitudes, so as to "*adjust their behaviour and definitions of corporate social responsibility in response to (...) criticism of their activities by the media and non-governmental organizations (NGOs)*" [xxxv].

The attention is turned especially on one area which interests the northernmost regions of Norway: the Arctic. Even though the area is known to have an extremely delicate and sensitive eco-system, it is also true that there is a very high possibility that massive hydrocarbons fields are located right under its soil. The first exploration activities in the Arctic began in the early 1980s, leading to the opening of some fields in 1993 in the Norwegian Sea and 2007 in the Barents Sea. However, the aim of the Norwegians is not to treat the Arctic area as they do other zones on

[xxxv] Oluf Langhelle, Bjørn-Tore Blindgeim, Olaug Øygarden. *Arctic Oil and Gas: Sustainability at Risk?*. Routledge. 2008: 6.

the NCS, but to conduct every kind of activity on it with special attention, given its special status.

In doing this, Norway [3], together with the other Arctic countries [4], is a member of the Arctic Council, a "*leading intergovernmental forum promoting cooperation, coordination and interaction among the Arctic States, Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic*"[xxxvi] .The country is also a member of the Barents Euro-Arctic Council, which involves regional cooperation with Finland, Russia, Sweden, Denmark, Iceland, and the European Commission since 1993. Both Councils embrace topics of common interest for their member states, such as economic cooperation, environment, infrastructure, health and social issues, indigenous people's rights, and research[5], aiming to bring a positive development of the region.

Once Norway obtained the Chairmanship of the Barents Euro-Arctic Council for the biennium 2019-2021, the Norwegian Minister of Foreign Affair, Ine Eriksen Søreide, increased the focus on the Arctic regions, especially on the sectors involving sustainable development and social policies. "*We would like to encourage more people to choose to live in the north. To achieve this, we must ensure that there are attractive communities offering good welfare and health services and quality education at all levels, with innovative businesses and varied employment opportunities* claimed the Minister on the Council meeting on October, 3rd 2019 [6].

As was already said, the Arctic area is extremely sensitive to climate change, especially in the Barents region, where its effects are evident. Eriksen Søreide underlined also the importance of adopting policies to safeguard the local natural resources and environment, by cutting greenhouse gas emissions and increasing

[xxxvi] The Arctic Council, https://www.arctic-council.org . "*A backgrounder*". September 3rd, 2018.

research in the field: "*We must ensure sustainable use of natural resources and adaptation to climate change, we must attract experience and expertise in order to build resilient Barents communities, and we must build trust and confidence across borders(..)"* [xxxvii].

In this chapter it is going to be analysed how Norway has managed the natural resources located in the Arctic Area, keeping in mind the context described in this short introductory overview.

The content is divided into four sections, each one analysing a specific area. The first one describes how the Arctic became a very important actor of the global economy. The second chapter focuses on which policies the Norwegian authorities are going to adopt in the near future, in order to hold environment safety and to control the effects of climate change. Successively, the third part discusses how the Norwegian government is planning to continue exploration activities in the Arctic area, even though this plan is increasing the opposition and concern of both domestic and international entities. Finally, the fourth section illustrates how Norway is tied to international policies and agreements in the management of its northernmost areas, and how companies are shaping the organization of activities in the Arctic.

[xxxvii] The Norwegian Government, www.regjering.no . *The Norwegian Chairmanship of the Barents Euro-Arctic Council 2019-2021*. Last update: October 3rd, 2019

1. Focus on the Arctic

Thanks to its rich amount of natural resources, the Arctic is an important part of the global economy. Interest in the area has grown, especially in the last five decades, after wide fields of hydrocarbons and minerals were found in it. Indeed, according to Alastair Fraser, a geoscientist from Imperial College in London, in the Arctic Circle a total amount of 90 billion barrels of oil is estimated to be located, that means 13 % of the total reserves on the planet.

How is it possible that such a large amount of oil can exist in such a delimited and remote area? The answer is given by the physical characteristics of the area, which are fundamental for the creation and preservation of hydrocarbons. First of all, the Arctic Circle is a small ocean surrounded, almost closed, by a ring of mainland. This means that it includes a great amount of continental crust, which is characterized by basins, in which organic components (such as plankton, algae and dead sea creatures) accumulate. These deposits are covered by the material generated by the natural erosion of rocks and mountains along the continental shorelines. The amassing of these sediments puts the organic matter under such a high pressure that it begins to heat, rising the temperature of 30 degrees for each kilometre of layer, leading the organic sediments to convert into oil (or gas, if the temperature reached is extremely high), after millions of years. This is the reason why the Arctic area is so uncommonly rich in hydrocarbons, especially offshore, where 84 % of the fields is supposed to be located [7].

The problem about the exploitation of the resources located in the Arctic emerges when it comes to finding and extracting them. Indeed, only the closest fields to the mainland have been opened yet. However, regarding the most offshores zones, where the majority of the basins are located, the operations are still proceeding

slowly. This is due to the fact that the inner areas of the Arctic Circle and the northernmost zones of the Barents Sea are characterized by extremely demanding weather conditions. Sea storms, thick ice, acutely low temperatures, and strong winds make any kind of activity very demanding and dangerous for both the local ecosystem and the staff involved in the operations. Indeed, the current technologies in the sector are not sufficiently developed to face these challenges without risk. Nevertheless, every country included in the Arctic Circle has already started extractive activities in the area. Norway's first operation was set in 1979, when the parliament gave the green light to the oil industry to perform above the 62nd parallel. The exploration of the Barents Sea began during the '80s, leading to the start of the production of hydrocarbons in the region in 2007.

However, these activities are exposing the Arctic ecosystem to a very high risk. Air and water pollution, added to greenhouse gasses, are damaging the local biodiversity, the phenology [8] and the life of people settled in the region. Both the Arctic and the Barents Euro-Arctic Councils are trying to hold the situation under control and to safeguard the area. In 1996 the Arctic council launched a proposal to start a collaboration among its members, to promote a sustainable development of the area [9]. The plan was put into practice with the establishment of the Ottawa Declaration, in which all the state members committed themselves to "*sustainable development in the Arctic region, including economic and social development, improved health conditions and cultural well-being"* [xxxviii].

[xxxviii] The Arctic Council. *Declaration on the establishment of the Arctic Council (Ottawa Declaration).* 1996. Source: Aslaug Mikkelsen, Oluf Langhelle. *Arctic Oil and Gas: Sustainability at Risk?.* Routledge, 2008: 1.

2. Environment Safety and Climate Change

"It is universally acknowledged that fossil fuels, and oil in particular, are bad news for our planet --- they are unsustainable, pollute the atmosphere, and it seems likely they are slowly making the planet warmer. Norway sources much of its own energy from clean, renewable hydroelectric power, thus absolving itself from direct consumer guilt. It is the wily drug pusher who refuses to touch its own product."

(Michael Boot. "The Almost Nearly Perfect People:
Behind the Myth of the Scandinavian Utopia".
Random House; 2014: 193 – from Moses & Letnes; 2017:198)

It is more than clear that gas and oil activities are a danger to the ecosystem, and that their processes contribute to water, air, soil pollution, and to climate change. However, some petroleum companies and local governments seem to prioritize the chance to make profit and perpetuate the economic stability, despite the risk of an environmental disaster.

One of the main targets of the Arctic Council is to try to keep the focus of its member states on environment safety, instead of the financial gain. One of the most important attempts of the Council is represented by the Arctic Environmental Protection Strategy (AEPS), established on June, 14th 1991. Through this strategy, a list of five objectives for sustainable development in the area was proposed. The first objective is for the protection "of the Arctic ecosystem, including humans". The second one aims to "*provide the protection, enhancement and restoration of environmental quality and the sustainable utilization of resources (..)".* The third invites to "*recognize and (..) seek to accommodate the traditional and cultural needs, values and practices of the indigenous people (…) related to the protection of the Arctic environment*". The fourth objective invites to "*review regularly the state*

of the Arctic environment". Last but not least, the fifth objective requests to "*identify, reduce and (…) eliminate pollution*" in the area[xxxix] .

To complete this operation, in 2015 the Arctic states organised themselves in six working groups specialized in four programme areas, at the time observer states [10] and the Arctic indigenous clans were also involved in the activities. Here the list of the six groups[11]:

1. The Arctic Contaminants Action Program (ACAP). The aim of the program is to prevent, reduce and eliminate pollution in the Arctic area, through legal acts and direct support to the national actions addressed to emissions cut. The current chairmanship is held by Norway.

2. Conservation of Arctic Flora and Fauna (CAFF). This group cares about the preservation of the Arctic flora and fauns, by developing actions for the safeguard and sustainability of the Arctic biological resources.

3. Arctic Monitoring and Assessment Programme (AMAP). The program is set to determine the levels of pollutant matters in the Arctic environment, so that to anticipate their effects and provide advice and support to the local authorities in prevention actions.

4. Protection of the Arctic Marine Environment (PAME). The aim of this group is to provide policies and measures for the protection of the Arctic marine environment.

5. Emergency Prevention, Preparedness and Response (EPPR). This group deals with the prevention and reaction to any kind of emergency which might occur in the area.

[xxxix] The Arctic Council https://www.arctic-council.org . *History of the Arctic Council Permanent Participants*. July 10th, 2012.

6. Sustainable Development Working Group (SDWG) [12]. The purpose of this group is to promote the development of the following fields: "*economic assessments; educational opportunities; heritage and culture of Arctic communities; human health; infrastructures; reduction/elimination of inequalities; science and research for sustainable development; sustainable business involvement and development; sustainable energy; transportation links; water and sanitation services"* [xl].

Moving the spotlight onto the Norwegian domestic condition, not so many specific procedures for the northern regions have been applied yet, excluding those established by the international councils and the Finnmark Act. However, on an overall national level, it can be said that up to this moment the government has been able to play a good balance game. It promoted and accepted global agreements about cutting industrial emissions, while keeping its national oil industry competitive. In this way the country has been able to conciliate the two opposites. Indeed, Norway has often confirmed its concern for the safety of the ecosystem by establishing specific taxes, and taking part in international protocols. Furthermore, the Norwegian state has always verified that companies operating on the NCS were respectful of environmental and social responsibility.

On one side, Norway tends to be seen as a role model in the environmentally friendly management of its resource, also by other actions. In 1978 the Norwegian Seas Association for Operating Companies (NOFO) was founded, with the mission to provide plans and actions for the safety of the marine ecosystem in case of oil spills. In the following year, Norway ratified the Gothenburg Protocol (then modified in

[xl] SDWG - the human face of the Arctic; *Strategic Framework*; 2017

1999) and, with the institution of the Pollution Control Act in 1981, the government guaranteed to limit the quantity of domestic pollution and wastes. Moreover, from 1997, the country became party to the two commitments of the Kyoto Protocol [13] undertaking to reduce its overall gas emissions by more than 20 per cent by 2020. In 2004 the country also agreed to respect the Greenhouse Gas Emission Act, whose aim is to "*limit emissions of greenhouse gases in a cost-effective manner by means of a system involving the duty to surrender greenhouse gas emission allowances and freely transferable emission allowances*"[xli] .

On the other side, the Scandinavian country did never concretely succeed in its environmental good intentions. Indeed, without any plan to definitely stop the extractive industry in the gas and oil fields on the NCS, Norway would unlikely be able to fulfil its commitments. As is universally known, petroleum is an unsustainable resource, therefore, its industry would coexist with future-oriented policies and sustainable development with difficulty [14]. The proof confirming this lies in the fact that "*Norway's currently implemented policies 'is' (as) "Highly insufficient." Norway's currently implemented policies are not consistent with the Paris Agreement, and are instead consistent with warming between 3°C and 4°C if all others followed a similar level of ambition (..) Norway's unconditional National Determined Contributions are "Insufficient," and not consistent with limiting warming below 2°C (..)"* [xlii].

This double-faced attitude of the Norwegian authorities was openly denounced in 2013, during Norway's ratification of the second committed period from the Kyoto Agreement, by one of the parliamentary members of the Miljøpartiet De Grønne (The Green Party), Rasmus Hanssos. The parliamentarian denounced the hypocrisy of the government in undertaking this commitment, especially after that the country

[xli] The Norwegian Government; *Act of 17 December 2004 No. 99 Relating to Greenhouse Gas Emission Allowance Trading and the Duty to Surrender Emission Allowances*.

[xlii] Climate Action Tracker- Norway; www.climateactiontracker.org ; last updated December 2nd, 2019.

failed to fulfil the requirements established in the first Kyoto Agreement. Currently, (December 2019) even if the Norwegian government did not approve the exploration plan in the Lofoten in April 2019, and blocked any kind of investment from the Pension Fund to companies producing more than 10GW of coal generated electricity per year, the criticism against the hypocritical attitude of the national authorities in the natural resource sector are still strong. It seems like Norway is still far from succeeding in reducing its greenhouse gas emissions, since most of them *"come from petroleum activities and Norwegians have no intent on killing the goose that lays their golden egg"* [xliii].

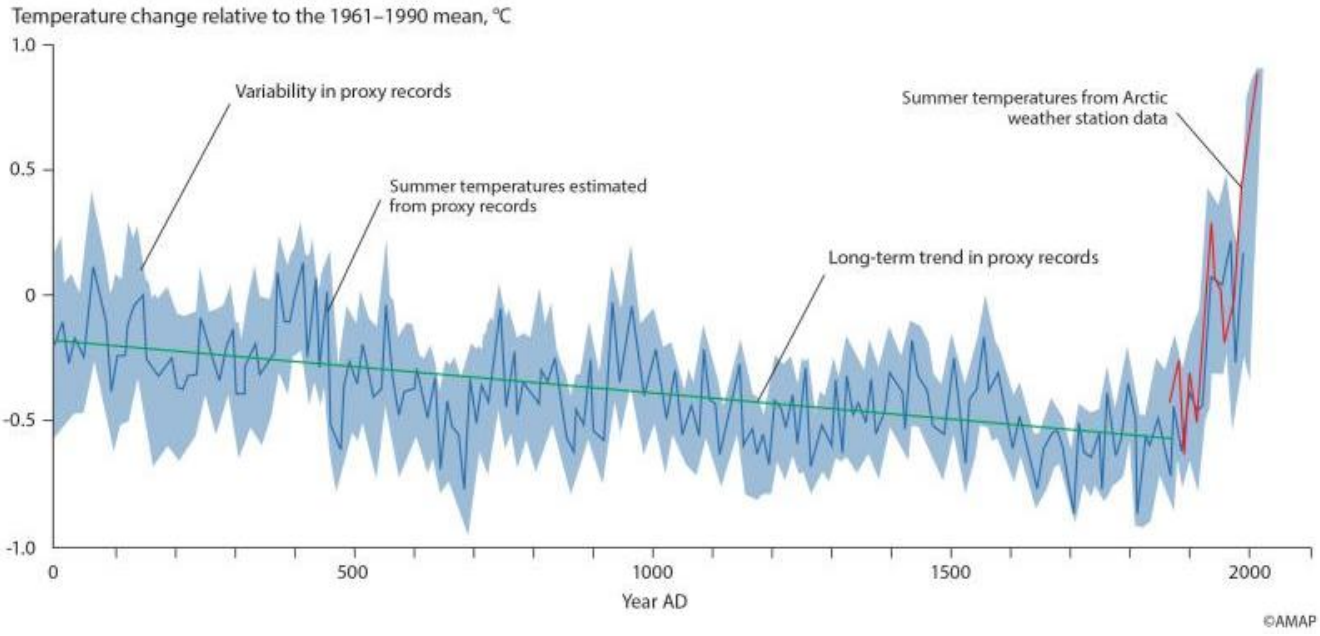

Figure 6. Long-term change in summer Arctic air temperatures, as estimated from lake sediments, ice cores and tree rings ('proxy' records)
Source: The Arctic Council (Arctic Monitoring & Assessment Programme)

[xliii] Jonathon Moses & Bjørn Letnes. *Managing Resource Abundance and Wealth: The Norwegian Experience.* Oxford University Press. 2017: 219-220.

3. The Arctic as Research Areas for New Oil Fields

As gas and petroleum are not from a renewable energy resource, it is fundamental for companies and oil nations to keep their exploration activities operating. Fields are not going to provide material forever, new rich basins need to be found, in order to compensate for the production fall from the older ones, otherwise the economies based on hydrocarbons will collapse.

Norway's oil industry faced a similar worrying scenario back in 2001 and 2013, when the production process decreased, given the lack of new fields to exploit, which in turn led to a weakening of large-scale investments on the existing fields. Luckily for the sector, the activities started working successfully again during the last years bringing the production back to a satisfactory and stable level: "*In recent years, the activity level on the Norwegian shelf has been high. Licensees have decided to develop many new discoveries and many field development projects are close to completion or came on stream recently. In addition, large investments have been made in producing fields to improve recovery. At year-end, 83 fields were in production, having produced a total of 226.7 million Sm³ o.e. in 2018"* [xliv] .

The production is supposed to stay rather stable or to increase from the beginning of the new decade, during which new exploration plans are going to be started in the North.

This last point raised some concerns among the Arctic community, especially after Norway took the responsibility to promote sustainable development in the area, and to reach the target set by the second Kyoto Protocol commitment. In 2006, public opinion expressed confusion about the development plans proposed by Norway under its chairmanship at the Council during that year. The country

[xliv] The Norwegian Petroleum Directorate - *Development and Operations; recent activity* https://www.norskpetroleum.no/en/developments-and-operations/recent-activity/ .

proposed to give priority to two matters: environmental protection and sustainable utilization of both renewable and non-renewable natural resources. This last point was particularly contested, since it included plans for the expansion of exploration activities in new areas in the North. The aim was to increase productivity in the hydrocarbon industry and increase local economic development of the Arctic regions, despite the vulnerability of the areas' ecosystems [15]. Luckily, areas such as the Lofoten archipelago have been spared from this plan. However, in the rest of the Arctic, especially in the Barents Sea, the exploration and production activities endured up to the most recent years.

The situation seemed to reach a decisive turning point when Norway took over the Chairmanship of the Barents Euro-Arctic Council in 2019. Here the country proposed a new set of guidelines for a sustainable development of the North, while cutting gas emissions and investing in renewable energy resources. However, the proposals seem not to be reflected in the reality of facts. Indeed, in March 2019 the Ministry of Petroleum and Energy, represented by Kjell-Børge Freiberg, proposed a drilling plan in 90 blocks on the NCS, including 48 of them in the Barents Sea [16]. Freiberg explained that the perpetuation of exploration activities in the area is a backbone for the government's petroleum policy. He also claimed that these operations are supposed to bring a positive industrial development in the Arctic regions overlooking the Barents Sea [17]

These plans faced strong opposition from many sides. The Norwegian government has been criticized particularly by climate campaigners affiliated to Greenpeace Nordic and Norway's Nature and Youth. Between November 5th and 14th, 2019, the government has been challenged by both groups in Oslo's Court of Appeal. [18]

The protesters argue that the exploration plans in the Arctic present not only a danger for the ecosystem of the area, but also a violation to the right of local

communities to live in a safe environment. For these reasons, the plans should not be approved, since they violate Article 112 of the Norwegian Constitution on the Right to Environment, which establishes that:

"Every person has the right to an environment that is conducive to health and to a natural environment whose productivity and diversity are maintained. Natural resources shall be managed on the basis of comprehensive long-term considerations which will safeguard this right for future generations as well. In order to safeguard their right in accordance with the foregoing paragraph, citizens are entitled to information on the state of the natural environment and on the effects of any encroachment on nature that is planned or carried out. The authorities of the state shall take measures for the implementation of these principles." [19].

According to Frode Pleym, the head of Greenpeace Norway, what that is worrying the most in these activities is the amount of gas emissions that derive from the combustion of petroleum once it is extracted, since their effects are having a great impact in the Arctic area. However, the problem involves all the areas where the Norwegian government approved the opening of oil fields, since their emissions are affecting the extreme North as well. Pleym claimed, "*The Norwegian government can no longer ignore the dangerous impact its exported oil is having on the climate. Climate change knows no borders. Oil is oil, no matter where it is burned, and the government needs to cancel all drilling for new oil in the Arctic. Not acting now violates the Paris agreement and Norway's own constitution."* [xlv].

Another important voice comes from David Boyd, the United Nations' special reporter on human rights and the environment. In a statement released on September 23rd, 2019, Boyd openly criticized the Norwegian paradox. He recognised

[xlv] Frode Pleym, at the Oslo's Court of Appeal on 2019 20- Sources: Wahl-Larsen advokat firma; «*The Climate Lawsuit*». Jillian Ambrose "*Campaigners try again to stop Norway drilling for oil in Arctic*"; The Guardian; November 8th, 2019

how the country can be located at the forefront of a global climate emergency, but at the same time, how it is still is enchained to the wealth generated by the hydrocarbon industry. Furthermore, the reporter attacked the decision of the Norwegian government to persist on its pro-oil policies: "*Norway, as one of the world's wealthiest nations and one of the world's leading producers of oil and gas, must accept substantial responsibility for leading efforts in mitigation, adaptation, and addressing loss and damage*." [xlvi].

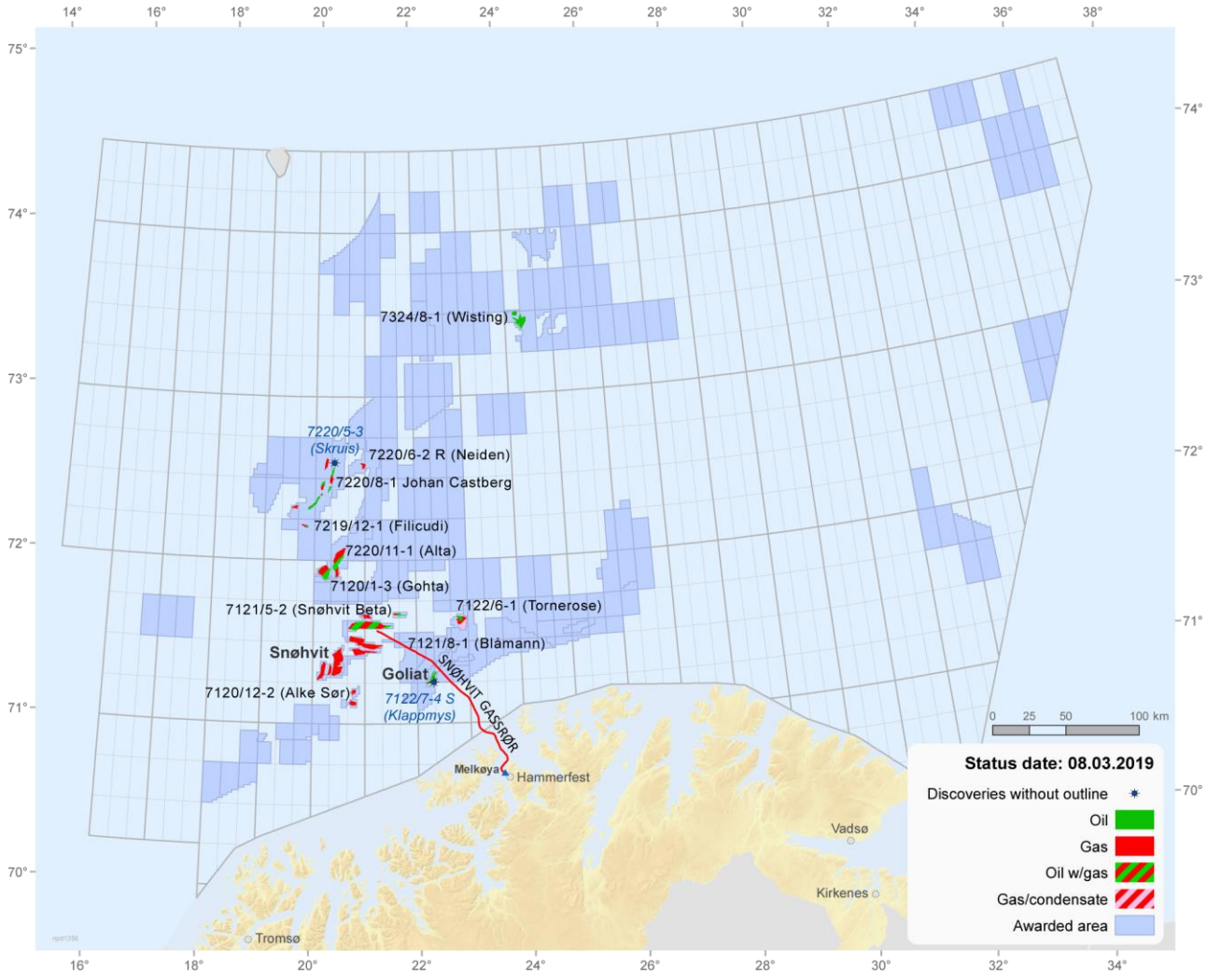

Figure 7. Fields and discoveries in the Barents Sea
Source: The Norwegian Petroleum Directorate; Activity Per Sea Area

[xlvi] David Boyd; *Norway- End of Mission Statement*; United Nations; 2019. United Nations Special Rapporteur on human rights and the environment; United Nations - Human Rights, office of the High Commissioner www.ohchr.org ; September 23rd, 2019.

4. The Influence of Foreign Actors and Policies on the Norwegian Arctic Oil Management

As already described in chapter 2, the Norwegian oil industry is subjected to many policies regarding license allocation, resource management and environment safety. However, over the Ten Oil Commandments and the Directives established by the European Union, Norway has to meet the aims set by other acts, agreements and protocol. This is especially true after the climate emergency became one of the main discussed topics in the two last decades.

4.1. International and National Policies, Treaties and Acts about the Arctic Environment Pollution (Accepted and Ratified by Norway)

The Norwegian law includes many articles and Acts whose aim is to protect the Arctic environment from industrial exploitation and the pollution linked to it. Some examples are the Act of the 21st December 1990 No. 72 relating to tax on CO2 discharge in the petroleum activities on the continental shelf, and the Act of 21st June 1963 No. 12 relating to scientific research and exploration for and exploitation of subsea natural resources. Above these, two Acts are significantly important in this topic: The Petroleum Act and the Pollution Control Act.

On one hand, the Act of the 29th November 1996 No. 72 relating to petroleum activities, concerns the legal framework for a responsible and efficient management of the resource. Specifically, the Act establishes which requirements are needed in order to allow a company to start its exploration and production activities on the NCS (over which the authority is kept by the Norwegian government). The company has to be responsible for risk reduction and response, and to conduct its activities in a safe way. This point is underlined in chapter 7 of the Act, which relates to the

companies' responsibility in case of damage caused by pollution. The Act has a great weight especially for companies that are conducting their operations in the Barents Sea, where the risk of accidents is not only really high, given the demanding weather conditions, but is also likely to have more serious consequences, given the proximity to the shoreline, and the fine balance of the local ecosystem [20].

On the other side, the Pollution Control Act is more focused on the effects that oil activities might have on the ecosystem, especially when considering the wastes produced during the exploration and production activities. The Act has been approved on March 13th, 1981 and refers to "*sources of pollution or any threat of pollution within the Economic Zone of Norway if the source of pollution is a Norwegian vessel or installation, or otherwise to the extent decided by the King (..)*" [xlvii]. Its aim is to make sure that "(…) *the quality of the environment is satisfactory, so that pollution and waste do not result in damage to human health or adversely affect welfare, or damage the productivity of the natural environment and its capacity for self-renewal*" [xlviii].

Passing from a national to an international regional context, the Arctic Council requires its members to respect the principles expressed in the Ottawa Declaration of September 19th, 1996, through which the Council was established. The Declaration contains the objectives that the Artic Council is supposed to carry, and that its members have to observe and keep functional through collaboration. An important highlight about this is provided in the first principle of the Declaration [21]. Here it is explained that:

[xlvii] The Norwegian Government. *Pollution Control Act of 13 March 1981 No.6 Concerning Protection Against Pollution and Waste*. Chap. 1 article 3.
[xlviii] The Norwegian Government. *Pollution Control Act of 13 March 1981 No.6 Concerning Protection Against Pollution and Waste*. Chap 1. article 1.

"The Arctic Council is established as a high-level forum to: provide a means for promoting cooperation, coordination and interaction among the Arctic States, (…) particular issues of sustainable development and environmental protection in the Arctic. oversee and coordinate the programs established under the AEPS on the Arctic Monitoring and Assessment Program (AMAP); conservation of Arctic Flora and Fauna (CAFF); Protection of the Arctic Marine Environment (PAME); and Emergency Preparedness and Response (EPPR) adopt terms of reference for and oversee and coordinate a sustainable development program disseminate information, encourage education and promote interest in Arctic-related issues [xlix].

Of course, Norway has to observe the decisions established by the Council, and to put its active effort to ensure these objectives are effective, so as to safeguard the Arctic area.

On a worldwide level, Norway committed itself also to two of the most important environmental procedures: the Kyoto Protocol and the Paris Climate Agreement. Unfortunately, as described in the previous section of the chapter, Norway has not fulfilled its commitment to any of the policies listed in them, since the government has not limited the domestic production of oil. Nevertheless, new procedures started in 2019 about the partial disinvestment in the gas and oil industry. The growing rise of renewable energy resources in the country, might bring Norway to meet the directions given by the Protocol and the Agreement in the next years [23]

The Kyoto Protocol was established by the United Nations in 1998 and during its first commitment period, between 2008 and 2012. The parties agreed on reaching a target reduction of greenhouse gasses emission, cutting them by the 20 per cent

[xlix] The Government of Canada. www.international.gc.ca ; International Affairs- *Canada and the Arctic Council*

compared to 1990. At the end of this round, Norway showed not only to have been unable to meet the objective, but moreover the country faced an increase of its emission by the 1 per cent [24]. Despite the country failing in meeting the target set in the first round, it committed itself also for the second round, which includes the years between 2013 and 2020. In this stage, Norway is trying not only to reduce its emissions so that to fulfil the goal set, but also to remedy for the missed first commitment, after the acceleration of the effects of global warming inducted by polluting gasses.

Norway signed the Paris Climate Agreement on April 22nd, 2016, and ratified it on June 20th on the same year [25]. The aim of the Agreement is to "*brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so*"[l]. However, what matters the most for Norway according to this Agreement, is the link between the control of global temperature rise and the adaptability to the impacts of climate change, especially in the Arctic regions. Indeed, the aim of the Paris Agreement is to contain the temperatures warming below an increase of 1,5 degrees Celsius. Above this level, the effects of climate change would be irreversible and might drastically affect the ecosystem and the waters level in the Arctic.

[l] Paris Agreement: *Essential Elements*. https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement .

4.2. The Role of Eni in the Policy Framework of the Arctic Oil Industry

Equinor is not the only actor playing on the arctic oil industry scenario. Another international hydrocarbon company is holding the control of production in one of the most important fields on the NCS, Goliat.

The *Ente Nazionale Idrocarburi, "Eni"* [26], is an IOC founded in Italy in 1953 and with headquarters in Rome. Eni has been operating in Norway through its subsidiary Eni Norge since 1964, continuing in 1971, when Eni participated to the beginning of the production process on the Ekofisk field [27]. Currently the main activities of the institution are centred in the Barents Sea. Here, Vår Energi AS, was originated from the fusion of Point resources AS and Eni Norge AS in 2018, is managing the exploration and production activities on Goliat. The two main stakeholder of Vår Energi are Eni, which integrates the company for the 69,6 per cent, and HitecVision, which owns the 30,4 per cent. The company is also committed to three of the United Nations principles for a responsible management of the energy resources: The Sustainable Development Goals (SDGs), the Global Compact (GC), and the Business on Human Rights (UNGP) [28].

Eni is operating in the Barents Sea and in the Norwegian area of the North Sea, covering a net area of 2,136 square kilometres [29]. Through the hand of Vår Energi, the company is focusing a big part of its activity in the Arctic, where it is both managing the oil field Goliat and trying to open new agreements with local authorities, especially with Sámi people, in order to expand its industrial business in the area.

As a stakeholder, Eni owns 65 per cent of interest over the Goliat field (the remaining 35 per cent is left to Equinor) which started producing oil in 2016. This has been set through the Production License 229 approved by the NPD. In 2018, Eni

invested over 3, 800 million NOK [30]. As anticipated in chapter 2, Goliat is the first and biggest oil field producing in the Barents Sea on the NCS, counting an estimated amount of 180 million barrels of oil. The platform has been built for storing up to 1 million barrels and is successfully carrying a daily production of 100,000 barrels, 65,000 of which are allocated to Eni. The field is located only 85 kilometres from the city of Hammerfest, in Finnmark. This factor influenced the start of the exploration and production operations in the Arctic area, since it was important for the local authorities to make sure that the opening of the new oil field, as other activities connected to the energy industry, would have had a positive influence on the domestic economy.

For this reason, in 2007 Eni's ex-Managing Director, Agostino Maccagni, presented a policy [31] describing the duties that Eni Norge promised to take, in order to conduct its activities "*in a way that is respectful of the dignity, rights, aspirations, culture and natural resource-based livelihoods of Sami People; - Consult with Sami People before taking any decision that may affect them directly (..); -foster opportunities for Sami People appropriate participation in the benefits of our activities."*[li]. Specifically, Maccagni underlined that the company committed itself to respect the policy in order to "*establish an effective and inclusive framework for the free and informed participation of Sami People in the consultation process (..)",* the Director also highlighted how important the cooperation between Sámi and the company is, given "*the impacts that the development of the (*our) operations may have on them"* on both social and economic level.

Currently Eni is continuing to carry out its activities in the Arctic, despite the opposition showed by Greenpeace and some local minorities belonging to the Green party, and some plans for a future expansion of exploration activities in the area are already set.

[li] Eni's ex-Managing Director, Agostino Maccagni Eni Norge- *Policy on Indigenous People*. June 4th, 2007

Conclusion

This chapter analysed the management of the natural resources present in the arctic Norway.

Given the presence of underground basins rich in organic deposits in the Barents Sea, the area attracts the interest of so many hydrocarbon companies and investors of many kinds. Through the actions of Eni, Equinor and Vår Energy, Norway already opened two oil and gas fields, Goliat and Snøhvit. The authorities limited the exploration plans within this zone, so as to avoid environmental risk in the southern part of the sea, specifically close to the Lofoten archipelago.

Nevertheless, the country does not have the complete freedom of power over the management of its resources. Being a member of the Barents Euro-Arctic Council, the EEA, and the Arctic Council, Norway has to follow the directives, acts and agreements supplied by them. Indeed, given the worrying progress of climate change's effects, Norway has to show its commitment to limit its fossil emissions and to lower the risk of environmental disasters in the areas interested by oil activities, especially in the Arctic.

As described above, a turning point in the national energy industry seems to have come when Norway took over the Chairmanship of the Barents Euro-Arctic Council in 2019. Here a new set of guidelines for a sustainable development of the North was proposed, cutting gas emissions and investing in renewable energy resources. Indeed, the country is one of the main users and developers of technology related to electric cars and hydropower in Europe. However, as it was unable to fulfil its first commitment to the Kyoto Protocol (2008-2012), the government is still fighting against actors like the Green Party, and ONG Greenpeace, that accuse the national authorities of hypocrisy in this field.

In short, the content of this chapter showed how the Norwegian authorities are linked to international bodies for what concerns resource exploitation, pollution control policies, and indigenous people rights. Much more space is going to be committed to this last point in the next chapter. Indeed, it is clear that people want to express their own opinions about the plans set by the energy industry, especially if its activities imply the opening of new fields on an area close to an inhabited zone. The communities of indigenous people living in the northernmost regions of Norway (such as the Sámi) are the most involved in this process, given the rich presence of both hydrocarbons and renewable resources (such as wind- and hydropower) on their territory.

It is true that the decision power lays in the government's hands; however, the people's right of expression is still able to highly affect the actuation process of the authorities' and companies' plans.

Notes

1- It is combination of Nitrogen Oxide (NO) and Nitrogen Dioxide, (NO2), methane (CH4).

2- Source: article "the shelf in 2009"; http://www.npd.no/en/news/news/2010/the-shelf-in-2009/the-shelf-in-2009---environment/ . The Norwegian Petroleum Directorate; 2010.

3- Three Norwegian districts are located in the Arctic Circle: Nordland, Troms and Finnmark.

4- USA (Alaska), Denmark (Greenland), Iceland, Canada, Russia, Finland and Sweden.

5- The same goals are set by Organization for Economic Co-operation and Development (OECD), and the World Trade Organization (WTO).

6- Source: The Norwegian Government; www.regjering.no - Nordområdene; "The Norwegian Chairmanship of the Barents Euro-Arctic Council 2019-2021"; Artikkel | Article's last update: October 10th, 2019.

7- Alastair Fraser, from Why Is There So Much Oil in the Arctic? - By Emma Bryce - Live Science Contributor August 03, 2019. https://www.livescience.com/66008-why-oil-in-arctic.html

8- 'Phenology': the study of recurring phenomena, such as animal migration, as influenced by climatic conditions. Source: Collins dictionary

9- Source: Aslaug Mikkelsen, Oluf Langhelle; "Arctic Oil and Gas: Sustainability at Risk?" Routledge, 2008: 1.

10- France, Germany, Italy, Japan, The Netherlands, China, Poland, India, Republic of Korea, Singapore, Spain, United Kingdom.

11- Source: The Arctic Council: Working Groups (www.arctic-council.org). Article written on June 29th, 2015.

12- Here it is possible to take vision of the full programme: https://www.sdwg.org/wp-content/uploads/2017/04/SDWG-Framework-2017-Final-Print-version.pdf

13- The first commitment included the years between 2008 and 2012; the second started in 2013 and is going to expire in the end of 2020.

14- Source: "Corporate social responsibility in the oil and gas sector"; Frynas. Article in "The Journal of World Energy Law & Business"; 2009b: 98- from Moses & Letnes, Oxford University Press; 2017:199.

15- Source: Aslaug Mikkelsen, Oluf Langhelle (2008). Arctic Oil and Gas - Sustainability at Risk"; Routledge; 2008:26.

16- The other fields under interest are located in the Norwegian Sea (35) and in the North Sea (8),

17- Sources: Atle Staalesen, "Norway expands Arctic drilling while promising emissions cuts"; the Barents observer; March 15th, 2019 // the Norwegian Government; "Høring om TFO 2019 – tildeling i forhåndsdefinerte områder"; pressmelding; March 14th ,2019.

18- The first time was in 2017, for the same reason.

19- Official translation of the constitution as amended by the Norwegian Parliament in 2018. Here it is possible to take vision of the full content of the Norwegian Constitution transcribed in English: https://www.stortinget.no/globalassets/pdf/english/constitutionenglish.pdf .

20- Source: Norwegian Petroleum Directorate: https://www.norskpetroleum.no/en/framework/the-petroleum-act-and-the-licensing-system/

21- Here it is possible to take vision of the full content of the declaration on the establishment of the Arctic Council: https://oaarchive.arctic-council.org/bitstream/handle/11374/85/EDOCS-1752-v2-ACMMCA00_Ottawa_1996_Founding_Declaration.PDF?sequence=5&isAllowed=y

22- More information is provided in this thesis in chapter 4, paragraph 1.2.

23- Here it is possible to take vision of the full content of the Kyoto Protocol: https://unfccc.int/resource/docs/convkp/kpeng.pdf

24- *Source: Climate Action Tracker. last update 2 December 2019. https://climateactiontracker.org/countries/norway/.*

25- Here it is possible to take vision of the full content of the Paris Agreement: https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

26- English translation: National Hydrocarbon Institution.

27- The company also took part to the production process on the fields Åsgard, Heidrun and Kristin, reaching a daily amount of 106 thousand barrels in 2015. Source : www.eni.it ¸ https://www.eni.com/enipedia/en_IT/international-presence/europe/enis-activities-in-norway.page

28- Source : Vår Energi AS official website ; www.varenergi.no

29- Sources : « Eni's activities in Norway »; https://www.eni.com/enipedia/en_IT/international-presence/europe/enis-activities-in-norway.page .

30- Source: Norwegian Petroleum Directorate; https://www.norskpetroleum.no/fakta/felt/goliat/

31- Here it is possible to take vision of the full content of the 'Policy on Indigenous People' applied by Eni: https://www.eni.com/docs/en_IT/enipedia/international-presence/norway/eni-norge-policy-on-indigenous-people.pdf .

CHAPTER 4 - THE PATH TOWARDS RENEWABLE RESOURCES

key words: national gaps; climate change; renewable resources; future.

Introduction

As it has been showed at the beginning of this study, in chapter 1, the Norwegian domestic innovation system is based on both the development of national industry sectors, and the interaction with international actors. These elements had a very important role, especially during the '60s and the 70's, when the Norwegian energy industry faced its biggest change after oil was found. As explained by Fagerberg and Vespangen in their study "The evolution of Norway's national innovation system" (2009), the country faced a change in its "research and development" (R&D) system after the Second World War, *a "knowledge-intensive, network-based development path characterized by R&D-intensive firms in 'new' industrial sectors such as ICT, relying on public investments in Norway's national R&D infrastructures of public laboratories and universities"* [lii]. This path was suggested as a more efficient model of development by both the national authorities and academic personalities. In this manner, the investment and the collaboration between industries and research institutions became fundamental to the Norwegian innovation system. Indeed, currently approximately 35 per cent of the domestic manufacturing firms are linked to universities, research centers and foreign sources [1].

[lii] Jan Fagerberg, David C. Mowery, Bart Vespagen (2009). *The evolution of Norway's national innovation system*. Centre for Technology, Innovation and Culture (TIK), University of Oslo, (NOR), Haas School of Business, University of California at Berkeley, Faculty of Economics and UNU-MERIT, Maastricht University, (NL). 2009: 439.

Thanks to this profitable collaboration, the energy industry faced a successful growth in management skills, productivity and income, bringing the country to reach the same development level of the other Northern European countries, that had begun their industrial development much earlier than Norway. As we know, this collaboration (together with the luck which accompanied Norway during its exploration of the Northern Sea) led the domestic petroleum sector to become one of the pillars of the current domestic economy. This brought also Norway to be recognized as the most successful model of management of the resource. Nevertheless, as discussed in the previous chapter, the employment of oil and gas resources is one of the main causes of the increase of greenhouse gasses and polluting substances in the air and the seawaters. Moreover, as these resources are not only responsible for climate change, but are also limited, it has been understood how the "*the development and deployment of clean technologies must be accelerated to avoid a more than 2-degree warmer world"* [liii], as established in the Paris Climate Agreement.

Energy generated by wind- and hydro power seems to be a good solution in the research for a substitute to oil in Norway. The country is rich in both waterfalls and streams, and the seas which border the Norwegian shorelines are characterized by a strong windy weather. However, the Scandinavian country seems to be still too tied to the immediate economic benefits that the hydrocarbon industry assures. As said in chapter 3, this confirms the double face of Norway: on the one side, Norway is oriented towards the transition to renewable resources; on the other side, Norway wants to continue raising its power in the petroleum sector.

As climate change and energy transitions are two of the most discussed topics of contemporary times, Norwegian policymakers have to face their responsibilities in

[liii] Tuukka Mäkitie, Allan D. Andersen, Jens Hanson, Håkon E. Normann, Taran M. Thune (2018). *Established sectors expediting clean technology industries? The Norwegian oil and gas sector's influence on offshore wind power.* Center for Technology, Innovation and Culture, Journal of Cleaner Production 177. University of Oslo. Norway.

conducting a more environmental-friendly profile of the domestic industry. 2019 has been a troubled year, from this point of view. The ethical dilemma which distresses Norway's energy industry became the main matter discussed at both national and international levels. The state promoted new environmental policies oriented towards an eco-sustainable development and a limitation of emissions (especially in the most populated districts), limiting at the same time the petroleum activities in some areas on the NCS. However, the government does not seem motivated to manifest further oppositions to the exploration and drilling plans proposed by Equinor in the Barents Sea and in the Great Australian Bight, continuing to incentive the hydrocarbon industry. This led both the Norwegian population and policymakers to think on the economic future of the country. Indeed, as expressed by Moses and Letnes in their study, *"Norway will have to decide the legacy it wishes to bequeath its future generations: Norway the oil power, or Norway the global champion for peace, development and environmental sustainability"*[liv] .

This chapter offers an analysis and a description of the latest events that are influencing the development path of the Norwegian energy industry. The content is divided into three subchapters.

In the first sub-chapter the focus is orientated on two of the main events which condition the performance of the policies inherent in the petroleum sector and have shaped public opinion: the "Strike for Climate" movement, and the decision of the Norwegian government to increase its investments in the renewable energy industry from June 2019. The second section underlines the reaction of the Norwegian population to the changes expected by the new energy policies that the national authorities are trying to actuate. Here a deeper view is given on the different points

[liv] Jonathon Moses & Bjørn Letnes. *Managing Resource Abundance and Wealth: The Norwegian Experience*. Oxford University Pres. 2017: 227.

of view between Northern and Southern Norway, highlighting the case of the Sámi people, whose economic activities and traditions might see the installation of wind turbines as a menace to their preservation. In the third and last part, the plans regarding the renewable energy industry are discussed. The city of Trondheim is going to be used as a case study, as it is one of the most active municipalities in Norway moving in the sustainable direction, promoting the employment of electric motors and preparing new urbanistic plans for a more sustainable city.

1. The Latest Developments

2019 has brought a year full of changes for the international energy industry. In the European continent, almost every country from North to South and from West to East started feeling the pressure of both stronger effects of climate change and of the expiration of the second commitment of the Kyoto Protocol. More violent storms, an extremely warm summer, a mild winter, and the awareness that the target set by the Protocol and the Paris Agreement are not sure to be accomplished, rose the awareness of policymakers that a more concrete action plan needs to be set.

In the context of polluting emissions, Norway did not appear as the perfect example to follow, given the continuation of its hydrocarbon production activities. Nevertheless, from a social and future-oriented political point of view, the country proved its commitment in the fight to climate change especially through two events: a strong participation to the "Strike for Climate" movement [2] and the decision of the Norwegian Labour Party to increase the use of renewable energy sources and limit the progression of the oil industry.

*1.*1. The Influence of the "Strike for Climate" Movement in Norway

The influence of the "Strike for Climate" movement reached young Norwegians at the beginning of 2019. Since the beginning of that year, students living all over the country took part in the strike, twice. The first time was on March 15th, 2019 [3], and the second on September 20th. On both occasions, the highest percentage of participation took place in the big towns of Norway, such as Oslo, Trondheim,

Tromsø and Hammerfest, where demonstrators marched around the city center, reaching the front of the City Hall, where they showed their slogans asking for 'concrete and immediate changes'. The Norwegian group "Nature and Youth" calculated a presence of about 40,000 participating to the protest all around the country, confirming the high interest of the younger generations to take active part in stopping climate change.

The demonstration also reached the extreme North. In Kirkenes, a little town in Finnmark with a local population of about 3,500 people in 2019, the great majority of young people took part to the march. Thomas Nilsen, journalist for newspaper "The Barents Observer" interviewed one of the students who took part in the protest at Kirkenes, asking the motivation for why she was participating to the strike. The girl, Sofie Gade-Lundlie Tallberg, answered «*We, in a small town in Northern Norway, above the Arctic Circle, are inspired by what youths around the globe are doing.* » [lv].

The second strike took place in the end of September 2019, and was not as crowded as the first one (given also the bad weather conditions that hit Norway on that day). Nevertheless, the support provided by the Norwegian population to the "Strike for Climate" movement appears to be strong, especially through the action of the "Nature and Youth" group.

[lv] Sofie Gade-Lundlie Tallberg, in the article by Thomas Nilsen. *Teens on school strike blame adults for climate screw-ups*. The Barents Observer. March 22nd, 2019.

1.2. June 2019: the Norwegian Labour Party Decides to Increase the Use of Renewable Energy Sources and Limit the Progression of the Oil and Coal Industry

Given the failed attempt to accomplish the first commitment to the Kyoto Protocol and as the level of emissions expelled by the hydrocarbon industry is still high, in recent years Norwegian policymakers have pledged to change the situation. In 2017 the country set a new long-term goal, according to which Norway should cut its emissions from oil, gas and coal activities by 80 per cent in relation to the levels registered in 1990, in order to become a "low carbon society" by 2050. Two years later, in January 2019, the goal was risen to a reduction of emission by 90-95 per cent.

However, Norway already committed itself, together with the other members of the EEA and EU, to reach the target of "emissions neutrality" by 2030, and, as already described in the previous chapters, the country signed and ratified both the second commitment to the Kyoto Protocol and the Paris Agreement. As said, despite these promises, the results have not been concretely satisfying. Indeed, under the recent policies from industry management and environmental safeguard, the emissions faced a limitation of only 12 per cent [4], making Norway again not the best example to imitate. Therefore, the government decided to take a more drastic action in order to meet the aims set to Norway and fight climate change.

To do so, the Norwegian Parliament voted for new policies concerning the Government Pension Fund, in order to limit future emissions and provide a more fertile economic ground for the renewable energy industry. In this way, projects involving renewable energy will be advantaged, while every investment in companies with an annual energy generation from coal over 10GW, will be banned. As a result, from June 2019 the companies involved in both coal, gas and oil

activities had to change their plans and slow their production down, given the lack of supplies that they were supposed to obtain by the Norwegian government through the Fund. As expected, this action damaged the business of the companies involved, whose important partner and source of investment used to be Norway. This proved the weight of Norway on the international energy industry, and the influence that its decisions have on it. On the other side, thanks to this policy, the renewable energy sector faced a good rising in its market. The electric cars industry faced an increase of 56 per cent in technology development, manufacturing, and sales. This, according to the data provided by the Climate Action Tracker (December 2019), led Norway to obtain the record as the country with the highest distribution of electric cars on its national territory. However, the process to reach the utilization of only electric cars in Norway is still far from completed, since only the 8 per cent of the total number of cars present in Norway was empowered from electric energy in 2019 [4].

In the coming years the electric car market is expected to keep growing, but no accurate prediction can be postulated on the future of the oil industry and the emissions linked to it.

2. How are the Norwegian Government and People Reacting to these Changes?

The environmental crises are a topic at the top of almost every country in the world. The effects of climate change became evident in the last two years, especially in the northernmost areas of the planet, where the melting of glaciers and the rise of temperatures significantly affected the local ecosystem, leading the human activities to adapt to these changes.

Norway is one of the countries whose majority of national territory is sensitive to the effects of climate change [5], but whose main economic resource is one of the main causes at the ground of global warming, and whose government is still struggling to find an efficient and definitive solution. As demonstrated by the high participation to the Strike for Climate movement, the rise of opinions against the investments offered by Equinor to some universities [6] and the increment of share of electric cars all over the country [7], the Norwegian population is showing its concern about the transition to renewable energy sources in order to limit the effects of climate change. However, this awareness emerged particularly in the last decade (2010's), once consciousness of the climate question had risen.

The rise of public awareness is a fundamental element in the fight to climate change and in influencing the attitudes of the oil companies, as they are principally responsible for the climate crises. An interesting accusation against these companies was raised in February 2006 by Professor Thomas Christian Wyller from the University of Oslo, who wrote an editorial in the 'Stavanger Aftenblad' newspaper about the inverse phenomenon. Wyller discussed the influence that the marketing proposed by oil companies was having on public opinion at the time. Indeed, in that

period Norway was experiencing a new era in oil politics after the opening of activities in the North: the dispute between business and political interests versus environmental considerations and local economic security, was extremely bitter. In his article, Wyller accused Equinor of using incorrect commercials in order to convince the Norwegian population of the benefits [8] that the opening of new oil fields in the North would have brought to the residents in the area. Wyller criticized the plan adopted by the oil company, by claiming "*this is not information, it is agitation, and it tries to influence the value choice during a political process of opening the areas for exploration or not*" [lvi] .

Recently, another claim has been raised under the eyes of the Norwegian government and population by Frode Pleym, the head of Greenpeace Norway. In his speech, Pleym pointed the finger against the Norwegian government itself. He accused it of not handling the emergency of global warming and climate change with the attention it deserves, since the policies promoted up to that moment (April 2019) did not prove to be efficient enough. Moreover, Pleym claimed that also the topic of regional environment safety seems to have been left apart: "*The Norwegian government can no longer ignore the dangerous impact its exported oil is having on the climate. Climate change knows no borders.* ***Oil is oil, no matter where it is burned,*** *and the government needs to cancel all drilling for new oil in the Arctic. Not acting now violates the Paris agreement and Norway's own constitution*."[lvii] The appeal launched by Pleym reached the Norwegian public opinion, who supported his motion.

[lvi] Aslaug Mikkelsen & Oluf Langhelle. *Arctic Oil and Gas: Sustainability at Risk?*. Routledge 2008:78 - Thomas Christian Wyller *Statoil influence population mind. February 24th,* 2006.

[lvii] Jillian Ambrose. *Campaigners try again to stop Norway drilling for oil in Arctic.* The Guardian. November 5th, 2019.

Another voice which awoke public opinion in Norway in the same period came from David Boyd, the United Nations rapporteur on human rights and the environment. Boyd, as described in the previous chapter, presented a report on the plan set by the Norwegian government to expand the activities of the oil industry, in which he demanded an end to the exploration and drilling operations. The rapporteur claim is characterized by a more severe tone than the appeal of Pleym: "*Norway should stop exploring for additional oil and gas reserves, stop expanding fossil fuel infrastructure, and harness Norwegian wealth and ingenuity to plan a just transition to a fossil fuel-free economy,(…) Norway, as one of the world's wealthiest nations and one of the world's leading producers of oil and gas, must accept substantial responsibility for leading efforts in mitigation, adaptation and addressing loss and damage*." [lviii].

The Norwegian government seems not to be too much concerned by these words, since it continues promoting its environment policies, while keeping a high profile in the petroleum industry. On the other hand, the Norwegians are giving an active response to both these calls and to the warnings given by nature. At the forefront, the younger generations are the readiest to take concrete action and to demonstrate against the companies' and government's wrong attitude. Indeed, as showed, the Friday for Climate and other events such as the "Energy Transition Conference" in 2019 enjoyed high levels of participation in Norway.

[lviii] David Boyd. *Norway- End of Mission Statement*. United Nations Special Rapporteur on human rights and the environment- September 23rd, 2019; United Nations - Human Rights, office of the High Commissioner.

2.1. The Gap between the Northern and Southern Sides of the Country - the Sámi Case

"Necessary measures should be taken to ensure that Artic flora and fauna and ecosystem on which they depend are protected during all phases of offshore oil and gas activity. Special attention (…) is required for species (…) which are resource for human use, particularly by indigenous people"

The Arctic Council, 2002
(from: Mikkelsen & Langhelle; "Arctic Oil and Gas: Sustainability at Risk?"; Routledge; 2008: 80)

As in many other countries, the disagreement of opinions between northern and southern regions has always characterized the Norwegian policy. The differences due to the physical features of the territory, the local culture, the historical experiences, and the physical distances between the two extremities of the country, made the regions develop different interests. One of the main sources of argument between the two parts is the discussion on the energy industry, in particular the field of oil and wind energy. Indeed, despite the debates concerning the right of local authorities to keep control over the resources situated on their land, the inhabitants of the northern regions (especially in Finnmark) were initially favourable to the start of oil activities in their area by NOCs and IOCs. On the other hand, in the south, especially in Oslo, the population did often demonstrate against the opening of fields in the north, giving the fear of possible oil spills [9]. This contrast of opinions worsened the relations between the two sides, since the inhabitants of Nordland and Finnmark were not interested in offering their land as "*nature park for the rest of Norway*", or to satisfy the wishes of "*groups of environmentalists*" whose view

was based on "*(..) a monopoly on being environmentally-friendly whilst sitting around a café table in Oslo*"[lix] without any legitimacy [10].

Leaving the political discussion, a part, it is objectively visible and unquestionable that in the last twenty years the Arctic society has faced a series of deep and rapid changes in its components. Economic and political changes, industrial development, environmental policies, and the risk of a cultural crises, have drastically influenced Arctic society.

In 2005 the Nordland Research Institute (NRI) presented on behalf of WWF research about work opportunities and economic development in the Northernmost regions of Norway during the course of the following 35 years. In it a special emphasis was given to fisheries and tourism [11]. Indeed, the study highlighted how "*the demands from the fishermen are based on four basic principles: all activities must be based on zero discharge; the petroleum industry must not occupy any important fishing areas; the government must have a close dialogue with the fishing associations when they consider new areas for oil and gas explorations; the state of readiness must be increased to an acceptable level*" [lx]. Moreover, the fishing industry was scared to lose employees, that might be more interested to work for the oil industry. It was fundamental for the region to find people able to work and satisfy the needs required by the two industries, to provide competent staff to both of them and limit competition between them.

However, the conflict between the fish and oil industries did not end here. At the opening of exploration activities, local fishermen were scared that their business

[lix] Arvid Jensen, Chairman of the Board of Petro Arctic, in the television debate on March 30th, 2006

[lx] Aslaug Mikkelsen & Oluf Langhelle . *Arctic Oil and Gas: Sustainability at Risk*?. Routledge; 2008: 222.

would face negative consequences. In this case, article 14 of ILO 169 Convention and the Finnmark Act came to help them. Indeed, in article 14.1 it is clarified that

"1. The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognized. In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities. Particular attention shall be paid to the situation of nomadic peoples and shifting cultivators in this respect."[lxi] .

Here the local authorities claimed that the 'land' expressed in the article includes both onshore and offshore activities [12]. Indeed, since the Sámi fishermen have conducted their activities in the Norwegian and Barents Seas for ages, making the aquaculture industry a pillar of their economic survival and tradition, drilling represents a factor which can negatively affect their business. For this reason, representatives of the indigenous community expressed their opinion, according to which the Sámi people should have a special say about drilling activities involving their territorial seawaters and marine resources. In addition to that, according to points 2, 3, and 4 of the Finnmark Act, the national law should assure the safeguard of Sámi culture, an ecological and sustainable development of the area, and improve positive industrial development. Moreover, the Act gives people resident in Finnmak the right to use the resources present on the region territory, including timber, gathering, peat cutting and, most important in this case, fishing [13].

Aili Keskitalo, Sámi president from the National Association of Norwegian Sámi (NSR) between 2008 and 2013, claimed during an interview with the regional newspaper "Nordlys" in August 2006: "*The international law gives the Sámi people (..) rights to oil and gas resources in our area. I am not claiming that we have sole*

[lxi] C169 - *Indigenous and Tribal Peoples Convention*, 1989 (No. 169); 14.

rights to the petroleum resources in the northern areas, but the Sámi people do have such rights as indigenous people" [lxii]*.* The words pronounced by Keskitalo found support in ILO 169, articles 14 and 15 [14], in the International Covenant on Civil and Political Rights (ICCPR) [15], in the Optional Protocol No. 1 [16], and in the Convention on the Elimination of All Forms of Racial Discrimination [17]. However, these principles are not completely shared by other political figures in the Norwegian parliament. Indeed, during an informative interview the same year, the members of the Energy and Environmental Committees from the 'Høyre/Høgre' (the Conservative Party) rebutted *"All the natural resources in Norway must belong to the whole Norwegian population, whether we are talking about fish or oil. The oil is a non-renewable resource, and cannot belong to a single group. I cannot imagine a geographical area or group of people who should have any special right to the oil. This is the community's property."* [lxiii]

Given this declaration, Sámi people brought the attention of the national authorities to another point. The ethnic group questioned the influence that the local community's opinion would have had on the conduction of exploration activities and the exploitation of the natural resource. This doubt found a solution in article 15.2 of the ILO 169 Convention, where it is explained how rights to resources have to be managed [18]:

"*In cases in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to lands, governments shall establish or maintain procedures through which they shall consult these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any program for the exploration or exploitation of such resources pertaining to their lands. The peoples concerned shall*

[lxii] Aslaug Mikkelsen & Oluf Langhelle. *Arctic Oil and Gas - Sustainability at Risk.* Routledge. 2008: 224; 237.
[lxiii] Aslaug Mikkelsen & Oluf Langhelle. *Arctic Oil and Gas - Sustainability at Risk.* Routledge. 2008: 225; 238.

wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which they may sustain as a result of such activities[lxiv]*.*

Recently, another debate about regional development and right to territory was raised, involving the hydroelectric and wind-power industries *versus* local reindeer husbandry. As revealed by the visit conducted by D. Boyd in Finnmark between 12th and 23rd September 2019, where he took part in about 30 meetings with the representatives of the Sámi Parliament, the two sectors create big difficulties for the survival of each other. Indeed, the Rapporteur explained as the growth of hydroelectric power plants and wind turbine fields create a physical limitation to the sustenance of reindeer pastures. Therefore, since the life of breeders relies on their farms, these people tend to see these renewable energy industries as a danger to their survival. Currently, in January 2020, the discussion on this issue is still open in the Norwegian government's agenda, since the extension of sustainable energy industries in the North is a necessity for an environmental-friendly development of the economy. However, it is still important for policymakers to keep in mind the rights of residents and indigenous people living in the area. Citing Boyd's own words *"Reindeer herding is at the heart of Sámi culture and provides a livelihood for thousands of people. By redoubling its efforts to secure the free, prior, and informed consent of the Sámi before making any decisions that affect their rights, Norway could provide a model for the world in protecting the rights of Indigenous peoples, protecting the environment, and highlighting the connections between human rights, healthy ecosystems, and healthy people."* [lxv]

[lxiv] C169 - *Indigenous and Tribal Peoples Convention*, 1989 (No. 169); 15

[lxv] David Boyd; *Norway- End of Mission Statement*; United Nations Special Rapporteur on human rights and the environment. September 23rd, 2019. United Nations - Human Rights, Office of the High Commissioner.

3. Towards Renewable Energy: Research, Plans and Actions in progress

Despite the failure to achieve the goals set by the second commitment to the Kyoto Protocol and the continuation of oil activities in the Arctic, Norway has made great strides in the development of the renewable energy industry, during the last years. According to data provided by Climate Action Tracker, in 2017 the country based 96 per cent of its electricity by hydropower and 2 per cent from wind-power. Indeed, the implant of offshore wind-power fields in the North Sea is supposed to lead to a growth in the national energy market, contributing also to a rise in the supply of renewable energy to the country [19].

In 2018, Norwegian authorities launched a plan for the reduction of greenhouse gas emissions produced by means of transport. This National Transport Plan is going to last up to 2029, by which it is hoped to completely decarbonize the Norwegian transport system. This plan leads also to an implementation of railways and public transports: in 2019 both sectors faced a rise in investments of about 6 per cent. Another important aim has been reached in the private transport, where in 2018 the national market has registered a share of 31 per cent of electric cars, and 18 per cent of hybrids. At the end of 2019, more than the half of the Norwegian population had its own electric vehicle [4].

During the Energy Transition Conference which took place in Trondheim on March 26th, 2019, Liv Lønnum, the Norwegian State Secretary for the Ministry of Petroleum and Energy, described how Norway is proceeding in its path toward decarbonization, in order to become a zero-emission nation. The Minister did not forget to mention the role which the oil and gas industry had in the development of the domestic economy. Lønnum recognized the fundamental help provided by this

industry and the importance that it has in the current Norwegian business; however, she admitted that Norway needs to conduct the production activities in such a way to safeguard the environment and to limit emissions. *"We are experiencing a rapid transformation in the way that we produce, distribute, and consume energy. What is Norway's role in the transition? We are a major exporter of oil and gas"* she said*" Oil and gas have been a source of economic growth, increased wealth, and created jobs all over the country. (..) We need to make sure that we produce these resources in the best possible way."* [lxvi]

Lønnum continued her speech by explaining how the Norwegian government is currently trying to encourage the development of motors fueled by hydrogen obtained by the CCS (carbon capture and storage) process. According to the words of the State Secretariat, this solution would help lower the level of polluting emissions. Indeed, natural gas seems to be one of the best resource fitting in the renewable sources list. Norway is rich in it, and it has the quality to be a "*flexible resource*", since it can be employed in any condition: when the sun does not shine, wind does not blow, and when there are water sources strong enough to start hydroelectric plants. Therefore, the government is currently supporting the collaboration between the energy research organization SINTEF and the University of Trondheim (NTNU) to keep the level of research in this field high.

The State Secretary concluded her speech expressing optimism in the future of the Norwegian energy system based on CCS, underlining the importance of the collaboration between Norway and the European Union in making this project successful: *"(..) I am sure that the government will keep to push forwards making CCS an important part of the global solution. The Norwegian government is committed to realizing full-scale CCS providers, as that the project leads to*

[lxvi] Liv Lønnum, the Norwegian State Secretary for the Petroleum and Energy Ministry. "*Norway's role in the energy transition"; Energy Transition Conference*; Trondheim March 26th, 2019.

technology development internationally. A successful CCS project could be the key to unlock considerable emission cuts from industry and power production in Europe. For that to happen, we need strong engagement from the European Commission, the European Member States, and the European industry and power entities. (…) It is not as if we go to bed in the petroleum age and wake in the age of renewable energy. The path toward decarbonization and the low emission society will take time." [lxvii]

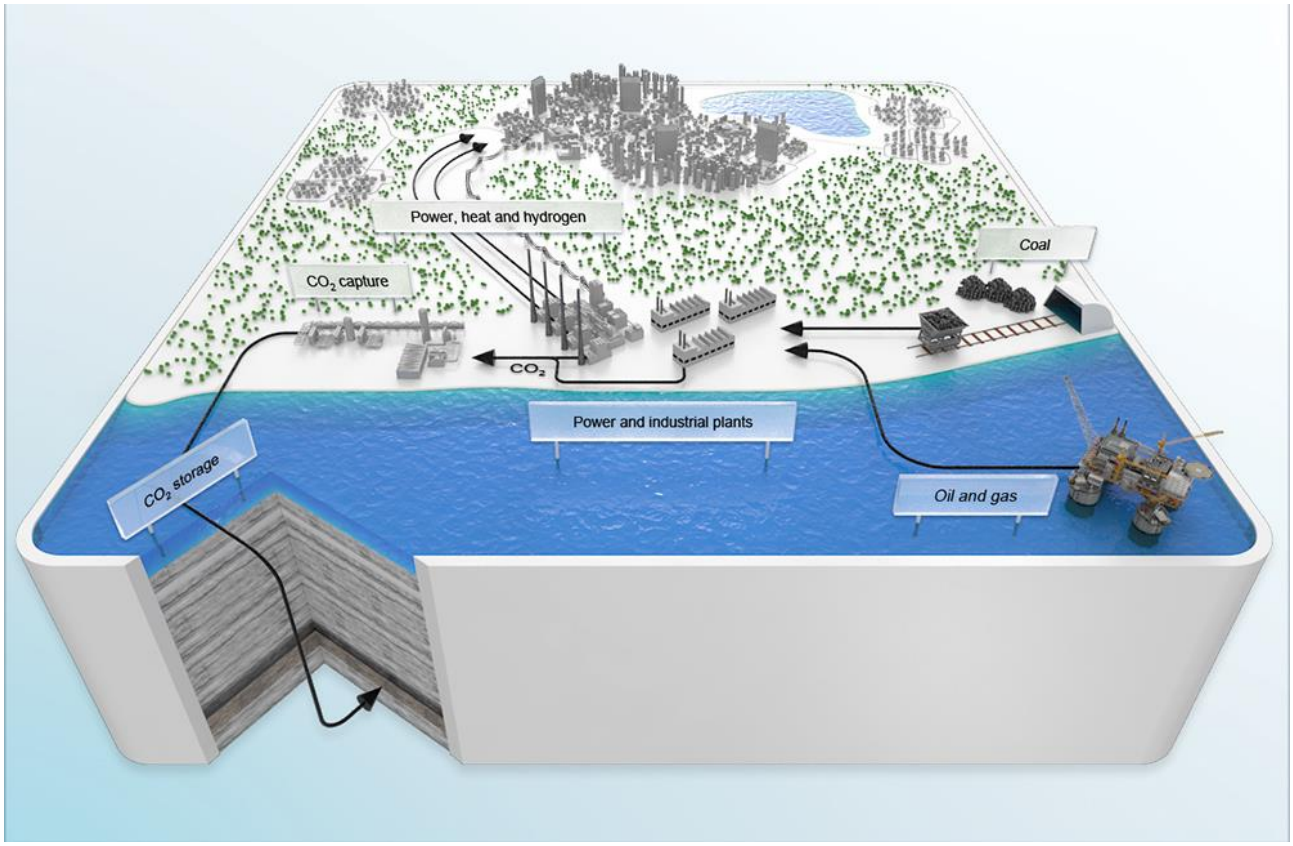

Figure 8. CCS comprises the capture, transport and storage of CO_2-emissions
Source: Norwegian Petroleum Directorate
Illustration: Gassnova

[lxvii] Liv Lønnum; the Norwegian State Secretary for the Petroleum and Energy Ministry. *Energy Transition Conference*; 2019.

3.1. The promotion of zero emissions vehicles - the case of the city of Trondheim

One of the main causes of polluting gas emissions are diesel cars, that produce a big amount of NO_2 emissions. In order to solve the problem, the Norwegian government is trying to encourage people to buy electric or hybrid cars and it seems to be doing it successfully. Indeed, thanks to the national tax system on cars and emissions, it is economically more convenient for a Norwegian to own a low or zero emission vehicle, since the higher is the level of emissions produced by the car, the higher is the amount of taxes to pay. Moreover, the tax is progressive and contributions raise in relation to the weight, and the amount of emission of CO2 and NOx released, making big petroleum car extremely expensive to support. In this way, even if the import prices for buying a zero-emission car are higher than those of a high-emission one, the revenues obtained from the polluting vehicles allow the government to subsidize low-emission cars with no economic loss. The aim of the Norwegian policymakers is that all the new vehicles sold on the domestic market should be zero-emission models by 2025. To do so, the tax system on polluting cars is going to be reinforced, making electric vehicles very competitive in the Norwegian market [20].

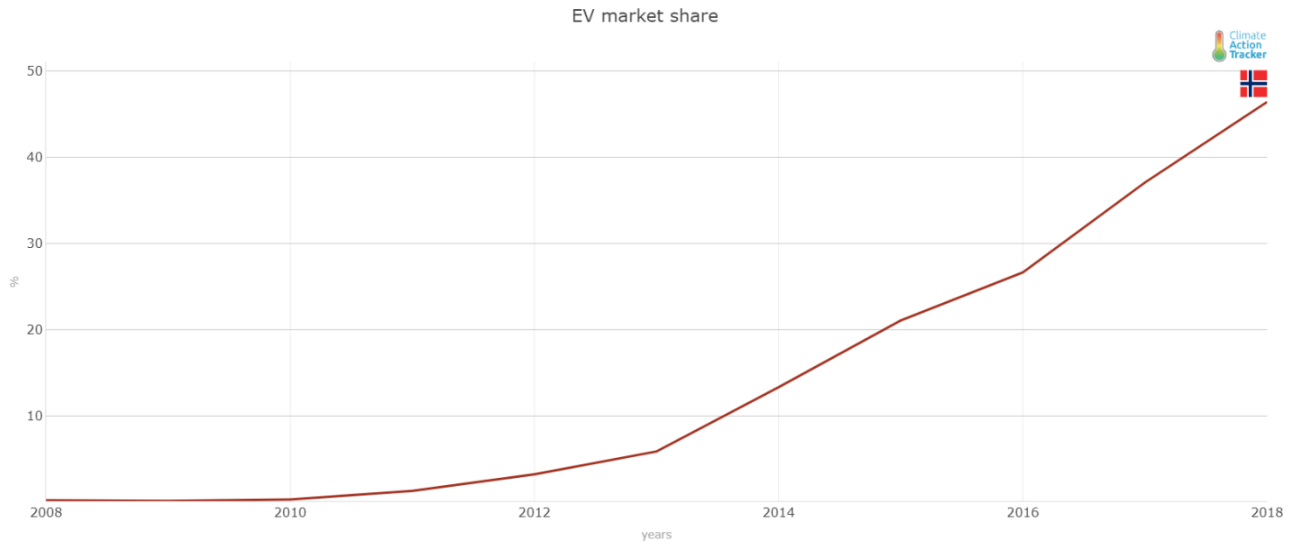

Figure 9. Market share of Electric Vehicles in Norway
Source: Climate Action Tracker

One of the best concrete examples of achieving this goal set by the parliament is the city of Trondheim. During the last five years, the city has been on the top of the list of the Norwegian inhabited centers with lower emissions levels [21]. As Trondheim is one of the biggest towns in Norway, it is important to analyses its current environmental policy, since its performance has a wide echo in the national scene.

From May 2017 the municipality adopted a new energy and climate plan, which is going to last up to 2030, at which time it is hoped to have reduced greenhouse emissions by 85% compared to 1991. In order to reach this target, Trondheim municipality is collaborating with Statkfraft AS [22] and NTNU, improving the research in technology development of electric motors and promoting the direct action of citizens. In 2018 the passenger car portfolio in Trondheim accounted for only 9% of electric vehicles, a percentage which grew in 2019, reaching 49%. A factor which contributed this rise has been the transformation of the public transport system, on August 3rd 2019. Since that day, every bus moving in the municipality is fossil-free.

By 2020, the plan is supposed to lead Trondheim to reduce its greenhouse gas emissions produced from vehicles by 10% compared to the levels registered in 1991, cutting also the emissions from construction activities by 75%. The role of urban construction is important for the success of this climate plan, since many of them produce polluting emissions though the use of heating system fueled by oil or gas. To solve this, the levels of energy needed in the erection of new constructions and in the daily consumption of each person are hoped to be lowered by 20 per cent in public and private buildings, by the end of 2020 [23]. Currently (January 2020), the municipality of Trondheim is continuing to apply the energy and climate plan and, through the new public transport means, it has already been able to reach a substantial part of the target set.

Conclusion

This chapter discussed the direct role of the Norwegian population in the climate crisis and in the energy transition. As described, the Norwegians are showing a great interest in what is happening in the energy industry and in which effects these events are having on the environment. The younger generations care particularly about the topic of climate change, which is why the “Climate Strike” movement started by the activist Greta Thunberg faced a wide positive echo in the country. The policies promoted by the Norwegian Parliament also reflect the awareness of the need to start concrete actions in the energy transition from the era of oil to the low emission era.

The strengthening of the car emission taxes, the cut of investments from the Pension Fund to coal and oil companies, and the promotion of CCS technologies, are a confirmation of the Norwegian policymakers’ commitment. In this framework, the city of Trondheim is one of the principal fulcra of research and debate on the matter of technological innovation in the energy sector. Not only is the municipality actively applying efficient measures to reduce greenhouse emissions (such as the employment of only fossil-free vehicles for public transport), but also the University in Trondheim, SINTEF and Statkraft AS are giving their contribution to the realization of new plans for the “zero-emission” society aim set by 2030. Moreover, the city is going to host another edition of the “Energy Transition Conference” in March 2020, during which time a new team of expert speakers in the sector, together with some representative of the Norwegian Parliament, are going to meet for another debate.

However, not everything is as positive as it might seem. People in Norway are not completely favorable to the changes that the energy transition is bringing to the local economy. Indeed, the farming activities of some residents in the northernmost areas of the country, especially reindeer breeders and fishermen, are put at risk by

the installation of wind turbines. The petroleum industry offered many work positions to the local population and, even if the disputes between fishermen and oil companies is still open, many seem to still trust more in this industry (especially the older generations). Nevertheless, the younger generations are clearly concerned about the environment and the future of the local economy, and are more favorable to welcome the new industry based on renewable sources.

Another problem is given by the rapid process of changes that the Arctic areas have been passing though in the last decades. The transformation of the cultural tradition caused by an extremely rapid industrial and economic development, as much as political changes, brought the local population to become more diffident on new policies concerning the management of natural resources located on the local territory. The issue concerns both oil and gas, as well as wind- and hydropower. People in the area want to have the right to decide on the exploitation of their local resources on their own, in order to manage them in the best possible manner for the regional development, without however completely refusing the help of the State, which still would keep an important voice in the topic. Currently, the situation in the Arctic seems to be still unclear, especially concerning the relation between the Norwegian government and the representatives of the Sámi people.

To sum up, although the Norwegian oil industry still occupies an important role in the domestic economy, both the national authorities and civil society are trying to contribute to reduce the CO2 and NOx emissions produced by vehicles and buildings, bringing innovation and development in the energy industry. The path to walk for Norway to become a zero-emission society appears to be still long, especially if oil continues to be one of the main sources of revenue for the country.

Notes

1- Source: Samfunnsøkonomisk analyse AS; "Norwegian industry-related R&I policy agencies, measures and beneficiaries". Report from Mat 21st, 2019.

2- This movement, also identified through the hashtag #FridaysForFuture, born in August 2018. The founder is the Swedish teenager Greta Thunberg, who decided to start her protest against the scarcity of policies to fight climate change, by sitting in front of the Swedish parliament's palace in Stockholm. Thunberg did this for a period of three weeks, skipping school, and posting her activity on social media. Doing so, her initiative became viral and other people took part to her protest, not only in Stockholm, but worldwide. Two strikes took place at global level, on March 15th and September 20th, 2019, both on Friday.

3- On March 15th 2019, more than 1,8 million young people in 2350 cities in 125 countries across the world were on school strike for the climate. In Norway more than 40 000 youths struck for climate. source: Global klimastreik/Global climate strike. September 20th,2019; https://naturvernforbundet.no/arrangementer/global-klimastreik-global-climate-strike-article39606-198.html.

4- Source Climate Action Tracker- Norway: https://climateactiontracker.org/countries/norway/

5- Regions such as Nordland, Finnmark, and the archipelago of Svalbard)

6- See the case described in the introduction to this study: Equinor offered a donation of 100 million Norwegians Krones to NTNU in 2019. The action rose the opposition of a big number of students, that tried to convince the chancellor of the university to refuse the money, since it is came from a 'dirty source' (oil business).

7- This also thanks to some policies and taxes facilitating the use of electric motors instead of the gasoline or diesel alimented ones.

8- Opportunities for increasing the national welfare and workplaces in the northern regions.

9- Source: Aslaug Mikkelsen, Oluf Langhelle Arctic Oil and Gas: Sustainability at Risk?"; Routledge; 2008: 219-226.

10- Source: Mikkelsen & Langhelle; 2008:220; 237.

11- Source: Mikkelsen & Langhelle; 2008:217.

12- In ILO 169 it is specified that the term 'land' refers to the territories that include "the total environment of the areas which the peoples concerned occupy or otherwise use".

13- Source: Mikkelsen & Langhelle; 2008: 126;128; 297-302.

14- Here it is possible to take vision of the full content of the C169 - Indigenous and Tribal Peoples Convention, 1989 (No. 169) : https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169

15- Here it is possible to take vision of the full content of the International Covenant on Civil and Political Rights (ICCPR): https://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx

16- Here it is possible to take vision of the full content of the Optional Protocol No. 1: https://www.ohchr.org/en/professionalinterest/pages/opccpr1.aspx

17- Here it is possible to take vision of the full content of the Convention on the Elimination of All Forms of Racial Discrimination: https://www.ohchr.org/en/professionalinterest/pages/cerd.aspx

18- Source-Mikkelsen & Langhelle; 2008: 297-302).

19- Source: Centre for Technology and Culture, University of Oslo_Mäkitie, Andersen, Hanson, Normann, Thune; "Established sector expediting clean technology industries? the Norwegian oil and gas sector' s influence on offshore wind power"; Oslo University, 2016)

20- Source: norsk elbil forening - The Norwegian Electric Vehicles Policy; https://elbil.no/english/norwegian-ev-policy/

21- Source: The Norwegian Institute of public health Air pollution in Norway. Article published on March 17th, 2015. Article updated on February 3rd, 2017; https://www.fhi.no/en/op/hin/environment/air-pollution-in-norway---public-he/

22- Statkraft AS is an international energy company which builds its business on gas-, wind-, and hydropower. The company is one of the biggest suppliers of renewable energy in Europe and operates in 16 countries worldwide.

23- Source: Trondheim Municipality news; environment and the Climate Plan; https://www.trondheim.kommune.no/aktuelt/utvalgt/andre-omrader/miljo/Klima/klimaplan

CONCLUSION

This master thesis aims to analyse the case of Norway as an example of an oil country which is attempting to put its active contribution in the process of energy transition, from hydrocarbons to renewable resources. This last and short chapter offers a resume of the thesis' contents along with some final considerations.

Norway is often reported to be one of the most virtuous and efficient examples of resource management, environment care and respect for human rights. However, as described in the course of this study, there was more than one occasion when the country found itself in the circumstance to be reported for some of its actions. Some examples have been listed: the proposal risen by Equinor to start new exploration activities in the Australian bight (action which would be illegal in Norway), the expansion of drillings in the Barents Sea, the missed accomplishment to the first commitment of The Kyoto Protocol, and the fight between the Parliament and the Sámi people over the rights on territorial natural sources. Under this light, Norway does not seem to be much better than the other oil countries. Nevertheless, the Norwegian government recently actualized new measures for the improvement of its environmental policies. An example has been displayed in chapter 3: the cut of investments from the Pension Fund to the companies dedicated to the coal, oil and gas business had big consequences on both the national and international energy market for Norway.

One of the objectives of this study was also to show that the Norwegian parliament is somehow allowed to keep its bipolar activity in this sector. Oil is an important part of the domestic economy, but it is not fundamental. The same can be said of hydro- and wind-power. Norway's economy needs these two industries to be active, but it can be decided to limit one of them at the expenses of the other without losses in

its GDP. In the past, once oil was found, the government decided to invest and develop this sector more. At the time (1970s-80s) the interests and needs were different than today: environmental matters were not such a dominant concern, as they are nowadays, and Norway wanted to evolve the new founded industry and make its economy grow. Now that the fight for climate change is one of the preeminent topics of this historical period (2010s-2020s), the Norwegian parliament has to adapt to a new emergency and new needs. The hydrocarbon industry is being slowed and the fields of interest are moving to the new and to the "old" manufactures.

As said at the beginning of this study, Norway has a solid economic foundation. The country was already wealthy enough before the arrival of petroleum in the energy industry. Nevertheless, it cannot be denied that the domestic economy owes much of its current strength to the oil and gas industry. After oil was found on the Norwegian continental shelf in 1969, the country became one of the richest economies on the planet and developed an extremely efficient welfare system. Many Norwegian research and innovation centres linked to the energy industry were founded during the 70s and 80s in order to keep on developing new technologies for the implementation of the sector. Moreover, the government decided to not focus all its attention on the oil industry, but also to maintain active the other sectors of the domestic economy, avoiding the Dutch disease and the resource course. This decision was dictated by both technical and strategic reasons. First, Norway benefited from a stable economy with a developed energy sector based principally on hydroelectric power, back to the opening of oil fields. Abandoning this foundation for its economy and the industries representing its national market (such as fisheries, forestry and timber), and focusing all the efforts in the oil sector, would have augmented the risk for the country to succumb to the Resource Curse. Second, the Norwegian authorities admitted to not being expert in

the management of the new-found oil fields. They also kept the awareness that the activities linked to the exploration, production and transport of petroleum are extremely dangerous for the environment's safeguard and staff security. Indeed, as the weather conditions in the Northern Sea are very demanding, it was necessary that the domestic engineering sector be kept active and innovative. This brought to a process of innovation and activity also in the other national industries, keeping them competitive. However, the real turning point in the management of the natural resource has been the creation of the Pension Fund, in which the revenues acquired by taxes on the oil industry have been kept safe for use in future public investments.

Indeed, it is also thanks to the money provided by the Fund that the research for the employment of renewable resources and for the development of new energy technologies has been financed. It can be said that Norwegian oil is supporting the business which is going to replace it.

Another topic on which this study aimed to shine more light on was how the Norwegian people feel about the energy transition. This theme has been developed in chapter 4, where two subdivisions were made.

First, it has been discussed how the indigenous people living in the Northernmost areas of the country are currently in a fight with the central power of Oslo. Indeed, the Sámi people are trying to assert their rights of ownership and management on the resources located on their regional territory, recalling the contents of the Finnmark Act of 2005 and the ILO169 Convention. This of course includes oil and renewable sources of energy. However, as the Arctic environment is extremely sensitive to the effects of climate change, the oil activities expose the territory to high dangers. Therefore, the Parliament is trying to preserve some of the areas of the region, even if this goes against the will of some of the residents. Many among

these people, especially the older generations, are reindeer breeders or fishermen and tend to see the installation of turbines both offshore and inshore as a theft of their land. On the other side, the younger generations seem to be more aware of the need to abandon oil and accept the new energy industries for the safeguard of the environment, and are therefore more open to these changes.

Second, the study analysed how Norwegians are accepting the progression of the energy sector. The city of Trondheim has been chosen as case study, being one of the most populated cities of the country and hosting many centres of research for the development of renewable resources. The town is currently working to reach the target of a zero-emission community set by 2030. In doing so, public transport is now composed only of fossil free vehicles from August 2019, and the circulation of electric vehicles is encouraged in the city. As said, in 2019 Trondheim also hosted (and is going to host in 2020) the Energy Transition Conference. The meeting has been an occasion for discuss the future of the global energy industry, dedicating a special focus on Norway. An important voice has been Liv Lønnum, from the Ministry of Petroleum and Energy. As the research in chapter 2 showed, the Minister talked about the influence of the European Union in the Norwegian energy economy, underlining the necessity of collaboration between the country and international bodies to overcome the oil era. Lønnum concluded her speech by underscoring the need that the energy industry has to proceed towards renewable resources in order to mitigate climate change and to assure a safe future for the future generations and the planet.

As asserted in the introduction to this thesis, we are living in an historical moment which is pushing the human being to face the concrete consequences of its past mistakes. Norway is not exempt from this responsibility. On the contrary, given its active contribution in the development of the gas and oil industry, the Nordic country sits at the table of the guiltiest parts of climate change. However, it should

also not be forgotten the important contribution that the Norwegian research centres are having in the development of new technologies for the employment of renewable resources. Furthermore, as explained in chapter 4 of this study, the country is one of the biggest buyers of electric cars and, through the emission taxes, it is trying to lead its population to only employ zero-emissions vehicles. In short, Norway can be recognised as both a bad and good example to consider. Indeed, by analysing the data collected in the previous chapters, this study showed that this two-faced path in the environmental politics might appear ambiguous, but, considering the benefits on the domestic welfare, they brought Norwegian society to its current richness, providing the funds for the development of green technologies.

With these evaluations it is hoped to have clarified the relevance of Norway's role in the international energy market. The aim is to move the reader to question on ethics and interests that are moving Norwegian policymakers in trying to meet the commitments of the Kyoto Protocol, the Paris Agreement, and the auto-set target to make the country become a zero-emission society by 2030. It is wished to encourage the reader to scrutinize the information supplied, to move his/her curiosity in what is going to be the next moves planned by Norway in the following years.

"No matter which country you're in,
the cost of clean energy now is cheaper than the cost of climate change later."

John Kerry, U.S. Secretary (2016)

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Acts, Agreements, Laws, Protocols and Treaties

- ***Act of June 21st, 1963 No. 12 relating to scientific research and exploration for and exploitation of subsea natural resources other than petroleum resources.*** *Last amended by Act of June 6th, 2008 no 37. The Norwegian Government.*
- ***Act of 13 June 1975 No. 35 relating to the Taxation of Subsea Petroleum Deposits, etc. (the Petroleum Taxation Act)****. Last amended by Act of June 21st, 2013 No. 66. Last updated: May 3rd, 2018. Ministry of Finance. The Norwegian Government.*
- ***Act of March 13th, 1981 No.6 concerning Protection Against Pollution and Concerning Waste (Pollution Control Act****). Ministry of Climate and Environment. The Norwegian Government.*
- ***Act of December 21st, 1990 No. 72 relating to tax on discharge of CO2 in the petroleum activities on the continental shelf****. The Norwegian Government.*
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- ***Høring om TFO 2019 – tildeling i forhåndsdefinerte områder****. Pressmelding. March 14th, 2019. The Norwegian Government.*
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Event

Energy Transition Conference 2019
March 26th, 2019. Clarion Hotel & Congress. Brattørkaia 1, 7010 Trondheim. Norway

speakers:

- *Alexandra Bech Gjørv (CEO & President SINTEF)*
- *Asami Miketa (Senior Program Officer IRENA)*
- *Asgeir Tomasgard (Professor and Director of CenSES, NTNU)*
- *Bente Hagem (Chair of the Board ENTSO-E)*
- *Charlie Wilson (Researcher Tyndall Centre for Climate Research)*
- *Christian Klöckner (Professor NTNU)*
- *Eli Aamot (Vice President SINTEF Industry)*
- *Guloren Turan (General Manager Global CCS Institute)*
- *Gunnar Bovim (ex-Rector NTNU)*
- *Henrik Solgaard Andersen (Manager Business Development Equinor)*
- *Henrik Sætness (SVP and Head of Corporate Strategy Statkraft)*
- *Helene Muri (Researcher NTNU)*
- *Jae Edmonds (Chief Scientist JGCRI)*
- *Jenny Larfeldt (Senior Combustion Expert Siemens)*
- *Johan Hustad (DIrector NTNU Energy)*
- *Jørgen Kildahl (Chairman eSmartSystems)*
- *Liv Lønnum (State Secretary, Ministry of Petroleum and Energy)*
- *Luiz Barroso (CEO PSR Brazil)*
- *Nathan Meehan (President Gaffney, Cline & Associates)*
- *Nisha Pillai (Moderator of the Energy Transition Conference)*
- *Stephen Bull (SVP New Energy Solutions Equinor)*
- *Tiina Koljonen (Research Team Leader VTT Research Centre)*