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Climate Change Negotiations : Challenges and Opportunities for OPEC

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Abstract

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CHALLENGES AND OPPORTUNITIES FOR OPEC

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Abstract:

Climate change negotiations have been going on for over 25 years. 195 States sign its newest instrument, the Paris Agreement with the main purpose curbing the world's temperature under 2 degree Celsius. In order to achieve the main purpose of the Agreement, it is clear that the ultimate activity is to reduce the use of fossil fuels, including oil. OPEC (Organization of Petroleum Exporting Countries) who aims to stabilize export, production, and price of petroleum in the world, has to encounter this obstacle because most of its member countries are signatories of the Agreement. This research analyzes challenges and opportunities for OPEC in the Climate Change Negotiations as well as possibilities presented to survive given the situation. Using theories from Oran Young's institutional dynamics, this research puts the world's oil market as the 'institution', OPEC as the 'organization', and Climate change negotiations as the 'determinant of change'. Although it seems that OPEC does not have the upper hand in the climate change negotiation regime, there are means that OPEC can take to survive. One of it is to allow the element of change in the organization.

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1. Background

Climate change negotiation (CCN) started to take place in 1992, when the Earth Summit decided to formalize the United Nations Framework Conference on Climate Change (UNFCCC)[2]. The UNFCCC then worked hard with its member countries to develop an agreement that gives direction and 'sanction' to curb GHG emission. In 1997, the Kyoto Protocol (KP) was born. To enter into force, however, the KP had a 'double threshold' where 55 countries have to sign/ratify it, and, the quotas of countries, which sign/ratify the KP, is accounted for 55% of the world's GHG emission. Finally, in 2005, KP entered into force with it signature mark, separating the member countries (MCs) into two categories: developed countries in Annex 1, and developing countries in Annex 2. The annex 1 countries then, have specific quotas for them to abide during the reign of KP.

Although seemed to be powerful and binding for MCs, KP was a little problematic. Annex 1 countries feel that although they understood the principle of 'Common but differentiated responsibilities' really well, the sense of equity was missing in KP. Annex 2 countries were not mentioned to curb their Green House Gases (GHG) emissions. It finally fell short in accommodating the needs of its MCs when it expired in 2012.

The year of 2012, in the UNFCCC meeting in Doha, some parties tried to protect the interest of KP to keep evolving with its strict standards. But as it didn't avail, the negotiation went to understanding each other needs under the Ad-hock Working Group of Durban Platform for Enhanced Action (ADP), where parties decided that they want something more workable, tangible, and binding agreement to work and curb GHG and halt the incline of the world's temperature, together under UNFCCC, with a deadline: 2015.

Through the hard work of ADP, in 2015 parties of UNFCCC decided to enact the Paris Agreement, in Paris[3]. This Agreement is viewed in comparison to KP as a more equal,

[2] Pandey, Chandra Lal, *The Limits of Climate Change Agreements: From Past to Present*, International Journal of Climate Change Strategies and Management, Vol.6 No.4, 2014, pp. 376-390.
[3] Paris Agreement, https://treaties.un.org/doc/Publication/CN/2016/CN.735.2016-Eng.pdf, viewed 3/12/2016.

flexible, clear, although still strict and legally binding to its parties[4]. Some of its' signature highlights are:

(1) the purpose of curbing the world's temperature by 2C and striving to 1.5C. by itself, this purpose is clear and non-negotiable. But when we see that this Agreement relies on NDCs (Nationally Determined Contributions) to achieve its purpose, (albeit with the help of technology transfer, financing, utilizing carbon sinks, …), the fact that NDCs are not clearly demarcated per countries by the Agreement itself, makes it hard for the Agreement to reach its goals. Moreover, the transition from INDCs to NDC is not clearly written in the Agreement.

(2) There's no more annexed countries in the Agreement. Rather than grouping countries into developed and developing countries, the Agreement looks at the Parties with a more detailed view, such as LDC (Least Developing Countries), SIDC(Small Island Developing Countries), low income countries,… categories of countries are being expressed and acknowledged in the agreement. This is a step forward from KP, which only grouped countries into 2 groups, but, on the other hand, the Agreement also does not clearly circumscribe obligations of these each countries categories.

(3) Instead of just listing, the principle of Common but differentiated responsibility (CBDR), the Agreement decided to insert several phrases for CBDR, which is CBDR under Respective Capabilities (RC) in light of different national circumstances. This means, that although CBDR, the powerful principal of International Environmental Law of equity based on historical responsibilities, is shifted with 'respective capabilities and in light of different national circumstances' which gives highlight for higher income developing countries who have more ability to restrain themselves from developing activities.

(4) This agreement is legally binding, but in fact, there is no sanctions mentioned in the agreement. What if the purpose of the Agreement cannot be reached? What will it do? There is no further deliberation in the Agreement for these possible occurrences.

[4] Id.

1.1 The Context for OPEC in Climate Change Negotiation

OPEC, the Organization of Petroleum Exporting Countries is an intergovernmental Organization[5]. According to the OPEC's Statute, the organization aims to stabilize export, production, and price of petroleum in the world. OPEC has 13 member countries, namely: Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela, Qatar, UEA, Indonesia, Algiers, Nigeria, Ecuador, Gabon, and Angola[6].

The United Nations categorizes the members of OPEC as developing countries[7], and these members are gifted by abundant resources of oil of which they depend their growth of their economics and development upon.

All member countries of OPEC are signatories to the UNFCCC. This means, efforts being encouraged by the UNFCCC are also determinations by the OPEC Member Countries. In terms of the Paris Agreement, most of member countries of OPEC have already sign the Agreement[8] with the exception of Iraq-who is not a party to the Agreement. The MCs signatories are: Iran, Indonesia (ratified by 3/11/2016), Saudi Arabia (signed and ratified by 3/11/2016) ,Kuwait, Venezuela, Qatar, UEA (ratified by 21/09/2016), Algiers (ratified by 21/10/2016), Nigeria, Ecuador, Gabon (ratified by 2/11/2016), and Angola.

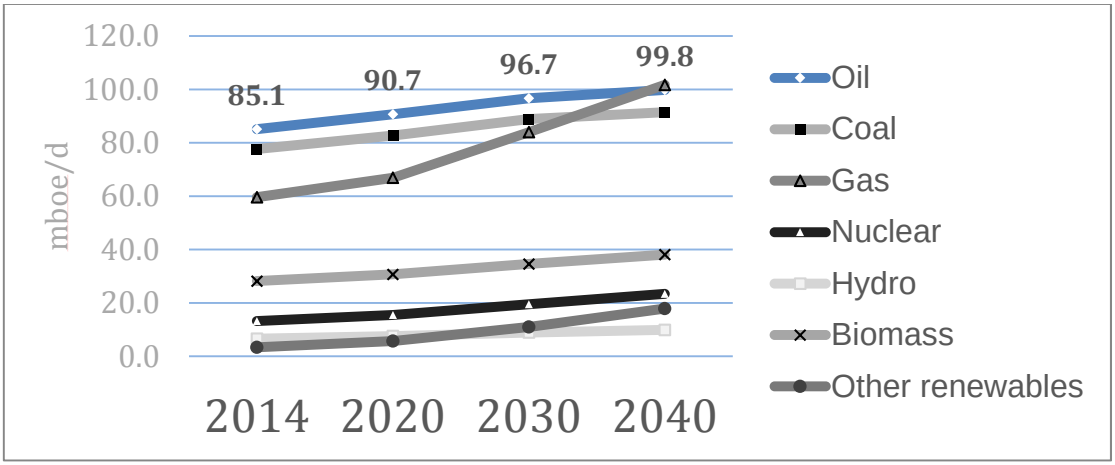
These past few years, starting from 2014 onwards, the oil price has gone tremendously unstable due to the 'perfect storm'[9] in the oil and gas world. There are three main causes of the perfect storm, *firstly*, the uncertainty of the world's economy, due to the economic crisis in parts of the world, which in turn obstructed to the oil price to go plummeting; *secondly*, the increase of alternative oil production, including the massive production from shale oil in the US, which considerably increased the supply of oil; *thirdly*, the climate change negotiations, whose main concern is to curb the green house

[5] OPEC Statute : http://www.opec.org/opec_web/en/publications/345.htm, viewed 3/12/2016
[6] www.opec.org, viewed 30/11/16, 8:50PM, Indonesia suspended its membership per 30 November 2016.
[7] http://unfccc.int/paris_agreement/items/9444.php , viewed 30/11/16, 8:50PM
[8] http://unfccc.int/paris_agreement/items/9444.php viewed 30/12/2016 9:30PM.
[9] Legacy, Cassandra, *Oil is Facing the Perfect storm*, http://oilprice.com/Energy/Crude-Oil/Oil-Is-Facing-The-Perfect-Storm.html viewed 30/12/16, 8:52PM.

gases emissions to a level of which is 2degree lower than the industrial age, which in turn lead to the diminution use of fossil fuels and more heavy on renewable energy.

On the other hand, based on the research of the World's Oil Outlook (2016), the world's energy demand for fossil fuels is still strong, at least for the next two decades, as mentioned in the table below:

World's Primary Energy Demand by Fuel Type



Source: WOO (2016)

Hence, in terms of climate change negotiations, OPEC is in between two pressured situations: (1) maintaining the interests of its member countries, in this case, producing and exporting oil to cover their development needs; and (2) maintaining sustainable development principles, as mentioned not only in the Paris Agreement, UNFCCC but also Sustainable Development Goals by the United Nations.

Since then, several countries have joined OPEC: Qatar (1961), Indonesia (1962)—suspended its membership January 2009, reactivated it in January 2016, but suspended it again in November 2016, Libya (1962), United Arab Emirates (1967), Algeria (1969), Nigeria (1971), Ecuador (1973)—suspended it membership in December 1992, reactivated it on October 2007, Angola (2007), and Gabon (19975)—terminated its membership in January 1995, rejoined in July 2016. OPEC's headquarter was

established in Geneva, Switzerland (1960-1965), then moved to Vienna on September 1, 1965[10].

OPEC's objective is to coordinate and unify petroleum policy among Member Countries, in order to secure fair and stable prices for petroleum procedures; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the industry[11]. OPEC Secretariat is the executive organ of the organization, located in and functioned as its headquarters in Vienna.

When OPEC was established in 1960, the international oil market was dominated by the 'Seven Sisters' multinational companies, former Soviet Union (FSU), and other centrally planned economies (CPEs)[12]. In 1968, OPEC adopted the "Declaratory Statement of Petroleum Policy in Member Countries', emphasized the inalienable right of all countries to exercise permanent sovereignty over their natural resources in the interest of their national development[13]. OPEC's share of world production was only 28% in 1960. By 1970, this figure would rise to 41%[14]. The next decade, 1980, world's oil price weakened and crashed in 1986, responding to a big oil glut and consumer shift away from tis hydrocarbon.

Prices moved less dramatically than in the 1970s and 1980s, and timely OPEC action reduced the market impact of Middle East hostilities in 1990–91[15]. But excessive volatility and general price weakness dominated the decade, and the South-East Asian economic downturn and mild Northern Hemisphere winter of 1998–99 saw prices back at 1986 levels. However, a solid recovery followed in a more integrated oil market, which was adjusting to the post-Soviet world, greater regionalism, globalization, the communications revolution and other high-tech trends[16].

[10] http://www.opec.org/opec_web/en/about_us/24.htm last viewed 27 March 2017, 12.17pm.
[11] OPEC Statute Article 2, paragraph A, B and C.
http://www.opec.org/opec_web/flipbook/OPEC%20Statute/OPEC%20Statute/assets/basic-html/index.html#page7
[12] History of OPEC, www.opec.org , last viewed 4 April 2017, 14.04pm.
[13] Id.
[14] David L. Russeau, History of Opec,
http://www.ssc.upenn.edu/polisci/psci260/OPECweb/OPECHIST.HTM
[15] History of OPEC, www.opec.org , last viewed 4 April 2017, 14.04pm.
[16] Id.

1.2 Research Question

Based on the above deliberation, this research tries to analyze the challenges and opportunities for OPEC in the future Climate Change Negotiations. The research questions are:

(A) What are the challenges and opportunities for OPEC in Climate Change Negotiations?

(B) How does OPEC strategize to cope with Climate Change Negotiations?

Results of the analysis of this research would give insights to readers of Climate Change Negotiations and how OPEC as an intergovernmental organization can strategize itself in Climate Change Negotiations.

1.3 Methods

This paper uses normative and literature method, where all the data analyzed derived from various journal articles, media information: newspapers and websites, as well as published books. Deductive and inductive analysis will be drawn based on the type of the data, and only qualitative analysis will be used in this research.

2. Theoretical Background

As we discussed in the earlier section, the variables for this research are States, as Parties or member countries, the Intergovernmental Organization—in this case OPEC, and Climate Change Negotiations in this case the newest instrument in CCN: Paris Agreement as an International Agreement. Additionally, in order to survive the pressure of CCN, OPEC needs to go through an institutional change. These sections discus theories and inter relations between on these variables.

2.1 States, and Intergovernmental Organization

A State, according to the Montevideo Convention 1933, is a person of international law should possess the following qualifications: a) a permanent population; b) a defined

territory; c) government; and d) capacity to enter into relations with the other states[17]. The political existence of the state is independent of recognition by the other states. Even before recognition the state has the right to defend its integrity and independence, to provide for its conservation and prosperity, and consequently to organize itself as it sees fit, to legislate upon its interests, administer its services, and to define the jurisdiction and competence of its courts[18]. The exercise of these rights has no other limitation than the exercise of the rights of other states according to international law[19].

Intergovernmental organization, or **international governmental organization** (**IGO**) is an organization composed primarily of sovereign states (referred to as *member states*) [20] . Intergovernmental organizations are an important aspect of public international law. IGOs are established by treaty that acts as a charter creating the group. Treaties are formed when lawful representatives (governments) of several states go through a ratification process, providing the IGO with an international legal personality.

The IGO in this discussion is the Organization of the Petroleum Exporting Countries (OPEC), created as a permanent intergovernmental organization in conformity with the Resolutions of the Conference of the Representatives of the Governments of Iran, Iraq, Kuwait, Saudi Arabia and Venezuela, held in Baghdad from September 10 to 14, 1960[21].

2.2 Variables of the research: Organizations, Institutions, and Determinant of Change

The new institutionalism draws a clear distinction between *institutions*, treated as a cluster of rights, rules and decision making procedures that give rise to social practices, and *organizations*, construed as material entities that t typically have personnel, offices, equipment, financial resources, and often legal personality[22].

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[17] Montevideo Convention, Article 1, 1933, can be read in: http://avalon.law.yale.edu/20th_century/intam03.asp last viewed 6 April 2017, 11.59pm.
[18] id, Article 2.
[19] Id, Article 3.
[20] Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations, 1986, Article 2, paragraph (i).
[21] OPEC Statute, Article 1.
[22] Oran Young, International Cooperation: *Building Regimes for Natural Resources and the Environment,* INTERNATIONAL ORGANIZATION 43 (3): 349-75, Douglas North, C, 1990, *Institutions, Institutional Change and Economic Performance.* Cambridge: Cambridge University Press.

Young gave an example of the relationship between institutions and organizations. For shorthand purposes, institutions are rules of the game, and organizations are players in these institutions[23].

Like all institutions, environmental and resource regimes—assemblages of rights, rules and decision-making procedures that influence the course of human-environment interactions—are dynamics[24]. They are dynamic because they are influenced by change(s)[25]. Some changes are developmental in character, which enhances the effectiveness of governance systems, some are responses to external events involving the biophysical, socioeconomic or technological settings in which regimes operate[26]. The sources change can be internal, external or both[27].

Young, in his '*Institutional Dynamics: Emerging Patterns in International Environmental Governance'* explored the determinants of patterns of change. He calls the determinants as the endogenous-exogenous factors. Endogenous factors are those having to do with attributes of the regimes, such as the locus of the regime on a hard law-soft law continuum; the nature of the relevant decision rule(s); provisions for monitoring, reporting and verification; funding mechanism; procedures for amending a regime's assemblage of rights, rules and decision making procedures; and so forth[28]. Exogenous factors include conditions pertaining to the character of the overarching political setting; the nature of the prevailing economic system; the rise of new actors, technological innovations and the emergence of altered or entirely new discourses; as well as significant changes in broader biophysical systems[29]. The categorization of these factors are not limited, there is always possibility that one or more previously unidentified factors will emerge and play an important role in individual cases[30].

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[23] Id.

[24] Young, ORAN R. YOUNG, INSTITUTIONAL DYNAMICS: EMERGENT PATTERNS IN INTERNATIONAL ENVIRONMENTAL GOVERNANCE 1-5,(MIT Press, 2010).

[25] Young, *supra,* pg 1-5.

[26] Young, *supra,* pg 1-5.

[27] Young, *supra*, pg. 6.

[28] Young, *supra*, pg.14.

[29] Young, *supra,* pg. 14.

[30] Young, *supra,* pg. 14.

In this current research, our '*institution*' is 'the world's market of oil', the '*organization*' in question is OPEC (although British Petroleum, Exxon Mobile, Royal Dutch Shell can also be example of 'Organizations' but in this case we focus on OPEC), and an 'important determinant' for change is the climate change negotiations, as an exogenous factor in the world's market for oil institution.

Why does the world's market for oil constitute an institution?

The world's market for oil is an institution because it has a cluster of rights for the producers and consumers of the world's oil, it embodies rules and regulations on the production, consumption, trade of oil, and it has procedures of decision-making that give rise to social practices. Oil producer countries would evolve their national regulations based on its dependency on the world's oil market. The world's oil market not only influence economies of oil producer countries, but also the economy of the world. The dependency of the current industrial world on oil, has strengthen the influence of the world's market of oil as a world level institution.

Intertwined between OPEC and its Member countries is complicated by an international efforts, called the climate change negotiation. On the one hand, OPEC needs to defend the interest of the IGO and its Member countries, but on the other hand, OPEC has an obligation to the international world and its Member countries to also foster the climate change negotiations.

This was hegemony was overviewed Gramsci, "*as the hegemony entails not only a unison of economic and political aims, but also intellectual and moral unity. . . the dominant group is coordinated concretely with the general interests of the subordinate groups, and the life of the State is conceived of as a continuous process of formation and superseding of unstable equilibria between the interests of the fundamental groups and those of the subordinate groups - equilibria in which the interests of the dominant group prevail, but only up to a certain point.…*"[31]

This is true in terms of the hegemony of climate change negotiations for OPEC and its

[31] As mentioned in: David L. Levy and Daniel Legan, A Neo-Gramscian Approach to Corporate Political Strategy: Conflict and Accommodation in the Climate Change Negotiations, JOURNAL OF MANAGEMENT STUDIES 40:4June 2003.

member countries. Since all of OPEC member countries are Parties of the UNFCCC and most of its member countries are signatories of the Paris Agreement, the shifting change of power between the environment and the fossil fuel (as an industry) became very apparent.

The current instrument in place for the climate change negotiations is the Paris Agreement, agreed by Parties of UNFCCC in Paris, 2015. The oil industry's initial response to this pressure was aggressive and unsurprising. However, as an international agreement which has been agreed by Parties, just like its' predecessor, the Kyoto Protocol, Paris Agreement also started to take its stride.

Oran Young explains this dilemmatic situation, especially within the realm of international institutions. He stated, *"We capture the outcomes of international negotiations better when we see them as resulting from institutional bargaining rather than from interactions among rational utility-maximizing states or exclusively from hegemonic pressures*[32]." So with in this research, I will argue that OPEC, as an intergovernmental institution/organization, has a better chance in delivering results in climate change negotiations rather than leaving its member countries without any facilitation from OPEC.

Young argues that the typology of international institutions serving as utility modifiers, enhancers of cooperation, bestowers of authority, and facilitators of learning, role definers, and agents of domestic realignments encompasses the range of theoretical perspectives on the how of institutional influence[33].

In support of Young's theory, I would argue that OPEC could cope within the climate change negotiations regime with adapting Young's theory on typology of international institution. In the climate change negotiation regime, OPEC has be able to serve as utility modifiers, enhancers of cooperation, bestowers of authority, facilitators of learning, role definers, and agents of domestic realignments (in MC's NDCs).

[32] As mentioned in Ronald B. Mitchell, Oran Young and International Institution, INTERNATIONAL ENVIRONMENTAL AGREEMENTS: POLITICS, LAW AND ECONOMICS 13, March 2013.
[33] Id.

In this case, even though the Paris Agreement, as an international agreement and key instrument of the climate change negotiations seems to be a very hard challenge for OPEC, but as an institution/intergovernmental organization, OPEC can still serve its member countries not only protecting their interests, but also doing good for the international community with abiding goals of curbing GHG's emission.

3. Analysis

This section discusses the challenges and opportunities for OPEC in the fora of Climate Change Negotiation. Although it seemed that OPEC does not have the upper hand in the negotiation process due to the 'severe' challenges, there are some very apparent and beneficial opportunities for OPEC arising from the negotiation process itself. Breaking down the details of each challenges, this section gives a thorough elaboration of the opportunities OPEC can gain, once it understood current and future situations.

3.1 Challenges of OPEC in Climate Change Negotiations

・Paris Agreement's

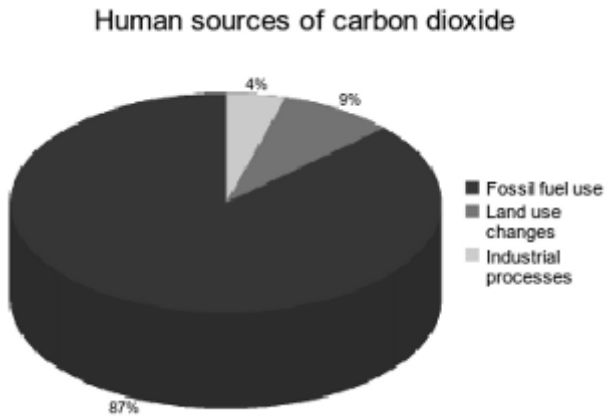
As discussed in the previous section, Paris Agreement is the current climate change negotiation's instrument in place, for all members of UNFCCC. This paper will discuss several sides of Paris Agreement, which are tremendous challenges for OPEC member countries. They are: the Agreement's main purpose, the Agreement's long term emission goal, and the Agreement's raising ambition in short term.

3.1.1 Paris Agreement's Purpose

The main purpose of the Agreement, is mentioned in Article 2(1)(a). It states:

> *Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;*

There is of course, a big concern for OPEC since 87% of all human-produced carbon dioxide emissions come from the burning of fossil fuels like coal, natural gas and oil.[34].



Source: Le Quéré, C. et al. (2012). The global carbon budget 1959-2011.

There is an estimate that the Middle East will lose about 35 percent of its oil export revenue by 2050 if the atmospheric concentration of C02 is to be stabilized at 450 ppm, (van Vuuren et al. (2003))[35].

Briefly summarized, studies suggest that policies and measures aimed at reducing C02 emissions will reduce the consumption of oil, which in turn would force the producer price for oil down. If a C02 tax or a cap and trade system is used, this will impose costs for both the oil consuming and extracting parties, but entail a transfer of rents from the extracting countries to the consuming countries, see e.g. Amundsen and Bergman (2005)[36].

This is of course, a very big challenge for OPEC, if the MCs have to start reducing their oil production, and on top of that loosing their GDPs, these are doomsday for the Organization.

[34] Le Quéré, C.,et al. "The global carbon budget 1959–2011." *Earth System Science Data Discussions* 5, no. 2 (2012): 1107-1157.
[35] Daniel J.A. Johansson, et.al, OPEC Strategies and Oil Rent in a Climate Conscious World, 2013.
[36] Ibid.

・A long-term emissions goal

The Paris Agreement may be most remembered for its long-term goal to phase out greenhouse gas emissions, which suggests a turning point in the use of fossil fuels.

There are many articles in the Agreement, which substantially adding ambition to a long term emission reduction. For example, Article 4 which specifically discusses 'National Determined Contribution' or NDC, each of the paragraph underlines how the NDC needs to be *successive and progressing* (para 2 and 3), and in Article 4 paragraph 1.

These articles underline the importance positioning emission reduction as a long term global achievement by member countries of UNFCCC. Why is then long-term emission goal needs to be addressed by OPEC member countries? By determining the long-term emission goal, member countries are also making long term planning in terms of fossil fuel production and/or consumption.

It will be almost certain that member countries are going to decrease fossil fuel related activities, which will also mean OPEC needs to be able to represent the time line of possible conventional activities of fossil fuel may exist and alternative activities related to fossil fuel. OPEC needs to diversify its production to unconventional energy sources, if the organization were to survive this long-term emissions goal.

3.1.2 Raising ambition in the short term

Almost all countries (189 to date, out of 195 countries in all) have pledged to take climate action after 2020, either in 2025 or 2030. This effort is highlighted in the Paris Agreement, in its Article 4, para 3, the Agreement clearly states: "*Each Party's successive nationally determined contribution will represent a progression beyond the Party's the current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities ,in the light of different national circumstances.'*

Prior to the enactment of Paris Agreement, countries have already publicly outlined what post-2020 climate actions they intended to take under the new international

agreement, known as their Intended Nationally Determined Contributions (INDCs). The climate actions communicated in these INDCs largely determine whether the world achieves the long-term goals of the Paris Agreement: to hold the increase in global average temperature to well below 2°C, to pursue efforts to limit the increase to 1.5°C, and to achieve net zero emissions in the second half of this century[37].

INDCs was designed to pair national policy setting — in which countries determine their contributions in the context of their national priorities, circumstances and capabilities — with a global framework under the Paris Agreement that drives collective action toward a zero-carbon, climate-resilient future[38]. INDC is a tool for governments to link feedback between national and international decision-making on climate change.

INDCs are also the primary means for governments to communicate internationally the steps they will take to address climate change in their own countries. INDCs comprised of each country's ambition for reducing emissions, taking into account its domestic circumstances and capabilities.

In the Paris Agreement 2015, the word 'intended' in INDCs were dropped, and INDC is converted into NDC (Nationally Determined Contribution). According to Article 4 paragraph 2 of the Paris Agreement, each Party shall prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

Table-1. INDCs / First NDCs

Developed Countries	Key features of the INDC
US	Reduce GHG emissions by 26–28% below its 2005 level in 2025 and make best efforts to reduce its emissions by 28%
EU (28 Member States)	At least 40% domestic reduction in GHG emissions by 2030 compared to 1990
Russia	Limiting anthropogenic GHGs to 70–75% of 1990 levels by 2030 might be a long-term indicator, subject to the maximum possible account of absorbing capacity of forests
Japan	Japan's INDC towards post-2020 GHG emission reductions is at the level of a reduction of 26% by fiscal year (FY) 2030 compared to FY 2013 (25.4% reduction compared to FY 2005) (approximately 1.042 billion t-CO2eq as 2030 emissions)

[37] http://www.wri.org/indc-definition
[38] Ibid.

Developing Countries	Key features of the INDC
China	Peak CO2emissions around 2030 and make best efforts to peak early Lower CO2emissions per unit of GDP by 60–65% from the 2005 level Increase the share of non-fossil fuels in primary energy consumption to around 20% Increase the forest stock volume by around 4.5 billion cubic metres on the 2005 level
India	Reduce the emissions intensity of its GDP by 33–35% by 2030 from the 2005 level
Indonesia*	Reduce GHG emission 26% against its' BAU by 2020, independently, and 41% with international support.
Saudi Arabia	Best-case scenario of Saudi Arabia would achieve significant annual mitigation co-benefits estimated to be up to 130 million tons of CO2eq by 2030. The measures focus on harnessing the mitigation potential in a way that prevents "lock in" of high-GHG infrastructure. This best-case scenario includes economic diversification from oil and its derivatives export revenues.
Algeria	Reduction of greenhouse gases emissions by 7% to 22%, by 2030, compared to a business as usual -BAU- scenario, conditional on external support in terms of finance, technology development and transfer, and capacity building. The 7% GHG reduction will be achieved with national means.
Nigeria	- Contribution based on a mixed results-and-action approach, unconditional and conditional according to the reference Business as Usual (BaU) scenario. - Results approach: % reduction of emissions, 2020-30. - Action approach: Strategic Framework for Sustainable Land Management (SF-SLM) actions, 2015-29 (Nigerans Feed Nigerans Initiative (I3N) focus)
Gabon	At least 50% reduction in emissions compared to the Development in 2025

Source: http://www4.unfccc.int/ndcregistry/Pages/Home.aspx; Shaded countries are OPEC member countries.
*: Former member country

OPEC needs to conduct possible research and interpretation of the possible ways of emission reduction with alternative energy. For example, if the substitution by alternative energy is dedicated to electricity generation rather than transportation, most of the reduction will be on gas and coal, rather than oil. But, if transportation is also high on the priority list, then oil production and consumption will also be hampered. OPEC can still be benefiting from this climate regime in a short term, but in a longer term, OPEC needs to bring more options to its member countries.

4. Energy and Environmental Policies

Energy and environmental policies are policies that are nationally enacted by countries to forward their energy and environmental situations. With the emerging climate change negotiations, most countries are striving towards fuel efficiency improvement, and alternative fuel vehicles. There are two focuses of energy and environmental policies, the upstream policy focus, and the downstream policy focus.

In the upstream side, exploitation of natural resources had enabled increased access to and production of these resources (namely oil, gas, minerals, etc), but on the other hand also creates vulnerability of the environment, especially the environmental risks in the production phase of the resources[39]. For example, environmental impacts arising from shale gas production: methane and ground water pollution gained recognition through media or even published scientific studies. This awareness is then, influences the downstream side of energy and environmental policies.

Policies in the downstream has shifted to the introduction of CO2 limitation and emerging stricter standard on fuel (sulphur content, octane/cetane, sustainable criteria on biofuels, etc). Some countries, including giants like China and India, increased the use of energy-saving and environmentally friendly methods in production and consumption and promoting technological innovations that will reduce the use of energy per unit of output (reduce energy intensity or increase energy efficiency) or reduce pollution per unit of output[40].

This is illustrated by the World Outlook on Oil (2016) in several recent decisions taken by policymakers in major consuming countries. In the US, the Renewable Fuel Standards (RFS) Programme for the calendar years 2014, 2015 and 2016, published in December 2015, sets out 18.11 billion gallons as the minimum amount of renewable fuel to be consumed during 2016[41]. This is a significant jump from the 16.93 billion gallons target
for 2015.

In the transportation sector, the European Commission initiative to apply the World-Harmonized Light Duty Vehicle Test Procedure in its territory from 2017 is generating some debate about the implications for automakers, which fear the policy may set unrealistic targets[42]. The EU will be the pioneer on the implementation of this test procedure, and its results may influence other prominent consuming countries.

[39] WOO, 2016.
[40] Chow, Gregory, China's Energy and Environmental Problems and Policies, CEPS Working Paper No. 152 August 2007, https://www.princeton.edu/ceps/workingpapers/152chow.pdf
[41] WOO, supra note.
[42] Ibid.

5. Uncertainties

Uncertainties are the hardest challenge for OPEC in terms of climate change negotiations. Among others, they are the uncertain prices of oil and other fossil fuel energy, economic growth influenced by technological advancements, unprecedented events (UK's 'Brexit' decision, terror attack, wars, and the like).

In the mid-2014 oil prices started to decline as excess output. The OPEC Reference Basket (ORB) fell from above $100/b in the first half of 2014 to its recent lowest level of $22.48/b in January this year[43]. Low oil prices present significant challenges and uncertainties. The price environment of the past two years has led to significant reductions in investments across the oil industry[44].

Unprecedented events are creating uncertainty in the economy, which will then take a troll to the oil and gas industry, and climate change negotiations. The 'Brexit' for example, when The people of Britain voted for a British exit (hence: Brexit) from the EU in a historic referendum on Thursday June 23, 2016. The outcome prompted jubilant celebrations among Eurosceptics around the Continent and sent shockwaves through the global economy[45].

Technological advancement some expected, some unforeseen, may also shift production and consumption in the world's oil industry. WOO (2016) stated that technological progress led to the rapid rise of tight oil, a resource that arguably continues to exceed expectations. Other energy alternatives are also thriving, new inventions of alternative fuels may also tip the mounting emission of green house gases.

5.1 Opportunities for OPEC in Climate Change Negotiations

Despite of the many challenges for OPEC in Climate change negotiations, there are also apparent opportunities presented. This section discus the opportunities for OPEC

[43] WOO 2016.
[44] Ibid.
[45] http://www.express.co.uk/news/politics/645667/Brexit-EU-European-Union-Referendum-David-Cameron-Economic-Impact-UK-EU-exit-leave

in Climate Change negotiations, among others: comparative advantages of oil versus other energy alternatives, carbon trading, common but differentiated responsibility based on respective capabilities and national circumstances, and carbon capture storage.

5.1.1 Comparative advantages of Oil

There are more than a few comparative advantages of oil in terms of climate change negotiations. Some however, have an expiry date, as we will learn in this section.

First, oil has an extensive history in the industrial world.

Fossil fuel, specifically oil, has been used for hundreds of years in the human history. On August 28, 1859, George Bissell and Edwin L. Drake made the first successful use of a drilling rig on a well drilled especially to produce oil, at a site on Oil Creek near Titusville, Pennsylvania. This is when the story of oil production begun. It is hard for other sources of energy to compete with the extensive history and progress in oil production and consumption.

Second, we can not exploit oil much more than we already did. As stated in the previous research by Grubb, 2001;Azar et al., 2003: "proven oil reserves and estimated ultimately recoverable reserves of conventional oil are smaller than the maximum allowable cumulative emissions over the century even when meeting low atmospheric stabilization targets."[46]

Third, scenarios of peak oil demand during 2020-2045, presents a time frame of around two decades for the oil industry to continue to expand. As indicated by Van de Graff and Verburggen in their 'The Oil Endgame: Strategies of Oil Exporters in a Carbon-Constrained World', several international institutions (IEA and OPEC) and oil majors (BP, Shell, and Exxon Mobil) have strengthened the argument that oil market will continue to expand over the next 25 years, driven in large part by economic and population growth[47].

[46] Grubb (2001), Azar, et al (2003). For example: the proven reserves of conventional oil amount to about 140 Gt C, while the estimated ultimately recoverable reserves left to be extracted are about twice as large. In order to stabilize the concentration of C02 in the atmosphere at 450 ppm, we may emit roughly 500 Gt C over the next 100 years.

[47] Van de Graff and Verburggen (2015), 'The Oil Endgame: Strategies of Oil Exporters in a Carbon-Constrained World', https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2640488 , last viewed 29 March 2017, 12.40pm.

They contrasted and compared the projected change on average per year in oil demand under different scenarios:

Table 2. Projected change on average per year in oil demand under different scenarios

Institution	Scenario/source	Projection period	CAGR
IEA	Current Policies – WEO 2014	2013-2040	0,96%
BP	Energy Outlook 2035	2013-2035	0,82%
ExxonMobil	Outlook for Energy – A View to 2040	2010-2040	0,80%
OPEC	Reference Case – World Oil Outlook 2014	2010-2040	0,70%
IEA	New Policies – WEO 2014	2013-2040	0,53%
Shell	Oceans Scenario	2010-2060	0,30%
Shell	Mountains Scenario	2010-2060	-0,53%
IEA	450 Scenario – WEO 2014	2013-2040	-0,83%
IEA	2DS Scenario – ETP 2015	2012-2050	-1,22%

Notes: CAGR = Compound Annual Growth Rate. WEO = World Energy Outlook. ETP = Energy Technology Perspectives

Sources: IEA (2014c; 2015), BP (2015a), ExxonMobil (2015), OPEC (2014b), Shell (2013) as shown in Van de Graff and Verburggen (2015), 'The Oil Endgame: Strategies of Oil Exporters in a Carbon-Constrained World', https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2640488

The table compares the projection periods of 'oil demand peaks' which is important for OPEC MCs. This means that currently as of 2017, MCs have roughly two decades to indulged oil production. However, the scenarios are based on two assumptions: (1) rational economics (increased efficiency and fuel switching, for example, due to high oil prices) and government policies to mitigate the environmental and financial costs of oil consumption (e.q. climate change, air pollution, fuel subsidies)[48].

Fourth, oil production is still cheaper than production cost of any other energy alternatives. Adelman, 1986; IEA, 2005; Brandt & Farrell, 2007, underlined: most conventional oil is inexpensive to extract (extraction costs in the Middle East amount to a few dollars per barrel), and that oil is superior in terms fuel production, which is crucial for the transportation sector, with few real contenders, most - if not all - of the estimated ultimately recoverable reserve still likely eventually be used even if we opt for stabilization levels that many would consider very stringent, i.e., about 400 ppm C02 in the atmosphere. **Conventional oil is still superior in terms of liquid fuel production**, at least for the next decade or two, because the fact that the extraction of

[48] Id.

conventional oil is still cheaper than other other alternative liquid substitutes (Johansson, Azar, Lindgren and Persson,2013).

Fifth, oil has lower net carbon energy ration then any other liquid substitutes. All of the alternative liquid substitute, except biomass-based fuels and natural gas, are higher in net carbon energy ratio (Brandt & Farrell, 2007). This implies that the production cost of these fuels, when carbon emissions are priced, would be more affected by the carbon price than would the cost of fuels from conventional oil (Manne & Rutherford 1994). If the OPEC member states behave strategically, they should be able to utilize this aspect so as to increase their rent. In the case of biomass-based fuels, the global supply potential is limited, and it has competing uses in other energy sectors (heat and electricity production) when C02 concentration is stabilized at low levels cost-effectively (Azar et al., 2003).

5.1.2 Common but Differentiated Responsibilities and Respective Capabilities in light of different National Circumstances

Differentiation between developing and developed state parties is by far the hardest for nations to address. The compromise of the Parties to led to a common ground of differentiated responsibilities based development stages, ranging from least developing countries, small island developing countries, to larger income developing countries (such as China, Saudi Arabia, Singapore, and Qatar).

This encapsulates the developed countries' new slogan '*in the light of different national circumstances*', which was added to the principle of '*common but differentiated responsibilities and respective capabilities'*; a new principle which has become the thread that sows together the Paris Agreement's fabric of mitigation, adaptation, support, implementation and compliance. The Paris Agreement has sifted the differentiation between the rich and the poor, from a rigid one in Kyoto Protocol, into a more flexible sharing of responsibilities (Article 2.2). The Agreement gives responsibilities to Parties to ambitiously reaching the goals of the Agreement (Art.2: Purpose, and Art 3: 'All Parties are to undertake and communicate ambitious efforts').

This "modified" principle is pivotal to the Paris Agreement for several reasons.

First, this principle acknowledges a differentiation of responsibilities between Parties.

Developed state Parties, having already produced emission since the pre-industrial era are responsible for greater emissions reduction than developing countries. Developing countries, needing room to grow and sustain their needs, have less restrictive measures to curb their emission, but they are still *encouraged* to fulfill their nationally determined contributions in reducing emission.

Second, developing countries, perhaps the hardest hit victims of climate change, will have the support of the developed countries in activities such as mitigation, adaptation, and technology support, in order for them to survive challenges of climate change. The Paris Agreement underlines the leadership of the developed countries, to giving support and mobilizing climate finance and support for developing countries.

Third, the Agreement acknowledges that there are different national circumstances between states, which mean a differentiation in the development level of developing states, and hence further distinguishing responsibilities.

Fourth, the Agreement also encourages '*other Parties … to provide or continue to provide such support voluntarily'* (Article 9(2)) to underline further developmental circumstances. The dichotomy of developed and developing countries no longer hold true, acknowledging other parties who are able and willing to voluntarily give support for efforts taken under this Agreement.

Fifth, in the spirit of differentiation, the Paris Agreement managed to articulate difficult issues in climate change's mitigation, adaptation, and support, breaking them into manageable steps in the bundles of rights and obligations contained.

As discussed above, most of OPEC member countries are signatories to the Paris Agreement. As an international organization, OPEC has to show its good intention to an international agreement signed by all its member countries, but, on the other hand, OPEC also has to keep the balance of any international agreement purposes with its own purpose and obligation towards its member countries.

5.2 Carbon Trading

There are two principal market-based instruments to address climate mitigation and the underlying issue of externalities: (1) carbon taxes, and (2)carbon emissions trading, the latter also referred to as cap-and-trade or allowance trading. A carbon tax is a price instrument and is typically levied on the carbon content of fuel inputs, creating an incentive either to switch to lower-carbon inputs or to use inputs more efficiently[49].

A carbon trade is an exchange of credits between nations designed to reduce emissions of carbon dioxide[50]. The carbon trade allows countries that have higher carbon emissions to purchase the right to release more carbon dioxide into the atmosphere from countries that have lower carbon emissions[51]. If a polluter (country) produce lower than its emissions cap, it might generate a carbon credit, which it can then sell to another polluter country struggling to meet its cap. This approach may encourages countries and regions to link existing national and regional carbon markets. Accounting of trade in carbon credits between capped schemes should be relatively straightforward.

Notwithstanding some earlier activities, it was only with the Kyoto Protocol, signed in 1997 by 37 industrialized countries and the European Community, carbon trading really became an economic force to take into account. Carbon trading occurs on compliance markets and voluntary markets. This is then continued by Paris Agreement. The Paris Agreement indicated that countries can choose to "cooperate" in meeting their national emissions targets, by trading emissions rights (Articles 6.2 and 6.3).

More than 90 of the submitted INDCs include proposals for emission trading systems (ETSs), carbon taxes and other carbon pricing initiatives[52]. 4 Parties stating in their INDCs that they are planning or considering the use of domestic or international market mechanisms c account for 61 percent of global GHG emissions[53]. Most of these Parties request financial and technological support through international carbon markets.

[49] Other price-based approaches include fees and subsidies. Marco Kerste, Jarst Weda , Nicole Rosenboom, *Carbon Trading*, SEO ECONOMISCH ONDERZOEK, Amsterdam 2010.
[50] http://www.investopedia.com/terms/c/carbontrade.asp last viewed 31 March 2017, 13.22pm
[51] Id.
[52] https://openknowledge.worldbank.org/bitstream/handle/10986/24288/CarbonPricingWatch2016.pdf?sequence=4&isAllowed=y , last viewed 31 March 2017, 15.50pm.
[53] Id.

Among the Parties planning or considering the use of market mechanisms are three of the world's five largest emitters[54].

OPEC needs to be aware of these developments, and if possible to also facilitating and assisting its MCs in this effort.

6. Mitigation effort: Carbon Capture Storage (CCS)

Another mitigation effort that is increasingly important is the Carbon Capture and Storage. Carbon Capture and Storage (CCS) is a technology that can capture up to 90% of the carbon dioxide (CO2) emissions produced from the use of fossil fuels in electricity generation and industrial processes, preventing the carbon dioxide from entering the atmosphere[55]. Furthermore, the use of CCS with renewable biomass is one of the few carbon abatement technologies that can be used in a 'carbon-negative' mode – actually taking carbon dioxide out of the atmosphere[56].

Carbon capture and storage (CCS) technologies are expected to play a significant part in the global climate response[57]. The ability of CCS to reduce emissions from fossil fuel use in power generation and industrial processes – including from existing facilities – will be crucial to limiting future temperature increases to "well below 2°C," as laid out in the Agreement. CCS technology will also be needed to deliver "negative emissions" in the second half of the century if these ambitious goals are to be achieved[58].

Experts believe that CCS is a step toward reducing CO2 emission with capturing the CO2 generated during combustion and store it in a suitable place. Research shown that CCS has the potential to reduce the future worlds' emission from energy up to 20%[59].

There is of course, a discourse on CCS, of whether or not it will work as good as it is advertised. And if it is shown as successfully as these research have shown us, it is

[54] Id.
[55] http://www.ccsassociation.org/what-is-ccs/ last viewed 3 April, 2017, 12.47pm.
[56] Id.
[57] Id.
[58] Id.
[59] WOO, 2016.

important for OPEC to investigate on how this method will be applicable in OPEC countries. In terms of the budget needed, applicable venue, etc. 20% reduction of the worlds' energy emission is a big piece of the emission, and for sure OPEC countries will need to have this reduction in terms of their oil production.

7. How does OPEC strategize to cope with Climate Change Negotiation

To answer the second research question on how OPEC should strategize to cope with climate change negotiations, *first,* we need to utilize facts that we have gathered to answer the first research questions. With the many challenges and opportunities of climate change negotiations for OPEC and OPEC MCs, there is a need to better define the roles of OPEC in the climate change negotiation. *Second*, we use Young's typology of institution to redefine strategies needed by OPEC. Young determined that institution's typology is to serve as utility modifiers, enhancers of cooperation, bestowers of authority, facilitators of learning, role definers, and agents of domestic realignments .

First, it is apparent that the current regime for climate change negotiations is Paris Agreement, an agreement that is legally binding for its Parties. OPEC MCs are all Parties to the Agreement. OPEC needs to make sure that all its' MCs understood their rights and obligation in the Agreement, including their NDCs. This is inline with Young's typlology of institution, which underlines that an institution among other has to serve as **facilitators of learning** and **utility modifiers**. Oil is the utility agreed by member countries to be used and also restricted, OPEC needs to inform, provide analysis, disseminate, and explain the pros and cons of this utility for member countries' interests, individually, and as a group. Keep in mind that each member countries have already determined their NDCs, but these NDCs are renewable in an annual basis, which is tremendously important for OPEC and its MCs to plan.

Second, with the many challenges of CCN on OPEC, there is a need to better define the roles of OPEC in the CCN, OPEC cannot stand on the sidelines anymore in CCN. This is also inline with Young's theory, which states that institution needs to be a '**role**

definers'. In relation to this, OPEC can breakdown its roles in the climate change negotiations as follows:

(1) Facilitator of learning:

A) OPEC can provide data for its MCs in relation to CCN. It does not have to engage in many researches outside its domain, but OPEC can gather information from reliable sources and make them available for MCs. These data can derive from IPCC, IEA, e-Journals, or other scientific databases available.

B) OPEC can be a facilitator for the climate change negotiations for its MCs. Not only providing the data, but also ready with analysis needed accustomed for its MCs. For example, in regard of the comparative advantages of oil which has time frame of 2 decades, OPEC needs to have a plan and strategy ready for its MCs on how to utilize oil production within those 2 decades. The same goes to for example carbon trading and CCS, in depth research and analysis need to be done by OPEC in order to provide its MCs with sufficient information.

(2) Enhancer of Cooperation and agent of domestic realignment:

A) OPEC has to be able to become the 'hub' between MCs and respective international organizations, not only UNFCCC and the UN, but also WTO, WB, and IMF.

B) Within OPEC MCs, cooperation needs to also be strengthened, in terms of achieving individual NDCs and maintaining interests as oil producers.

Third, once OPEC decided its role/s in the climate change negotiations, OPEC then has to define its strategies to deliver MCs aspirations and interests in the negotiations. OPEC needs to provide possible steps, guidelines, plans, all documents needed for its MCs for the negotiations. OPEC has to find a balance between sustainable development in climate change negotiations, with the need to develop economic growth in its MCs.

Fourth, OPEC has to be the leader of climate change negotiations. Since one and foremost important for OPEC and its member countries is the existence production of petroleum, which is a very big chunk in fossil fuel, the main ingredient of CO2 emission, people would think that OPEC should oppose to climate change

negotiations. As we discussed in the 'opportunity' section above, with climate change negotiations, OPEC in fact, are gaining momentum. This is the time for OPEC to involve, take charge, and lead the negotiations to protect interest of its MCs and to move forward to a better climate.

Fifth, Change is required. OPEC need to be able to provide possibilities of diversification of its product, rather than just concentrating on conventional oil. Other energy alternatives are promising possibilities for OPEC to explore. This essential factor has to be accounted for when forming OPEC's Climate Change Negotiations' Strategy.

8. Conclusion

It is apparent that climate change negotiations have became more and more influential with the Paris Agreement. 195 countries have signed it, most of whom are already ratified the agreement. Out of 12 OPEC member countries, 11 of them are Parties to the Agreement.

Clearly that there are more challenges than opportunities for OPEC within the climate change negotiations. From the 'purpose' of the Paris Agreement: curbing the world's temperature under 2 degree Celsius, long term emission goal, raising ambition in a short term, Nationally Determined Contribution (NDC), and a big question of uncertainties, all of them pose very high rate of difficulties for OPEC to cope.

On the other hand, however, there are also opportunities within the climate change negotiations. For example, comparative advantages of conventional oil: the long history of oil, cheaper in production, cleaner in terms of carbon emissions, smaller amount available than maximum allowable emission, and the fact that peaking of oil is estimated to be achieved within two decades from 2017; has presented more opportunities for OPEC countries to plan their growth within the two decades. They can start several efforts that are assumed to be useful in reducing carbon emissions,

such as ‘carbon trading’ and ‘carbon capture and storage’, they can also start crafting plans for possible alternative for conventional oil.

If OPEC has all of these challenges and opportunities, how can it cope with climate change negotiations? Based on Young’s theory, this research found that OPEC needs to define its roles. OPEC need to make sure that all its’ MCs understood their rights and obligation in the Agreement, including their NDCs; OPEC can be a data provider for its member countries, a facilitator, a hub between MCs with other international organization. OPEC has to find a balance between sustainable development in climate change negotiations, with the need to develop economic growth in its MCs.

OPEC needs to start leading the climate change negotiation, and not stand on the side lines anymore. OPEC has to prove that even though petroleum is its main focus, climate change negotiation fora also provide OPEC with tangible opportunities to grow. Aside from that, OPEC needs to also begin strategizing alternatives for conventional oil as its focus, as the world is watching and hoping that OPEC can strive through climate change negotiations.

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