



Development of Energy Sector in Iran in Light of Energy Trilemma. An Analysis of Legal and Policy Challenges

Mohammad Mohsen Masjedi

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Development of Energy Sector in Iran in Light of Energy Trilemma. An Analysis of Legal and Policy Challenges

Mohammad Mohsen Masjedi



DOCTORAL THESIS

2020

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I STATE that the present study, entitled “Development of energy sector in Iran in light of energy trilemma. An analysis of legal and policy challenges”, presented by Mohammad Mohsen Masjedi. for the award of the degree of Doctor, has been carried out under my supervision at the Department Departament Dret Públic of this university.

Tarragona, 13/01/2020

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**Development of Energy Sector in Iran in Light of
Energy Trilemma. An Analysis of Legal and
Policy Challenges**

TESIS DOCTORAL

Dirigida por el Dr. Endrius Cocciolo

Departament de Dret Públic



UNIVERSITAT ROVIRA I VIRGILI

Tarragona

2020

“The cost of our success is the exhaustion of natural resources, leading to energy crises, climate change, pollution, and the destruction of our habitat. If you exhaust natural resources, there will be nothing left for your children. If we continue in the same direction, humankind is headed for some frightful ordeals, if not extinction.”

Christian de Duve

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LIST OF ACRONYMS AND ABBREVIATIONS

ACER:	Agency for the Cooperation of Energy Regulators
AEOI:	Atomic Energy Organization of Iran
AWG:	Anthropocene Working Group
BAU:	Business As Usual
BOO:	Build Operation and Own
BOT:	Build Operation and Transfer
CERM:	Co-ordinated Emergency Response Measures
EPCNES:	Executive Plan of Comprehensive National Energy Scheme
CO ₂ :	Carbon Dioxide
COPs:	Conference of Parties
DISCOs:	Distribution Companies
EDI:	Energy Development Index
EOR	Enhanced Oil Recovery
EPCNES	
EU:	European Union
FDI:	Foreign Direct Investment
FIPPA:	Foreign Investment Promotion and Protection Law
FYDPL:	Five Year Development Plan Law
GCC:	Gulf Cooperation Council
GDP:	Gross Domestic Product
GECF:	Gas Exporting Countries Forum
GHG:	Greenhouse Gas Emission
HDI:	Human Development Index
IEA:	International Energy Agency
IEF:	International Energy Forum
IOC:	International Oil Company
IOP:	Iranian Oil Participants Ltd
IOR:	Improved Oil Recovery
IPC:	Integrated Petroleum Contract
IPO:	Iran Privatization Organization

IPPU:	Industrial Processes and Product Use
IRENEX:	Iran Energy Exchange
JCPOA:	Joint Comprehensive Plan of Action
LAECP:	Law on Altering Energy Consumption Patterns
LIGPA44:	Law of Implementation of General Policies of Article 44
LMFEIZ:	Law on Management of Free Economic and Industrial Zones
LNG:	Liquefied Natural Gas
LLP	Limited Liability Partnership
LRECP:	Law on Reforming Energy Consumption Pattern
LRPGFP:	Law of Regulating Part of Governmental Financial Provisions
Mbd:	Million Barrels per Day
MPTAL:	Ministry of Petroleum Tasks and Authorities Law
MW:	Mega Watts
NDC:	Nationally Determined Contribution
NECP:	National Energy & Climate Plan
NESP:	National Energy Strategic Plan
NIOC:	National Iranian Oil Company
NPS:	New Policies Scenario
OECD:	Organisation for Economic Co-operation and Development
OIETAI:	Organization for Investment, Economic and Technical Assistance
OPEC:	Organization of Petroleum Exporting Countries
PSA:	Production Sharing Agreements
RBAOFCL:	Registration of Branches and Agent Offices of Foreign Companies Law
RES:	Regional Electricity Companies
SATBA:	Renewable Energy and Energy Efficiency Organization of Iran
SDS:	Sustainable Development Scenario
SWOT:	Strengths, Weaknesses, Opportunities, and Threats
TFEU:	Treaty on the Functioning of the European Union
TPES:	Total Primary Energy Supply
UN:	The United Nations
UNFCCC:	United Nations Framework Convention on Climate Change
USA:	The United States of America

WEC: World Energy Council

WTO: World Trade Organization

Part One. Introduction, History and Background of Research

1. Chapter 1: Introduction

1. Chapter 1: Introduction

1.1. Introduction and Background

In modern times, energy is considered as the lifeblood of almost every aspect of human activity.¹ In the words of the former Secretary-General of the United Nations (UN) Ban Ki-moon: ‘It is unimaginable that today’s economies could function without electricity and other modern energy services. From job creation to economic development, and from security concerns to the status of women, energy lies at the heart of all countries’ core interests.’² The world’s energy consumption is increasing as the economies and population grow and dependency to energy resources for almost all the economies is unavoidable. Energy could be considered as one of the most important drivers of the economies and it is not possible to imagine every human operation continuing without using some type of energy. The inevitable importance of the continues energy supply makes energy security one of the main challenges worldwide.³ In last few decades, related global developments and concerns including climate change, energy poverty, emergence of major developing countries, and fossil fuels price fluctuations intensified this challenge. However, this common challenge didn’t lead to neither a conclusion of a universal energy related treaty nor establishment of a comprehensive global energy

¹ The importance of the energy for the society has been emphasized by the EU Court of Justice, see Court of Justice of the EU. Case 72/83 *Campus Oil v Minister for Industry* [1984] ECR 2727. 1984.

² ‘Total Energy Consumption’ <<https://yearbook.enerdata.net/natural-gas-consumption-in-the-world.html#energy-consumption-data.html>> accessed 10 June 2017.

³ Energy security in local, regional and global level has been widely discussed in the academics. For bibliometric analysis on the evolution and development of the energy security see, Wei Zhou and others, ‘A Retrospective Analysis with Bibliometric of Energy Security in 2000–2017’ (2018) 4 *Energy Reports* 724 <<https://doi.org/10.1016/j.egy.2018.10.012>>.

For discussions on the energy security in regional and global level see e.g., Antonio Gm and others, ‘Energy Research & Social Science Navigating a Trilemma : Energy Security , Equity , and Sustainability in the Philippines ’ Low-Carbon Transition’ (2018) 35 *Energy Research & Social Science* 37 <<https://doi.org/10.1016/j.erss.2017.10.039>>., Rabindra Nepal and Nirash Paija, ‘Energy Security, Electricity, Population and Economic Growth: The Case of a Developing South Asian Resource-Rich Economy’ (2019) 132 *Energy Policy* 771 <<https://doi.org/10.1016/j.enpol.2019.05.054>>. Polona Šprajc, Miroslav Bjegović and Bojana Vasić, ‘Energy Security in Decision Making and Governance - Methodological Analysis of Energy Trilemma Index’ (2019) 114 *Renewable and Sustainable Energy Reviews* 109341 <<https://linkinghub.elsevier.com/retrieve/pii/S1364032119305490>>. M Asif and T Muneer, ‘Energy Supply, Its Demand and Security Issues for Developed and Emerging Economies’ (2007) 11 *Renewable and Sustainable Energy Reviews* 1388.

Part One. Introduction, History and Background of Research

governance mechanism. Moreover, energy-related policies are not controlled only by sovereign states and variety of international related organizations, and international oil companies also play a considerable role in this context.⁴ That's why global energy developments are shaped in a very sophisticated way.⁵

The current global energy system is highly dependent on combustion of the fossil fuels. Despite the development of various renewable energies in last few decades, over 80% of global energy supply relies on fossil fuels. Between 1971 and 2017, world total primary energy supply (TPES) increased by more than 2.5 times with major changes to the shares of oil and gas. While still the dominant fuel in 2017, oil fell from 44% to 32% of TPES. As for natural gas, it grew from 16% to 22%. The share of coal was one percentage point higher in 2017 compared to 1971, however, it has fluctuated significantly during that period, increasing constantly between 1999 and 2011, influenced mainly by increased consumption in China.⁶

The primary cause of the climate change crisis is the current global energy system. According to the Working Group on the Anthropocene (AWG), there is a wide range of evidences proving that we already have entered to the Anthropocene. It represents a distinct change of geological processes that are clearly reflected in strata characteristics. As AWG clarified, these changes mark the proposed Anthropocene as being sufficiently different from the Holocene to constitute a new unit of geological time.⁷ As discussed, the current world economy system is highly

⁴ See Bernard Mommer, 'Governance of International Oil: The Changing Rules of the Game' [2000] Oxford Institute for Energy Studies 42.

⁵ For discussion on the global energy governance see Thijs Van de Graaf and Jeff Colgan, 'Global Energy Governance: A Review and Research Agenda' (2016) 2 Palgrave Communications 15047 <<http://dx.doi.org/10.1057/palcomms.2015.47>>; Navroz K Dubash and Ann Florini, 'Mapping Global Energy Governance' (2011) 2 Global Policy 6; Ann Florini and Benjamin K Sovacool, 'Who Governs Energy? The Challenges Facing Global Energy Governance' (2009) 37 Energy Policy 5239 <<http://dx.doi.org/10.1016/j.enpol.2009.07.039>>; Lisa Sanderink and others, 'Mapping the Institutional Architecture of Global Energy Governance' (2018); Pami Aalto, 'The New International Energy Charter: Instrumental or Incremental Progress in Governance?' (2016) 11 Energy Research and Social Science 92.

⁶ International Energy Agency, 'World Energy Balances' (2019) <<https://www.iea.org/statistics/balances/>> accessed 1 November 2019.

⁷ Jan Zalasiewicz and others, 'The Working Group on the Anthropocene: Summary of Evidence and Interim Recommendations' (2017) 19 Anthropocene 55. See also, Pasi Heikkurinen and others, 'The Anthropocene Exit: Reconciling Discursive Tensions on the New Geological Epoch' (2019) 164 Ecological Economics.

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dependent on the fossil fuels and the overall emissions of the fossil fuel combustion continues to grow. According to IEA, after three flat years, global energy-related carbon dioxide (CO₂) emissions rose by 1.6% in 2017 and the early data suggest continued growth in 2018, far from a trajectory consistent with climate goals. Energy-related air pollution continues to result in millions of premature deaths each year.⁸ International law recognizes and permits the sovereign right to exploit fossil resources. In the absence of comprehensive global energy governance mechanisms, Paris Agreement could be considered the unique universal treaty dealing with the energy system in global context. The Sustainable Development Goals and the Paris Agreement set very ambitious goals that, if taken seriously, would result in a rapid transformation of human environmental interactions and decarbonization of the global socio-economic system, what the agreements do not specify, however, is how the transformation should be achieved and who the transformation agents would be.⁹ While setting an overall stocktake, the main mitigation mechanism under the Paris Agreement has based on the Nationally determined Contributions (NDCs). Despite the considerable doubt on the effectiveness of the submitted NDCs¹⁰, achievement of the agreement goals lies on the national level. This intensifies the importance of the focus on each member state's national policies for the climate change and energy transition. While reaffirming the importance of the necessity of taking action by all states, obviously, the major greenhouse gas emitters have to be

⁸ IEA, '2018 World Energy Outlook - Executive Summary' (*Oecd/Iea*, 2018) 11 1 <www.iea.org&c/> accessed 5 October 2019.

⁹ Ilona M Otto and others, 'Human Agency in the Anthropocene' (2020) 167 *Ecological Economics* 106463, 1 <<https://doi.org/10.1016/j.ecolecon.2019.106463>>.

¹⁰ For the assessment of the NDCs see, Panagiotis Fragkos and others, 'Coupling National and Global Models to Explore Policy Impacts of NDCs' (2018) 118 *Energy Policy* 462 <<https://doi.org/10.1016/j.enpol.2018.04.002>>; Maria Jermnäs and Björn Ola Linnér, 'A Discursive Cartography of Nationally Determined Contributions to the Paris Climate Agreement' (2019) 55 *Global Environmental Change* 73 <<https://doi.org/10.1016/j.gloenvcha.2019.01.006>>; Xunzhang Pan and others, 'Exploring Fair and Ambitious Mitigation Contributions under the Paris Agreement Goals' (2017) 74 *Environmental Science and Policy* 49 <<http://dx.doi.org/10.1016/j.envsci.2017.04.020>>; Håkon Sælen and others, 'Fairness Conceptions and Self-Determined Mitigation Ambition under the Paris Agreement: Is There a Relationship?' (2019) 101 *Environmental Science & Policy* 245 <<https://doi.org/10.1016/j.envsci.2019.08.018>>; Huan Wang and Wengying Chen, 'Gaps between Pre-2020 Climate Policies with NDC Goals and Long-Term Mitigation Targets: Analyses on Major Regions' (2019) 158 *Energy Procedia* 3664 <<https://doi.org/10.1016/j.egypro.2019.01.894>>. Huan Wang and Wengying Chen, 'Modeling of Energy Transformation Pathways under Current Policies, NDCs and Enhanced NDCs to Achieve 2-Degree Target' (2019) 250 *Applied Energy* 549 <<https://doi.org/10.1016/j.apenergy.2019.05.009>>.

Part One. Introduction, History and Background of Research

more be taken into account. Today, Iran is the world eleventh consumer of energy¹¹ and has the fourth highest level of natural gas consumption after the United States, Russia, and China.¹² Iran is also the 8th CO₂ emitter in the world.¹³

Table 1. CO₂ Emission from Fuel Combustion, Mt CO₂

China	9.3 thousand
United States	4.8 thousand
India	2.2 thousand
Russian Federation	1.5 thousand
Japan	1.1 thousand
Germany	718.8
Korea	600.0
Iran	567.1
Canada	547.8
Saudi Arabia	532.2

Source, IEA

Moreover, country's energy intensity of GDP ranks eighth in the world.¹⁴ Meanwhile, the country is facing 5% annual primary energy and 5.5% of annual electricity demand increase as the population and economy grow and access to national grid expands across the country.¹⁵

Iran as the holder of massive oil and natural gas reserves and one of the biggest producers of oil and natural gas has played and continues to play a considerable role in global energy trends. Iran holds some of the world's largest deposits of proved oil and natural gas reserves, ranking as the world's fourth and first largest

¹¹ Iran Ministry of Energy, 'Gozaresh-e Dah Sale Sanate Barghe Iran (Iran's Electricity Sector, Ten Years Trends and Statistics (2005-2015))' (2017) <<http://amar.tavanir.org.ir/pages/report/stat93/10sale/10sale93.pdf>>.

¹² International Energy Agency, '(1990-2016) Statistics Data Browser' (2018) <[https://www.iea.org/statistics/?country=WORLD&year=2016&category=Energy supply&indicator=TPESbySource&mode=chart&dataTable=BALANCES](https://www.iea.org/statistics/?country=WORLD&year=2016&category=Energy%20supply&indicator=TPESbySource&mode=chart&dataTable=BALANCES)> accessed 30 March 2019.

¹³ International Energy Agency, 'IEA Atlas of Energy, CO₂ Emission from Fuel Combustion' (2019) <<http://energyatlas.iea.org/#!/tellmap/1378539487>> accessed 5 November 2019.

¹⁴ Enerdata, 'Energy Intensity of GDP at Constant Purchasing Power Parities' <<https://yearbook.enerdata.net/energy-intensity-GDP-by-region.html>> accessed 11 May 2017.

¹⁵ Iran Ministry of Energy (n 11).

1. Chapter 1: Introduction

reserve holder of petroleum and natural gas, respectively. Iran also ranks among the world's top seven oil producers and top three natural gas producers according to BP statistical review.¹⁶ According to the same statistics, Iran has 34 trillion cubic meters of natural gas reserves, which is 18.02 percent of total proven reserves of the world. The country also holds 157.8 billion barrels proven crude oil reserve that is more than 9 percent of total proven reserves of the world. Iran is currently producing 3.7 million barrels of crude oil per day and in 2014 the total natural gas production reported 166.6 billion cubic meters.

In addition to the vast reserves and high capacity for petroleum production of the country, Iran historically played an important role in international energy organizations. Iran is a founding member of both major oil and natural gas exporter organizations (OPEC and GECF)¹⁷ and effectively participates in the organizations policymaking.¹⁸

Moreover, potentially, Iran's geopolitical position, geographical proximity and ease of access to giant consumers like Pakistan and India¹⁹, and low-cost production of petroleum products, strengthen its role as a prominent player in global energy trends and a major supplier of petroleum resources.²⁰ Nevertheless, Iran faces many challenges to realizing the development of its energy sector and change into a reliable supplier of energy resources for regional and international markets²¹ and to move towards achieving a domestic energy system that takes the sustainability into

¹⁶ International Energy Agency, '(1990-2016) Statistics Data Browser' (n 12).

¹⁷ In 2001, the Gas Exporting Countries Forum (GECF) was founded in Tehran, as an international body representing the interests of gas-producing nations. See SA Gabriel and others, 'Cartelization in Gas Markets: Studying the Potential for a "Gas OPEC"' (2012) 34 *Energy Economics* 137.

¹⁸ It could be argued that the Iran role in OPEC has significantly declined after the 1979 revolution, however the country is still an influential member. See John Hopkins and F Doran Charles, 'Three Models of OPEC Leadership and Policy in the Aftermath of Iran' [1973] *Journal of policy modeling*.

¹⁹ Regarding the gas exports to Pakistan and India See, Shiv Kumar Verma, 'Energy Geopolitics and Iran-Pakistan-India Gas Pipeline' (2007) 35 *Energy Policy* 3280.

²⁰ See Fei fei Guo, Cheng feng Huang and Xiao ling Wu, 'Strategic Analysis on the Construction of New Energy Corridor China-Pakistan-Iran-Turkey' (2019) 5 *Energy Reports* 828 <<https://doi.org/10.1016/j.egy.2019.06.007>>.

²¹ For potentials on natural gas exports see, Ali Nowrouzi and others, 'Optimizing Iran's Natural Gas Export Portfolio by Presenting a Conceptual Framework for Non-Systematic Risk Based on Portfolio Theory' (2019) 26 *Energy Strategy Reviews* 100403.

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account and follow a gradual decarbonization objective. Despite the political reasons, *legal* and *policy* challenges could be considered important barriers in this context.

Historically talking, the first concession that led to oil discoveries ever granted in the whole of the Middle East was in Iran, to William D’Arcy, the British merchant. This concession was granted in the year 1901 and led to the commercial discovery of oil in 1908.²² Many historical events in the contemporary history of Iran and the Middle East occurred in the shadow of the Iranian petroleum. British and Soviet invasion of Iran during First and Second World War, Oil Nationalization Movement in 1951, the conflict between Mohammad Reza Shah and the United States and Britain regarding the prices of oil in 1970s, Islamic Revolution in 1979, and invasion of Saddam Hussein to oil-rich region of Iran in 1980s are turning points in this context. To provide a reliable understanding of aforementioned challenges and expected developments in the future, it is necessary to assess historical backgrounds that is still affecting country’s energy policies and legal framework, in order to provide a solid understanding of the challenges as mentioned earlier and expected future developments.

Over one century since the first discovery of oil in “Masjed Soleiman” (the south-western part of the country), it has significantly influenced the life of the country in all of the political, social and economic aspects. As a result, currently, the domestic energy supply is highly dependent to oil and natural gas and the country’s economy is highly dependents on petroleum related exports.²³ The access to massive and cheap hydrocarbon resources and the poor governance of the sector have caused a negligence of the environmental aspects of the energy developments. Rather than following mid-term or long-term policies, the Iranian energy sector has developed as a response to short-term needs.

²² See James Bamberg, *The History of the British Petroleum Company, Volume 2 The Anglo Iranian Years* (Cambridge University Press 1994) 639.

²³ For the debate on impacts of the oil on Iranian economy, see Hadi Salehi Esfahani, Kamiar Mohaddes and M Hashem Pesaran, ‘Oil Exports and the Iranian Economy’ (2013) 53 *Quarterly Review of Economics and Finance* 221, 221–237 <<http://dx.doi.org/10.1016/j.qref.2012.07.001>>.

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1.2. The Theoretical Background of the Research

Different approaches may be used in analysing the energy laws and policies and a variety of technical, geographical, political and geopolitical elements affect the energy policy making among different nations. The energy policy of a fossil fuel rich country contains elements that are different compared to another country that lacks such resources. Moreover, the intense impacts of the energy system on economic, environmental, and political developments make it a multi-disciplinary point of analysis.

The vital role of the energy in every economy and for the modern human life requires steady and affordable access to energy resources for all the economic entities and total population of a nation. No economic activity could be imagined without dependency on energy. Moreover, the significant impact of the new forms of energy like electricity on daily life and welfare for a nations is undeniable. This requires the security of unceasing flow of energy for the uses of industries , and individuals, as well as transport, and etc. Therefore, security of energy supply is a vital element of energy policies.

As a consequence of the rise of the global concerns over climate change from 1992, after the adoption of United Nations Framework Convention on Climate Change (UNFCCC) in the Earth Summit and further developments of Conference of Parties(COPs), the sustainability of energy systems became a substantial dimension of energy policymaking which was essentially neglected by the policymakers and legislators.²⁴ Apart from the global concerns over the climate change the environmental impacts of using fossil fuels could become a great concern of human life at the local level. The air quality in metropolitan areas is one of the large concerns in this context.²⁵

²⁴ For the resume of endeavors following the UNFCCC, see N Höhne and others, 'Evolution of Commitments under the UNFCCC: Involving Newly Industrialized Economies and Developing Countries' (2003) 201 Research report 255
<<http://www.chem.uu.nl/nws/www/publica/Publicaties2003/e2003-155.pdf>>.

²⁵ For the energy policies tackling climate change in EU and the USA, see R Arababadi, K Parrish and M El Asmar, 'Waging War on Climate Change: Mapping Energy Policies to Their Strategic,

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The other important concern of the energy system is the affordability of the energy for all. In fact, in addition to sustainability and security concerns, it is substantially important that the energy system provides access to affordable energy for the whole population of a nation. Access to modern energy is considered essential for improving quality of life and is considered imperative for achieving the Millennium Development Goals. IEA has developed Energy Development Index (EDI) similar to the Human Development Index (HDI). It is based mostly on four indicators associated with the definition of energy poverty²⁶: Per capita commercial energy consumption, per capita electricity consumption within the residential sector, share of modern fuels in total, residential sector energy use, and share of population with access to electricity.²⁷ Equity in access to energy could be understood in simple terms as affordable access to nonharmful sources of energy for all. In the past few years, there has been significant work in the academic community dealing with energy equity and energy poverty at both the global and local level.²⁸

Depending on the potentials and concerns, the energy policies may vary from one country to another and there is no one-size-fits-all solution for energy policy

Tactical, and Operational Levels' (2016) 145 *Procedia Engineering* 11
<<http://dx.doi.org/10.1016/j.proeng.2016.04.002>>.

²⁶ Energy poverty is not limited to poor and developing countries. It is estimated that more than 50 million households in the EU experience energy poverty as a result of energy inefficient buildings and appliances, high energy expenditures, low household incomes and specific household needs. This leaves them in a vulnerable position that can expose them to respiratory and cardiac illnesses, as well as have an adverse effect on their mental health, due to low temperatures or stress over unaffordable energy bills. See 'Energy Poverty' <<https://ec.europa.eu/energy/en/topics/markets-and-consumers/consumer-rights-and-protection/energy-poverty#content-heading-0>> accessed 3 January 2020.

²⁷ LK Grimsby, 'Securing Energy Equity' (2011) 39 *Energy Policy* 6912, 6912.

²⁸ See e.g., Jianglong Li, Chang Chen and Hongxun Liu, 'Transition from Non-Commercial to Commercial Energy in Rural China: Insights from the Accessibility and Affordability' (2019) 127 *Energy Policy* 392 <<https://doi.org/10.1016/j.enpol.2018.12.022>>; Juliani Chico Piai Paiva, Gilberto De Martino Jannuzzi and Conrado Augustus de Melo, 'Mapping Electricity Affordability in Brazil' (2019) 59 *Utilities Policy* 100926 <<https://doi.org/10.1016/j.jup.2019.100926>>; Benjamin K Sovacool, 'Fuel Poverty, Affordability, and Energy Justice in England: Policy Insights from the Warm Front Program' (2015) 93 *Energy* 361 <<http://dx.doi.org/10.1016/j.energy.2015.09.016>>; Maciej M Sokołowski, 'When Black Meets Green: A Review of the Four Pillars of India's Energy Policy' (2019) 130 *Energy Policy* 60 <<https://doi.org/10.1016/j.enpol.2019.03.051>>. Andrew J Chapman, Benjamin McLellan and Tetsuo Tezuka, 'Proposing an Evaluation Framework for Energy Policy Making Incorporating Equity: Applications in Australia' (2016) 21 *Energy Research and Social Science* 54 <<http://dx.doi.org/10.1016/j.erss.2016.06.021>>.

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making. However, these three essential principles of sustainability, security and affordability or social equity have been conceptualized as an energy trilemma and is thought to be an adequate index for energy policymaking. The concept has been widely used by policy makers as well as academics. Policymakers, as well as academics, have widely used the concept. The concept also has been used by the World Energy Council, one of the most inclusive energy forums engaging with energy debates, accredited by the United Nations..²⁹

The World Energy Council provides the World Energy Trilemma Index Report by analysing the impacts of different policy pathways countries have taken in each of the dimensions over the past 20 years. In its own words, the report provides an objective rating of national energy system performance across the three Trilemma dimensions. The trilemma has been created to support an informed dialogue among stakeholders about improving energy policy to achieve energy sustainability, by providing decision-makers with information on countries' relative performance. Readers are encouraged to use the Trilemma framework with its three dimensions of Security, Equity and Sustainability to engage with policymakers and energy communities in conversations about navigating the energy transition effectively and building prosperity for a nation's citizens..³⁰

World Energy Council continuously provides rankings and balance scores based on the trilemma index. This analysis is based on a quantitated assessment of energy data and statistics. According to the council report: "Iran maintains a stable position

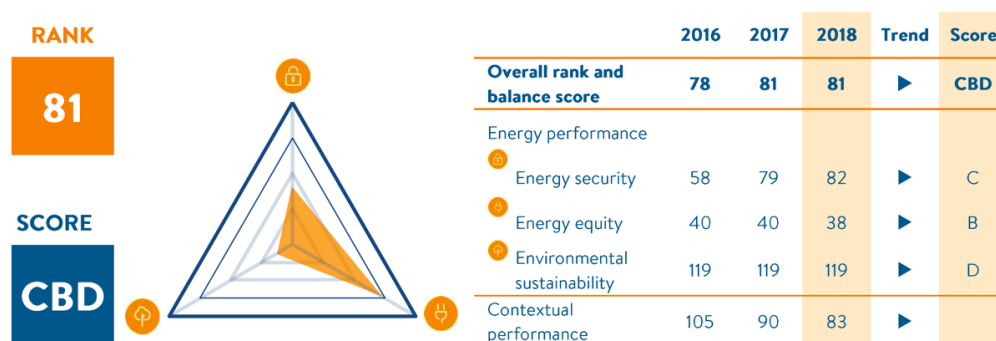
²⁹ For the analysis of the energy policies from the trilemma perspective, see Antoinette Santos, 'The Energy Trilemma of the European Union: Finding the Right Balance' 1., Raphael J Heffron, Darren McCauley and Gerardo Zarazua de Rubens, 'Balancing the Energy Trilemma through the Energy Justice Metric' (2018) 229 *Applied Energy* 1191. Neil Gunningham, 'Managing the Energy Trilemma : The Case of Indonesia' (2013) 54 *Energy Policy* 184 <<http://dx.doi.org/10.1016/j.enpol.2012.11.018>>., Lianlian Song and others, 'Measuring National Energy Performance via Energy Trilemma Index : A Stochastic Multicriteria Acceptability Analysis' (2017) 66 *Energy Economics* 313 <<http://dx.doi.org/10.1016/j.eneco.2017.07.004>>., Gm and others (n 3).

³⁰ World Energy Council, 'World Energy Trilemma Index, 2019' <<https://www.worldenergy.org/publications/entry/world-energy-trilemma-index-2019>> accessed 23 October 2019.

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at a global rank of 81. A good score for energy equity is offset by weak performance in energy security and environmental sustainability.³¹

Figure 1. International Energy Agency, ‘(1990-2016) Statistics Data Browser’ Iran Energy Index



Source: World Energy Council, World Energy Trilemma Index

While we consider the trilemma concept as the appropriate approach in analysing energy policy, the equity parameter analysis provided in the mentioned index could be seen as less than comprehensive. The equity factor analysis in the index is based basically on the affordability of energy and the coverage of access to energy for the population. The importance of affordability is undeniable, however, in the case of countries like Iran, in addition to affordability, the distribution of the energy resources’ revenues and benefits also have to be taken into account. For instance, the energy careers in Iran are mostly supplied under subsidised prices by public entities and out of a liberated and competitive market. The constitution names natural resources as public wealth that belongs to the whole population of the country. Nevertheless, in many cases (that will be discussed in the analysis of the policies), these resources revenues and benefits are not being adequately distributed among the whole population.³² In the case of the current statistics of energy in Iran,

³¹ World Energy Council, ‘Iran, Trilemma Index Ranking and Balance Score’ (2019) <[https://trilemma.worldenergy.org/#!/country-profile?country=Iran \(Islamic Republic\)&year=2018](https://trilemma.worldenergy.org/#!/country-profile?country=Iran%20(Islamic%20Republic)&year=2018)>.

³² For the study on the income inequality and welfare effects of the direct distribution of resource rents and subsequent taxation in Iran, see Mohammad Reza Farzanegan and Mohammad Mahdi Habibpour, ‘Resource Rents Distribution, Income Inequality and Poverty in Iran’ (2017) 66 *Energy Economics* 35 <<http://dx.doi.org/10.1016/j.eneco.2017.05.029>>.

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the rich decile benefits a larger number of subsidies comparing the poor. This element has no place in the analysis of the index made by the World Energy Council. Therefore, it could be argued that a wider approach to the issue of social equity has to be applied that in addition to the affordability, includes the concerns as mentioned above.

This research intends to critically analyse the Iranian energy laws and policies from the energy trilemma perspective to relatively address the challenges in meeting the sustainability, social equity, and security goals in domestic level and contributing in the global GHG mitigation essays tackling the climate change. This analysis requires profound assessments of a variety of issues that this thesis discusses in different chapters.

Before entering the discussion on the objectives and purposes of the research, it is crucial to provide an overview of the background of the energy sector in Iran. As explained, currently, over 95% of the domestic energy supply in Iran relies on oil and gas resources. Moreover, the major part of the country's exports also relies on exports of crude oil and other oil and gas products. On average, 60% of the Iranian government revenues and 90% of export revenues originate from oil and gas resources.³³ Despite some shifting policies in favour of the development of renewable energies, they still play a minimal role in domestic energy supply. Oil over one century from the first discovery in the southwest of Iran has known as one of the most important elements in contemporary Iranian history.

From one point of view, petroleum production provided the wealth for the country and has had an undeniable impact on Iranian economic growth, development of infrastructures and welfare for Iranian. From another point of view, petroleum reserves considered as the main cause of many historical events in a century of Iranian contemporary history including super powers interference in Iranian domestic affairs trends during First and Second World War, establishment of a

³³ Mohammad Reza Farzanegan, 'Oil Revenue Shocks and Government Spending Behavior in Iran' (2011) 33 *Energy Economics* 1055, 1055 <<http://dx.doi.org/10.1016/j.eneco.2011.05.005>>.

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state-centred economy structure, Nationalization Movement of 1951, Islamic revolution in 1979 and Saddam Hossein invasion in 1981.

Before the 1979 revolution and in the era of Mohammad Reza Shah Iran had taken an explicit strategy for the industry; maximizing the petroleum exports and incomes and using the petroleum incomes in the desired imperative economic development by different plans of the Shah like building new industries, development of infrastructures, and providing the utmost economic growth for the country.³⁴ Every related policy and legal and institutional developments in pre revolution era could be analysed in direction of this strategy. The Iranian petroleum legal framework was designed in the way to attract the maximum possible foreign investment. The contributions in establishment of OPEC carter performed to control international oil market and different development plans both in oil and natural gas sectors designed to keep and expand the country's production and exports.³⁵ As a result, the country's crude oil production in 1970s reached the six million barrel per day peak of production.³⁶ In natural gas sector, as it was a new discovered opportunity in hydrocarbon industry (the inception of natural gas projects was in late 1960s), many export plans had planned and as instance the Iran-Soviet Union gas export project successfully implemented.³⁷

Following the Islamic revolution in 1979, some substantial changes have been made in the political economy of the country. Although the development of oil and gas projects have been slowed down and exports of oil declined significantly³⁸ due to the challenges after the revolution, the sector remained as the major supplier of local

³⁴ See Ali Gheissari, *Contemporary Iran: Economy, Society, Politics* (Oxford University Press 2009).

³⁵ See Massoud Karshenas, *Oil, State and Industrialization in Iran* (Cambridge University Press 1990).

³⁶ 'Iran Crude Oil Production 1973-2017' <<http://www.tradingeconomics.com/iran/crude-oil-production>> accessed 12 May 2017.

³⁷ Elham Hassanzadeh, 'Exports of Iranian Natural Gas to Regional and International Markets' (University of Dundee 2013) <http://discovery.dundee.ac.uk/portal/files/2739074/Hassanzadeh%7B_%7Dphd%7B_%7D2013.pdf>.

³⁸ See Jr Mazarei Adnan, 'The Iranian Economy under the Islamic Republic: Institutional Change and Macroeconomic Performance (1979-1990)' (1996) 20 *Cambridge Journal of Economics* 289 <<https://doi.org/10.1093/oxfordjournals.cje.a013617>>.

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energy needs and country's economy and exports.³⁹ In the post-revolutionary era, petroleum sector faced many challenges that could be characterized in categories of legal, policy making, technical and political issues. Firstly, one of the leading revolutionaries' criticisms against the Shah concerned his economic relations with western countries and Israel.⁴⁰ The revolutionaries were arguing that the country's governance is highly dependent on western powers, especially the United States. This criticism mainly focused on economic relations. Following the revolution, the USA embassy hostage crisis in 1979 has led to a diplomatic conflict between Iran and the USA. Forty years after this crisis, the political conflict between Iran and the USA remains in place and has many effects on the Iranian economy, including the energy sector. The United States initiated a variety of sanctions against Iran because of different cases, including the so-called support of terrorism, violation of human rights and development of ballistic missiles and nuclear program⁴¹. About the latter, effective economic sanctions had not limited to USA and EU and other permanent members of the UN Security Council involved in imposing sanctions against Iran.⁴² On 14 July 2015, Iran and P5+1 (the five permanent members of the United Nations Security Council (China, France, Russia, United Kingdom, United States plus Germany), and the European Union signed an international agreement on the nuclear program of Iran called Joint Comprehensive Plan of Action(JCPOA). Under the agreement, Iran agreed to eliminate its stockpile of medium-enriched uranium and reduce by about two-thirds the number of its centrifuges for at least fifteen years. The agreement provides that in return, Iran will receive relief from part of

³⁹ Esfahani, Mohaddes and Pesaran (n 23) 229.

⁴⁰ (Ayatollah) Khomeini opposed economic domination by foreigners or non-Muslims, especially Americans and Israelis... , J. Barkley Rosser, Jr., Marina V. Rosser, *Comparative economics in a transforming world economy*(2nd edn, MIT press, 2004) John Barkley Rosser and Marina V (Marina Vschernaya) Rosser, *Comparative Economics in a Transforming World Economy* (MIT Press 2004) 490.

⁴¹ See U.S. Department of the Treasury sanctions against Iran in: 'Iran Sanctions' <<https://www.treasury.gov/resource-center/sanctions/Programs/Pages/iran.aspx>>.

⁴² See European Union sanctions against Iran in: 'EU Sanctions against Iran' <<http://www.consilium.europa.eu/en/policies/sanctions/iran/>>.

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the U.S., European Union, and United Nations Security Council nuclear-related sanctions.⁴³

While the relief of sanctions provided great opportunities for Iranian economy including the energy sector, the new administration in the White House unilaterally withdrew from JCPOA and re-imposed sanctions against the Iranian economy.⁴⁴ Other members of the deal have criticized the US withdrawal from JCPOA. However, this decision could be interpreted in line with Trump's energy dominance doctrine. It could be argued that by excluding the Iranian oil and natural gas from the global market, Trump is removing a serious competitor, especially for the US natural gas exports. The comprehensive and crippling regime of the US sanctions remains as the main foreign barrier against the development of the Iranian economy generally and the energy sector specifically.

In addition to foreign political barriers, Iranian energy sector also faces the domestic political challenges. The political issues are beyond the scope of the thesis, however many of these domestic political trends are influencing energy policies. Many economic policies including the energy policies are subject to the change due to the lack of consensus over the country's economic paradigm. That's why the country's economic roadmap is vague and controversial. These domestic political struggles are also one of the main barriers to the development of the sector. As instance the disagreement over the form of foreign investment contracts to develop the petroleum projects between the conservative parliament and reformist government of Rouhani has delayed the approval of the contract pattern for almost 3 years.⁴⁵

⁴³ On 14 July 2015, Iran and P5+1 (the five permanent members of the United Nations Security Council (China, France, Russia, United Kingdom, United States—plus Germany), and the European Union signed an international agreement on the nuclear program of Iran. Under the agreement, Iran agreed to eliminate its stockpile of medium-enriched uranium and reduce by about two-thirds the number of its centrifuges for at least fifteen years. The agreement provides that in return, Iran will receive relief from U.S., European Union, and United Nations Security Council nuclear-related sanctions. 'Iran Nuclear Deal: World Powers Reach Historic Agreement to Lift Sanctions | World News | The Guardian' <<https://www.theguardian.com/world/2015/jul/14/iran-nuclear-programme-world-powers-historic-deal-lift-sanctions>> accessed 11 May 2017.

⁴⁴ DONALD J. TRUMP, Executive Order Reimposing Certain Sanctions with Respect to Iran.

⁴⁵ 'Iran's New Oil Contract Model Shelved' <<https://www.tasnimnews.com/en/news/2017/02/14/1328071/>> accessed 12 May 2017.

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Accordingly, the policymaking challenges driven from these facts could be considered as one of the main hindrances to development of the sector.

Secondly, Iran's petroleum export faces domestic and international legal obstacles. The country's foreign investment framework generally, and petroleum legal framework specially experienced a history of vicissitudes.⁴⁶ Regarding the hydrocarbon sector, exploration, exploitation and production activities after conclusion of D'Arcy Concession continued in the same way until the appearance of the Nationalization Movement of Iran, which wrapped up by the adoption of Iran's Oil Industry Nationalization Law in 1951 under the leadership of Prime Minister Mosaddegh. Although nationalization made a historical point in Iran's petroleum history, the further coup of Mosaddegh's government took Iran's petroleum contracts back to how they were before the nationalization era, but this time with a more complicated contract called 1953 Oil Consortium. The next turning point in this history was the adoption of the second Iranian Petroleum Law in 1974. Based on this law, the oil industry of Iran was declared as national, but this time in a real sense. Nevertheless, this law did not affect the 1953 Consortium, and it remained in force until the Islamic Revolution in 1979⁴⁷ (see chapter 2).

After the 1979 Revolution, the new Constitution perused a narrow approach to foreign economic cooperation, meanwhile, some restrictions for natural resource exploitations established under the new Constitution and Islamic rules acknowledged as one of the main sources of law.

Thirdly, country's petroleum and more generally energy administration is facing some sort of weak and fragmented policy making and governance. First of all, energy in Iran faces lack of an efficient unique body that regulates energy and petroleum policies with legally binding nature of decisions. Ministry of Petroleum, Ministry of Energy and Water Resources, Department of the Environment and many other bodies have direct roles in the energy sector. Moreover, many other

⁴⁶ See Duane Sams, 'The Legal Aspects of Doing Business in Iran' (1983) 17 *International Lawyer* 23, 27.

⁴⁷ Nima Nasrollahi Shahri, 'The Petroleum Legal Framework of Iran : History , Trends and the Way Forward' (2010) 8 *China and EurasiaForum Quarterly* 111, 113.

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bodies including Transportation Ministry, municipalities and city councils, Targeted Subsidies Organization, and Fuel and Transportation Organization have indirect roles in country's energy governance. As a result, energy sector in Iran struggling with many parallel and contradictory decisions and plans, implemented by a variety of uncoordinated institutions. As for instance, the huge loss of energy in household consumption of electricity and natural gas⁴⁸ and ill-oriented subsidies considered as two main reasons that limited the Iranian vast natural gas production to supply domestic demand. The main reasons of country's massive domestic gas consumption could be summarized in government subsidies, low efficiency and more generally lack of a efficient policies for the sector. One more example is the increasing growth of gasoline and diesel consumption. In the condition that near 950.000 automobiles are entering the Iranian roads and cities each year, lack of development in urban and interurban public transportation caused daily consumption of 2 million barrels of petroleum refined products. Meanwhile, this domestic market couldn't be seen as a competing market why so the domestic market benefiting from vast subsidies. Following the government proposal, the Iranian parliament passed the Targeted Subsidy Plan law in January 2010 with the aim to replace subsidies on food and energy with targeted social assistance, with considering the Five Year Economic Development Plan. It was expected that the plan controls domestic energy consumption, increase the energy efficiency, prevent wasteful consumption of energy and food and finally reach free market prices in a 5 years period.⁴⁹ By passing years after the implementation of the plan, it could be argued that the reform has not been achieved the expected targets in energy sector mainly because of the lack of required studies on the plan and the policy making challenges.

⁴⁸ Iran is the world ninth consumer of energy and has the fourth highest level of natural gas consumption after the United States, Russia and China. International Energy Agency, '(1990-2016) Statistics Data Browser' (n 12).

⁴⁹ Ghanone Hadafmand Kardane Yaraneha (Law on Altering Subsidies to Targeted Subsidies) 2010 2010.

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1.2. Objectives and Purposes of the Thesis

Considering the energy trilemma as a just paradigm for energy policy making could lead the energy governance towards a situation in which the basic concerns over energy sector including sustainability, affordability and social equity, and security are simultaneously met. As argued before, while massive fossil fuel resources have provided access to cheap energy resources for almost every Iranian, already today, Iran's energy sector faces serious challenges regarding the sustainability and social equity and policies doesn't represent a reliable road map for energy transition in the future. Relied on the massive reserves and production of hydrocarbon, security is not the current concern of Iran's domestic energy supply, however, the continuance of the current energy trends and lack of efficient diversification policies could pose security concerns in future.

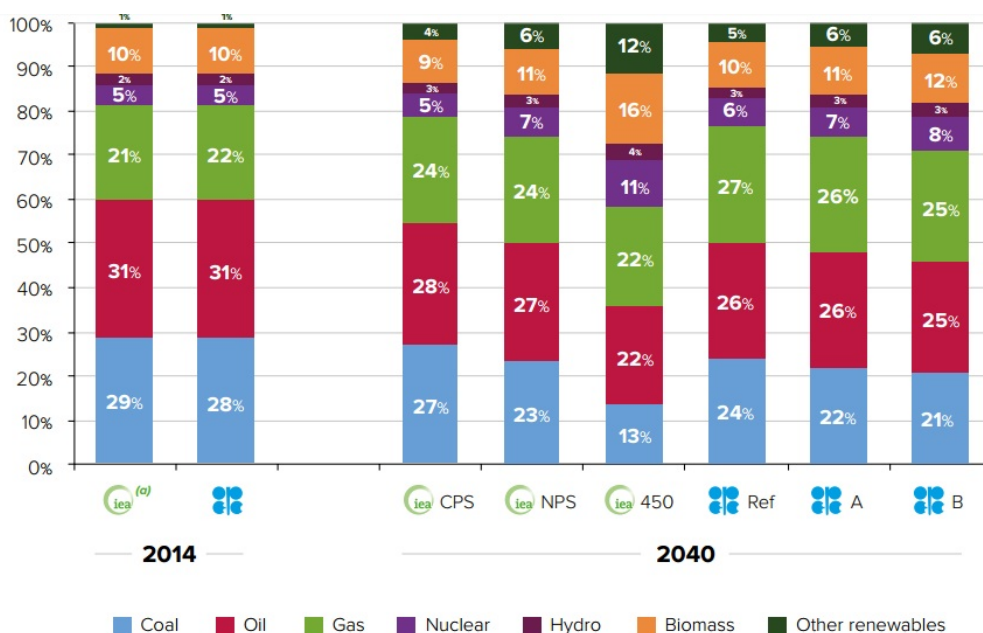
As argued, beside the political debates which is out of the scope of this research, legal and policy challenges could be considered as the main barriers of the development of Iran's energy sector in light of the energy trilemma. What intensifies the importance of this research is the bottom up approach of Paris Agreement. Paris agreement requires the parties to nationally determine their contribution in mitigation policies. Hereupon it could be argued that to meet the Paris Agreement targets, more and more studies and data sharing over each state party's energy policy is required to realize an overall assessment on the achievements and shortcomings in meeting the agreement goals. Thereupon, the Thesis has outcomes and consequences for both private and public and local and international decision makers dealing with energy sector.

In addition to the debates on domestic level, Iran's energy sector also potentially benefits a significant regional and global importance. According to estimates by International Energy Agency and OPEC, despite the fact that by the end of 2040 the renewable and nuclear energies will supply a larger portion of world's energy demand, oil and gas will still remain as the source of approximately half of total world energy supply.

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In the crude oil sector, although according to IEA and OPEC reports, it is expected that by the end of 2040 the share of oil in supplying world primary energy demand will decrease from 31% in 2014 to 26%, it will remain as one of the main world energy sources. (Figure 2)⁵⁰

Figure 2. World primary Energy Fuel Shares in 2013 and Outlook for 2040



Source: IEF Report

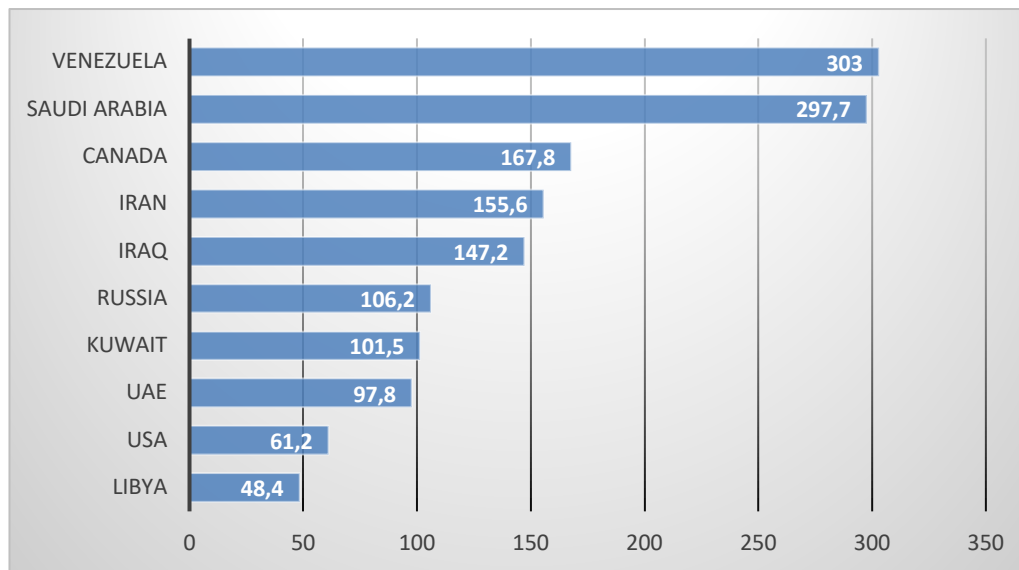
In natural gas sector unlike the oil, it is expected that by the end of 2040, natural gas will supply a bigger portion of world primary energy demand rather than the current share. Natural gas advantages same as less environmental damages, competitive prices, and flexibility of consumption targets make it as a more reliable source of energy. According to IEA report, it is expected that the 21% share of natural gas in world energy supply in 2014 will increase to 24-27% in 2040.

Iran holds world's fourth largest deposits of proved crude oil reserves after Venezuela, Saudi Arabia, and Canada. (Figure 3)

⁵⁰ International Energy Forum Publication, 'A Comparison of Recent IEA and OPEC Outlooks' 63 47 <https://www.ief.org/_resources/files/events/seventh-iea-ief-opec-symposium-on-energy-outlooks/final-final-7th-iea-ief-opec_online1.pdf>.

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Figure 3. Largest Proved Reserve Holders of Crude Oil, (billion barrels), End of 2018



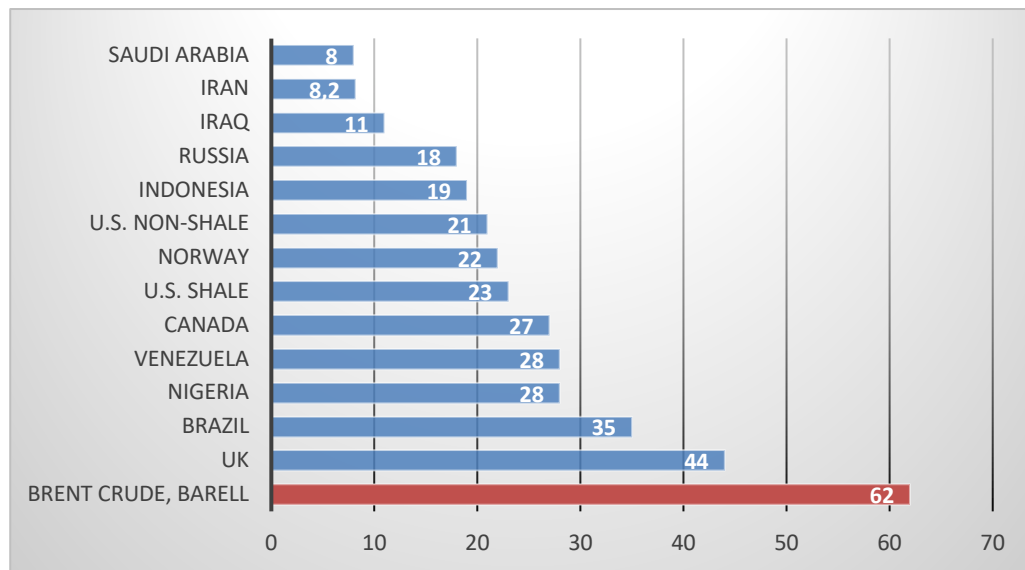
Source: Created by author using data from BP, Statistical Review of World Energy 2019

In analysing the potentials of the hydrocarbon resources, the amount of reserves is not the only factor, and there are a variety of other elements that have to be duly be taken into account. The per barrel production costs is one of the main factors in this analysis. In fact, the capital and the production operation expenditures differs from any oil and natural gas to the other, depending to the geographical characteristics of the field and the technologies that have to be applied. The oil production cost in Iran is one of the cheapest in the world. (Figure 4)⁵¹

⁵¹ According to Wall Street Journal cost of producing a barrel of crude oil in Iran in 2016 is 9.08\$ similar to Saudi Arabia and lower than any other producing countries. See: 'Barrel Breakdown' <<http://graphics.wsj.com/oil-barrel-breakdown/>> accessed 10 May 2017.

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Figure 4. Average Cash Cost To Produce a Barrel of Oil or Gas Equivalent By Country. Brent Crude November 2019 Price Set as Lost and Profit Indicator



Source: Wall Street Journal

The cheap oil production costs and huge reserves have altered Iran to one of the permanent suppliers of crude oil within the last century. However, political vicissitudes, ambiguous legal framework and challenges in policy making and governance of petroleum and more generally in the energy sector have considered as main obstacles not letting Iran to play a more constructive role in enhancing the energy security in regional and global level. While Iran holds near 9% of world oil reserves, by the end of 2015 the country's crude oil production has not exceeded from 3.7 mbd which is 5% of world crude oil productions. According to BP statistical review, by the end of 2015, Iran's crude oil exports reported 1.7 mbd meaning that Iran obtained only 3.7% of world crude oil exports market.

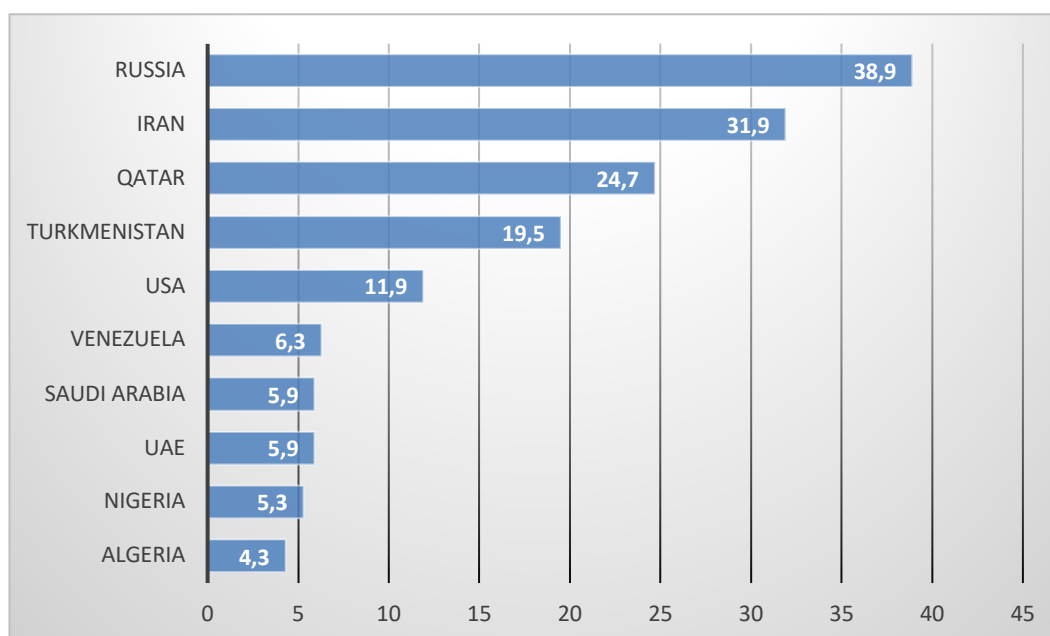
According to the 2019 BP statistical review, Iran holds world's second largest deposits of proved natural gas reserves. Iran has 32 trillion cubic meters of natural

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gas reserves, which is about 18 % of the total proven reserves of the world. Figure 1.4 shows the top ten reserve holders of natural gas.⁵²

Whilst Iran holds more than 18 % of total world natural gas reserves, according to OPEC statistical review the amount of natural gas production of the country has not exceeded from 248.524 mcm which is about 6% of world total production. Meanwhile, Iran exported a negligible amount of 12.237 mcm in 2018 which is about 1 % of total world exports⁵³. Currently and as explained, the majority of natural gas production is being consumed domestically.

Figure 5. Largest Proved Reserve Holders of Natural Gas,(Trillion Cubic Meters), End of 2018



Source: Created by author using data from BP, Statistical Review of World Energy 2019

The exports of Iranian petroleum products have not only had direct impacts for the country, but also have many international consequences. The expansion of Iranian petroleum exports could diversify the world's oil supply sources which are mainly

⁵² British Petroleum, 'BP Statistical Review of World Energy Statistical Review of World, 2019' 30 <<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-full-report.pdf>>.

⁵³ OPEC, 'OPEC Annual Statistical Bulletin 2019' [2019] Organization of the Petroleum Exporting Countries 132, 111–118.

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dependent on confined suppliers like Russia and Saudi Arabia. In the natural gas sector, Iran could potentially be considered one of the best options to contribute to the supply of India's vast energy demand through a Peace Pipeline and an option for diversification of EU natural gas supply. Likewise, Iran's natural gas could potentially contribute to the diversification of LNG supply in global markets.

Legal and policy challenges could be considered the main barriers to the expansion of Iran's petroleum exports to regional and international markets. In this Thesis, different challenges of the Iranian energy legal regime and energy policymaking will be critically analysed. This analysis includes a variety of debates; development of Iran's petroleum legal framework, legal basis of Iran's energy decision making, legal instruments for development of renewable energies, the legal aspects of Iran's participation in related international organisations such as OPEC, the legal challenges of Iran's adhesion to corresponding international organisation and treaties like International Energy Charter, the impacts of world energy trends on Iran's policies, and possible impacts of the international norms on Iran's energy policies are topics that will be critically analysed in different chapters of the Thesis.

The purpose of the Thesis is to provide a comprehensive understanding of the current legal, and policy challenges stopping Iran from developing its energy sector in line with the principles of sustainability, social equity and security on a domestic level. This shift would also contribute to the enhancement of regional and global energy security. In addition to debates on domestic subjects, the Thesis also considers the international dynamics at play.

Energy policies, such as pricing strategies, are puzzling in relation to many other energy related areas like the amount of unconventional petroleum or renewable energy production worldwide. While every development in the global energy sphere could affect other elements, the analysis of one component within a chain of other developments could lead to more reliable results. Hence, in this Thesis, the analysis of Iran will be performed while considering global impacts.

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1.4. Problematic and Research Questions

Iranian domestic energy supply remains highly dependent on the oil and natural gas. Despite some achievement in development of renewable energies in recent years, the amount of the green house emission production in Iran remains relatively high. In addition to the global environmental and climatic concerns over the Iranian energy sector, many cities in Iran are already suffering from environmental harms caused among other reasons by energy sector.

The analysis of challenges that energy sector in Iran faces to develop in light of energy trilemma has domestic and international importance; in addition to the mentioned importance of the energy exports, based on the bottom-up approach in Paris Agreement and by considering Iran as a major and developing producer and consumer of fossil fuels, addressing the legal and policy challenges of the sector to develop in light of sustainability, social equity and security is in line with global targets for mitigation and meeting the sustainability goals.

Therefore, the main question of this research is:

What are the main legal and policy challenges of the development of Iranian energy sector in light of sustainability, social equity and security pillars?

This question is will be followed by the second question which is:

How have the energy policies in last decade affected the sustainability and GHG emissions mitigation ?

Several considerations intensify the importance of the Thesis: Firstly, in existing literature, we are lacking a comprehensive study that analyses and clarifies not only the legal but also policymaking aspects concerning the development of the Iranian energy sector. This study requires an in-depth assessment of the legal and constitutional bases that form the country's energy policies and requires an analysis of legal aspects of domestic development plans in the energy sector. Secondly, in addition to domestic concerns, the thesis also deals with the impacts of international

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mechanisms, including the Paris Agreement, on national Iranian energy policies. In addition to the environmental commitments, the role of the country's obligations in relation to international organisations and parallel developments in international norms regarding the energy sector could be considered the main instances of foreign elements in this context. Thirdly, the hypothesis that the legal and policymaking challenges energy sector development have to be assessed in light of the energy trilemma is a novel approach and could not be found in any existing literature. It is expected that this essay provides a better understanding for both local and foreign, as well as private and public, actors dealing with the energy sector in Iran and provides a better understanding for academics and legislators for required reforms.

1.5. Literature Review

Research related to the energy sector, especially those focused on giant fossil fuel producers are overwhelmingly discussed as the economies that are still dependent on these resources and meanwhile environmental concerns are enjoying growing attention. Despite the variety of work on Iran's petroleum issues, we are facing a lack of a comprehensive analysis on legal and policy challenges regarding development of the energy sector in Iran in relation to the essential principles of sustainability, equity and security. Most of the existing corresponding research is focused on hydrocarbon, and especially the framework for foreign investment in the Iranian upstream oil and gas sector. Currently, we lack an analysis that considers the neglected concerns of sustainability, security, and social equity in the development of the energy sector in Iran. Already today, Iran is facing many serious environmental challenges that are directly and indirectly resulting from local energy policies. These challenges, like sand storms in vast areas of the country, or continuing air pollution in metropolitan areas like Tehran and Isfahan, are results of negligence with regard to the environmental aspects of the policies adopted by the Iranian legislature over the past few decades.

The Thesis aims to analyse the issue of the legal and policy challenges of development of Iran's energy sector while considering the three requirements of the energy trilemma. This approach could not be found in any existing publication on this issue. This approach could provide a deep and enhanced understanding of the

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previous developments and current issues that could lead to a better understanding of the neglected aspects of energy policy and a path for required reforms in the future. The petroleum industry in Iran has experienced over a century history with many political and legal vicissitudes. A wide variety of sources are available on the history of Iranian energy, and specifically the oil and natural gas industry, in English and Persian.⁵⁴ The approach in history and the background part of the Thesis is based on highlighting the developments that could be considered turning points in this context. Based on this approach, developments that are still influencing energy policies and approaches could enjoy more importance while still influencing the current developments.

As Iran holds massive reserves of oil and natural gas reserves and is one of the largest producers of petroleum products, the other aspects of the Iranian energy sector, especially power generation through renewables and the diversification perspective, have hardly been discussed in academic literature. Lack of a comprehensive and long-term domestic energy strategy is not only a cause, but also the result of, the domination of the hydrocarbon sector even in research and academics. It could be argued that the political isolation of the country after the revolution from 1979 have led to a gap in the coverage of the corresponding legal material in English-language sources. However, academics have widely covered the former legal framework for foreign investment in the petroleum sector as a response to the needs of the hour.⁵⁵ As an example, a detailed analysis of Iranian

⁵⁴ Mohammad Ali Movahhed, *Khab-e Ashoftey-e Naft, Doctor Mossadegh va Nehat-e Melli-e Iran (Agitated Oil Dream, Dr Mosaddegh and Nationalization Movement of Iran)* (Karnameh 1999); Fateh Mostafa, *50 Sal Naft e Iran (50 Years of Iran's Oil)* (1st edn, Chehr Publication 1956); Mark J Gasiorowski and Byrne Malcolm, *Mohammad Mosaddegh and the 1953 Coup in Iran* (Syracuse University Press 2004); Ervand Abrahamian, *The Coup: 1953, the CIA, and the Roots of Modern U.S.-Iranian Relations* (The New Press 2013); Fakhimi Ghobad, *30 Sal Nafte Iran, Az Melli Shodan Ta Enghelabe Eslami (30 Years of Iran's Oil from Nationalisation to Islamic Revolution)* (Mehrandish 2008); Bamberg (n 22); Seyyed Ahmad Alavi, 'History of Oil Industry in Iran' (California Institute of Asian Studies 1977).

⁵⁵ Ghandi Abbas and Cynthia Lin C-Y., 'Do Iran's Buy-Back Service Contracts Lead to Optimal Production?' [2012] *Energy Policy* 181; SN Ebrahimi and A Shiroui Khouzani, 'The Contractual Form of Iran's Buy-Back Contracts in Comparison with Production Sharing and Service Contract' [2003] *Middle East Oil Show. Society of Petroleum Engineers*; Alexander Brexendorff, Ule Christian and Maximilian Kuhn, 'The Iranian Buy-Back Approach' (2009) 7 *Oil, Gas & Energy Law Journal (OGEL)*; Hooman Farnejad, "'How Competitive Is the Iranian Buy-Back Contracts in Comparison to Contractual Production Sharing Fiscal Systems?' (2009) 7 *Oil, Gas & Energy Law Journal (OGEL)*; Maximilian Kuhn and Mohammadjavad Jannatifar, 'Foreign Direct Investment Mechanisms and Review of Iran's Buy-Back Contracts: How Far Has Iran Gone and How Far

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contractual model for foreign investment in petroleum sector could be found in the work of Kakhki.⁵⁶ Kakhki's study provides a detailed analysis of Iranian petroleum legal framework and the Iranian buyback contractual model. The study includes a satisfactory historical assessment, however as the study was done in 2008, the recent legal developments including the enactment of MPTAL and new proposed investment pattern called IPC has not been covered. Following the enactment of MPTAL, the legal framework for foreign investment in industry experienced significant developments that must be analysed among the other debates of the Thesis.

Hassanzadeh offers a comprehensive approach in her study on the Iranian natural gas sector. This study includes an assessment of political, legal and economic barriers to the exports of Iranian natural gas in local and international markets.⁵⁷ However, the research has been limited to natural gas and does not cover the oil and electricity sector and, due to the limited scope, could not provide a thorough analysis of challenges that the Iranian energy sector faces. Besides, the research was performed in 2013 and the recent legal and political developments are not covered. The international sanctions against Iran could be one of the main obstacles to Iranian natural gas exports, while the 2015 nuclear agreement between Iran and P5+1 states has been led to the lifting of many sanctions. Therefore a new analysis of political and legal factors in the post-agreement era is necessary.

May It Go?' (2012) 5 *Journal of World Energy Law and Business*; Shahri (n 47); Ebrahimi Nasrollah and Shirijian Mohammad, 'Upstream Oil and Gas Contracts Of Islamic Republic Of Iran and Explanation of Legal Implications and Requirements of New Contracts' (2014) 3 *Iranian Energy Economics* 1; Mohammad Mehdi Hedayati Kakhki, 'A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems' (Durham University 2008) <http://etheses.dur.ac.uk/2931/1/2931%7B_%7D762-vol1.pdf?UkUDh:CyT>; Abdolhossein Shiravi and Seyed Nasrollah Ebrahimi, 'Exploration and Development of Iran ' s Oilfields through Buyback' (2006) 30 *Natural Resources Forum* 199.

⁵⁶ Kakhki (n 55).

⁵⁷ Hassanzadeh (n 37).

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1.6. Research Methodology

Employing the appropriate scientific method is the first step and a key factor in social science researches that ensures the reliability of conclusions. The Scientific method comprises standardized means that allows researchers to impartially examine pre-existing theories and findings and bring them to open discussion and modification. There are a variety of research approaches, tools, and techniques that may be used in legal researches.⁵⁸

The concept of energy law and policy as a legal discipline has been the subject of discussions in academics over last few decades. Adrian Bradbrook has defined the Energy Law in his seminar paper in 1996 as “*The allocation of rights and duties concerning the exploitation of all energy resources between individuals, between individuals and the government, between governments and between states*”.⁵⁹ This definition could be considered as one of the initial essays in conceptualizing the energy law as a new legal discipline. The definition provided by Bradbrook considers the broad concept of resources including the primary resources both in finite and non-finite forms as well as the secondary or substitute sources of energy.

While addressing the regulations managing the energy system, energy law and policy could be distinguished from resources law and policy. This distinction based on the idea that energy law and policy are dealing with the energy markets, security of energy supply and efficiency. Under the energy law and policy concept, government policies aimed at securing energy sources at the least possible cost, including social cost. Resources law and policy, by contrast, is about the strategies used by governments to maximize revenue and exercise sovereignty.⁶⁰ In case of Iran, the issue of oil and gas resources management (specially the legal aspects of ownership and the exercise of sovereignty) has been an important subject of law

⁵⁸ Anol Bhattacharjee, *Social Science Research: Principles, Methods, and Practices*, vol 9 (Global Text Project 2012) 5 <http://scholarcommons.usf.edu/oa_textbooks> accessed 11 May 2017.

⁵⁹ Adrian J Bradbrook, ‘Energy Law as an Academic Discipline’ (1996) 14 *Journal of Energy & Natural Resources Law* 193, 194.

⁶⁰ Raphael J Heffron and Kim Talus, ‘The Evolution of Energy Law and Energy Jurisprudence: Insights for Energy Analysts and Researchers’ (2016) 19 *Energy Research and Social Science* 1, 1–2 <<http://dx.doi.org/10.1016/j.erss.2016.05.004>>.

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and policy. The other aspects of energy law and policy, by contrast have benefited from a far less attention.⁶¹

The increase of concerns over environmental harms of the economic development has led to the genesis of the Sustainable Development concept and one of the key elements of sustainability is energy use. Bradbrook has argued that the required reforms for achieving the sustainability goal doesn't necessarily needs legal reform i.e. the allocation of government grants and subsidies can be achieved without the need for new laws. However, the state of the law remains a substantial factor and tool in ensuring that energy use is consistent with the goal of sustainability. In this context, laws can encourage industry and individuals to invest in renewable energy and energy conservation technologies (by the use of taxation incentives), laws can require industry and individuals to engage in certain desired activities or to desist from certain undesirable activities (by the use of regulations), and laws can establish new entities or frameworks which are regarded as supportive of or consistent with the government's stated objective.⁶² The energy policy problems include selecting among energy alternatives, evaluating energy supply technologies, determining energy policy and energy planning.⁶³

Energy law and policy forms around the potential and necessities of each country and differs from one country or region to another. Countries relying on imported resources are trying to develop their strategies to be energy secure. In essence, their energy law and policies are based on two main groups: internal and external. In the case of internal measures, these countries should develop strategies which will maximise energy efficiency and use of renewable energy. Primarily, they have to secure enough energy from domestic sources, or stable foreign suppliers, by developing adequate foreign policy and trading arrangements. Diversification of

⁶¹ This has also highly influenced the academics. Currently, there are academic courses titled as *oil and gas law* that mainly covers different legal topics on of oil and gas contracts and operations. This courses doesn't inherit any other domains of the energy law.

⁶² Adrian J Bradbrook, 'Environmental Aspects of Energy Law - the Role of the Law' (1994) 5 *Renewable Energy* 1278, 1278.

⁶³ İhsan Kaya, Murat Çolak and Fulya Terzi, 'A Comprehensive Review of Fuzzy Multi Criteria Decision Making Methodologies for Energy Policy Making' (2019) 24 *Energy Strategy Reviews* 207, 207.

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supply is of high importance. Secondly, the issue of energy transport and storage has to be adequately addressed, with risk assessment and investment in infrastructure.⁶⁴ Meanwhile, whereas the fossil energy resources are vast and flowing to supply the demands, the resource-rich countries barely take the necessary security options such as diversification, as seriously as the imports-reliant countries do. In the same way, the sustainability approach to the energy sector is also being neglected.

Energy systems are deeply interrelated with other domains of policy, and issues of energy supply and demand and their consequences span diverse sectors, sites and scales. For example, it is widely recognised that climate change represents a cross cutting problem which cannot be addressed from any single sector alone. Security issues within energy systems are another revealing example: energy security crosses multiple scales and disciplines, and is affected by various nonenergy sectors, including the military, regional planning, trade and technology. In recognition of the interrelated and cross-cutting character of many problems, policy integration has become a salient issue for decision-makers and researchers within diverse disciplines.⁶⁵

While assuming the pillars of the energy trilemma as principles that cover most of the concerns over the energy policy making, the rhetorical discussion over the concept remains in place. Firstly, by considering the energy trilemma as the guiding rule of energy policy making, the first question that arise could be; is there any priority of one of the axis over the others? Secondly, is it possible to apply the concept to any energy system in every country despite their differences in economic development, access to resources, and geographical characteristics? Depending on the priority of the energy and more generally economic systems, the policies may be made in favour of one of the dimensions as the prior and dominant element. Therefore, when it comes to a legal discussion, one may argue that the energy trilemma approach lacks any guiding normative content. In fact, we may answer to

⁶⁴ Šprajc, Bjegović and Vasić (n 3).

⁶⁵ Emily Cox, Sarah Royston and Jan Selby, 'From Exports to Exercise: How Non-Energy Policies Affect Energy Systems' (2019) 55 *Energy Research and Social Science* 179, 179.

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the question that, is there any priority between the objectives of security, sustainability and social equity? It could be argued that the energy trilemma objectives are not impossible as a trinity. In fact, the main guideline could be considered as meeting the balance between the three objectives.⁶⁶

From the methodological point of view, it is expected to clarify the domain of energy law and policy as a legal topic. There is an ongoing discussion over considering the energy law as an independent legal discipline. One may argue that energy law is the energy-related regulations that could be found in different disciplines of the law including public international law, environmental law, property law, and administrative law, while others may argue that it could be considered an independent legal discipline.⁶⁷ However, despite this theoretical discussion, in this research, by energy law and policy, we mean the package of legal instruments regulating the extraction, production, supply, and consumption⁶⁸ of all sort of energy carriers.

The main methodology of the research is based on the qualitative analysis of Iranian energy laws and policies. Qualitative methods are often used while researchers plan an in-depth study. This in-depth research focuses on similarities among separate instances of a first cause that is believed not accurately represented yet. Qualitative methods are also used to illustrate fundamental characteristics of phenomena and then to clarify primary relationships among these characteristics.⁶⁹ The study of legal and policy challenges against the sustainable, socially equitable and secure development of Iran's energy sector requires an in-depth investigation of legal and, policymaking, components. Hence, a qualitative method seems the most appropriate methodology that could guide the research towards more reliable conclusions. Flexibility and open character are also one of the essential

⁶⁶ See: 'Climate Rhetoric: What's an Energy Trilemma?' <<https://www.carbonbrief.org/climate-rhetoric-whats-an-energy-trilemma>> accessed 15 October 2019.

⁶⁷ See Heffron and Talus (n 60) 2.

⁶⁸ known as the energy life cycle. See Raphael J Heffron, 'The Application of Distributive Justice to Energy Taxation Utilising Sovereign Wealth Funds' (2018) 122 Energy Policy 649, 651.

⁶⁹ Charles C Ragin, *Constructing Social Research : The Unity and Diversity of Method* (Pine Forge Press 1994) 102.

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characteristics of qualitative methods.⁷⁰ The Thesis also requires flexibility to ensure the possibility of covering the conversion and transformation of circumstances and variables. This flexibility also lets us adjust contents in the course of the research while concepts and discussions are clarified. Qualitative research includes several approaches and tools. In this research, the descriptive parts are addressing facts and further, the analytical part provides an assessment of different influences of the mentioned facts on current and future developments. For instance, the descriptive part of history and background provide selected facts and later analytical part examines the impacts of historical facts on current and expected future developments. The comparative approach is also utilised in certain parts of the Thesis dealing with the assessment of legal and policymaking materials when the existing frameworks in other States could provide a better understanding of the challenges and lacunas. For example, while there are several international practices embedded in national petroleum legal frameworks of host governments, a comparative approach could provide the best results of the research in this context.

Energy law and policy is probably one of the more complex areas of law requiring the engagement of the researcher with other disciplines including politics, economics, geography, engineering and environmental sciences.⁷¹ The scope of this research is limited to the law and policy. However, the quantified results of other disciplines like economics and environmental science⁷² are used for the evaluation of the impacts and results of the laws and policies.

1.7. Organization of the Thesis

The thesis is organised into ten chapters which are divided into five parts. **Part One**, which consists of chapter 1, 2 and 3 indicates the research introduction, history, and background. **Chapter 1** provides the introduction to the research and illustrates its research problematics and questions. It also defines the reasons for

⁷⁰ *ibid* 90.

⁷¹ Heffron and Talus (n 60) 1–2.

⁷² I.e. the emissions data provide by the environmental scientists, the natural resources data and analysis provided by geological engineering, and the energy related economic data provided by the economic sciences.

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choosing this research topic and indicates a detailed review of the available literature. This chapter finally elaborates on the research methodology.

Chapter 2 presents a history of energy and especially petroleum industry impacts on different aspects of the Iranian economy from the first exploration of oil till today. In addition to describing all of the vital turning points in this long history, an analysis of each historical phenomenon's impacts on the current law and policy framework could be found in this chapter.

Chapter 3 provides comprehensive and up to dated data, statistics and information on Iran's energy sector. This chapter first addresses hydrocarbon reservoir estimates followed by providing data on infrastructures and current production, consumption, and exports data. It also provides electricity and renewable energies data and statistics.

Part Two comprising of the chapter 4 and 5 examines the global energy governance and international energy instruments. **Chapter 4** critically analyses the energy governance in the global context by assessing the role of the international energy organizations and agreements. **Chapter 5** later provides an overview of the EU energy policies and later analyses the challenges the EU faces in formation and strengthening the energy union. This chapter also provides an analysis the international impacts of the EU energy policies.

Part Three which includes chapter 6 and 7 assesses the Iranian energy policies based on the energy trilemma perspective and from a critical point of view. **Chapter 6** first defines and analyses the legal nature of the policies in Iranian legal order. Further, it addresses the administration of the energy sector. **Chapter 7** critically analyses the energy policies in light of the principles of sustainability, affordability and social equity, and security. The chapter further provides a mapping and resume of energy policies in Iran.

Part Four which contains chapters 8, 9, and 10 deals with analysing legal barriers versus the development of energy sector as required by the analysed policies. **Chapter 8** first examines the general regulations and laws of energy activities,

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natural resources, and investment, and further, discusses contemporary developments, and finally critically analyses the current legal order and investment regime. **Chapter 9** later, critically analyses the petroleum legal framework by addressing all of the corresponding regulations. **Chapter 10** describes the electricity market and renewable energy laws and regulations, and then critically analyses the legal framework for the development of renewable energies in Iran.

Part Five, comprising of chapter 11, includes a summary of the thesis followed by conclusions in English and Spanish

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2. Chapter 2: A history of energy sector in Iran, one century of petroleum domination

2.1. Introduction

Any research of Iran's energy industry could not be realized without analyzing history and background of the sector. The petroleum industry in Iran not only experienced many developments itself but also during last century has been an influential element affecting all of the economic, social and political trends and developments. Petroleum is a key factor in most of the substantial events in the contemporary history of Iran. From the invasion of great powers during world wars to further coup of the nationalist government of Mohammad Mossadegh. Criticism against Shah oil and gas policy also was one of the main factors in 1979 revolution. In post-revolution era, oil and gas remained as an important element. Soon after the victory of the revolution, the oil-rich region of Iran was the main target for Saddam Hossein's invasion and after the 8 years war, oil and gas industry remained as the most important economic sector in the country with many influences in domestic and international political developments. This chapter starts by providing a selective and brief history of Iran's oil and gas industry. It continues by analyzing recent developments and finally, it examines current statistics of reserves, production, and infrastructures.

2.2. The brief history of Iran's petroleum industry

2.2.1. Persia on the verge of first oil exploration

Despite the ancient use of hydrocarbon in Iran, modern oil history of Iran begins by granting concessions by kings of Qajar dynasty. Qajar dynasty was in power from 1789 to 1925. The concessions by Qajar kings were granted in the situation that among other reasons long and repetitive wars of Qajar kings with Imperial Russia put Iran in one of the weakest situation during the long history of the country. An analysis of social, political and economic backgrounds in which these concessions were granted has an inevitable importance for better understanding of later developments.

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Those Russo-Persian Wars (or Russo-Iranian Wars) were a series of wars battled between the Russian Empire and the Persian Empire in the middle of the 17th and 19th century. Similarly, as Russian power grew, it began to challenge the two hegemony powers in the region meaning Safavid Empire (followed by Afsharid and Qajar) in Iran and Ottoman Empire over the territories around the Black Sea and the Caspian Sea and Caucasus region. All of Russo-Persian Wars Consequently worried the Caucasus region. For its history, Transcaucasia (comprising current Georgia, Azerbaijan, and Armenia) and substantial parts of Dagestan were under the authority of Iran Empire. Throughout the course of the nineteenth century, the Russian Empire during several wars conquered those territories from Qajar dynasty.⁷³

From these series of wars the two latest i.e. 1804-13 and 1826-28 Russo-Persian wars led to Russian victory and Persia cedes all of the territories of current Armenian Republic, Nakhchivan and Azerbaijan to Russia during treaties of Gulistan and Turkemenchay.

According to settlement agreements, Qajar government had to pay a large amount of compensation to Russia. Moreover, corruption in government and taxing administrations, wasteful expenses of Qajar kings and droughts in many parts of Iran have led to continues economic crisis during the 19th century. The economic crisis during the 19th century, poor governance of Qajar kings, the conflicts of interests of great powers i.e. Russian and Great Britain and lack of local know-how and ability for economic and industrial development put Qajar kings in a position to grant different types of concessions to foreigners to achieve minimal financial sources for survival. Meanwhile, providing economic interests and enhancing relationships with European powers was a measure by Qajar government to gain European supports against Russian involvements in Iran. In addition to all of these facts, in different cases, local actors who have achieved influences on corrupted Qajar court, played a broker role in the conclusion of some of these concessions.

⁷³ Multiple Authors, 'Caucasus and Iran' (*Encyclopædia Iranica*)
<<http://www.iranicaonline.org/articles/caucasus-index>> accessed 9 May 2017.

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2.2.2. Reuter Concession

In 1872, in the era of Naser od-Din Shah and chancellorship of Mirza Hosein Sepahsalar, a concession granted to Baron de Reuter⁷⁴ known as Reuter Concession. This concession includes the right to railroad construction and general commercial development. Section 11 of this concession grants exclusive right of mineral exploitation including petroleum in all of Iran's land to Reuter. Gold, silver and jewel mines considered as exceptions. According to section 12 of Reuter Concessions, Iran's government entitled 15 percent of the net profit of exploitations.⁷⁵ Mirza Hosein Sepahsalar believed that the only solution of Iran's salvation is to fulfill all of the commitments to Russia and to develop the country by British supports.

Reuter Concession canceled by Naser od-Din Shah due to much opposition by clerical leaders, political fractions, and the Russian government.⁷⁶

⁷⁴ Paul Julius, baron von Reuter, original name Israel Beer Josaphat (born July 21, 1816, Kassel, Electorate of Hesse [Germany]—died Feb. 25, 1899, Nice, France), German-born founder of one of the first news agencies, which still bears his name. Of Jewish parentage, he became a Christian in 1844 and adopted the name of Reuter. As a clerk in his uncle's bank in Göttingen, Ger., Reuter made the acquaintance of the eminent mathematician and physicist Carl Friedrich Gauss, who was at that time experimenting with the electric telegraph that was to become important in news dissemination. In the early 1840s he joined a small publishing concern in Berlin. After publishing a number of political pamphlets that aroused the hostility of the authorities, he moved to Paris in 1848, a year of revolution throughout Europe. He began translating extracts from articles and commercial news and sending them to papers in Germany. In 1850 he set up a carrier-pigeon service between Aachen and Brussels, the terminal points of the German and the French-Belgian telegraph lines. Moving to England in 1851, Reuter opened a telegraph office near the London stock exchange. At first his business was confined mostly to commercial telegrams, but, with daily newspapers flourishing, he persuaded several publishers to subscribe to his service. His first spectacular success came in 1859 when he transmitted to London the text of a speech by Napoleon III foreshadowing the Austro-French Piedmontese war in Italy. The spread of undersea cables helped Reuter extend his service to other continents. After several years of competition, Reuter and two rival services, Havas of France and Wolff of Germany, agreed on a geographic division of territory, leaving Havas and Wolff their respective countries, parts of Europe, and South America. The three agencies held a virtual monopoly on world press services for many years. Reuter was created a baron by the Duke of Saxe-Coburg-Gotha in 1871 and later was given the privileges of this rank in England. He retired as managing director of Reuters in 1878. 'Paul Julius, Baron von Reuter' <<https://www.britannica.com/biography/Paul-Julius-Freiherr-von-Reuter>> accessed 5 April 2017.

⁷⁵ Mostafa (n 54) 246–247.

⁷⁶ *ibid* 248.

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2.2.3. Imperial Bank of Persia Concession

Right after the cancellation of concession, Reuter started to fight for his rights through the British embassy in Tehran and claimed compensations for the cancellation of concession. Amin al-sultan as chancellor of Iran and Sir Henry Drummond-Wolff as British Minister Plenipotentiary to Teheran started negotiations for settlement of disputed over canceled Reuter Concession. In the meantime, Naser od-Din Shah was intended to travel to Europe for the third time and this travel required a large amount of money. As the result, negotiations of Sir Drummond and Amin al-Sultan led to granting a new concession to Baron de Reuter in 1889 known as Imperial Bank of Persia⁷⁷ Concession. According to article 6 of the concession, Imperial Bank gave a loan of 40.000 pounds to cover Shah's travel expenses.⁷⁸ According to Article 1, the concession called for the establishment of a state bank that not existed before. Article 3 ordained that the bank was given the exclusive right to issue banknotes. Article 5 considered the bank exempted from any taxation. In return to these vast rights, the Persian government entitled to 6 percent of the bank's net profits, or 4,000 pounds sterling, whichever was larger.⁷⁹

Article 11 deals with mining operations. According to this article, an exclusive right for exploitation of steel, copper, lead, coal, mercury, borax, manganese and oil mines in Iran's land except those mines that formerly assigned to other entities, granted to the bank. Bank has to register explored mined within ten years and those mines that not explored and registered within ten years will be considered as government's property and the bank couldn't claim any right over them. The government has 16% share from the net profit of mines exploitation by the bank. According to article 9 of 4th attachment to concession bank entitled to assign its mining rights to other entities. Bank furtherly assigned its mining rights to The Persian Mining Company a British entity for 150.000 sterling pounds. The Persian Mining Company employed several geologists for mining exploration over the

⁷⁷ Bank-e Shahi

⁷⁸ Mostafa (n 54) 248.

⁷⁹ Multiple Authors, 'Banking in Iran', *Encyclopaedia Iranica* (Encyclopaedia Iranica New York) <<http://www.iranicaonline.org/articles/banking-in-iran>> accessed 9 May 2017.

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country. The company drilled two explorations well in Dalki with 270 meters depth and in Qeshm Island with 250 meters depth; however, these wells didn't succeed in oil exploration. The company continued its exploration activities in Iran but due to high prices of transportation and lack of enough capitals did not conclude any mining operation and as the 10 years term of the contract has elapsed, the right annulled automatically.⁸⁰

2.2.4. D'arcy Concession

A couple of years before the conclusion of D'arcy concession⁸¹, Jean-Jacques de Morgan, a French geologist, and archaeologist was excavating around Susa an ancient region in south-west of Iran. He wrote an article in *Les Annales Mines* journal explaining the high possibility of oil resources existence in south and south-west of Iran. General Antoine Kitabgi Khan, director general of Persian Customs read Morgan's Article and achieved some general information about oil exploitation through his travels to European countries. During a travel to Paris, he met Sir Henry Drummond-Wolff and while sharing his ideas about the possibility of oil exploitation in Iran he asked Drummond-Wolff to negotiate with British investors with the aim of encouraging them to invest in oil explorations. Drummond-Wolff met William Knox D'Arcy⁸² and encouraged him to use his capitals to oil exploitation in Persia. Following the introduction by Drummond-Wolff, Kitabgi traveled to London and negotiated about his proposal with D'arcy.

⁸⁰ Mostafa (n 54) 249.

⁸¹ For more details and an analysis of the D'arcy concession see: Maximilian Kuhn, *Enabling the Iranian Gas Export Options: The Destiny of Iranian Energy Relations in a Tripolar Struggle over Energy Security and Geopolitics* (Springer Science & Business Media 2014) 280.

⁸² William Knox D'Arcy, (born Oct. 11, 1849, Newton Abbot, Devonshire, Eng.—died May 1, 1917, Stanmore, Middlesex [now Greater London]), English businessman who was the principal founder of the Iranian oil industry. As a youth D'Arcy emigrated with his father to Queensland, Australia, where between 1882 and 1889 he made a fortune in the Mount Morgan goldfield. He returned to London and, with British government assistance, secured (in 1901) a 60-year oil-mining concession in Iran. The area, more than 500,000 square miles (1,300,000 square km), included the entire country exclusive of five provinces bordering on Russia. The first strike of any value was made in May 1908 in southwestern Iran and led to the formation of the Anglo-Persian Oil Company in 1909. D'Arcy retired from active business immediately thereafter. As the first Westerner to discover the oil-production potential of the Middle East, D'Arcy effectively transformed the region into an area of enduring geopolitical interest. Editors of *Encyclopædia Britannica*, 'William Knox D'Arcy BRITISH ENTREPRENEUR' <<https://www.britannica.com/biography/William-Knox-Darcy>> accessed 11 April 2017.

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D'arcy dispatched H.T. Burls and Dalton two geologists to Persia for further examinations. They provided a report to D'arcy confirming that there is the possibility of oil exploration in Persia, especially around Qasre-Shirin and Shushtar cities. Following this report, D'arcy appointed Marriot as his agent to negotiate for a concession with supports of Kitabgi. Moreover, Drummond-Wolff sent a supporting letter to British Minister Plenipotentiary to Teheran Sir Arthur Hardinge asking for any possible support for the conclusion of concession. In addition to Drummond-Wolff's supporting letter, Arthur Hardinge himself was enjoyed in supporting negotiation as it was one of his missions in Tehran by British foreign ministry to obtain the advantage of oil in south part of Iran in favor of a British entity and meanwhile not to provoke Russians anxiety over the concession. That's why Hardinge proposed to D'arcy's agent to exclude 5 Northern provinces from the scope of the proposal. Marriot and Kitabgi brought a proposal to Mozaffar ad-Din Shah⁸³ but the proposal was immediately rejected by Shah due to his concerns over Russian reaction. However, with further efforts of Hardinge and his negotiations with Amin al-Soltan, the later took Russians approval and concession concluded in 1901.⁸⁴ This concession was the first concession ever granted in the Middle East, that led to oil production.

According to the first article of the concession, the Shah grants to the William Knox d'Arcy a special and exclusive privilege to search for, obtain, exploit, develop, render suitable for trade, carry away and sell natural gas petroleum, asphalt and ozokerite throughout the whole extent of the Persian Empire for a term of sixty years as from the date of concession. As mentioned, according to article 6, Northern provinces i.e. Azerbaijan, Gilan, Mazandaran, Asdrabad, and Khorassan excluded

⁸³ Mozaffar-al-Din Shah (r. 1896-1907) was a weak, pleasure-loving, simple-minded, and considerate king. It was during his reign that liberal and clerical elements joined forces to oppose the despotic and harsh prime minister 'Ayn al-Dawla (q.v.) and demanded a constitutional charter. 'Ayn al-Dawla was dismissed, and his successor, the liberal Naṣr-Allāh Khan Mošir al-Dawla, managed to secure the signature of the sickly shah on the Constitutional Charter, which included the Constitutional Law (qānun-e asāsi, lit. basic or foundational law), a few days before the latter's passing. Ehsan Yarshater, 'THE QAJAR DYNASTY (1779-1924)', *Encyclopædia Iranica* (2004) <<http://www.iranicaonline.org/articles/iran-ii2-islamic-period-page-5>>.

⁸⁴ Mostafa (n 54) 252–253.

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from the scope of concession.

According to article 2, this privilege shall comprise the exclusive right of laying the pipelines necessary from the deposits where there may be found one or several of the said products up to the Persian Gulf, as also the necessary distributing branches. It shall also comprise the right of constructing and maintaining all and any wells, reservoirs, stations, pump services, accumulation services and distribution services, factories and other works and arrangements that may be deemed necessary. According to article 7, All lands granted by concession to the concessionaire or that may be acquired by him in the manner provided for in Articles 3 and 4, as also all products exported, shall be free of all imposts and taxes during the term of the present concession. All material and apparatuses necessary for the exploration, working and development of the deposits, and for the construction and development of the pipelines, shall enter Persia free of all taxes and Custom-House duties.

According to article 9, The Imperial Persian Government authorizes the concessionaire to found one or several companies for the working of the concession. The names, "statutes" and capital of the said companies shall be fixed by the concessionaire, and the directors shall be chosen by him on the express condition that, on the formation of each company, the concessionaire shall give official notice of such information to the Imperial Government, through the medium of the Imperial Commissioner, and shall forward the "statutes", with information as to the places of which such company is to operate. Such company or companies shall enjoy all the rights and privileges granted to the concessionaire, but they must assume all his engagements and responsibilities.

Article 10 deals with the rights of Persian government. Article 10 says: It shall be stipulated in the contract between the concessionaire, of the one part, and the company, of the other part, that the latter is, within the term of one month as from the date of the formation of the first exploitation company, to pay the Imperial Persian Government the sum of 20,000 sterling in cash, and an additional sum of 20,000 sterling in paid-up shares of the first company founded by virtue of the foregoing article. It shall also pay the said Government annually a sum equal to 16 percent of the annual net profits of any company or companies that may be formed

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in accordance with the said article. Article 16 sets a time limit for the concessionaire to perform the initial steps required by concession. If within the term of two years as from the present date the concessionaire shall not have established the first said companies authorized by Article 9 of the present agreement, the present concession shall become null and void.⁸⁵

In the summer 1903, first well with 507 meters depth drilled around Qasre Shirin and achieved a few productions however because of the long distance (near 1000 KM) between Qasre Shirin region and Persian Gulf and high rate of transportation expenses, the continue of drilling in Qasre Shirin assumed non-commercial. Based on article 16 Darcy established The First Exploitation Company with 600,000 sterling shares in 1903. He also paid the agreed 20,000 sterling and the paid up shares to Persian government. Till the establishment of the mentioned company, Darcy's expends exceeds 300,000 sterling and he was not motivated to put more capitals on project.⁸⁶ Many German, French and American financiers proposed Darcy to buy his privileges of Persian oil concession. Till that day, Darcy has invested huge amount of money on his project he was not willing to invest more capitals, meanwhile he didn't agree with non-British investors for cooperation.⁸⁷

Meanwhile, a committee appointed by Admiral of the Fleet John Fisher in 1904 to secure supply of oil resources for British Navy. One of the missions of the committee was to save the Persian oil concession in favour of Britain. As a result of committee's efforts, Burmah Oil Company (another British company) and Lord Strathcona (a Canadian investor) provided additional capitals and joined Darcy in funding a new company named Concessions Syndicate. Darcy's concession assigned to this new company and with further capitals provided, the new company resumed operations in Iran.⁸⁸

The first measure of the new company was to transfer the drilling operation from

⁸⁵ James Gelvin, *The Modern Middle East* (1st edn, Oxford University Press 2005) 154–156.

⁸⁶ Mostafa (n 54) 255–256.

⁸⁷ *ibid* 256.

⁸⁸ *ibid* 257.

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Qasre Shirin to the southwest of the country. Two speculation wells drilled in Mamatien around Ramhormoz city but none of them led to oil exploitation. Company's capital was depreciating because of high expenses of drilling operations and lack of results made anxiety for new investors. After the failure in Mamatien, equipment and experts moved to Meidan e Naphtoon region around Masjid Soleiman city. It was reported by Jacques de Morgan that there are signs of oil and remnants of an ancient fire temple in Meidan e Naphtoon region. Drilling operations began in Meidan e Naphtoon in January. By April 1908 with no success, the company was close to collapse and bankrupt, but on 26 May when second drilling in Meidan e Naphtoon arrived at 307 m the oil fountained from the well.⁸⁹

2.2.5. The Birth of Anglo-Persian Oil Company

Oil discovery in Meidan e Naphtoon have led to rapid recovery of investments. In April 1909 Concessions Syndicate surrogated by Anglo-Persian Oil Company an entity which established in London by 2 million sterling capitals. Oil operations had been developing rapidly. Between 1908 and 1914, 30 wells drilled in Masjed Soleyman, many required buildings developed and with the aim of oil exports a pipeline expanded from Masjed Soleyman to Abadan a city with access to Persian Gulf through Arvand River. This pipeline had the capacity to transfer 400.000 tons of crude oil annually.⁹⁰

In 1909 construction of an oil refinery in Abadan with the aim of altering crude oil to products began. The basic capacity of refinery was 120.000 tons per year and Abadan refinery developed in following years. Exports of exploited oils developed from 43.000 tons in 1912 to 274.000 tons in 1914. When the First World War began, Anglo-Persian Oil Company was already holding massive capacity of oil production and refinery. This capacity was potentially a great advantage for Britain during the war.⁹¹

⁸⁹ ibid 258.

⁹⁰ ibid 260.

⁹¹ ibid 262.

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Winston Churchill was appointed first lord of Admiralty in 1911 and continued his service into the First World War. One of his initiatives was to equip British battleship with larger and more powerful weapons.⁹² One of the other initiatives was to speed up the battleships. In the words of Churchill: *'But suppose you have a division of ships in your Fleet which go much faster than any of your other ships or of your enemy's ships. These ships will be certainly able to draw ahead and curl round the head of the enemy's line.'*⁹³ The main idea was to increase the speed of battleships by 4 or 5 knots and the only possibility to increase the 21 knots speed to 26 knots was to get the power required by the use of oil fuel rather than coal.⁹⁴ In addition to speed increase, oil fuel comparing to coal would provide faster, easier and more efficient filling and longer journey with the same weight amount.⁹⁵

As there weren't reliable oil production in Britain, obviously, required oil for royal navy had to be supplied from distant land in an uninterrupted way. Hence, the Royal Commission on Oil Supply set up by Churchill to follow possible manner for oil supply.⁹⁶

Despite the activities of the Commission, with the aim of ensuring the production capacity, Churchill sent Admiral Slade with an expert committee to Persian Gulf Region to report the capacity of oil fields.⁹⁷

Churchill efforts for securing the oil supply for Fast Division by achieving a great oil reserve led to conclusion of an agreement by and between British Government and Anglo-Persian Oil Company for an initial investment of two millions of public money (furtherly increased to 5 millions). Although it was a costly partnership, it

⁹² Winston Churchill, *The World Crisis* (First edit, Charles Scribner's Sons 1923) 125–130.

⁹³ *ibid* 131.

⁹⁴ *ibid* 133.

⁹⁵ *ibid* 134.

⁹⁶ *ibid* 137.

⁹⁷ *ibid* 139.

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provided security of oil supply for British Navy and also has led to holding a controlling share in company for British Government.⁹⁸

The overall benefit of Iran not exceeded from 1.325.000 sterling to the end of 1918, and for 1919 and 1920, 470.000 sterling paid to Iran as the royalty.⁹⁹ Moreover, during the First World War, south and north of Iran was occupied by British and Russian troops and further purchase of victual by foreign troops in south and Russian troops in north was one of the reasons of great famine of Iran during 1917 and 1918.¹⁰⁰

2.2.6. 1933 Agreement

Following the Iranian Constitutional Revolution, National Consultative Assembly¹⁰¹ (Majlis) as the legislative body of Iran established in 1906. One of the main influences of Constitutional Revolution could be explained as increase of public awareness over country's affairs. Intellectuals have played a significant role in communicating more political and intellectual information and ideas to public. Many newspapers began to publish and debates on oil concession brought to Majlis. In 1906 for the first time, Majlis hold a hearing meeting with the mining Minister asking about D'arcy concession.¹⁰² Despite the raining criticisms against concession, development of The Anglo-Persian Oil Company operations had been continuing as described.

The negligible benefits of Iran from its natural resources, British and Russian invasion during First World War, enlightenment activities by intellectuals and increase of public awareness over the story of oil have led to criticisms against the oil concession. However, even further the 1921 coup d'état of Ahmad Shah

⁹⁸ *ibid.*

⁹⁹ Mostafa (n 54) 274.

¹⁰⁰ See Mohammad Gholi Majd, *The Great Famine and Genocide in Persia, 1917-1919* (University Press of America 2003).

¹⁰¹ Majles-e Showrā-ye Mellī

¹⁰² Mostafa (n 54) 268–272.

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government and later by establishment of Pahlavi dynasty by Reza Shah, Iran did not achieve a substantial change over oil concession.

Although oil operations were providing high benefits for Britain, the company was strictly criticized by Iranian political activist. The main criticisms headlines could be summarized as below:

1- According to the agreement between the British government and the Company, the oil was sold to British government under lower prices. This may directly reduce Iran's share according to 16% royalty.¹⁰³

2- The Company made agreements with local Khans in order to gain their supports for securing the areas of oil fields and pipelines. During the First World War, these Khans even equipped with light weapons to defend the lands and oil installations. This was an act that considered as a breach of the authority of the central government of Iran over the region.

3- Moreover, British government moved many Indian soldiers to the region for securing oil production and transfer. This measure without the approval of Tehran's authorities was also against Iran's sovereignty.¹⁰⁴

4- Also instead of local workers many foreigner labors employed by the Company and were working on the operation.

5- The company limited the royalty to benefits of oil sales, however according to concession, 16% benefit was of a general nature that could include benefits of other operations of company same as shipping.¹⁰⁵

In 1931 the royalty share of Iran dramatically decreased from 1.288.000 in 1930 to 307.000 sterling pound because of international economic crisis. Iran denied to

¹⁰³ ibid 265.

¹⁰⁴ ibid 272.

¹⁰⁵ ibid 275.

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accept this share and asked for company's explanation. Following this event and the failure in achieving a new agreement, Iranian authorities made a hasty decision and Taghizade, Finance Minister send a letter to the Company declaring annulment of the Concession and meanwhile the possibility of negotiations with the aim of concluding a new fair agreement. Afterward, Majles also confirmed the annulment and several representatives brought speeches against the Company's colonial and unfair policies. Following the annulment, British government brought a dispute before the Council of League of Nations. After negotiations in the Council of League of Nations and by the mediation of Edvard Beneš Foreign Minister of Czechoslovakia parties agreed to solve the dispute by negotiations. These negotiations ended by the conclusion of 1933 Agreement. As Fateh argued, the procedure that led to 1933 agreement and its contents approving why annulment of the Concession has to be considered a hasty decision. In fact, it was possible for Iran to achieve more rights and benefits under the former Concession and meanwhile not prolonging the duration. Although the 1933 agreement recognized more benefit for Iran, the 60 years duration of agreement renewed and as Fateh arguing it was possible for Iran to gain more advantages by bargaining more benefits under the Concession and meanwhile not prolonging the duration of concession.¹⁰⁶

The main provisions of the 1933 Concession are as follow;

1. The territory of concession limited to 100.000 square miles by the end of 1938(article2).
2. The Company has the right of use of necessary public lands and has to fairly buy required private lands from private owners. (Article 4).
3. The Company has to acquire previous agreement between the Government and the Company for construction of any new railway, service of telephones, telegraphs, wireless and aviation in Iran (Article 5). The Company has the right of taxes and customs duties exemption (Article 6 & 11).

¹⁰⁶ ibid 290–291.

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4. Setting the sum to be paid to the Government as follows:
5. Four shillings per ton of Petroleum sold by the Company.
6. Payment of a sum equal to twenty per cent. (20%) of the distribution to the ordinary stockholders of the Company (Article10).
7. The government has the right of technical inspection for company's operations at any reasonable time (Article 14).
8. The government shall have the right to appoint a Representative who has the right to obtain from the company all the information to which the stockholders of the company are entitled (Article 15).
9. The Company has to yearly and progressively reduce non-Persian employees with a view to replacing them in the shortest possible time and progressively by Persian nationals (Article 16).
10. Whenever the Company shall make issues of shares to the public, the subscription lists shall be opened at Tehran at the same time as elsewhere (Article 18).
11. The Company shall sell domestic required petroleum products to the government under determined prices (article 19). Setting arbitration as the manner of dispute resolution (Article 22). The period of the Concession set for 30 years ending on 31st December 1993(Article26).

The 1933 agreement did not make any fundamental change comparing to former D'arcy Concession. The former Concession unilaterally annulled mainly because of Reza Shah's anger and his hasty decision. Lack of required legal and technical know-how in Iranian party, role of influential characters like Foroughi¹⁰⁷ in pushing

¹⁰⁷ Born in Tehran into a family of Isfahani merchant origin, Forūgī was the oldest child of Moḥammad-Ḥosayn Khan Ḍokā'-al-Molk (Forūgī), a Qajar writer, poet, translator and official.

After his father's death in 1325/1907, Forūgī inherited his title, Ḍokā'-al-Molk, and succeeded him as director of the College of Political Science. At the age of 32 he was elected a deputy for Tehran in the second Majles (1909-11), and was soon chosen as speaker. Resigning this position, he later became deputy speaker, but on 6 Āḍar 1290 Š./27 November 1911, prior to the forced dissolution of the second Majles (December 1911), Forūgī became minister of finance (mālīya). Soon after, he assumed the portfolio of justice (ʿadlīya), which he retained until 14 Ḳordād 1291 Š./4 June 1912, before becoming president of the High Court of Appeal (Dīvān-e ʿālī-e tamīz). In this capacity, or as minister of justice in 1293 Š./1914 and again briefly in 1294 Š./1915, Forūgī endeavored to implement reforms in the procedures and conduct of the courts. In Bahman 1301 Š./January 1923,

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he became foreign minister and on 24 Kordād 1302 Š./14 June 1923 finance minister. Forūgī had joined the supporters of the army commander and war minister Rezā Khan (later Rezā Shah). Later, Forūgī served as foreign minister in two of Rezā Khan's cabinets and as finance minister in two others. He was a supporter of the failed pro-Rezā Khan republican campaign, was acting prime minister during the latter's military operations to end Shaikh Kaz'al's rule in Kūzestān, and helped to bring about the end of the Qajar dynasty, the last shah of which (Aḥmad) he had personally tutored. Also as acting prime minister, he helped to organize the Constituent Assembly, which confirmed Rezā Khan as shah (21 Āḍar 1304 Š./12 December 1925). Soon after, Rezā Shah appointed Forūgī as his first prime minister; he served in this capacity until Tīr 1305 Š./June 1926. On the occasion of the shah's coronation (4 Ordibehešt 1305 Š./24 April 1926), Forūgī delivered a speech extolling him as a worthy successor to a long line of celebrated kings of the past; he also alluded to the expectations which his subjects had of him (text in Makkī, IV, pp. 39-44). Upon resigning the premiership, Forūgī assumed the titular position of minister of war (the ministry itself remained under the direct control of the shah). In the late summer of 1306 Š./1927 he was dispatched as special ambassador to Turkey to resolve border disputes with that country. In Šahrīvar 1307 Š./September 1928, while ambassador in Turkey, he was appointed the first Persian representative at the League of Nations and served as president of the League's Council, a rotating post among member countries.

Forūgī, like the rest of his cabinet colleagues, was eclipsed by 'Abd-al-Hosayn Teymūrtāš, the powerful court minister (Zargar, p. 137 ff.). The fall of Teymūrtāš (Dey 1311 Š./December 1932) increased Forūgī's influence; unlike the former, he was not suspected of harbouring far-reaching political ambitions. He also steered a more flexible and accommodating course in foreign policy, particularly in tackling disputes with Britain over Bahrain, other islands in the Persian Gulf, and oil. According to the British Minister in Tehran, Forūgī was the only personality on whose support Britain could count. In the final stage of the oil negotiations, presided over by the shah and leading to the Anglo-Persian oil agreement of 1933, Forūgī, like other senior ministers, played a passive role.

In Šahrīvar 1320 Š./August 1941, the Anglo-Soviet invasion of Persia forced Rezā Shah, reluctantly and on the insistence of his ministers, to call upon Forūgī to assume the premiership. Forūgī accepted, despite his ill-health, attributed by Reader Bullard, British Minister in Tehran, to "angina pectoris". In addition to his reputation for honesty and integrity, Forūgī was considered to be a principled Anglophile. In Bullard's view, the purpose of Forūgī's appointment was "to conciliate" the British.

Forūgī's immediate task was to tackle the crisis caused by the Allied occupation. The erosion of the government's authority and the speedy disintegration of the army had rendered Rezā Shah's position so untenable that he contemplated abdicating and leaving the capital with his family, including the crown prince, and needed to be persuaded to abandon the idea. The British and Soviet officials and their representatives in Tehran had concluded that Rezā Shah should go. Forūgī for his part "eventually came to the conclusion that reforms which were essential could not be secured under Reza Shah". What finally precipitated the abdication was the news, in the early morning of 25 Šahrīvar 1320 Š./16 September 1941, that Soviet forces were advancing on the capital. Forūgī favored Rezā Shah's exile from Persia, as he "feared that if he stayed in the country, he would not be able to refrain from interference in the Government. On the other hand, Forūgī played a significant role in the smooth and speedy transfer of the throne to the crown prince, Moḥammad-Rezā, whom he envisaged acting as a constitutional monarch. In doing so, Forūgī preempted or neutralized alternative schemes, thereby rendering "the greatest service to the Pahlavi dynasty and the person of Moḥammad-Rezā Shah". The British government agreed that the new shah should be given a "trial subject to good behaviour".

As prime minister Forūgī sponsored the approval by the Persian parliament of the treaty of alliance between Persia, Britain and the Soviet Union (Bahman 1320 Š./January 1942). The proposal for such an alliance had originated with the British government even before the abdication of Rezā Shah, and had "the personal approval" of Forūgī. The treaty formally ended Persia's neutrality, but specified obligations of the parties, underlined Persia's independence and territorial integrity, and set a time-table for the withdrawal of the occupying forces. Forūgī is considered as one of the most influential political characters in contemporary Iranian history.

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the Shah to conclude a new agreement and finally the personal interference of Shah in determining the provisions of 1933 Concession ended with a 60 years oil concession that except some few more Royalty benefits and commitment of the Company in supplying the internal required petroleum products did not provide any remarkable benefit for Iranian party.

2.2.7. Persian Oil and Second World War

Following the 1933 Concession, operations of the Company gradually developed. The company developed storing infrastructures in main cities, a new small-scale refinery with annual 100.000 tons capacity constructed in Kermanshah in 1935. Between 1933 and the beginning of Second World War four other major reservoirs explored and an annual capacity of Abadan Refinery increased to 10.000.000 tons. Many accommodations, hospitals, schools and other facilities built by the company for employees.¹⁰⁸

During the Second World War oil exports from Iran faced many challenges; Italy involvement in the war in 1940 had led to transportation interruption in the Mediterranean Sea. Meanwhile, Iran's oil had seen as the best option for the Allies to supply Soviet Union's required fuels during the war. Occupation of Indonesia and Burma by Japan intensified the challenge of oil supplies for the Allies and increased the importance of Iran's oil option. A new avgas facility that had built in Abadan Refinery in 1940 developed in 1942 to supply more fuel for the Allies' warplane fleet. During the war, development of oil operations including construction of pipelines, drilling new wells, increasing refinery capacity etc. accelerated.¹⁰⁹ This argument that Iran played a remarkable role for the Allies during the War by altering to a supply route of fuel and ammunition for USSR seems to be inviolable.

Fakhreddin Azimi and Iraj Afshar, 'FORŪGĪ, MOḤAMMAD-'ALĪ DOKĀ'-AL-MOLK', *Encyclopædia Iranica* (1999) <<http://www.iranicaonline.org/articles/forugi-mohammad-ali>>.

¹⁰⁸ Mostafa (n 54) 307–313.

¹⁰⁹ *ibid* 314–319.

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Fall of Reza Shah that could be considered as one of the most important events in the contemporary history of Iran also occurred in light of the importance of Iran for the Allies in Second World War.

During the last decade of his reign, Reza Shah made decisions that raised concerns of Britain and the Soviet Union. Firstly, Reza Shah tried to open a room for foreign trade with Germany that was mainly monopolized before by Britain and the Soviet Union. Firstly, he employed hundreds of German experts with the aim of industrial developments. Secondly, although his personal decision on the annulment of D'arcy concession further led to the conclusion of 1933 oil concession, his continues claims for more benefits of Iran from oil exports made concerns for Britain. The rapid progress of SS troops in the Soviet Union in the first two years of the war put Iran in a critical position for the Allies. Before the invasion, both Britain and Soviet Union authorities asked Reza Shah for the expulsion of German experts. It was argued that some of these German experts are spies trying to threaten Soviet Union oil facilities in Bako and Britain oil operations in the south of Iran. Reza Shah denied these requests as there was a chance of victory for Germany and the direct confrontation of Reza Shah and Germany may end to a disaster for Iran after the possible triumph of Germany in war. Therefore, Reza Shah insisted on his neutrality policy and waited for clear defeat signs of one of the parties. Finally, despite the fact that Iran declared neutrality in the war, in August 1941, USSR and British troops occupied north and south of Iran (called the Anglo-Soviet invasion of Iran) with the aim of securing oil fields and preventing Germany from possible involvements.¹¹⁰

Following the pressures made by Britain and the Soviet Union, Reza Shah decided to abdicate. His abdication allowed his young son and heir Mohammad Reza to become Shah of Iran. According to Britannica, this helped Reza Shah to save his dynasty and for his successor to adopt a policy appropriate to the new situation.¹¹¹

¹¹⁰ <http://pahlaviha.pchi.ir/show.php?page=contents&id=19102>

¹¹¹ Hassan Arfa, 'Reza Shah Pahlavi', *Britannica Encyclopaedia* (2017) <<https://www.britannica.com/biography/Reza-Shah-Pahlavi>>.

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The appropriate policy here seems to mean completely obeying British and the Allies orders and representing their interests in Persia.

Six months after the end of Second World War, British and Soviet troops didn't leave the occupied territories. Aḥmad Qawām (Prime Minister) started negotiations with the Soviet Union to convince them for freeing the lands. Finally, Soviet Union agreed to leave occupied lands in north part of Iran. One of the promises of Qawām to Soviet authorities was to establishing Soviet-Iranian Limited Partnership Oil Company with the aim of exploiting oil from north provinces of Iran.¹¹²

Following to Anglo-Soviet invasion, dissatisfactions against British and Soviet involvements intensified in Iran. The nationalization movement raised and 14th National Majlis stood against Qawām agreement for Soviet involvement in north oil operations. Musaddiq a member of Iranian National Front Party and a member of 14th Majlis played a remarkable role in passing single article law of 22 October 1947. This law made it illegal for the government to negotiate and conclude any concession with foreigners without the approval of Majlis.¹¹³

2.2.8. Overview of Nationalization of Iranian Oil and Further Coup of Mossadegh Government

Like many other petroleum producing countries, the revenues from the sale of oil were perceived to be shared unfairly between operating firm and Iranian government.¹¹⁴ Influenced by the nationalization of natural resources movements like Mexico in 1938, Dr Mossadegh and National Front initiated the process to reform the oil agreements to gain more benefit for the Iranian government. It was the oil committee of 16th Majlis initiated with the aim of renegotiating oil agreement. The committee rejected a draft agreement of Anglo-Iranian Oil Company that included improvement of Iran's government benefits from oil

¹¹² Bamberg (n 22) 250.

¹¹³ ibid 383.

¹¹⁴ See, Paasha Mahdavi, 'Why Do Leaders Nationalize the Oil Industry? The Politics of Resource Expropriation' (2014) 75 Energy Policy 228 <<http://dx.doi.org/10.1016/j.enpol.2014.09.023>>.

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exploitations.¹¹⁵ Mossadegh, the leader of commission and representative of Majlis, took the leadership of the movement to nationalize Iran's oil industry and terminate the domination of IOCs over the sector. The Oil Nationalization Bill brought to Majlis in 8 March 1951, following the approval of the bill by National Consultative Assembly in 15th March, a few days later in 20th March 1951 the bill passed by the Senate and entered into force. The bill ordered that the Iran's oil industry in all territory of the country is nationalized and all of exploration, exploitation, and operations shall be under the authority of the Government.¹¹⁶

Further to the approval of the Nationalization Bill by Shah, Shah nominated Seyyed Zia'eddin Tabatabaee as Prime Minister Candidate. Majlis refused to vote for Tabatabaee and elected Mossadegh as prime minister. Mossadegh announced the implementation of Nationalization Bill as the first priority of his agenda. National Iranian Oil Company established and Mossadegh ultimately sent a delegation for the dispossession of oil operations in Abadan. This measure opposed by Britain and the British Government brought a case against Iran to Security Council of United Nation. Security Council rejected Britain's case as argued that the conflict is a British Company and Iranian Government and the Council only has the competence to deal with States conflict cases. The United Kingdom also brought a case against Iran to International Court of Justice.¹¹⁷ By Judgement of 22 July 1952 ICJ arrived at the conclusion that it lacks jurisdiction.¹¹⁸

Following the failure of legal efforts of United Kingdom to regain its crucial profits from Iran's oil, imposing sanctions and embargos against Iran's oil sell were the measures taken by the UK. It was proposed by Tudeh Party¹¹⁹ to Dr. Mossadegh

¹¹⁵ For an analysis of the events lead to the nationalization movement see, Mostafa Elm, *Oil, Power, and Principle: Iran's Oil Nationalization and Its Aftermath* (Syracuse University Press 1994).

¹¹⁶ Foad Rohani, *Tarikh-e Melli Shodan-e Sanat-e Naft-e Iran*(The History of Iran's Oil Nationalization) (Sherkat Sahami Ketabhaye Jibi 1973) 109–111.

¹¹⁷ Movahhed (n 54).

¹¹⁸ International Court of Justice, 'Anglo-Iranian Oil Co. Case (Preliminary Objection)' (1952) <<http://www.icj-cij.org/docket/index.php?sum=82&p1=3&p2=3&case=16&p3=5>>.

¹¹⁹ About the Tudeh party and their relation with Mossadegh see, Maziar Behrooz, 'Tudeh Factionalism and the 1953 Coup in Iran' (2001) 33 *International Journal of Middle East Studies* 363.

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to enter to a deal for selling the oil to the Soviet Union to resist against British boycott. Moreover, Czechoslovakia and Poland offered to directly purchase oil from Iran. However, Dr. Mossaddegh was not interested in entering into a deal with the Soviet Union or any other communist countries as it was believed that it may enhance Soviet influence in Iran.¹²⁰

The British would not leave their huge interests and benefits. Their diplomatic and legal efforts have not led to conquer of Mossaddegh hence the new British government aimed to overthrow Dr. Mossaddegh.¹²¹

Finally, implementation of a coup plan orchestrated by the United Kingdom and the United States¹²² and ended with the successful overthrow of Prime Minister Mossaddegh. Mohammad Reza Shah who left the country before the Coup came back to power and General Fazlollah Zahedi appointed as Prime Minister.¹²³

For much Iranian, the British and U.S conspiracy in Coup of Mossaddegh government intensified the pre-mentioned dissatisfaction and sense of anger against these two major powers involvement. This sense of dissatisfaction later altered to one of the most important elements against Shah during 1979 revolution.

2.2.9. Oil and The Political Life Of Mohammad Reza Pahlavi

A year after the overthrow of Mossaddegh's Government, by the pressure of Eisenhower on British Petroleum to enter to cooperation to continue their activity in Iran, Seven Sisters Oil Companies¹²⁴ formed a consortium and started

¹²⁰ Mansoureh Ebrahimi, *The British Role in Iranian Domestic Politics (1951-1953)* (Springer International Publishing 2016) 30–31.

¹²¹ *ibid* 32.

¹²² See Byrne Malcolm, 'CIA Confirms Role in 1953 Iran Coup' <<http://nsarchive.gwu.edu/NSAEBB/NSAEBB435/>> accessed 11 May 2017; Abrahamian (n 54); Gasiorowski and Malcolm (n 54).

¹²³ See for detailed discussion on the coup, Stephen Kinzer, *All the Shah's Men: An American Coup and the Roots of Middle East Terror* (John Wiley & Sons 2008).

¹²⁴ British Petroleum (40%), Gulf Oil (8%), Royal Dutch Shell (14%), and Compagnie Française des Pétroles (later Total S.A., 6%). The four Aramco partners—Standard Oil of California (SoCal,

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negotiations with Iranian party. After three and half months of negotiations, the Consortium Agreement of 1954 concluded. The Consortium did not agree to recognize the Iranian rights obtained through Mossadegh's negotiations with the British Company. The initial duration of the agreement set for 25 years with the possibility of three other 5 years period of extension unilaterally by the Consortium. However, Iranian party did not entitle to agree or don't agree on this 15 years extension. With the aim of justifying the agreement against the public opinion, in Persian text, the contract title translated to the Oil Sell Agreement but meanwhile the English (Original) text uses the Oil Agreement title.¹²⁵

To establish a legal entity the consortium members incorporated in London in 1954 as a holding company called Iranian Oil Participants Ltd (IOP). All IOP members recognized the ownership right of National Iranian Oil Company (NIOC) on oil and facilities in Iran, and IOP's role considered as operator and manager of oil production and refining on behalf of NIOC. The parties agreed to divide profits on a 50–50 basis similar to the Saudi-Aramco 50/50 agreement of 1950 but Iranian auditors not permitted to access to company's books and also the agreement not allowed Iranians to enter onto company's board of directors.¹²⁶

The collapse of Ali Amini's government in July 1962 and assassination of John F. Kennedy who put a pressure on Shah for enhancing political freedoms in Iran have led to the Shah's assumption of the responsibility of taking the absolute leadership of the country in all of the economic and political aspects. In fact, from 1962, Shah turned his position as the executory governor of the country rather than acting as a constitutional king as required by the constitution. When Eisenhower came to office, the external pressure by the United States for enhancement of Democracy in developing countries as was followed by Kennedy abandoned and it made the suitable background for Shah to follow his idea of leading Iran towards his dream of the Great Civilization of Iran. Mohammad Reza Shah launched his White

later Chevron), Standard Oil of New Jersey (later Exxon), Standard Oil Co. of New York (later Mobil, then ExxonMobil), and Texaco—each held an 8% stake in the holding company.

¹²⁵ Ghobad (n 54) 149–150.

¹²⁶ 'The Consortium Agreement of 1954' <<http://www.iranreview.org/content/Documents/The-Consortium-Agreement-of-1954.htm>> accessed 15 May 2017.

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Revolution plan in 1963 with the aim of achieving a series of economic reforms towards westernization. Meanwhile, Iran's oil revenues from 500 million dollars in 1962 increased to three billion dollars in 1972 due to the rise of oil production and price. Following the conclusion of 1970 oil agreement between Libya and Occidental Petroleum Company, OPEC members decided to set common targets to achieve a more beneficial agreement with foreign companies. OPEC conference decided that the petroleum producing countries in Persian Gulf region including Iran, Saudi Arabia, Kuwait, Iraq, Qatar, and UAE commonly negotiate with IOCs delegations to achieve a new agreement based on the set guidelines. Negotiations took place in Tehran and Shah essayed to introduce himself as the leader of developments and used a frank literature in favor of producing countries against consumers and IOCs during his press conference. Shah was not only seeking an agreement on raising the oil prices but also was highly motivated to be recognized as the most influential leader in the Middle East. In February 1971 parties agreed firstly to set 55% taxation rate in the region, secondly to increase the declared prices for 33 cents per barrel and thirdly an overall 2.5% annual increase of prices to compensate inflation. Following this agreement, Iran light and heavy crude oil price rose from 1.79 to 2.17 dollar and from 1.72 to 2.125 dollar respectively.¹²⁷

2.2.10. Oil and 1979 Revolution

During 1970s activists opposed to the Shah were repeatedly criticising Shah's economic and specifically oil policies. This critical attitude not even confined to opposition and came to be shared by some economists and technocrats inside the Pahlavi Government. The main criticism against the oil policies focused on the argument that Shah had been increasing the oil production to the level far above the Iran's revenue requirements. Also they believed that natural resources had being exhaustively exploited and the benefits of international oil companies have to be ended or at least limited. The revolutionaries believed that the Iranian oil resources were being plundered by IOCs. Such ideas stemmed from the experience of more than 70 years of oil exploitations by the great powers companies. For many political

¹²⁷ Ghobad (n 54) 487–495.

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activists, the coup of Mosaddegh government and further failure of nationalist movement to realize an oil industry independent from IOCs and great powers and under the control and governance of Iranian government was the main reason to believe to the treason of IOCs, Shah and superpowers. The role of the Shah in the coup has overshadowed his achievements in increase of oil prices and his efforts to achieve more economic benefits from oil industry in the 1970s. Hereupon there was a historical patrimony of mistrust of IOCs and more generally involvement of superpowers in Iranian economy.¹²⁸

These sorts of criticisms have been shared by almost all of political activist with different attitudes. Left-wing opposition groups like Mujahedin Khalgh and Cherikhaye Fada'iyeh Khalgh were arguing that Iran had been plundered by western powers, the monarchy and the ruling class. Islamist opposition was also providing same criticisms. Ayatollah Khomeini repeatedly referred to plunder of Iranian oil resources by the United States and the West and Natural gas resources by the Soviet Union in his declaration and speeches during his exile in Iraq and later in Paris. 'They are giving our assets to America. They are giving oil to America. They are giving it away at such a rate that in 30 years, we will have no oil left... and the nation gets nothing in return.'¹²⁹

At the eve of the overthrow of Pahlavi government and right after his return from exile, Ayatollah Khomeini had a historical speech among thousands of peoples whom gathered for his greeting in the main cemetery of Tehran where many revolution martyrs rested. As the recognized leader of the revolution, Khomeini expressed main headlines of his opinions on the desirable government after revolution. About the oil he argued '... and about the oil, they take away all of our oils to the America and others, and in return to the given oil to America they (Shah Government) took arms to build military bases for America's interests, we both given them our oil and built for them military bases. ... 'America with this

¹²⁸ Shaul Bakhash, *The Politics of Oil and Revolution in Iran* (1st edn, The Brookings Institution 1982). 2

¹²⁹ Rohollah Mousavi Khomeini, *Sahifeye Imam Volume 5* (5th edn, Moassesseye Tanzim va Nashre Asare Imam Khomeini 2010) 46.

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conspiracy that this man (Shah) has also been involved in, took our oil and in return built bases for itself, they sold to our army weapons which our army is not even able to operate them, hence they advisors and experts also has to be here. ... This is our oil story, they are giving our oil away at such an amount that if his government was continuing the work, we will have no oil left.' ... 'without any oil and without the agriculture which is also destroyed by him (Shah) in next few years our people will have to do servitude for others.'¹³⁰

Abolhassan Banisadr, a prominent economist and political activist and close advisor to Ayatollah Khomeini before revolution and the Minister of finance and later the first president of Iran after revolution developed this perspective on the foreign involvement in oil industry. Banisadr had been active in the pro-Mosaddegh National Front Movement. He was considering himself as a follower of Mosaddegh and freeing the Iranian oil industry from Western domination was one of his main goals. In 1960s Banisadr settled in Paris and influenced by left-wing critiques of western and particularly American capitalism and imperialism. Banisadr cooperated with a French sociologist writer Paul Vieille on the book *Petrole et violence*. Banisadr later devoted the book in Persian under the title *Naft va Solteh*.¹³¹ Banisadr more fully explained the idea of oil as an instrument for domination of oil producing countries by the industrial powers. He argued that the economic policies of Shah declared in various five year development plans, had been altered Iran to an exporter of raw materials to western countries and importer of manufactured products from them. In Banisadr idea, no real Iranian industry had been formed under Pahlawi government and the existed assembly plants were shams rather than a real industry.¹³²

The narrow attitude to foreign involvement in country's economy, guarantying country's ownership and authority over natural resources, emphasis on country's

¹³⁰ Rohollah Mousavi Khomeini, *Sahifeye Imam Volume 6* (5th edn, Moassesseye Tanzim va Nashre Asare Imam Khomeini 2010) 10.

¹³¹ Abolhasan Banisadr, *Oil and Domination (The Role of Oil in Expansion of Capitalsim)*, in *Persian (Naft va Solteh, Naghshe Naft Dar Tosee Sarmayedari* (Mosaddegh Publication 1978).

¹³² Bakhsh (n 128).5

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economic independence was the main basis for drafting the economic contents of the new Constitution. The new Constitution generally made substantial reforms in country's economic regulations and more particularly set new regulations relating to petroleum industry. The aforementioned assumption of foreign dominance over country's economy led to adoption of general bans and limits in relation to foreign involvement in economy and more precisely in petroleum activities.

2.2.11. Post Revolution Era

As it was explained, during the pre-revolutionary era, and especially in 1970s, the Shah's oil policy was heavily criticized, and in mass demonstrations people called for the conservation of the country's oil resources. The high levels of oil production were seen as responsible for waste, corruption and the relative decline of the agricultural and crops production.¹³³ Upon seizing power, the Provisional Government of Mehdi Bazargan decided to reduce oil production from its height of 6 million barrels to around 4 million barrels per day. Although the revolutionary upheavals and the strikes by oil workers had halted oil production, it was the conscious decision by the Provisional Government to reduce the level of oil production to around 30 percent below its average level over the 1971-78 period.¹³⁴

The most impressive contribution of the oil industry to the national economy has been since the late 1960s, especially 1967—74, when Iran was the leading producer in the Middle East. Production peaked in 1974 at 301.2 million tons, doubling that of 1968 in six years, but declining thereafter by half to 158.1 million tons in 1979, a vast rise and fall in a decade (see Appendix 1). Oil revenues helped to accelerate the pace of industrialization, but the fall in national income experienced when oil revenues began to decline in the late 1970s caused a slowdown in industrial activity and precipitated an economic crisis. This coincided with the damaging effects of an

¹³³ See: Hassan Hakimian, 'The Impact of the 1970s' Oil Boom on Iranian Agriculture' (1988) 15 *The Journal of Peasant Studies* 218 <<https://doi.org/10.1080/03066158808438358>>.

¹³⁴ M Hashem Pesaran and Kamiar Mohaddes, 'One Hundred Years of Oil Income and the Iranian Economy: A Curse or a Blessing?' [2014] *Iran and the Global Economy: Petro Populism, Islam, and Economic Sanctions* 12.

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inadequate infrastructure to cope with the massive projects associated with the revised Fifth Year Plan, with serious political consequences.¹³⁵

2.3. Chapter Conclusion

It is not exaggerating if one considers petroleum as one of the most influential element in the contemporary history of Iran. As discussed in this chapter, there is a footprint of direct and indirect petroleum influence in almost every historical turning points in Iranian history in last century. From Constitutional Movement to establishment of Pahlavi Dynasty, from fall of Reza Shah to coup against Mossadegh's government and from the rapid one-sided economic development in the era of Mohammad Reza Shah to Islamic Revolution, there is an undeniable influence of oil in every phenomenon. In addition to being an important element during the Islamic Revolution, petroleum sector remained as one of the substantial factors influencing all of the economic, social, and political aspects of Iranian lives. Petroleum-rich region of Iran was the main target of Saddam Hussein that imposed eight years of war to Iran with a large number of casualties and destructions.

Petroleum sector has played a dual impact on Iran. From one point of view, it played a constructive role in providing wealth, cheap energy access and a minimal welfare for Iranian and sources for the development of country's infrastructures. Meanwhile, the destructive role of the sector could be summarized in the persuasion of illegitimate interferences of world powers, the establishment of *rentier* governments¹³⁶ and providing an economic context highly vulnerable to regional and global developments.

Oil operations in Iran began by the conclusion of long-term concessions. At the time of granting these concessions, Iran had a backward economy and industry and oil was totally unknown for corrupted and weak Qajar kings. That is why D'arcy

¹³⁵ Charles Perer Melville, Gavin Hambly and Peter Avery, *The Cambridge History of Iran: Volume 7: From Nadir Shah to the Islamic Republic* (Cambridge University Press 1991) 639.

¹³⁶ See, Daniel Heradstveit, *Oil in the Gulf: Obstacles to Democracy and Development* (Routledge 2017).

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and later Anglo-Persian Oil Company had succeed to achieve a concession providing them an exclusive right for oil operations in a very wide region of country's territory and in return, Iran benefited from a scanty share of benefits. In some of the western literature, by appreciating the ambitiousness of investors like D'arcy, it is argued that as investors took a huge risk for expensive oil operations without knowing that whether they succeed to exploit the oil or they lose their capital in this gamble they are entitled to benefit from a prevailing share of benefits.

It's true that foreign investors who took a huge risk on their investments have to be benefited from their operation; however, the old concessions designed in a colonization manner and were not well balanced to ascertain benefits of both host state and investors. This lack of balance raised the sense of dissatisfaction firstly among Iranian intellectuals and later ordinary people.

The other reason for growing of Iranian confrontation against foreign investors was the foreign involvements in Iranian domestic affairs and British and Soviet invasions during First and Second World War. These invasions not only were the explicit breach of country's territorial integrity but also ended to historical catastrophes like the great famine of Persia that formerly discussed.

Iranian Nationalisation Movement with the leadership of Dr. Mossaddegh was a response to what believed to be a colonial approach of British exploiters of Iranian oil. Although the coup of Mossaddegh's government had also several domestic reasons, it's not possible to deny the role that British and U.S intelligence services played in this phenomenon.¹³⁷ In addition to the aforementioned reasons, the coup of the popular nationalist government of Mossaddegh intensified the anger and dissatisfaction sense against involved foreigners.

This pessimistic approach to oil operations by foreigners continued in the era of Mohammad Reza Pahlavi. Howbeit Mohammad Reza Shah hardly tried to limit and end to foreigner's domination over the oil sector, the continuation of foreigner's dominance over oil sector and their involvement in Iran's domestic affairs became

¹³⁷ August W Giebelhaus, 'Oil Industry, History Of' (2004) 4 Encyclopedia of Energy 649, 657.

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the Achilles Heel of Mohammad Reza Shah and was one of the main criticisms against his governance during the Revolution of 1979.

By the triumph of the Revolution in 1979, the oil policy against foreigners radicalized in a way that former agreements annulled and for a couple of years any involvement of foreigners in oil operations have been denied by governments in the Islamic Republic. This pessimistic approach to foreigner's involvement in country's economy and more specifically oil sector also influenced the novel economic paradigm in the Constitution. It could be argued that till today there is a highly pessimistic and even a conspiracy theory based approach especially for conservative politicians against foreign companies' involvements in Iranian oil and natural gas sector. However, reformist and moderate politicians and lawmakers take a wider approach to the issue trying to achieve a balanced relation with foreign company's involvements and cooperation based on assuring country's economic independence and realizing mutual interests.

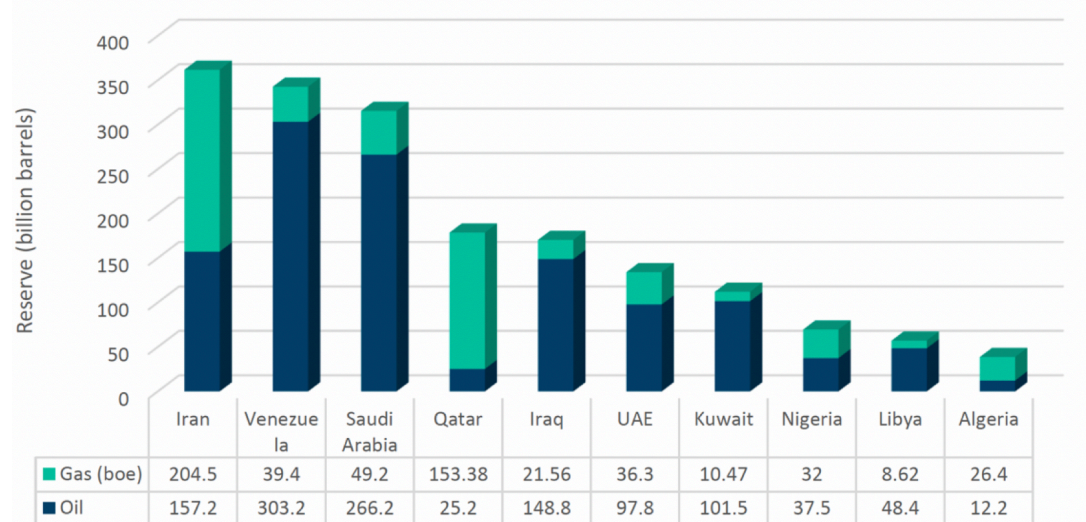
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3. Chapter 3. Energy in Iran an Overview of Fossil Fuel Reservoirs, Energy Infrastructures and Statistics

3.1. An Examination of Hydrocarbon Reserves and Production

Iran holds the largest combined oil and natural gas reserves in the world. From a geological standpoint, Iran has prime development opportunities and the government has expansive development plans for its industry, which includes both green fields in the Arvandan region, as well as opportunities to implement improved oil recovery (IOR)/enhanced oil recovery (EOR) techniques to increase recovery rates for the giant fields in the Khuzestan Province and offshore Persian Gulf.¹³⁸ Iran holds more than 361 billion barrels of oil equivalent in proved reserves of oil and gas, which positions the country as the top reserve holder in the Organization for Petroleum Exporting Countries (OPEC) and the world. This includes 9.3 percent and 17.2 percent of global oil and natural gas reserves respectively.

Figure 6. The OPEC Countries Oil & Natural Gas Reserves(2017)



Source: Chow e al. 2018

¹³⁸ For oil recovery methods and their necessity see, Mohsen Khojastehmehr, Mohammad Madani and Amin Daryasafar, ‘Screening of Enhanced Oil Recovery Techniques for Iranian Oil Reservoirs Using TOPSIS Algorithm’ (2019) 5 Energy Reports 529
 <<https://doi.org/10.1016/j.egy.2019.04.011>>.

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Iran benefits from a unique distribution amongst the top resource holders, of almost equal shares for oil and natural gas reserves (43 percent oil and 57 percent natural gas). There are 184 oil and natural gas fields in Iran. These fields include 171 developed and 209 undeveloped reservoirs, as many fields have more than one producing formation stacked on top of each other. Like many other fractured carbonate systems in the Middle East, many Iranian fields in the Zagros trend are multi-layered reservoir systems. The majority of Iranian oil is produced from three main formation groups: Asmari Group, Bangestan Group, and Khami Group. The table below shows estimated original oil-in-place for each of these formation groups as well as the current recovery rates.

Table 2. Iran Oil Reservoirs Estimates

Reservoir Formation Group	Original Oil in Place (billion barrels)	Estimated Recovery Rate	Technically Recoverable (billion barrels)
Asmari	300	37%	111
Bangestan	280	15%	42
Khami	126.5	17.15%	21.7
Total	706.5	24.6	174.7

Source: Chow e al. 2018

As seen in the table, the average recovery rate for Iranian oil fields is below 25 percent. Recovery rates for natural gas liquid and condensate reservoirs average higher around 51 percent and natural gas reservoir recovery rates are above 70 percent, which make up a total average recovery rate of 40 percent for Iranian hydrocarbon resources.¹³⁹

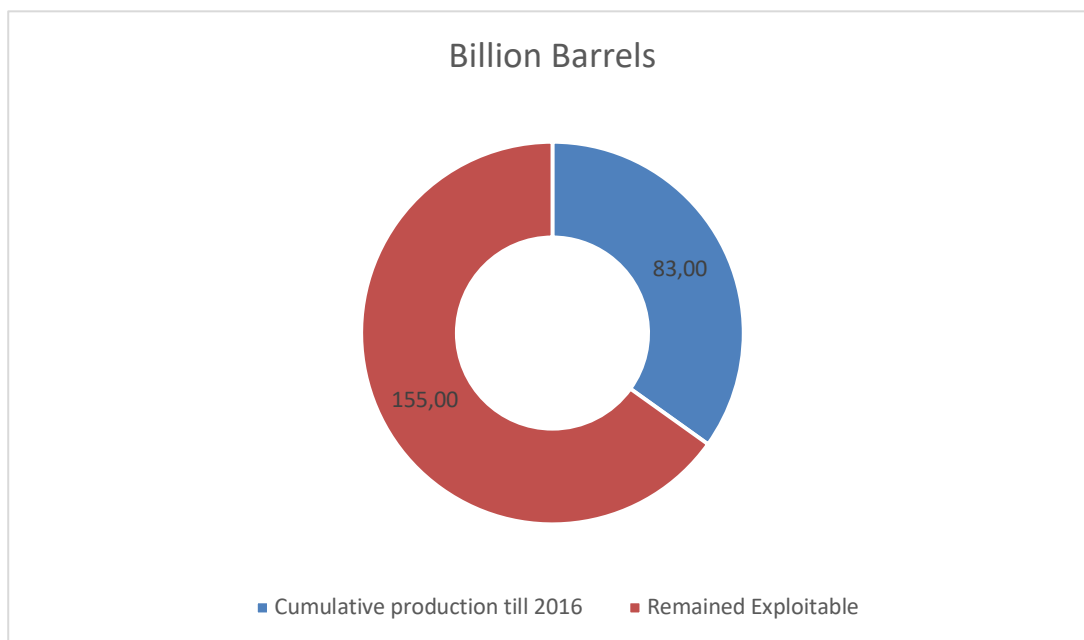
According to Iran’s Annual Hydrocarbon Resources Report published by Ministry of Oil, since the first exploitations till the end of 2016, Iran has produced 83 billion barrels of oil and 5 trillion cubic meter of natural gas respectively. Calculation of the possible duration of maintaining and developing oil and gas production highly depends on the oil and gas production and recovery technologies. However,

¹³⁹ Edward Chow, Cyrus Ashayeri and Andrew J Stanley, ‘The Future of Iran’s Oil and Gas Industry’ (2018) 1 SSRN Electronic Journal 1.

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theoretically Iran could maintain a daily production of 5 million barrels of oil and more than annual production of 1000 million cubic meter of natural gas for decades to come. The massive quantities of oil and gas reserves has caused a sort of confidence for Iranian policy makers. The impact of long durability of oil and gas production on Iranian energy policies will be discussed in second part of the thesis.

Figure 7. Remained Exploitable Oil by 2016



Source: Iran's Annual Hydrocarbon Resources Report¹⁴⁰

The amount of the possible production of remained oil and gas reserves depends on the technologies being used for the primary exploitation and further recoveries.

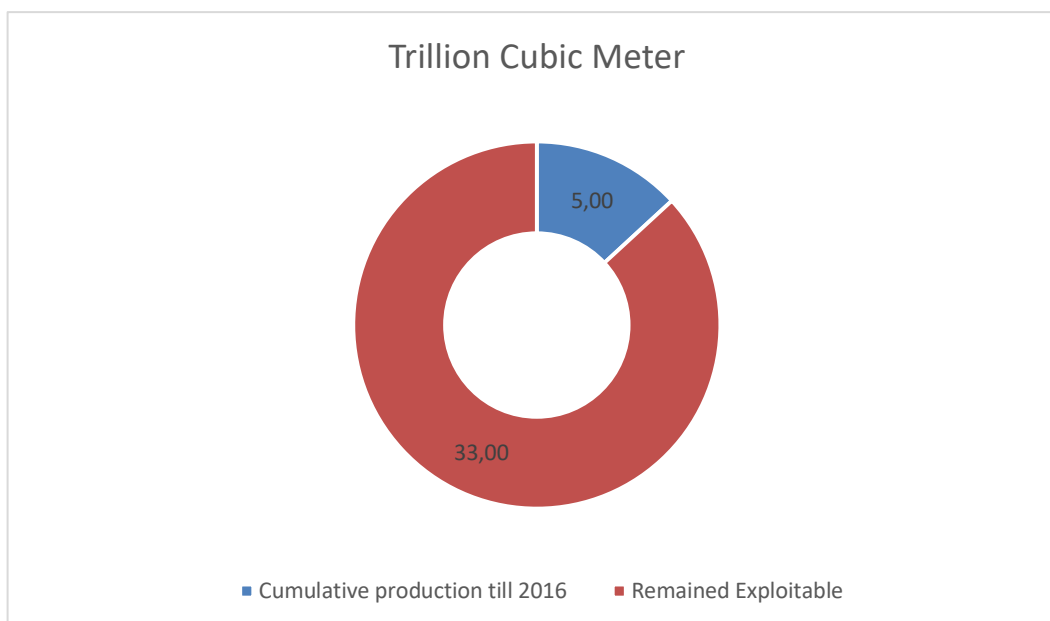
The life cycle of an oil reservoir consists of three main stages. First is the development phase during which production level increases to a planned level. The second phase, called plateau, is the main stage of an oil field life. In this stage, the reservoir produces an almost steady amount of crude oil and methods such as gas injection and water injection are used to maintain the pressure of the reservoir. The last stage is the period of decrease in production until the reservoir is abandoned.

¹⁴⁰ Ministry of Oil, 'Iran's Annual Hydrocarbon Resources Report' (2019)
<<http://www.iranenergyinfo.ir/فصل-اول>> accessed 27 August 2019.

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Enhanced oil recovery methods and Improved Oil Recovery methods(IOR) are used to postpone this stage. Most Iranian giant oil fields have passed their plateau and require protective production methods to stabilize their conditions. Despite this fact, important role that modern production techniques play has been ignored in favour of maintaining technical factors in oil reservoirs.¹⁴¹

Figure 8. Remained Exploitable Natural Gas by 2016



Source: Iran's Annual Hydrocarbon Resources Report¹⁴²

According to OPEC statistical report¹⁴³, in 2018, Iran has produced 3.553 thousand barrels of crude oil per day of which 1.706 thousand barrels are refined and consumed locally as products such as gasolines, kerosene, and distillates and around 1.849 thousand barrels per day have been exported. Iran's marketed natural gas production in 2018 reached 248.524 million cubic meter with a 4.4 % raise comparing to 2017. From this amount, 242.367 million cubic meter demanded

¹⁴¹ See, A Kamran Azadi and Mohammad H Yarmohammad, 'Analysis of Iran's Crude Oil Export Future Capacity' (2011) 39 Energy Policy 3316, 3320,3321 <<http://dx.doi.org/10.1016/j.enpol.2011.03.023>>.

¹⁴² Ministry of Oil (n 140).

¹⁴³ OPEC, 'OPEC Annual Statistical Bulletin 2019' (n 53).

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nationally and only 12.327 million cubic meter has been exported. The demand for natural gas has been consequently increasing in last years.

Table 3. Iran's Natural Gas Demand, 2014-2018

Year	2014	2015	2016	2017	2018
Consumption	174,600	184,900	188,598	231,103	242,367

Source: OPEC

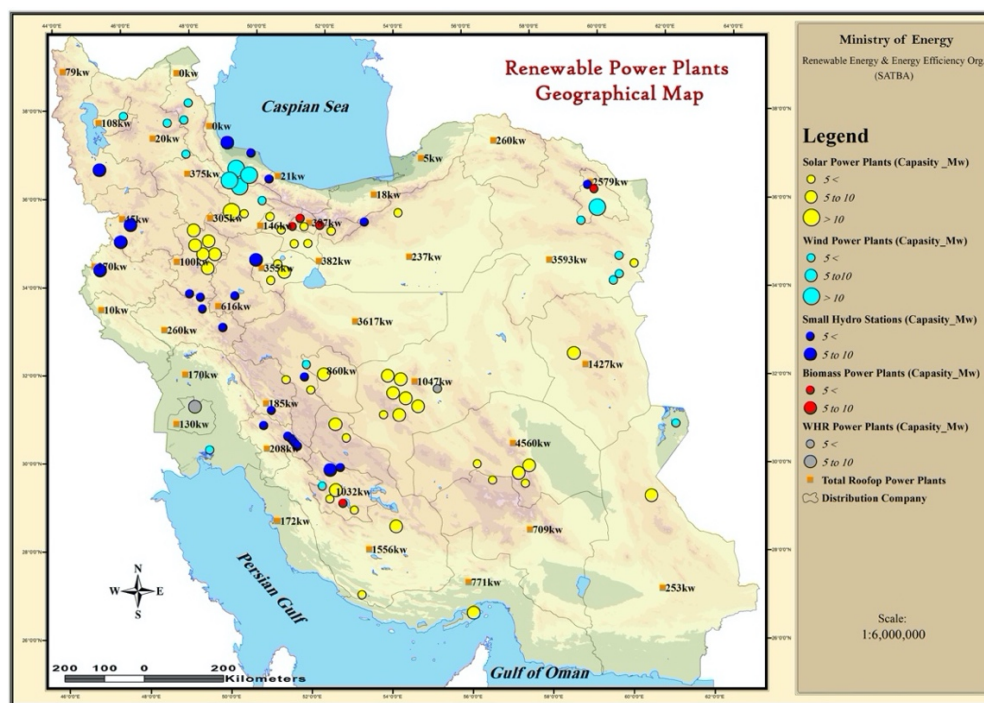
3.2. An overview of renewable energy potentials and statistics

Despite massive resources of fossil fuels, Iran has excellent potentials for development of renewable energies specially solar and wind systems. Moreover,

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decentralized renewable energy systems could be considered as one of the best options to provide the energy for remote urban areas with few population.¹⁴⁴

Figure 9. Geographical Map of Renewable Power Plants



Source: SATBA

3.2.1 Solar Potentials

Iran has a remarkable potential for using solar energy systems in large scales. Located on the world's Sun Belt; the country is covered with 60% wilderness with one of the highest averages of solar radiations. The sunny hours in different seasons are 700 h during spring, 1050 h during summer, 830 h during autumn and 500 h during winter.¹⁴⁵ Based on estimates, average solar insolation is 2000 kWh/m² year. Therefore, Iran has an appropriate position for using solar energy. To provide an

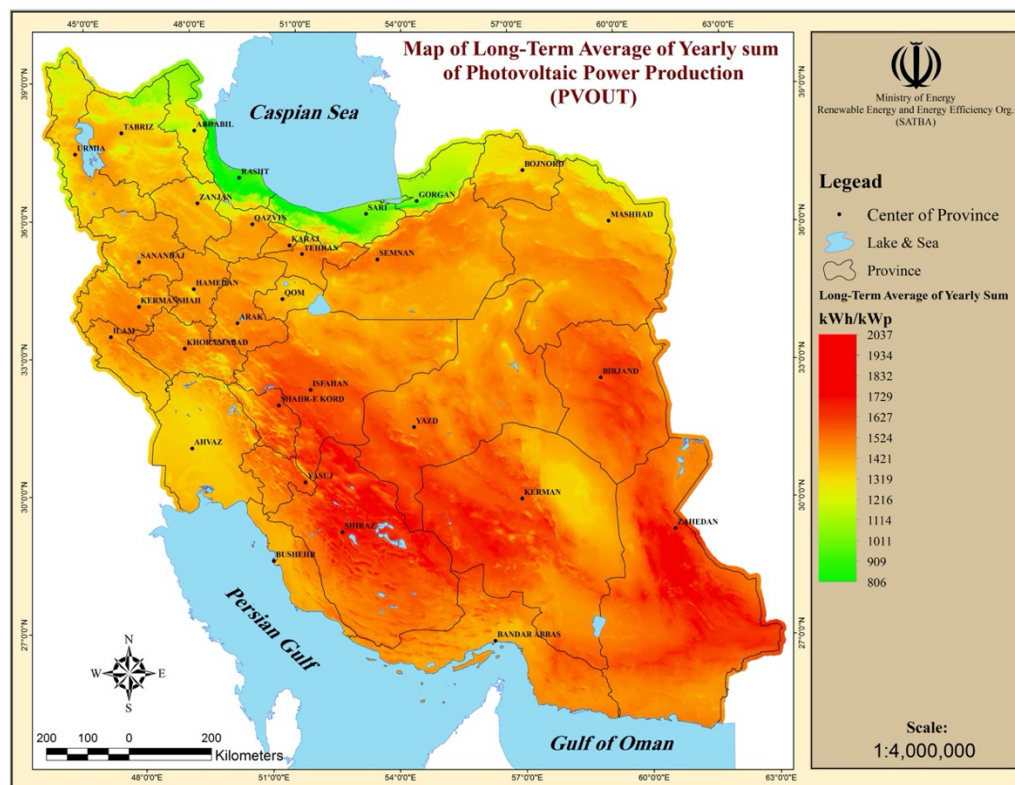
¹⁴⁴ See, Nashmil Afsharzade and others, 'Renewable Energy Development in Rural Areas of Iran' 743 <<http://dx.doi.org/10.1016/j.rser.2016.07.042>>.

¹⁴⁵ Amir Hossein Ghorashi and Abdulrahim Rahimi, 'Renewable and Non-Renewable Energy Status in Iran: Art of Know-How and Technology-Gaps' (2011) 15 *Renewable and Sustainable Energy Reviews* 729.

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overall understanding, only by using 1 percent of the country's area for this energy, it can supply all of Iran's energy needs.¹⁴⁶

Figure 10. Map of Long-Term Average PV Power Production



Source: SATBA

3.2.2. Wind Capacities

Persians were a pioneer to design and use windmills some 200 years B.C. Still, in rural areas of Khorasan province, some of those historic windmills are still operating. Besides having vast deserts; Iran is also a mountainous land which has two long mountain range covering large areas of the country and providing a 4 season climate.¹⁴⁷ Alborz is a mountain range in northern Iran that stretches from the border of Azerbaijan in the northwest of the country along the entire southern coast of the Caspian Sea and finally runs northern parts of Khorasan in the northeast

¹⁴⁶ Dawud Fadai, Zahra Shams Esfandabadi and Azadeh Abbasi, 'Analyzing the Causes of Non-Development of Renewable Energy-Related Industries in Iran' (2011) 15 Renewable and Sustainable Energy Reviews 2690.

¹⁴⁷ Ghorashi and Rahimi (n 145).

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of Iran. The second mountain range of Iran is Zagros which has a total length of 1,500 km (932 mi). The Zagros mountain range begins in north-western Iran and roughly corresponds to Iran's western border, and it spans the whole length of the western and southwestern Iranian plateau, ending at the Strait of Hormuz.

These climatic and geographic conditions provide the availability of sites with high locally wind energy potentials. Moreover the country is also blessed with various tropical wind flows. Iran is located in the main air flow path among Asia, Europe, Africa, Indian Ocean and the Atlantic Ocean and therefore is subject to: pressure centre flow over Central Asia in winter, pressure centre flow over Indian Ocean in summer, western flow from Atlantic and the Mediterranean Sea especially in winter and finally northwest flow during summer.¹⁴⁸

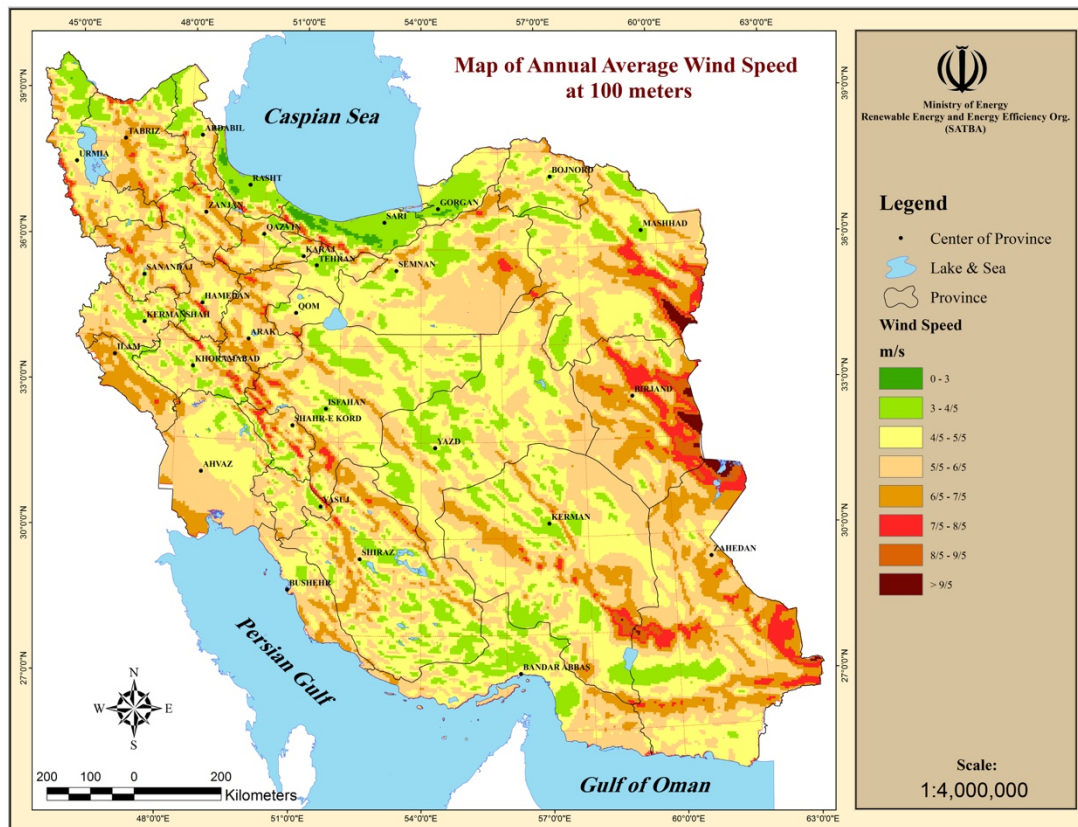
Considering as per the wind power classification made by the U.S. Department of Energy, ranging from class 1 to 7, based on values of wind power density (W/m²) where class 1 is for 50–200 W/m² and finally class 7 indicates the range of 800–2000 W/m², most of the windy sites in Iran are of class 7 category. Based on the recent wind energy survey in 45 suitable sites, the wind energy potential is estimated to be 6500 MW, with the average efficiency of 33%. The availability of such vast wind energy potential in Iran ensures the efficiency of constructing large wind farms.¹⁴⁹

¹⁴⁸ Fadai, Esfandabadi and Abbasi (n 146).

¹⁴⁹ Ghorashi and Rahimi (n 145).

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Figure 11. Map of Annual Average Wind Speed at 100 Meters



Source: SATBA

3.2.3. Hydropower

Hydropower is the most important operating renewable source of energy in Iran. Based on the data of Ministry of Energy, currently Iran has 11630 MW hydropower capacity and operating hydropower plants have 14 % share of total electricity generation in Iran. More than 90% of current installed hydro plants are big units ranging above 100 MW capacities.¹⁵⁰

As mentioned before, many areas in Iran are covered by mountains, therefore, in addition to big rivers that are currently subject to construction of dams and hydropower plants, there are obviously many water streams and small rivers which either go waste or connect to rivers and then terminate to sea. Hence, there is a potential for thousands of small and Mini/Macro hydro systems to be installed

¹⁵⁰ Iran Ministry of Energy, 'Achievement of Dam Constructions in Iran' (2017) <<http://news.moe.gov.ir/Detail?anwid=42152>> accessed 30 March 2019.

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through these streams which can provide locally needed electricity or to be fed to local grids. The available hydro potential from Mini/Macrosystems is not yet accurately estimated and these vast potentials of hydropower could be considered as one of the upcoming plans for development of renewable energy in Iran.¹⁵¹

3.2.4. Geothermal and Biomass Potentials

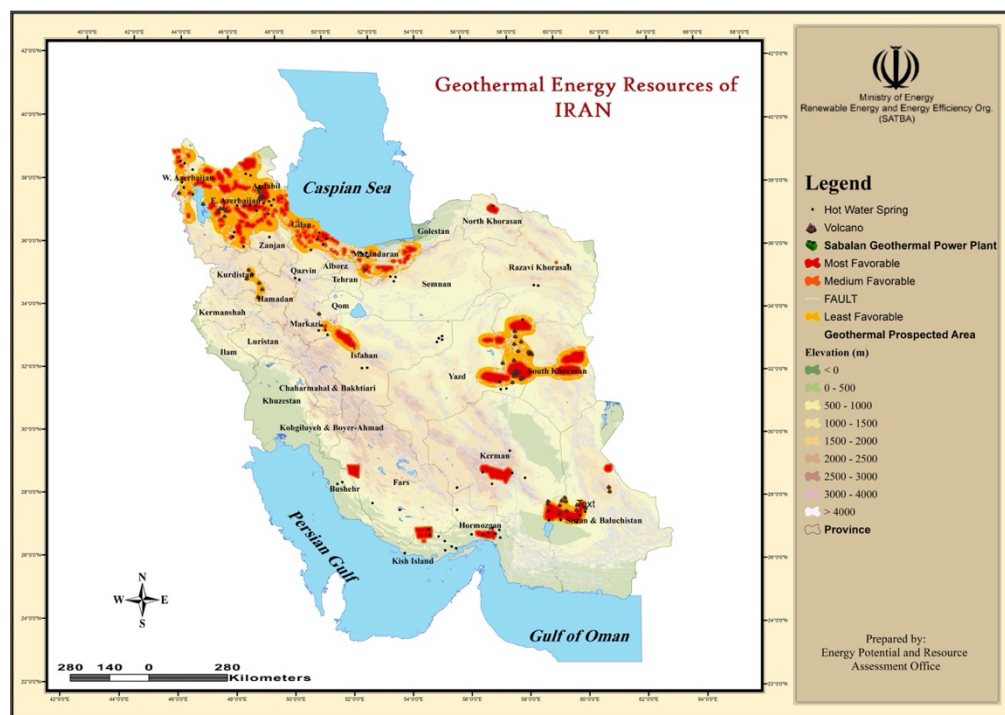
Iran is located on the global geothermal belt. Geothermal potentials may be obvious by a large number of warm water streams and volcanoes. According to geological surveys, there are four main areas with 31.000 km² which hold considerable amounts of geothermal potentials. Currently, the first Iranian geothermal power plant is under construction in Meshkinshahr. While the basic plan for this project is building a 55 MW power plant, it is estimated that the existing capacity at the area is about 200 MW. Geothermal power technology is one the newest in the country and other surveys for determining suitable sites in in process.¹⁵²

¹⁵¹ Ghorashi and Rahimi (n 145).

¹⁵² *ibid.*

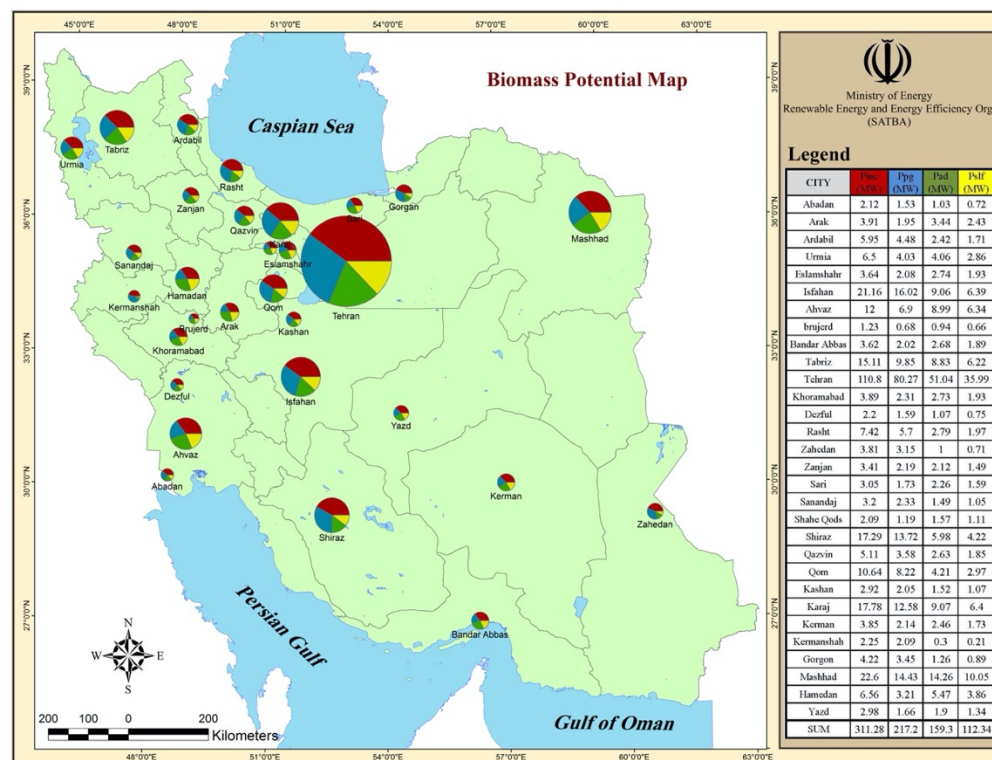
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Figure 12. Geothermal Energy Resources of Iran



Source: SATBA

Figure 13. Map of Biomass Potential of Iran



Source: SATBA

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3.3. Current Statistics of Renewables

Relying on cheap and massive access to fossil fuels, renewable energies haven't been developed in line with the considerable climatic and geographic potentials. However, several renewable energy projects have been developed across the country in last few decades. Whereas Iran faces a low rainfall rate and water shortage, several dams have been constructed in different areas of the country with the basic aim of management of water resources. Hydroelectric power plants also have been developed across the dams, therefore, hydropower is the most developed renewable energy in Iran.

Table 1 illustrates the installed renewable energy power plants situation up to end of August, 2019 in Iran.

Table 4 . Installed Renewable Energy Power Plants Situation Up to end of Aug, 2019

Item	Power plant	Capacity (MW)
1	Wind	302
2	Solar (PV)	347
3	Biomass	11
4	Small Hydropower	88
5	Waste heat recovery	13
6	Hydropower	11.938
Total		761

Source: SATBA¹⁵³

¹⁵³ SATBA, 'Renewable Licensing Statistics', <http://www.satba.gov.ir/suna_content/media/image/2018/05/6033_orig.jpg?t=636629412826776562> accessed 18 January 2019. ANA News Agency, 'Iran's Power Generation Capacity Reached 80.500 MW' <<https://ana.ir/fa/news/51/379958>> accessed 7 September 2019.

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Apart from the major hydropower plants that remain as the main source of renewable energy in Iran, recent policies have encouraged the development of renewables in Iran.

Table 5 . Companies with Renewable & Clean Power Purchase Agreement (PPA) up to end of June, 2019

Item	Power plant	Number of company	Capacity (MW)
1	Wind	39	1471/87
2	Solar (PV)	290	2694/63
3	Biomass	6	33
4	Small Hydropower	10	18
5	Waste heat recovery	5	64
Total		350	4282

Source. www.satba.com

3.4 Nuclear Energy

Since the announcement of the nuclear energy roadmap in 1974, Iran has pursued nuclear energy capacities as a way to lower its dependency on fossil fuels. The Bushehr nuclear power plant was the first project towards a (non-realized) 20 year plan to build 23.000 MW of nuclear energy capacity in Iran. This plan has been revised ever since. In 2006, the Iranian parliament set a 20.000 MW capacity target for nuclear energy connected to the grid by 2025. In March 2010 and by enactment of 5th FYDPA it was decided that one of the objectives of the 5-year plan would be the construction of 5000 MW of nuclear power plant capacity. Also, in the sixth and seventh published 5-year plans in Iran, it was decided that by 2025 nuclear energy will supply 10 percent of the electricity of the country.¹⁵⁴ Despite these ambitions, the NESP strategies for the nuclear sector doesn't contain any plan for the development of new nuclear power plants in general. It seems that policy makers

¹⁵⁴ Hamed Beheshti, 'The Prospective Environmental Impacts of Iran Nuclear Energy Expansion' (2011) 39 Energy Policy 6351, 6355 <<http://dx.doi.org/10.1016/j.enpol.2011.07.036>>.

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have excluded the expansion of nuclear energy power plants due to the high costs that this politicized plan has imposed to the country's economy and the long last tensions between Iran and world powers regarding this program.¹⁵⁵

3.5. An Analysis of Domestic Consumption of Energy

3.5.1. An Overview of Current Energy Statistics

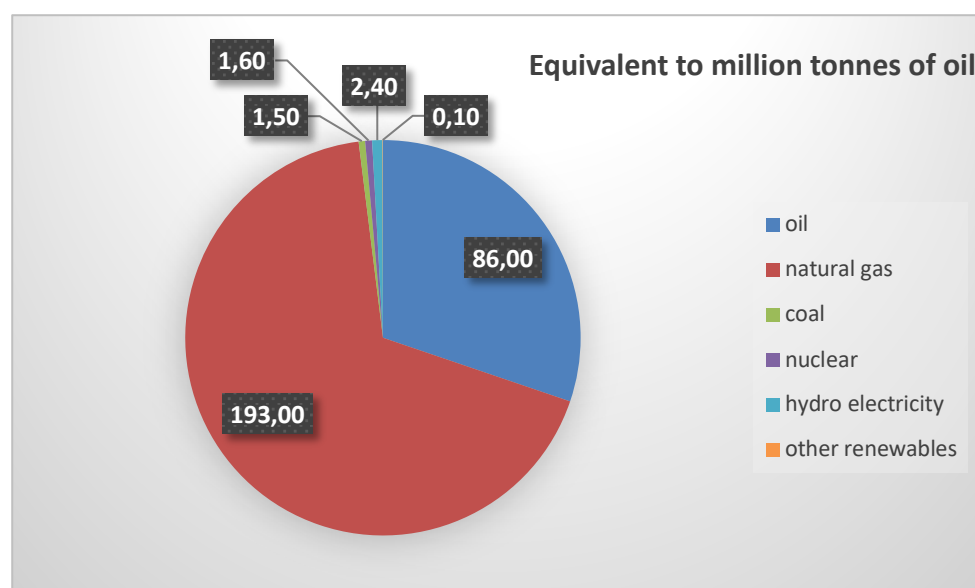
Iran's primary consumption reported 285.7 equivalent to million tonnes of oil, nominally ranking 10th in the world. The expansion of the natural gas network across the country and the access of household and industries to cheap natural gas has expanded the consumption to 193 equivalent million tonnes of oil. The country also consume 86 million tonnes of oil products like gas, diesel and kerosene mainly for transportation uses. The renewables and nuclear are supplying less than 5 percent of energy consumption.¹⁵⁶

¹⁵⁵ See Orkideh Gharehgozli, 'An Estimation of the Economic Cost of Recent Sanctions on Iran Using the Synthetic Control Method' (2017) 157 *Economics Letters* 141 <<http://dx.doi.org/10.1016/j.econlet.2017.06.008>>; Shahram Chubin, 'The Politics of Iran's Nuclear Program' [2010] *Iran Primer* 1 <<http://carnegieendowment.org/2010/09/01/iran-primer-politics-of-iran-s-nuclear-program>>.

¹⁵⁶ *British Petroleum* (n 52).

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Figure 14. Primary Energy Consumption by Fuel



Source: Created by author using data from BP Statistical Review of World Energy 2019

According to Iran's Annual Hydrocarbon Resources Report, more than 95% of country's energy consumption is from fossil fuels and is highly dependant to natural gas and oil products.¹⁵⁷

3.5.2 Energy Intensity and Energy Subsidies

According to Iran 2016 Energy Balance report published by Ministry of Energy, the per capita energy consumption of Iran is 3.4, 2.0, 1.6, and 1.4 times higher than global average in agriculture, residential, public and commercial, transport, and industry respectively. Also the per capita consumption of oil and natural gas in Iran is 1.5 and 6.4 times higher than the global average. Energy expenses in urban areas are 4.7% and in rural areas are 7.2% of the overall annual families' spendings.¹⁵⁸

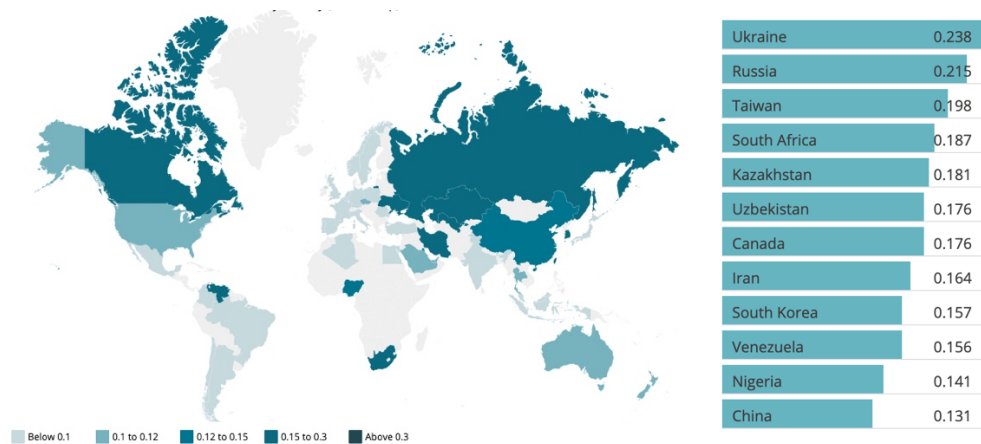
¹⁵⁷ Ministry of Oil (n 140).

¹⁵⁸ Iran's Ministry of Energy, 'Iran 2016 Energy Balance Report(in Persian: Tarazname Sale 1395)' (2018) <<http://pep.moe.gov.ir/getattachment/72efcbc2-a1d1-4167-8e99-03ea18e98600/95-سال-انرژی-نامه>>.

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Iran represents the eighth highest level of energy intensity in the world. Energy intensity is calculated by dividing the amount of the energy consumption by its Gross Domestic Product. It indicates the total amount of energy necessary to generate one unit of the GDP. The GDP is being calculated at constant exchange rate and purchase power parity to avoid the impact of inflation.¹⁵⁹

Figure 15. Energy Intensity, koe/\$2015p



Source: Enerdata

Massive amount of subsidies dedicated to the energy could be considered as one of the main reasons of the high level of energy consumption and energy intensity in Iran.

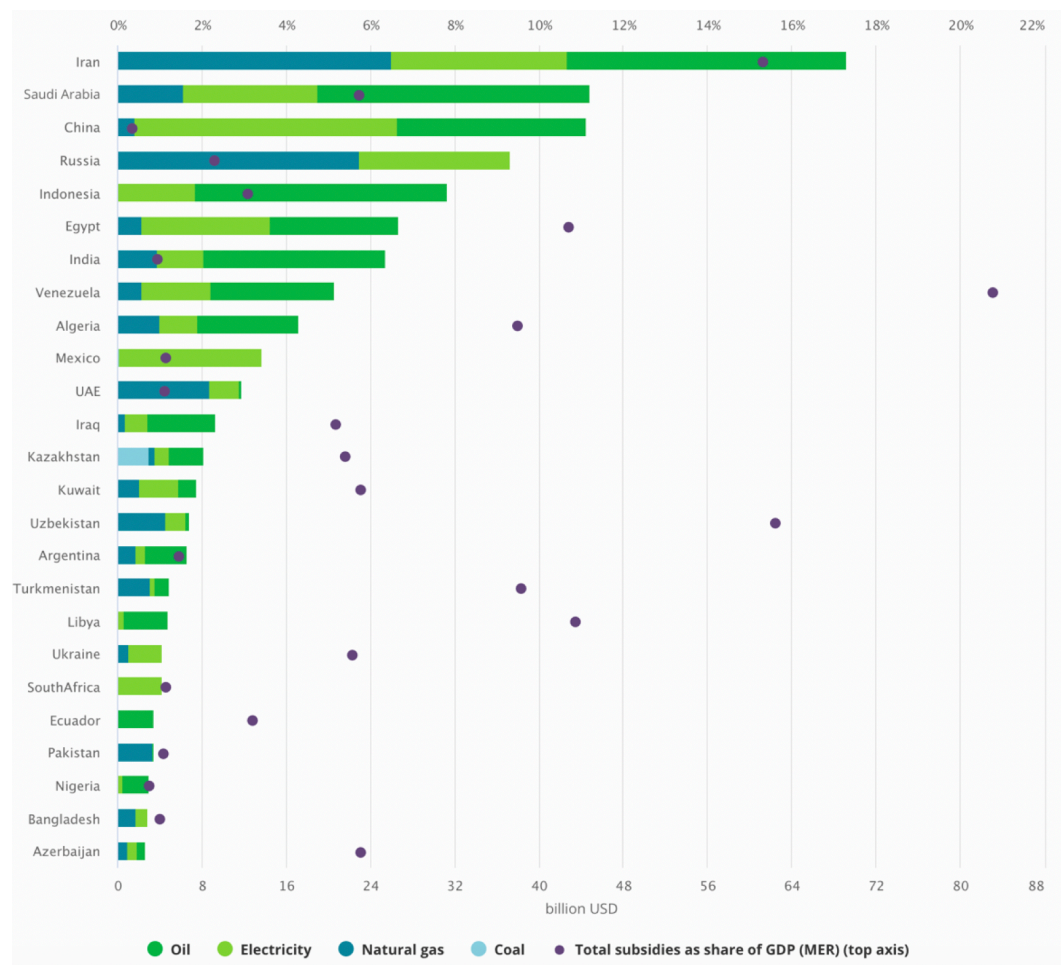
According to the International Energy Agency¹⁶⁰, by spending \$69.2 billion on fossil energy consumption, Iran was the largest fossil fuel subsidizer in 2018 ranked first globally, leaving behind Saudi Arabia with \$44.72 billion and China with \$44.44 billion. The volume of Iranian fuel subsidies equals 15.3% of Iran's GDP. Considering the the country paid \$844 as fossil fuel subsidies per person in 2018.

¹⁵⁹ Enerdata (n 14).

¹⁶⁰ International Energy Agency, 'World Energy Outlook, Fossil-Fuel Subsidies'.

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Figure 16. Fossil-Fuel Consumption Subsidies by Country (Billion USD)



Source: IEA

Iran has the cheapest gasoline in the world priced at \$0.3. In 2018, Iran’s subsidies for natural gas consumption were at \$26 billion, fossil-fueled electricity at \$16.58 billion and oil at \$26.57 billion. Iran had spent \$48.66 billion on fossil fuel consumption in 2017, including \$17.89 billion on natural gas, \$14.41 billion on electricity and \$16.34 billion on oil.¹⁶¹

Energy subsidies have been dedicated to keep the prices affordable for the consumers. While subsidies have provided access to cheap energy for almost every Iranian, they have altered to the main reason of low rate of energy efficiency and

¹⁶¹ ‘Iran: Largest Fuel Subsidizer in 2018’ <<https://financialtribune.com/articles/domestic-economy/98959/iran-largest-fuel-subsidizer-in-2018>> accessed 18 November 2019.

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massive losses of energy in country. The reform and removal of the subsidies directly and indirectly affects many economic parameters including the inflation.¹⁶² In last decade, the new subsidy reform policies have been adopted, however the government has failed in implementation of the policies. Unless a precise and comprehensive reform policy is not implemented, subsidies remain as one of the most challenging factors of Iranian energy developments.

3.5.3 An Assessment of Energy Consumption Projection

In addition to the current massive consumption of energy, Iran has faced an average 5% increase in energy consumption in last 3 decades. The principal driving forces behind the rising energy consumption trend are economic growth (5% over the past 40 years), population growth (about 2%), and heavily subsidized energy markets.¹⁶³

Same as many other fossil fuel rich countries, Iran has a growing energy intensive economy¹⁶⁴ and as it is expected that the current 5 percent annual energy growth continue, whereas the economy and the population grow.¹⁶⁵

¹⁶² Most recently removal of part of gas subsidies have led to massive protests across the country. See, Borzou Daragahi, 'Iran Protests: How Tehran Let a Plan to Remove Subsidies Turn into a Threat to the Regime' <<https://www.independent.co.uk/news/world/middle-east/iran-protests-tehran-rouhani-subsidies-a9208021.html>> accessed 20 November 2019.

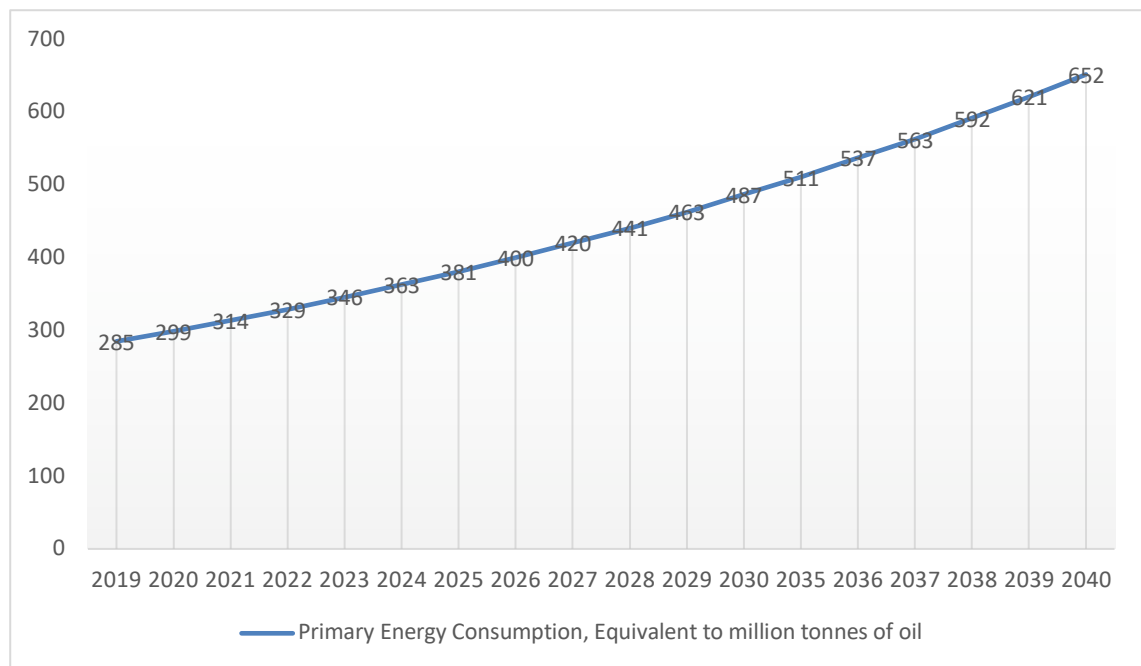
¹⁶³ Maryam Mirzaei and Mahmoud Bekri, 'Energy Consumption and CO2 Emissions in Iran, 2025' (2017) 154 *Environmental Research* 345 <<http://dx.doi.org/10.1016/j.envres.2017.01.023>>.

¹⁶⁴ See: Cosimo Magazzino, 'The Relationship between Real GDP, CO2 Emissions, and Energy Use in the GCC Countries: A Time Series Approach' (2016) 4 *Cogent Economics and Finance* 1 <<http://dx.doi.org/10.1080/23322039.2016.1152729>>.

¹⁶⁵ See: Zahra Dehghan Shabani and Rouhollah Shahnaz, 'Energy Consumption, Carbon Dioxide Emissions, Information and Communications Technology, and Gross Domestic Product in Iranian Economic Sectors: A Panel Causality Analysis' (2019) 169 *Energy* 1064 <<https://doi.org/10.1016/j.energy.2018.11.062>>; Mirzaei and Bekri (n 163); Babak Mousavi and others, 'Driving Forces of Iran's CO2 Emissions from Energy Consumption: An LMDI Decomposition Approach' (2017) 206 *Applied Energy* 804 <<https://doi.org/10.1016/j.apenergy.2017.08.199>>.

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Figure 17. Iran's Primary Energy Consumption, Business as Usual Scenario



Source: Created by Author using data from Iran Energy Balance Reports

3.6. Chapter Conclusion

This chapter has intended to provide an overall understanding of the Iran's energy statistics. As discussed, energy supply in Iran is highly (more than 97%) dependant to fossil fuels. During the last few decades, the natural gas and electricity grids have been expanded throughout the country and currently over 99% of the urban and rural population have access to these grids.

If access to energy for all the population is considered as the indicator of equity in access to energy, Iran ranks in a top position worldwide. However, under the highly subsidized prices, in fact, the more one consumes energy, the more benefits from the subsidies. This is the ongoing trend unless any substantial reform is made on the subsidies allocation. Most of the energy infrastructure development plans have been dedicated to expansion of the *accessible, cheap, and vast* oil and gas resources. The natural gas production and oil refining capacities in Iran has been raised in last few decades as a easiest respond to the increasing demand driven by growth of population and the economy. The low energy efficiency and massive amounts of energy waste has intensified the annual demand increase. As a result, as it was

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discussed, Iran altered to one of the biggest consumers of energy and of the the highest CO₂ emitters in the world. Scarcity of fossil fuels is considered as one of the concerns in many countries and is one of the main drivers in transition towards a low carbon energy system. However, in case of Iran, there is no sign of concern over the finitude nature of the oil and gas resources in energy developments, whereas the huge amount of reserves technically ensures the possibility of oil and gas flow in coming decades. As discussed in the first part, there are a variety of economic, technical, political and legal parameters that directed the energy in Iran into the current unsustainable and unsecure situation. The next two parts intends to provides an analysis of the legal and policy challenges.

Part two: International and European Energy Instruments

Part two: International and European Energy Instruments

4. Chapter 4. International Energy Instruments

4. Chapter 4. International Energy Instruments

Despite the domestic dynamics, energy sector of Iran is highly dependent to global developments and instruments due to the significant role of hydrocarbon related exports of the country. Hereupon, while analysing the Iranian energy policies, it is important to take into consideration the impacts of international developments at the same time. One of the key questions that arise is the role Iran plays in global energy organizations and mutually the impacts that global energy trends impose on Iranian energy policies. Despite the domestic policies and regulations, there are a wide range of international regulations and instruments that influence Iranian energy policies both regarding the exports of energy carriers and the energy policymaking in national level. These influential elements, at a primary classification could be divided to different categories as follows; firstly, the globally recognized energy trade, and investment regulations and practices. Secondly, the global energy market developments which is a result of market trends (with economic nature rather than legal and policy bounds). Thirdly, the impacts of regulations and policies of international organizations and instruments such as OPEC, GECF, WTO, UNFCCC, IEA, and the EU. Fourthly the applicable international environmental law and climate change regulations. This chapter firstly provides an analysis on the corresponding global dynamics and later the impacts of the aforementioned phenomena on Iranian energy policies will be dully assessed.

4.1 Global Energy Governance, the Challenge of Fragmentation

There is a wide range of literature describing the global energy governance as fragmented and paradoxical.¹⁶⁶ In fact, there is a variety of interstate and international institutions dealing with energy, however most of them have misalignments and even in some cases contradictory purposes and missions.¹⁶⁷ In

¹⁶⁶ See Benjamin K Sovacool, 'Exposing the Paradoxes of Climate and Energy Governance'; Rafael Leal-Arcas and Andrew Filis, 'The Fragmented Governance of the Global Energy Economy: A Legal-Institutional Analysis' (2013) 6 *Journal of World Energy Law and Business* 348; Dubash and Florini (n 5); Benjamin K Sovacool and Ann Florini, 'Examining the Complications of Global Energy Governance' (2012) 30 *Journal of Energy & Natural Resources Law* 235 <<http://www.tandfonline.com/doi/full/10.1080/02646811.2012.11435295>>.

¹⁶⁷ See Endrius Cocciolo, 'La Unión de La Energía y La Gobernanza Del Sistema Tierra En El Antropoceno: Una Cuestión Constitucional' (2015) 6 *Revista Catalana de Dret Ambiental*.

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this context, energy in international scope lacks a single organization and a single universal agreement that regulate the sector in a comprehensive way.¹⁶⁸

Global energy governance for over the last few years has been considered as an important and interesting field of research and study in academics. Before entering to the debate on different topics and concerns over global energy governance, it seems necessary to provide an understanding from the concept.

Florini and Sovacool (2009: 5239) define global energy governance as the “international collective efforts undertaken to manage and distribute energy resources and provide energy services”. Yet, according to Van de Graff the scope of global energy governance is not well defined. The potential scope of global energy governance is any social, political or economic issue that (1) crosses international borders and (2) is tightly connected to the production, distribution or consumption of energy.¹⁶⁹

Global energy governance in its wide concept shall inherits various aspects of the governance of the sector. Regulating the trade of energy, securing the supply, considering the environmental concerns and climate change, dealing with transboundary energy transit and regulating the investments in energy sector are different components of the concept.

The existing energy governance system framed incidentally as a result of the aggregation of the different institutions, legal instruments and processed linked to the energy economy.¹⁷⁰

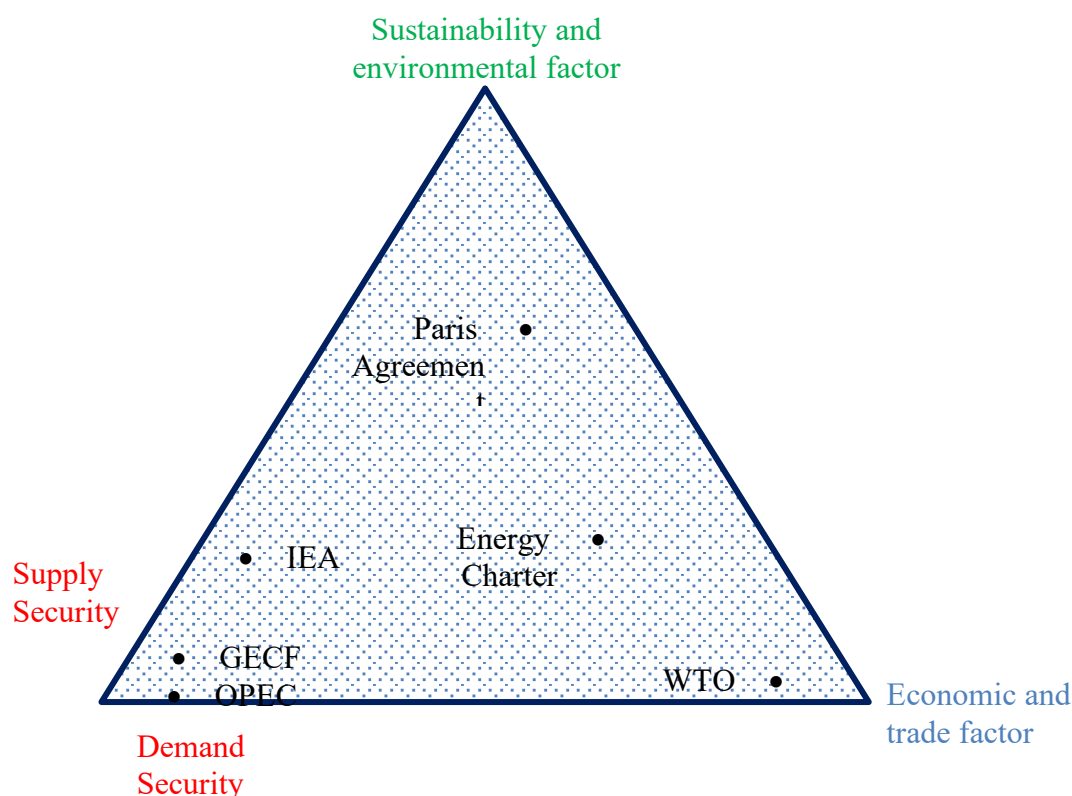
¹⁶⁸ Leal-Arcas and Filis (n 166) 53.

¹⁶⁹ Van de Graaf and Colgan (n 5) 3.

¹⁷⁰ Leal-Arcas and Filis (n 166) 4. See also Endrius Cocciolo, ‘Capitalocene, Thermocene and the Earth System: Global Law and Connectivity in the Anthropocene Age’, *Research Handbook on Global Climate Constitutionalism* (Edward Elgar Publishing 2019); Jesse Salah Ovadia and Tim Di Muzio, *Energy, Capitalism and World Order: Toward a New Agenda in International Political Economy* (Springer 2017).

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Figure 18. Framing Global Energy Governance in Light of Energy Trilemma



Using the term *system* for the current energy governance requires some sort of connivance. In fact, the existing governance of energy in global sphere lacks the essential elements of a *system* in its narrow sense. More than being a *system*, the current situation could be described as a patchwork of incoherence legal, political and policymaking instruments that in many areas are contradictory to each other.

The current system faces many serious challenges. The issue of energy security lies in the core of energy governance discussions.¹⁷¹ This could be the cause of the abrupt impacts that the threats against energy security could impose on economies. However, in addition to failing in achieving a common framework ensuring energy security, the fragmentation of global energy governance causes continuous destructive proceed of the high carbon energy system and many doubts and uncertainties over the timing and modality of energy transition towards a low carbon economy, and challenges of justice in global energy system. Hereupon,

¹⁷¹ See Bryan R Early, Mark T Nance and M Patrick Cottrell, 'Global Governance at the Energy-Security Nexus: Lessons from UNSCR 1540' (2017) 24 Energy Research and Social Science 94 <<http://dx.doi.org/10.1016/j.erss.2016.12.007>>; Andreas Goldthau and Jan Martin Witte, *Global Energy Governance: The New Rules of the Game* (Brookings Institution Press 2010); Ovadia and Di Muzio (n 170).

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environmental consequences of the existing governance of energy system has to benefit more attention due to increasing consequences of climate change. Hence, bringing the three key dimensions of energy law and policy (sustainability, affordability and security) to global scope could be considered as the goal of a desired and ideal global governance system.

The main question around the topic is how the global energy governance could move towards a more coherent structure? The answer to this question lies on the discussion over the conceptual development of the energy law in global context and further institutional integration.

Energy law that could be the legal basis for the energy governance paradigm-shift has been subject to discussion and has grown over the past three decades, however, energy law has not grown theoretically as climate change and environmental have. With the aim of formulating the energy law guiding principles which are already in operation to varying degrees in practice and, Heffron .et al have codified the guiding principles of energy law as follows:¹⁷²

1. *The principle of permanent sovereignty over national resources,*

Following the nationalization movements in post-colonial era, this principle has been formed and is widely recognized under international law and enshrined in several UNGA Resolutions,¹⁷³ Stockholm and Rio Declaration of 1972 and 1992¹⁷⁴ and article 194 of TFEU¹⁷⁵.

2. *The Principle of Access to Modern Energy Services,*

This principle was first recognized in 1986 in the Report of the World Commission on Environment and Development (the Brundtland Report), and

¹⁷² Raphael J Heffron and others, 'A Treatise for Energy Law' (2018) 11 Journal of World Energy Law and Business 34, 40.

¹⁷³ UNGA, Permanent Sovereignty Over Natural Resources: U.N. General Assembly resolution 1803 (XVII) 1962; UNGA, General Assembly Resolution 3281 (XXIX).

¹⁷⁴ Declaration of the United Nations Conference on the Human Environment, Rio de Janeiro, 14 June 1992; Declaration of the United Nations Conference on the Human Environment Stockholm, 16 June 1972.

¹⁷⁵ Treaty on the Functioning of the EU (TFEU).

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later gained momentum in a joint report, World Energy Assessment: Energy and the Challenge of Sustainability, prepared by the UN Development Programme (UNDP), the UN Department of Economic and Social Affairs (UN DESA)

3. *The Principle of Energy Justice,*

Energy Justice, as a moral, philosophical and legal concept was emerged and has reached a considerable mass of contributions in recent years aiming to bring the morality and ethics into energy policymaking.¹⁷⁶ Energy justice movement shares same philosophical background as the more general issues of environmental justice and atmospheric and climate justice. The existing literature conceptualizes the concept into three core domain: distributional justice, procedural justice and recognition justice. Distributional justice aims to ensure that siting energy projects are not always causes suffers to disadvantaged, vulnerable, and poor people. Respectively, recognition justice emphasizes on the consideration of differing community opinions and perspectives based on such matters as gender, race and cultural background as well as ensuring that certain groups and places are not devalued or disrespected. Procedural justice deals with the involvement of the equal ability of all social groups to participate in energy decision-making processes. From these three criteria, the procedural justice has been explicitly enshrined in the Aarhus Convention.¹⁷⁷

4. *The principle of prudent, rational and sustainable use of natural resources*

The principle of sustainable use of natural resources is referred in various international and multinational conventions. Article 2 of UNFCCC, requires the

¹⁷⁶ See Kirsten Jenkins and others, 'Energy Justice: A Conceptual Review' 174; Benjamin K Sovacool and others, 'Energy Decisions Reframed as Justice and Ethical Concerns'; Benjamin K Sovacool and Michael H Dworkin, 'Energy Justice: Conceptual Insights and Practical Applications' (2015) 142 Applied Energy 435; Benjamin K Sovacool and others, 'New Frontiers and Conceptual Frameworks for Energy Justice' (2017) 105 Energy Policy 677; Ross Gillard, Carolyn Snell and Mark Bevan, 'Advancing an Energy Justice Perspective of Fuel Poverty: Household Vulnerability and Domestic Retrofit Policy in the United Kingdom' (2017) 29 Energy Research and Social Science 53; Giuseppe Pellegrini-Masini, Alberto Pigni and Stefano Maran, 'Energy Justice Revisited: A Critical Review on the Philosophical and Political Origins of Equality'.

¹⁷⁷ Heffron and others (n 172) 42.

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sustainable use of natural resources. The Thematic Strategy adopted by the European Commission dedicate to the sustainable use of natural resources and considers that “involving sustainable production and consumption is hence a key ingredient of long-term prosperity, both within the EU and globally.”¹⁷⁸ The Millennium Development Goals adopted by the UNGA¹⁷⁹ directly addresses the sustainable use of energy resources.¹⁸⁰

5. The principle of the protection of the environment, human health and combatting climate change

As was seen in introduction, energy sector is the main contributor in production of GHG emissions. Moreover, all the process of exploration, extraction, transportation and consumption of the energy resources has considerable environmental consequences. These environmental problems include degradation of natural environments and the imposition of risks on human health. As a result, energy law and policy and environmental law and policy cannot be treated as distinct areas of regulation. Traditional energy policies were relying on exploitation and use of the cheap, accessible and abundant fossil fuels. However, regulators can no longer refer to the possibility of implementing regulations that address and fix a problem after the occurrence, such as an oil spill or even a nuclear plant malfunction that has occurred in the past. Therefore, linking energy law and policy with environmental law and policy could ensure the forward thinking and preventive regulations which are necessary to reduce carbon emissions in an effort to forestall further climate damage.¹⁸¹

6. Energy security and reliability principle

Energy security is one of the main concerns of the energy policies across the globe enshrined in considerable number of national regulations. The domain of the energy security concept depends on the approach to the energy system. Originally, energy

¹⁷⁸ ‘EUR-Lex - 52005DC0670 - EN - EUR-Lex’ <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52005DC0670>> accessed 9 January 2020.

¹⁷⁹ UN Res A/55/2, United Nations Millennium Declaration, adopted on 18 September 2000 2000.

¹⁸⁰ Heffron and others (n 172) 43.

¹⁸¹ *ibid* 45.

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security has been synonym to security of supply of energy, meaning the continues and uninterrupted flow of energy sources. However, the concept of energy security has been evolving and there appears to be an expansive range of definitions of energy security in the policy and scholarly literature. In its wider concept, a variety of dimensions could be gathered under the security concept umbrella, including: *availability* (Having sufficient supplies of energy, being energy Independent), *affordability* (Producing energy services at the lowest cost, having predictable prices for energy fuels and services, and enabling equitable access to energy services), *technology development and efficiency*(capacity to adapt and respond to the challenges from disruptions, researching and developing new and innovative energy technologies, making proper investments in infrastructure and maintenance. Delivering high quality and reliable energy services), *environmental and Social Sustainability*(Minimizing deforestation and land degradation, possessing sufficient quantity and suitable quality of water, minimizing ambient and indoor pollution, mitigating GHG emissions associated with climate change, adapting to climate change), and finally *regulation and governance*(Having stable, transparent, and participatory modes of energy policymaking, competitive markets, promoting trade of energy technology and fuels, enhancing social and community knowledge about education and energy issues.)¹⁸² Considering the reliance of oil and gas exporters to potential buyer, the security of demand for energy also could be added to this long list.

7. Principle of resilience

By the broader concept of the energy security, resilience also could be seen as a dimension of energy security. However, in formulation of the energy law principles provided by Heffron and others, resilience considered as an independent principle. The National Academy of Sciences of the USA, has defined resilience as ‘the ability to prepare plan for, store, recover from, and more successfully adapt to adverse events’. The natural disasters as well as new and more frequent sorts of threats like the cyber-attacks could impose risks to the energy system. As the energy systems

¹⁸² Benjamin K Sovacool and Ishani Mukherjee, ‘Conceptualizing and Measuring Energy Security: A Synthesized Approach’ (2011) 36 Energy 5343, 5344 <<http://dx.doi.org/10.1016/j.energy.2011.06.043>>.

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transform, greater attention must be paid to the threats and risks presented by climate change and other disruptions.¹⁸³

Creation of a new mechanism under the current contradictory nature of the interests of States is far away from the reality. However, expansion of the territorial and substantive scope of existing instruments e.g., Energy Charter is a more conceivable scenario to follow. Energy Charter as instance, could include a wider range of members and adding new substantive elements through new protocols could help the charter to move towards a comprehensive instrument. As mentioned above, the main barrier in the way to achieve such an integrated and cohesive instrument is the contradictory nature of the interests and concerns of the actors in global scale. The question that arise here is over the tools and procedures that could contribute in decreasing the backgrounds of the conflicts of the interests. These tools and procedures could contribute in gradual improvement of the current system rather than expecting a snap birth of a new integratory or regulatory solution. Strengthening the dialogues and political contributions in intergovernmental mechanisms like IEF is one instance of such tools. It is true that initiatives like IEF or UN Energy lack a binding legal framework, however they could contribute in fostering wider contributions of Sates through political means.

From the formal point of view, the intergovernmental organizations like IEF or UN Energy could play their role in shifting towards a more just and integrated energy governance system, nevertheless, an integrating common substantive element is required in this context. It could be argued that the environmental concerns over the current energy system has a common and universal nature in contrast to the other aspects of energy governance e.g. trade, security, and investment.

¹⁸³ Heffron and others (n 172) 46.

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4.1.1 Framing Global Energy Agreements and Institutions, In quest of an Integrated Mechanism

4.1.1.1 International Organizations, the Producers Block

A. OPEC

The Organization of the Petroleum Exporting Countries (OPEC) is a permanent, intergovernmental Organization, created at the Baghdad Conference on September 10–14, 1960, by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. The five Founding Members were later joined by ten other Members: Qatar (1961); Indonesia (1962) – suspended its membership in January 2009, reactivated it in January 2016, but decided to suspend it again in November 2016; Libya (1962); United Arab Emirates (1967); Algeria (1969); Nigeria (1971); Ecuador (1973) – suspended its membership in December 1992, but reactivated it in October 2007; Angola (2007); Gabon (1975) - terminated its membership in January 1995 but re-joined in July 2016; Equatorial Guinea (2017); and Congo (2018). OPEC had its headquarters in Geneva, Switzerland, in the first five years of its existence. This was moved to Vienna, Austria, on September 1, 1965. OPEC's objective is to co-ordinate and unify petroleum policies among Member Countries, in order to secure fair and stable prices for petroleum producers; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the industry.¹⁸⁴ OPEC countries as a group account for about 43% of global oil supplies and over 80% crude oil reserves.¹⁸⁵

Since the establishment, securing the demand for the crude oil of the members and stabilizing crude prices remained as the primary and essential target of OPEC. In fact, the only restriction criterion for OPEC and its member is the regime of quotas adopted in meetings of members with the aim of balancing the overall offer of the members by regarding the market situation. While OPEC considers the production capacity, population and other factors of the members' situation in adopting quotas,

¹⁸⁴ OPEC, 'Brief History' <https://www.opec.org/opec_web/en/about_us/24.htm>.

¹⁸⁵ Organization of the Petroleum Exporting Countries OPEC, 'OPEC Annual Statistical Bulletin' (2018).

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the global elements especially environmental concerns are in fact excluded from the decision-making procedure of the organization. This is due to the vital role that crude export plays for almost all the members.¹⁸⁶ As instance 47% of total Iranian and 69% of total Saudi Arabian exports belongs to crude oil. This scale of dependency to oil exports is common among almost all of OPEC members.

From its establishment, the cartel has been considered as a challenge for the developed and western countries due to the limits that the ceiling of members' production imposes to the global market. Despite the political alliances to confront the cartel, many efforts in the academics dealt with the legal instruments to control or breach the limits that OPEC impose to the global supply of crude oil. There are three factors and scenarios that could contribute in weakening the OPEC's position in global energy economy. Firstly, the political agenda against OPEC through legal mechanisms, secondly, relative realization of sustainable development goals and thirdly, the internal political challenge among the members of OPEC.

The tempo of the political rhetoric against OPEC follow and therefore the temptation to undertake to challenge it appears to travel up and down in relation with crude costs on the global market. The legal manifestation of those issues comes within the type, inter alia, of judicial challenges to OPEC and its member states beneath the national and international law. Two legal avenues are thought in this regard – an antitrust action for alleged violation of competition law before domestic courts and an attainable challenge through the WTO dispute settlement system of OPEC countries that also are members of the WTO. There have additionally been legislative initiatives to form each 'judicial' choices attainable. however, neither line is new, nor is the chance of winning 'judicial' challenge beneath either of those avenues any closer to reality than before.¹⁸⁷

¹⁸⁶ Jude Chukwudi Dike, 'Measuring the Security of Energy Exports Demand in OPEC Economies' (2013) 60 Energy Policy 594, 594–600
<<http://dx.doi.org/10.1016/j.enpol.2013.05.086>>.

¹⁸⁷ Melaku Geboye Desta, 'OPEC Production Management Practices under WTO Law and the Antitrust Law of Non-OPEC Countries' (2010) 28 Journal of Energy & Natural Resources Law 439, 441.

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According to Leal Arcas and Filis, given that the majority of its members—with the exception of Algeria, Iraq and Iran—are WTO Members, the compliance of their OPEC-related activities with the WTO system comes under examination. However, placing production quotas, whatever the trade implications, does not, on its own strength, become WTO inconsistent. While the WTO unequivocally prohibits quantitative restrictions—including export and import related—on trade flows (namely through Article XI GATT), it is unlikely that this prohibition will extend to the pre-extractive stage of energy resources. Once resources have been extracted and are in tradable form, they ought not be subject to quantitative restrictions that are otherwise not WTO-compliant. In other words, WTO disciplines—as they currently stand—do not extend to the pre-extraction/production stage of energy. This could be understood to preserve the voluntarist basis upon which WTO Members have acceded to the WTO, and to safeguard the sovereign prerogatives—in our case, in relation to sovereignty over natural resources from incursions not otherwise justified under the existing state of public international law.¹⁸⁸

From a global point of view, OPEC's role on the security and sustainability components of global energy system could be described as challenging. However, under the existing fragmented system there isn't any efficient legal control mechanism over OPEC. OPEC's cooperation with bodies like International Energy Forum in political level could be considered as a promising effort, however IEF doesn't provide any binding mechanism on members unless otherwise remain as a ceremonial political body enhancing the dialogue between members.

Despite the legal mechanisms, there are dynamics in energy trends that highly influence the role of OPEC in the global system. As mentioned, the main target of OPEC is balancing the market demand and the overall production and offer of the members. However, in contrast with the unique parameter of keeping the oil prices steady and preventing the dramatic decrease of the oil prices in last few decades, the growth in development of unconventional oil production and the feasibility of

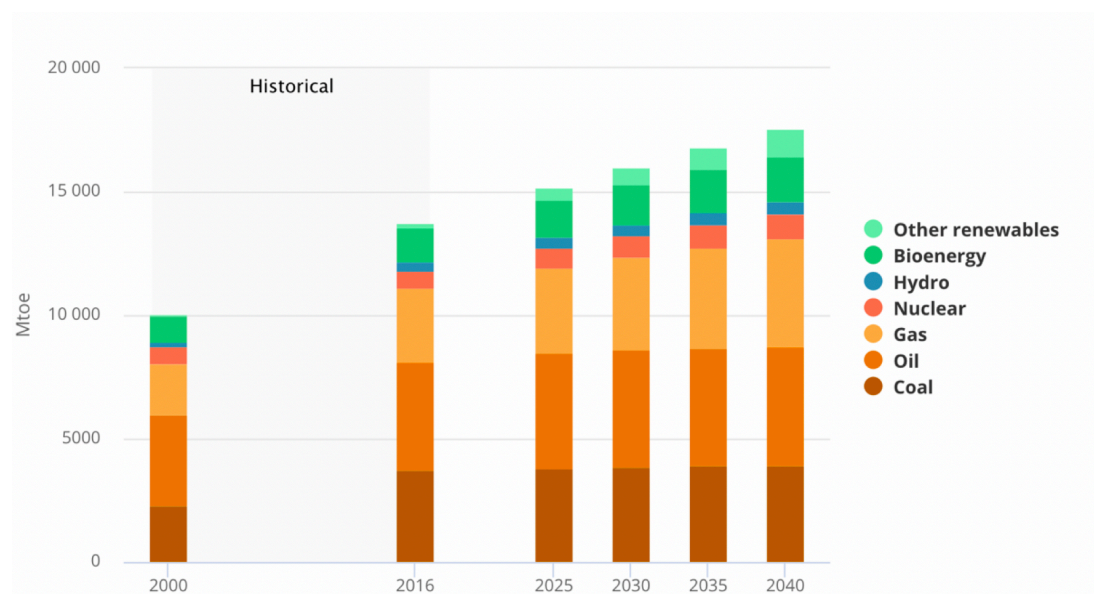
¹⁸⁸ Leal-Arcas and Filis (n 166) 25–26.

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renewable energy alternatives altered to the elements of OPEC decision making in past few years. More accurately addressing the issue, by accepting the fact that development of renewables is mainly relying on the incentive policies, however the higher prices of oil and natural gas increase the feasibility of renewable energy projects. Both of unconventional oil and gas production and feasibility of renewables are elements that encourage the OPEC members to agree over a relatively lower price of the oil in the market.

It could be argued that under the current global energy system, more than direct legal parameters, the energy trends and especially low carbon policies could influence the role of OPEC. IEA in its recent World Energy Outlook report has traced the energy trend with the perspective of 2040 with the two possible scenarios.

Figure 19. a) Primary Energy Demand (TPED, New Policies Scenario (NPS))



Source: IEA

As described by IEA, New Policies Scenario (NPS) aims to provide a sense of where today's policy ambitions seem likely to take the energy sector. It incorporates not just the policies and measures that governments around the world have already

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put in place, but also the likely effects of announced policies, including the Nationally Determined Contributions made for the Paris Agreement.¹⁸⁹

The NPS outlook of IEA relatively overlaps with the 2040 energy outlook provided by OPEC.¹⁹⁰ Under both reports oil has a 27% share of world primary energy demand. Unless otherwise, the energy trends benefit a substantial change by technological developments or stronger sustainable policies, the current outlook approves that OPEC maintain its role in world energy market.

Figure 20. World Primary Energy Demand by Fuel Type

	Levels <i>mboe/d</i>				Growth <i>% p.a.</i>
	2015	2020	2030	2040	2015–2040
Oil	86.5	92.3	97.9	100.7	0.6
Coal	78.0	80.7	85.8	86.2	0.4
Gas	59.2	65.2	79.9	93.2	1.8
Nuclear	13.5	15.8	20.1	23.8	2.3
Hydro	6.8	7.5	9.0	10.3	1.7
Biomass	28.0	30.1	34.0	37.3	1.2
Other renewables	3.8	6.6	12.9	20.0	6.8
Total world	276.0	298.2	339.4	371.6	1.2

Source: OPEC World Oil Outlook

While under NPS scenario, OPEC maintains its substantial role in global energy market, the realization of Sustainable Development Scenario (SDS) provided by IEA could led to the lower dependency of global energy to oil. This certainly could be translated as attenuation of OPEC’s role during the next two decades.

SDS examines what it would take to achieve the main energy-related components of the “2030 Agenda for Sustainable Development” adopted in 2015 by member states of the United Nations. The three goals are: to achieve universal energy access

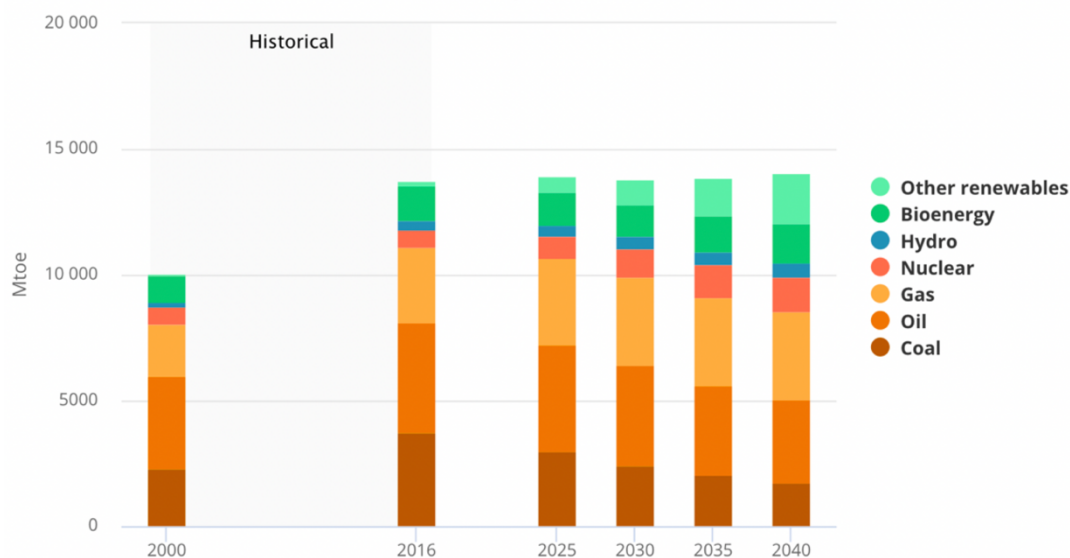
¹⁸⁹ International Energy Agency, ‘World Energy Model, Scenario Analysis of Future Energy Trends’ <<https://www.iea.org/weo/weomodel/>>.

¹⁹⁰ Organization of Petroleum Exporting(OPEC), ‘World Oil Outlook_OPEC’ 72 <<http://library.seg.org/doi/10.1190/1.1439163>>.

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to modern energy by 2030; to take urgent action to combat climate change; and to reduce dramatically the pollutant emissions that cause poor air quality.¹⁹¹

Figure 21. Total Primary Energy Demand under Sustainable Development Scenario



Source: IEA

Under SDS, total primary energy demand's dependency to oil decrease to 23%. Apart from the environmental considerations, a relative realization of SDS contribute in weakening the OPEC's influence in global energy system. Apart from the economic and environmental impacts this could contribute in substantial geopolitics consequences.

The other factor that currently weakening and expected to continue to affect OPEC's position is the political challenges within the members. The political conflict between Iran and Gulf Cooperation Council (GCC) members especially Saudi Arabia and UAE could be the most obvious instance of such political disagreement between the members.

Since the establishment, in addition to the common interest over the oil market, the members have shared many political perspectives. The Islamic and anti-American

¹⁹¹ Agency (n 189).

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ideology have been followed by different members of the organization that have been strengthening the alliance of members of the organization.¹⁹²

As a cause of these challenges and the conflict of non-oil oriented interests of the members, the non-compliance to the determined quotas could be intensified by the members. As instance, currently the relationship between Iran and Saudi Arabia could be defined as hostile. Saudi Arabia holds strong ties with the USA and other western powers and has recently accompanied the USA and Israel to renew the United States sanctions against Iran. Obviously, the strategic political alliance between Saudi Arabia, UEA and the USA could end with ignoring the share of Iran from the market and mitigate the impacts of sanctions against Iran.¹⁹³

While exceeding the organization's quota altered to a norm in past few decades¹⁹⁴, the enhancement of the political challenge between the members and new informal production alliances between the members and non-members (like the market arrangements between Saudi Arabia and Russia and Saudi Arabia and the USA) could potentially weaken the position of the organization in global energy markets. The political conflict between members and agreements of members with non-OPEC actors are one of the factors that already weakening and expected to weaken the position of OPEC in global market. However, based on the NPS scenario, while the primary energy supply continues to depend on crude oil, OPEC continues to play its role in global petroleum sector and this role could not be ignored.

B. GECF

The origins of the GECF can be traced to the First Meeting of Ministers held in Tehran, on May 19 20, 2001. This 1st Ministerial Meeting was convened by the Minister of Petroleum of Iran and was attended by the governments of Algeria,

¹⁹² Indra Overland, 'Handbook of Clean Energy Systems' [2015] Handbook of Clean Energy Systems 4032, 3525.

¹⁹³ 'Saudi Arabia Ready to "Mitigate" Impact of Iran Oil Sanctions' <<https://www.bloomberg.com/news/articles/2018-05-08/saudi-arabia-ready-to-mitigate-impact-of-iran-oil-sanctions>> accessed 21 July 2018.

¹⁹⁴ See Hamed Ghoddusi, Masoud Nili and Mahdi Rastad, 'On Quota Violations of OPEC Members' (2017) 68 Energy Economics 410.

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Brunei, Indonesia, Iran, Malaysia, Oman, Qatar, the Russian Federation, Turkmenistan and Norway (Observer). During this 1st Ministerial Meeting it was agreed that the aims of the Forum will be to foster the concept of mutuality of interests by favouring dialogue among producers, between producers and consumers and between governments and energy related industries; to provide a platform for research and exchange of views, and to promote a stable and transparent energy market. These and other goals were outlined in a document prepared by the Expert Meeting and approved by the Ministers as a mandate of the GECF.¹⁹⁵

According to Article 3 of GECF Statute: The GECF was established to support the sovereign rights of its Member Countries over their natural gas resources and their ability to independently plan and manage the sustainable, efficient and environmentally conscious development, use and conservation of natural gas resources for the benefit of their people. These objectives will be promoted through the exchange of experience, views, information, and coordination in, inter alia, the following interrelated topics:

1. Worldwide gas exploration and production trends;
2. Present and anticipated supply-demand balance for gas;
3. Worldwide gas exploration, production and transportation technologies;
4. The structure and development of gas markets (regional and global);
5. Transport of gas: pipelines and LNG carriers;
6. Interrelationship of gas with oil products, coal, and other energy sources;
7. Technologies and approaches for sustainable environmental management, taking into account environmental constraints, national regulations and multilateral agreements on environment and their impact on volume and sustainability of gas consumption; and

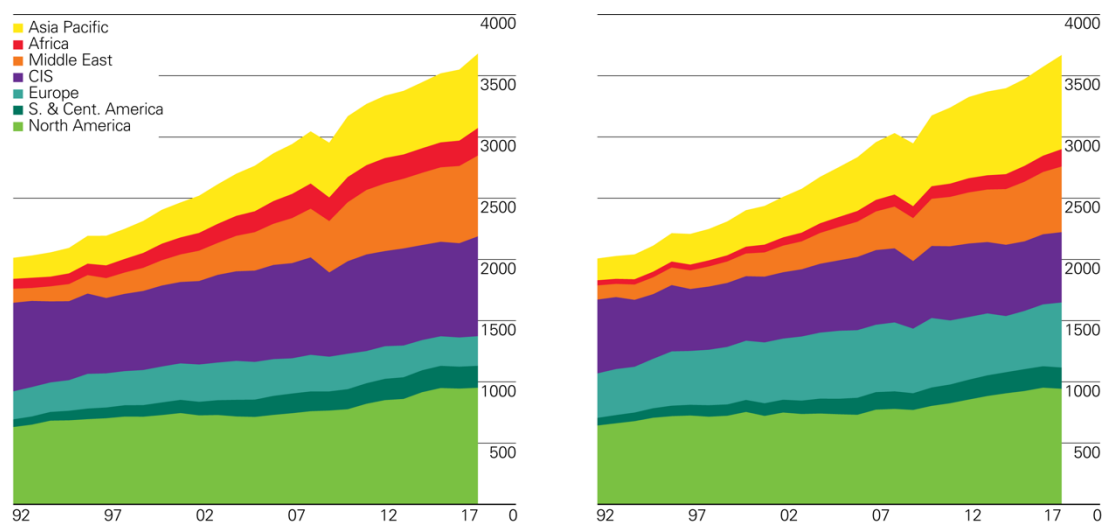
¹⁹⁵ Gas Exporting Countries Forum, 'Gas Exporting Countries Forum (GECF) Brief History' (2003) <https://www.gecf.org/_resources/files/pages/history/gecf-history-file.pdf> accessed 13 June 2018.f

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- Techniques and approaches for maximizing the contribution of natural gas resources, at all stages of the value chain, to the promotion of sustainable economies and human resources development in member countries.¹⁹⁶

In contrast with the crude oil, the consumption of natural gas expected to raise in next few decades and under different scenarios. According to the IEA report, under the both NPS or SDS, natural gas will supply 24% of world energy demand. This means a 3% increase comparing to 2016. Comparing to oil and gas the environmental privileges of natural gas is a key element in its expected development in new few decades. The lower prices of natural gas comparing to oil products is also an encouraging factor for investors. The global production and consumption of natural gas substantially have grown in last few years because of the aforementioned privileges it contains.

Figure 22. Gas Production/Consumption by Region



Source BP Statistical Review of 2017

According to BP statistical review, the global production and consumption of natural gas from 2100 BCM has raised to 3100 BCM in 2017.¹⁹⁷

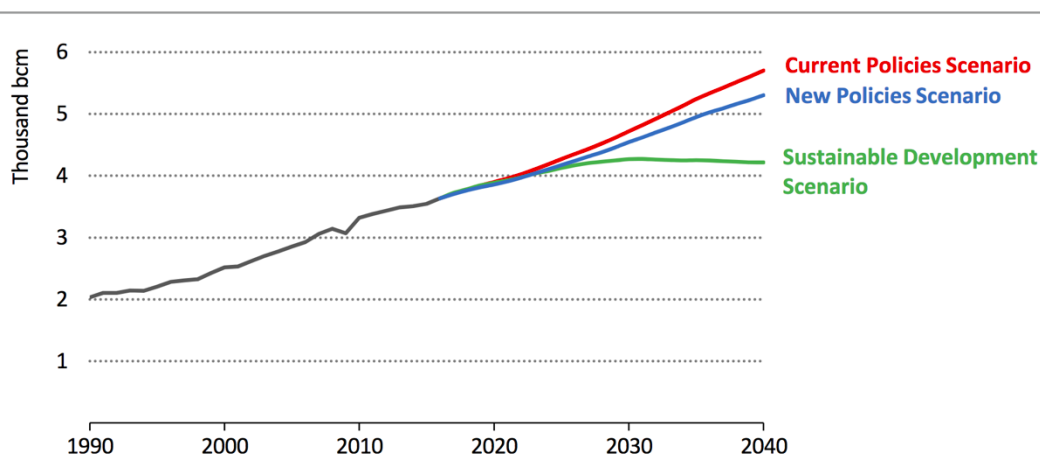
¹⁹⁶ GECF, Statute of GECF.

¹⁹⁷ British Petroleum, 'BP Statistical Review of World Energy, 2018, Natural Gas' (2018) 35
<<https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review/bp-stats-review-2018-natural-gas.pdf>> accessed 30 March 2019.

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Most of the forecast reports of different energy organizations provide closely information about the raise of natural gas consumption by 2014.

Figure 23. World Natural Gas Demand by Scenario



Source: IEA Outlook for Natural Gas 2017

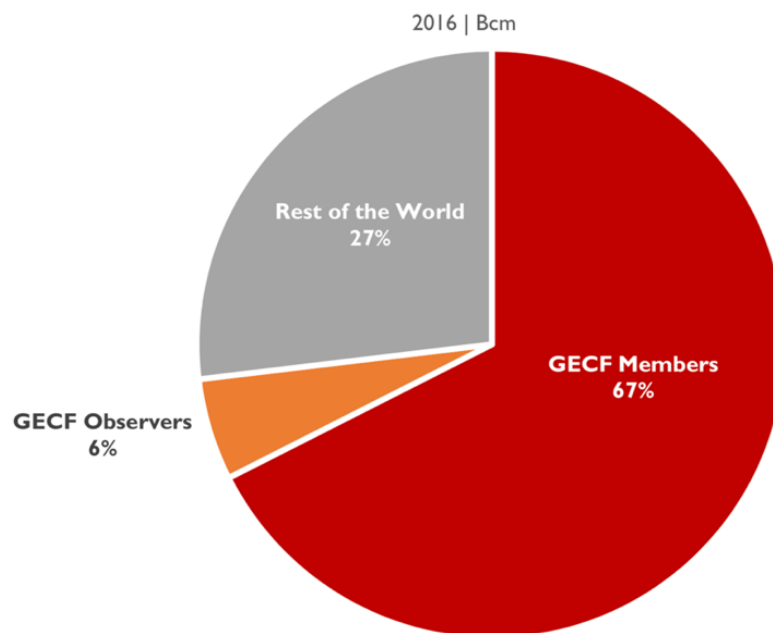
IEA expects that under different scenarios the demand for natural gas increase by the 2040 outlook. Even by considering the lowest increase rate under SDC, the demand for natural gas will raise meaning that the sector maintains and develop its role in the energy market.¹⁹⁸

GECF members hold 67% of world natural gas proven reserve. In fact, except the United States, all of the major holder of natural gas reserves are members of GECF. In contrary to the OPEC, Russia is a member of the organization. In terms of the scope and inclusivity of membership, GECF has a significant situation that could be considered as more important than OPEC.

¹⁹⁸ Agency (n 189).

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Figure 24. GECF Countries and Rest of the World Natural Gas Proven Reserves Source



Source: GECF Annual Statistical Bulletin 2017

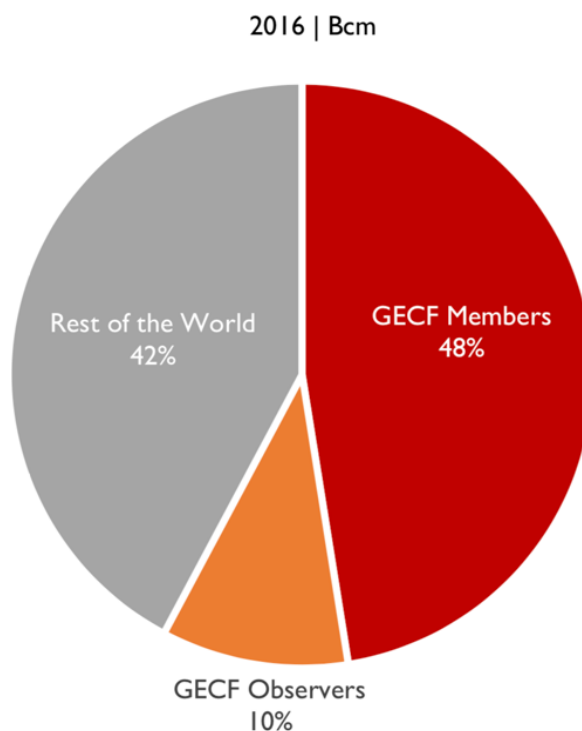
In addition to the reserves, the GECF members are representing 48% and 41% of the world gross and marketed production of natural gas respectively.

This considerable margin between the reserves and production is mainly because of the vast development of natural gas sector in the USA. While USA as a non-member to GECF holds 4.5% world proven natural gas reserves has a 20% share of world's natural gas production.¹⁹⁹

¹⁹⁹ British Petroleum (n 197).

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Figure 25. GECF Countries and Rest of the World Natural Gas Gross Production



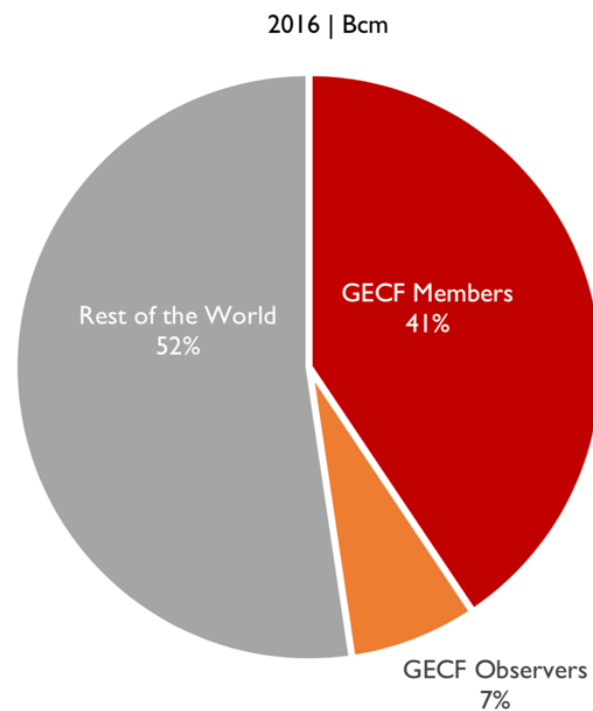
Source: GECF Annual Statistical Bulletin 2017

Like OPEC, GECF has been established based on the common interests of the members over maximising their revenues from the production and exports of the resources. According to N. Wagbara, the Forum has potentials to alter to a natural gas cartel because of the following reasons: firstly, membership of Russia as a prominent producer and exporter of natural gas and as an influential actor in gas markets strengthens the Forum's position in global markets. In addition to the Russian production, Gazprom cooperates in exports of Turkmen, Kazakh and Uzbek productions. Secondly, as mentioned before, the demand for gas as a source of energy expected to raise in following years.²⁰⁰

²⁰⁰ Obindah N. Wagbara, *How Would the Gas Exporting Countries Forum Influence Gas Trade?*, vol 35 (2007).

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Figure 26. GECF Countries and Rest of the World Natural Marketed Gas Production



Source: GECF Annual Statistical Bulletin 2017

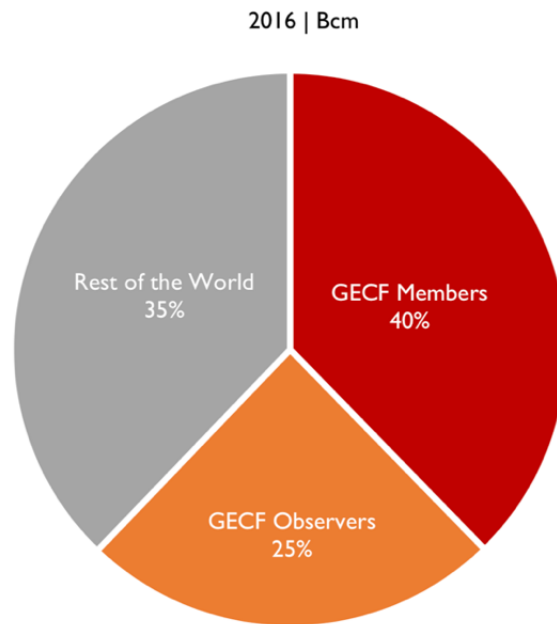
This increase in demand could provide a potential position for GECF to alter to a gas cartel. Thirdly, the vast reserves and market share of GECF could also contribute in altering the GECF to a cartel. Russia Iran and Qatar (all members of GECF) alone have near 50% share of global reserves.²⁰¹ Fourthly, like the OPEC in which the oil is a vital economic element for the members, natural gas plays an undeniable role in the economy of the members, that could potentially approach their policies to maintain their benefits over the exports of natural gas.²⁰²

²⁰¹ British Petroleum, 'BP Statistical Review of World Energy 2018.Pdf' 11.

²⁰² Obindah N Wagbara, 'How Would the Gas Exporting Countries Forum Influence Gas Trade?' (2007) 35 Energy Policy 1224.

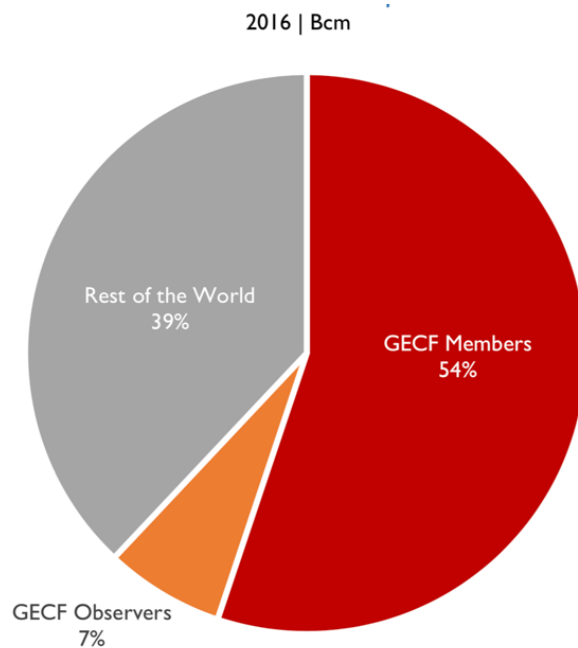
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Figure 27. GECF Countries and Rest of the World Natural Gas Pipeline Exports



Source: GECF Annual Statistical Bulletin 2017

Figure 28. GECF Countries and Rest of the World LNG Exports



Source: GECF Annual Statistical Bulletin 2017

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From its establishment, the concerns over the alteration of GECF to a gas version of OPEC raised in developed countries.²⁰³

Against the arguments that GECF could alter to a gas cartel, I believe that the Forum inherits many barriers not letting it to expand its role in natural gas markets as a cartel. At first glance these barriers could be divided to the specific characteristics of natural gas markets and internal conflict of interests among the members.

Natural gas market characteristics

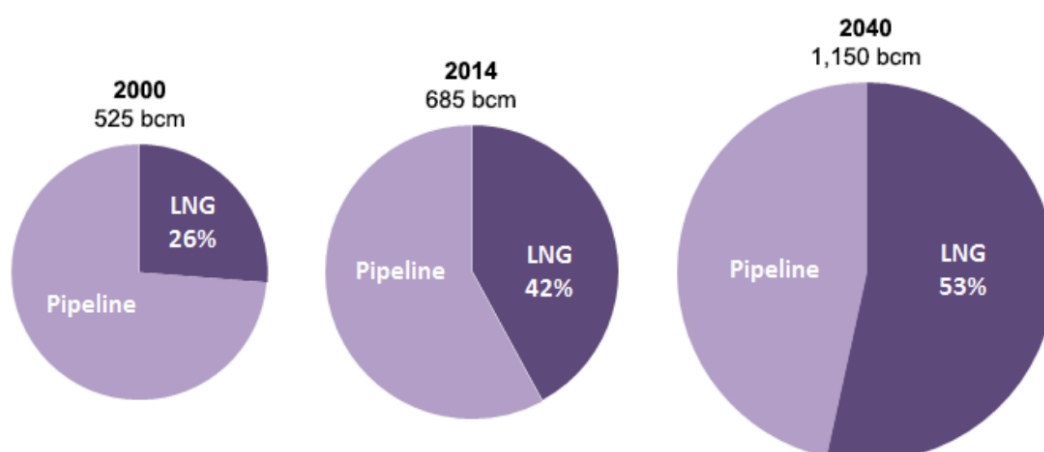
Natural gas market is different in its nature comparing to the oil. One important difference between the oil and gas markets is that transport costs are much higher for gas than for oil. As a consequence, it has been more common to talk about regional gas markets than a global one. Moreover, the market specially in Europe and Asia have been dominated by long-term contracts, and spot sales has a small share of the sales. Similar market structure is true also in the United States where long-term contracts dominate over spot market sales. The amount of LNG sales in spot market are lower than the purchase through pipelines, however, in last few years statistics show relative increase in market share. The current trend, however, is towards a more globalized gas market with more spot sales, partly due to lower costs of LNG transport over the last decade. Nevertheless, the significant transport costs have some important implications for the cartelization issue. First, it presumably implies that the effects of cartelization will differ across regions, as regional prices will differ because of the transport costs. For instance, the U.S. market is located further away from most GECF countries than the European and Asian markets. Furthermore, the United States is no longer expected to import significant amounts of gas in the coming decades, which was the common thinking a few years ago.²⁰⁴

²⁰³See: Hadi Hallouche, 'The Gas Exporting Countries Forum : Is It Really a Gas OPEC in the Making ?' (2006) NG13 Oxford Institute for Energy Studies.SA Gabriel and others, 'Cartelization in Gas Markets: Studying the Potential for a "Gas OPEC"' (2012) 34 Energy Economics 137 <<http://dx.doi.org/10.1016/j.eneco.2011.05.014>>.

²⁰⁴ Gabriel and others (n 17).

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Figure 29. Share of LNG in Global Gas Trade



Source: IEA World Energy Outlook 2017

The expansion of LNG share in global trade of natural gas is a game changer in the future of the sector. In fact, while the domination of regional trade of natural gas through pipelines and by long-term agreement has been described as a special characteristic of the sector that harden the way for GECF to alter to a cartel, the expansion of LNG share could be defined as an element that approach the gas pricing formula to oil. This is an important factor that has to be taken into account while analysing the role that GECF may play in the future.

Conflicts of interests

Russia, Iran, and Qatar are holding 18.1%, 17.2%, 12.9% of world's natural gas reserves respectively.²⁰⁵ Geographically, Iran, Russia and Qatar's destinations for pipeline exports overlap with one another. As instance, Iran could potentially expand the exports to Turkey (through Tabriz-Ankara pipeline) which is already a strategic purchaser of Russian natural gas. In this case while Iran intends to increase the exports to Turkey (regardless to technical barriers), the expansion of Iranian gas market in Turkey necessarily threatens the Russian interests. Considering the possibility of Iranian exports of natural gas to EU through the proposed Nabucco

²⁰⁵ Petroleum (n 201).

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Pipeline.²⁰⁶ once again a direct conflict with Russian strategic interests arise that could potentially lead to challenges between Iran and Russia. Because of the geographically limited nature of pipeline exports the same competition in achieving the market could arise in other examples. Qatar's geographical position in south of Persian Gulf also limits the pipeline export options of this major producer to the borders with Saudi Arabia, UAE and Iran, all three the members of GECF. As a cause of this restriction Qatar hugely invested on LNG markets to cover its lack of access to suitable pipeline export options.

Another instance is the two possible options of exports to giant market of Pakistan and India. While for almost two decades Iran is struggling to conclude the exports to Pakistan and India through Peace Pipeline, the Turkmenistan–Afghanistan–Pakistan–India Pipeline project started in 2015 and limited the Iranian cards to plan in proceeding the already agreed Peace Pipeline Project. Although Turkmenistan is not a GECF member, its strategic energy ties with Russia pose the question and doubts over Russian approach to the mentioned project.

The conflict of interests inside the GECF members or between a member and a non-member with strategic ties with the other members doesn't necessarily means that the organization couldn't move on its agenda. However, these conflicts specially by considering the fact that price offer in natural gas market is a key parameter in achieving long term sale agreements, could impose adversities for formation of a cartel.

From the establishment GECF has functioned as an integrating body enhancing data sharing and dialogues between members rather than trying to apply pricing policies or quota mechanisms. From the global point of view, cooperation of the GECF members could contribute in development of natural gas sector that by considering the environmental advantages comparing to the other fossil fuels is a promising

²⁰⁶ See Abbas Maleki, 'Energy Supply and Demand in Eurasia: Cooperation between EU and Iran.', *China & Eurasia Forum Quarterly* (2007); Bülent Aras and Emre İşeri, 'The Nabucco Natural Gas Pipeline: From Opera to Reality' [2009] SETA policy brief 1; Vladimir Socor, 'Sourcing the Nabucco Pipeline to Prevail Against South Stream' (2008) 5 *Eurasia Daily Monitor* 1; Erkan Erdogdu, 'Bypassing Russia: Nabucco Project and Its Implications for the European Gas Security' (2010) 14 *Renewable and sustainable energy Reviews* 2936.

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point. As mentioned above, characteristics of natural gas market and conflict of interests of members is a barrier for GECF to alter to a gas cartel. However, by considering the *developing and maintaining the members' benefits of their natural gas resources* as the main agenda of the organization, following the pricing and quota plans specially about the LNG market is a probable scenario in the future.

4.1.1.2 International Organizations, the Major Consumers Block

International Energy Agency (IEA)

As a response to the risks imposed by the disruption of oil supply, the idea of initiating collective measures by OECD members has led to the creation of IEA in 1974. In fact, the IEA was initially designed to help countries co-ordinate a collective response to major disruptions in the supply of oil, such as the crisis of 1973/4. While this remains a key aspect of its work, the IEA has evolved and expanded significantly.²⁰⁷

According to the presentation provided in the website of the Agency, the IEA examines the full spectrum of energy issues including oil, gas and coal supply and demand, renewable energy technologies, electricity markets, energy efficiency, access to energy, demand side management and much more. Through its work, the IEA advocates policies that will enhance the reliability, affordability and sustainability of energy in its 30 member countries and beyond. Today, the IEA is at the heart of global dialogue on energy, providing authoritative analysis through a wide range of publications, including the flagship World Energy Outlook and the IEA Market Reports; data and statistics, such as Key World Energy Statistics and the Monthly Oil Data Service; and a series of training and capacity building workshops, presentations, and resources. The four main areas of IEA focus are:

- Energy Security: Promoting diversity, efficiency, flexibility and reliability for all fuels and energy sources;

²⁰⁷ 'International Energy Agency' <<https://www.iea.org/about/ourmission/>> accessed 15 August 2018.

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- Economic Development: Supporting free markets to foster economic growth and eliminate energy poverty;
- Environmental Awareness: Analysing policy options to offset the impact of energy production and use on the environment, especially for tackling climate change and air pollution; and Engagement Worldwide: Working closely with partner countries, especially major emerging economies, to find solutions to shared energy and environmental concerns.²⁰⁸

As mentioned, the initial duty of the agency was to support the interests of oil consuming countries vis a vis producers. The primary task to oversee an emergency oil sharing response required the members to maintain 90 days of net oil imports to provide the ability of respond to the supply shocks. By 1984, the member states had agreed upon the Co-ordinated Emergency Response Measures (CERM). The CERM was intended to be a fast and flexible response mechanism; a set of guidelines on when oil reserves should be drawn upon with no defined trigger for initiation. Instead, CERM could be initiated upon authorization of the IEA governing board, after a consultative process involving the member states. CERM measures have been used three times: during the first Gulf War in 1991, in response to the devastating hurricanes in the US Gulf of Mexico in 2005 and in June 2011 in response to the ongoing disruption of oil supplies ²⁰⁹

As quoted from the Agency's website, the scope of the activities of IEA from the response measures expanded to gathering energy statistics and data from member and non-member states, and also entering to dialogues with corresponding organizations and non-state members with the aim of strengthening the security of energy as well as enhancing the efforts to support free markets and finally taking the environmental concerns into account to address the climate change, air pollution and other environmental issues.

²⁰⁸ 'International Energy Agency'.

²⁰⁹ Ann Florini, 'The International Energy Agency in Global Energy Governance' (2011) 2 Global Policy 40, 41.

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While the member states are legally bound to meet CERM requirements, the Agency's activities regarding environmental issues and energy efficiency has been remained limited to a set of recommendations and data and information gathering and sharing. World Energy Outlook and other detailed reports of the Agency altered to a reliable source among researchers and policy makers. The informational role of IGOs is not limited to technical data-gathering. By selecting data to be gathered and choosing how to present information, IGOs can influence what issues get attention and how they are addressed. For example, since its inception, the IEA has taken an active role in conducting energy research, compiling and publishing data for public dissemination.²¹⁰

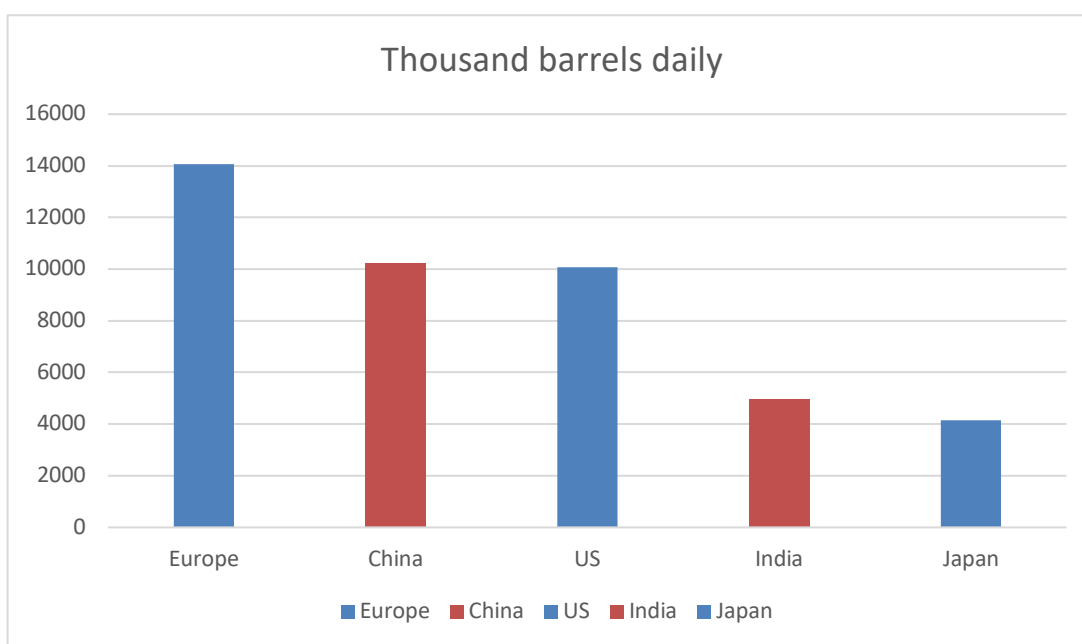
The cooperation of IEA with the other intergovernmental energy organizations also provided a fruitful background for energy dialogues among key actors. In fact, from an organization to respond to the possible oil crisis IEA altered to a forum with lots of advisory activities of political and non-binding nature with the aim of enhancing the security, sustainability and energy efficiency among members and even non-member states.

The expansion of IEA role playing in global energy trends requires the expansion of the scope of the members. The organization today lacks the involvement of new major energy consumer states. China and India as instance have 25% dollar value of world crude oil imports.

²¹⁰ Florini and Sovacool (n 5) 5243.

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Figure 30. Major Oil Importers



Source: Created by Author Using Data of BP Statistical Review of World Energy

The IEA structure is not letting the organization to simply extend the domain of membership to actors like China and India. This is mainly because of the firstly voting mechanism in the agency that is based on some degree of connection to relative oil consumption and secondly Although this historical connection to the OECD is now seen by many in the energy field as an impediment to effective global energy governance via the IEA, the prospects for delinking appear poor. There are also many doubts whether the major new players have any incentive to join the agency.²¹¹

4.1.1.3 International Energy Charter

The International Energy Charter is a declaration of political intention aiming at strengthening energy cooperation between the signatory states and which does not bear any legally binding obligation or financial commitment. The International Energy Charter has been formally adopted and signed at the Ministerial

²¹¹ Florini (n 209) 45.

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Conference, which was hosted by the government of The Netherlands. It maps out common principles for international cooperation in the field of energy.²¹² 49 European state members of European Energy Charter have formed the core of International Energy Charter. The scope of the charter's member has been extending during the last few years. In addition to the signatory states of the 1991 European Energy charter many other Eurasian, Middle Eastern, Latin American, and also new emerging economic powers like India, China, Brazil and South Africa have signed the Charter.²¹³ The Charter currently has 88 signatory members.

Figure 31. Members of IEC, EEC and ECT



Source: www.energycharter.org

²¹² 'The International Energy Charter' <<https://energycharter.org/process/international-energy-charter-2015/overview/>> accessed 10 February 2018.

²¹³ Aalto (n 5) 1,2.

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In terms of the scope of the membership the Charter is unique among any other international energy related agreement. A wide range of states, from the world major economies like the U.S, European Union, China, India, Brazil to influential OPEC members like Iran, Nigeria, Iraq, and UAE are signatories to the Charter. This alter the Charter to a unique instrument to enhance the energy cooperation in a global context.

While development of an open and competitive energy market lies at the heart of the Charter, the Title I (objectives) of the charter also considers the sustainability of energy development, improving the energy security and maximising the efficiency in energy sector as the main objectives.²¹⁴ Substantially talking, the charter content tries to reconcile the energy objectives that apparently seem to be incompatible. As instance, right after the first paragraph of Title I that addresses the three axes of energy trilemma (Sustainability, viability and security) as the main objectives, the second paragraph emphasise on the sovereignty of each State over its energy resources. Apart from the political and non-binding nature of the document, this balanced and *in favour of all* approach open the Charter's rooms open for including a wider range of states. Rather than taking the regional considerations into account the charter calls for a general open and competitive market for energy products, materials equipment and services. The charter calls on the access to energy resources, exploration and development based on the *commercial basis* rather than any political or geopolitical preferences. Moreover, Title I(1) also addresses the necessity of development and interconnection of energy transport infrastructure and the regional integration of energy markets. This wide approach to financial and trade related energy cooperation also entail promoting best possible access to capital through financial institutions, facilitating access to transport infrastructure, coordination of energy policies, and exchange of information and experience.

²¹⁴ Energy Charter Secretariat, 'The International Energy Charter Consolidated Energy Charter Treaty with Related Documents' 168, 13
<<http://www.energycharter.org/fileadmin/DocumentsMedia/Legal/ECTC-en.pdf>>.

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Title I(3) of the charter deals with energy efficiency and environmental protection. Encouraging clean and efficient use of fossil fuels, promotion of a sustainable energy mix designed to minimise negative environmental consequences in a cost-effective way are among the environmental objectives of the Charter. The charter calls for development of the use of renewable energy sources and clean technologies and sharing the best practices on clean energy development and investment between the members.²¹⁵

The substantial assessment of the policies covered by the Charter could be classified as; firstly, resource development secondly, cost, finance, business models and market dimension, thirdly, institutional dimension and finally ecological and climate dimension. The Charter covers all main energy resources oil, natural gas, nuclear energy, coal and renewables in terms of resource development, the infrastructure and technology dimension, while it also touches upon end products by referring to electricity production. In terms of the costs, finance, business models and markets dimension, the Charter is instrumental to reiterating the economic preoccupations of the European Energy Charter and the Energy Charter Treaty. The former remains a political declaration, while the latter introduces binding regulation on investment, trade and transit related issues, including a dispute settlement mechanism. The International Energy Charter calls to ‘facilitate the operation of market forces and promote competition’ and to remove barriers to trade in energy products, equipment and services, as well as investments, in line with WTO provisions and nuclear non-proliferation regimes. It recognises the role of ‘commercially sound’ conditions for transit; and stresses the development of cross-border oil and gas networks and power grids to practically facilitate energy trade. For many signatories in West Africa and Latin America, the Charter’s provisions on access to capital, the removal of barriers to and protection of investments, together with the creation of a legal framework for foreign investments, are crucial in order to improve energy access, develop new sources of energy and promote economic growth. In terms of the institutional dimension, the main thrust of the Charter is to provide a non-binding political framework for the

²¹⁵ *ibid.*

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new relationships that have recently formed among producer, consumer and transit states. Regarding the ecological and climate dimension, the Charter quite realistically proceeds from the 'trilemma between energy security, economic development and environmental protection without elevating any of these grand challenges above the others.'²¹⁶

Formation and expansion of the Charter is a promising progress for harmonizing different aspects of energy policies in a global context. A wide range of conservatively designed contents addressed in the Charter to make as much as inclusive as possible. Despite the difference over the legal nature, this is more or less the same approach taken in drafting the Paris Agreement to put the document in a position not to be sharply opposed by different states by this very incompatible and even conflicting approaches and interests in energy issues. The emphasise on states' cooperation for development of many different aspects energy trade expanded the Charter from a Europe centric document to a global charter that even could enjoy the membership of OPEC members like Iran, Iraq, Nigeria and UAE whom are normally conservatively approach to a cooperation initially initiated from the major energy importers. Despite some negligence on as instance human right and justice aspects of global energy system, substantially the Charter could be described as a comprehensive document. The Charter is unique in this regard comparing to any other energy related agreements. The other strength of the charter is the territorial expansion of the Charter. The charter has moved from a European and Eurasian agreement towards a global scope. This is also the other unique characteristic of the Charter that couldn't be found in any other energy related agreement. These are all the promising points of the Charter that could enhance the progress of integration of energy governance in the global scope. Nevertheless, the agreement has a soft-law nature and despite entailing some degree of political will of the members to agree on common objectives of energy policies hasn't any enforcement mechanism. However, the charter could be considered as a basis that

²¹⁶ Aalto (n 5) 94–95.

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could help further efforts for a more integrated governance of energy in a global context.

4.1.1.4 Applicable WTO Mechanisms

WTO regulations form the most inclusive framework governing trade in the global context. WTO generally deals with trade among the members without specifically setting regulations regarding the energy trade. However, WTO agreement has a broad scope of application and covers different energy related activities. Most of major energy actors are already member of WTO except Azerbaijan, Iran, Iraq, and Libya.²¹⁷

The GATT/WTO sets out rules prohibiting unjustifiable discrimination, and import and export bans, on trade in all products past, present and future. To the extent that an energy source (oil, natural gas, or coal, for example) is in the form of a product, then all WTO provisions that contain disciplines on trade in goods are applicable.²¹⁸

While WTO regulations are applicable to certain energy product and services trades, there isn't any room to apply WTO rules to agreements limiting the exploitation of energy careers like oil and natural gas. As a result, while considering the OPEC quota system, the limits imposed by OPEC to the overall offer of the members applies to the production rate and not the trade of produced hydrocarbon resources. Hereupon, WTO regulations couldn't legally face the limits that OPEC impose to the offer of the oil to international markets.

In addition, the GATT/WTO has relevant disciplines on transit, on subsidies with special rules on agriculture subsidies, on customs matters, on state trading enterprises actions, on standards; the GATT contains flexibilities for preferences for development or with regional trading partners, and for the use of policies other

²¹⁷ 'WTO Members and Observers'

<https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm>.

²¹⁸ Marceau Gabrielle, 'The WTO in the Emerging Energy Governance Debate'

<https://www.wto.org/english/res_e/publications_e/wtr10_forum_e/wtr10_marceau_e.htm>
accessed 21 January 2018.

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than trade (like the protection of the environment). All these provisions would be applicable to trade in natural resources or trade in energy when in product form when assessing the compatibility of governmental measures affecting trade opportunities.²¹⁹ However, WTO fails to provide universal/global governance over all energy-related trade. Moreover, the WTO rules are fully applicable to trade in energy as well as to energy goods and services.²²⁰

It could be argued that WTO positively contributes in enhancing global energy security through facilitating energy trade among a wide range of members. The free and non-discriminated trade of energy also has impacts and outcomes for wider access to energy carriers and as a result a more viable and affordable access to energy in global context.

From the institutional point of view, a more integrated global energy governance firstly requires a balance between unidirectional instruments like OPEC or IEA and furtherly a new paradigm that defines and strengthens common interests concerns of all components of the system and gather all the actors around the same table. This scenario requires a control mechanisms over unidirectional instruments that weaken their position in favour of a relatively more integrated governance.

4.1.3. The Post Paris Agreement Era, Impacts of Climate Governance on Energy Governance

Paris agreement is the result of long and sophisticated post Kyoto efforts to reach a universal binding mechanism tackling climate change. There is a wide range of discussions over many different aspects of Paris Agreements and the influences it may impose in global scope. Despite the substantive debates over the content of the Agreement, by ignoring the recent decision of the USA to withdraw from the deal, it offers a unique characteristic of inclusivity of all members of international community, an attribute that as discussed widely in this section could not be found in any other energy related documents. It is true that the Agreement essentially deals

²¹⁹ *ibid.*

²²⁰ Leal-Arcas and Filis (n 166) 22.

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with climate governance and environmental policies, however, many different regulations set by the Agreement would impact the energy trends and developments and the governance of the energy in a global context. These influences could be categorized to two groups. Firstly, the direct rules, regulations and concerns that the Agreement set for energy sector, and secondly the indirect impacts of the environmental and climate policies that is expected to be realized by the common and differentiated responsibilities of the members on energy governance.

As was discussed in the introduction and seen in this chapter, energy law as a novel legal domain has been subject to considerable research in academia. Moreover, due to the significance of the energy sector, and the vast dimensions of energy market, rather considering the energy law as an independent discipline or not, it has been and it is a considerable domain of law in practice. Same as many other fields of law, the formulization and codifications of the substantive legal outcomes and instruments in national, multinational and international sphere could contribute in gradual development of energy law.

Considering the fragmentation of the energy governance that discussed before, the genesis of a universal legal instrument determining various aspects of energy governance in global scope could be considered as an ideal option. This agreement potentially could determine the rules that may apply to the trade of energy carriers, banning the disturbance of supply, regulating investments, taking the environmental concerns into account, and tackling climate change.

The aforementioned principles which has been formed in various legal disciplines, may constitute the common legal grounds and norms required for such instruments. However, these existing legal basis are not proportionate to an inclusive and global legal mechanisms. From the seven principles addressed, *energy justice* remains as a theoretical, and philosophical topic without current practical implications. However, it certainly could contribute in formation of new legal norms in the future. The principle of *access to modern energy services* could be described as a norm appreciated by various soft law mechanisms. The direct link between the modern access to energy and substantially important social issues like poverty is undeniable. But, the question that to what extend these soft mechanism could alter

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this principle to an international driver remains in place. We can argue that the principle of *security* benefits the highest level of attention in universal scale. Rarely we could find a country with energy regulatory mechanisms not addressing the energy security because of the essential role that the energy supply plays in economies. Nevertheless, under the current circumstances, it is hard to imagine an international consensus over ensuring the security of energy systems due to the very different nature of the security necessities and even definitions from a country and region to another. While in many cases, the security interests of key global players contradict with one another, ensuring the security remains in national and regional levels. The current technological innovations and development of renewable energies are among the reasons approaching the supply and demand-oriented security policies. This could approach the view to security in global scope in future. From the mentioned principles of energy law, *principle of prudent, rational and sustainable use of natural resources* and *principle of the Protection of the Environment, Human Health & Combatting Climate Change* are the only principles enshrined in the universal treaty law. The extra territorial nature of many of environmental harms caused by energy sector, and the impacts of climate change in global sphere could make the sustainability principle as the key legal norm with universal consensus.

4.2 Chapter Conclusion

Most of the current energy related instruments in global scope has formed as a response to certain common concerns of a group of states, in most cases with conflicts in interests. The current system could be defined as a non-integrated and non-harmonized patchwork of a variety of legal and institutional mechanisms. This is the case about almost most of multilateral energy related agreements such as: formation of OPEC as a respond to losing the interests of oil reach states against politically and economically powerful importers, formation of IEA as a respond to the insecurity that could be imposed by major oil exporters against the major importers, formation of GECF to respond to the fluctuations of natural gas prices. Therefore, one of the major challenges of the current system is the *lack of integrity* and even *controversial nature of the existing instruments*.

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Newly developed organizations like IEF and International Energy Charter are instances of initiatives looking for approaching the energy policies of the aforementioned blocks. However, these instruments lack a legally binding mechanism and remain as political bodies that under the best scenario could contribute in enhancing the international dialogue among states. Hence, the other challenge in existing system could be addressed as the inefficiency of the inclusive mechanisms. The other major challenge of energy governance is the substantive shortcoming of the inclusive instruments. WTO domain as instance includes most of the states, however the related trade regulations and environmental and security implications of WTO on energy system is highly faces substantive shortcomings. This is the same scenario about the Paris Agreement. While the implementation of agreement could potentially contribute in achieving a more integrated global governance of energy, all of the concerns of current energy system is not covered in the document as the document naturally address the environmental and climate issues.

Under the current circumstances, the international actors lack the political will to move towards achieving a comprehensive mechanism to govern energy in a manner that covers all of the aforementioned concerns. Moreover, the energy law as a legal discipline hasn't developed to the extend to provide a global consensus over the principles that govern the energy in international sphere. Therefore, the path to move towards a more integrated and more just governance of energy market could be defined as enhancing and improving the existing more inclusive and more comprehensive instruments. In this regard, expansion of the membership scope of International Energy Charter that contain several promising substantive implications and meanwhile strengthening the field covered by the Charter through respective protocols could be a practical recommendation.

Similarly, the compliance of the members to Paris Agreements to its objectives, and implementation of the members' NDCs could be the other solution to be followed in the international level. The unique attribute of the Paris Agreement is that it deals with the common concern of international community as a whole. From the hydrocarbon rich to the developed countries and to the countries with a poor energy industry, non are exempt of the destructive impacts of climate change. For instance,

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while a global energy actor like Iran may be reluctant to participate in many energy related trade agreements, it would welcome environmental initiatives as it considers many of the harms resulted by the climate change as destructive to its nature and citizens in a way which is not compensable with millions of dollars expenditures fed by hydrocarbon export incomes.

Chapter 5. European Energy Union and Europeanization of Energy Law and Policy Beyond the Members

Energy has been a crucial issue in the contemporary history of the Europe. The establishment of the European Coal and Steel Community dealing with the coal production as the primary Europe's energy source after the Second World War, and the establishment of European Atomic Energy Community following the Suez crisis represents the importance of the energy as a key pillar of the integration of Europe.²²¹ Following the establishment of the European Union, energy has been one of the main areas of the legislation. However, the genesis of the mandatory and comprehensive European energy policy was formed on 27 October 2005 in an informal European Council meeting in Hampton Court.²²² The European energy law combining different elements of wide areas of legal fields. Therefore, a great deal of energy legislation targeted at market liberalization, environmental issues, climate change, antitrust and state aid rules which, inter alia, constitute EU energy law.²²³ Later, the Lisbon Treaty formalized the specific energy policy provision under the Article 194 of the Treaty on the Functioning of the European Union (TFEU).²²⁴ Article 194 determines the EU energy union pathway and while emphasizing on the establishment and functioning of the internal market by considering the need to preserve and improve the environment, orders for the three EU energy principles of competitiveness, sustainability and supply security.²²⁵

With the second decade of the new millennium came a series of shocks to global politics that forced the EU to reconsider its liberal approach to international political

²²¹ Maya Jegen, 'Energy Policy in the European Union: The Power and Limits of Discourse' [2014] *Les Cahiers européens de Sciences Po* 21, 4 <https://www.sciencespo.fr/centre-etudes-europeennes/sites/sciencespo.fr/centre-etudes-europeennes/files/cahiers_europeens_2014_02_maya.jegen_.pdf>.

²²² Rafael Leal-Arcas, 'The European Energy Union' [2016] *The quest for secure, affordable and sustainable energy. European Energy Strategy Studies, CLAYES&CASTELS* 15.

²²³ Irakli Samkharadze, 'Europeanization of Energy Law and Policy beyond the Member States: The Case of Georgia' (2019) 130 *Energy Policy* 1, 2 <<https://doi.org/10.1016/j.enpol.2019.03.019>>.

²²⁴ Leal-Arcas (n 222) 15.

²²⁵ Consolidated version of the Treaty on the Functioning of the European Union Article 194.

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economy. The increasingly assertive use of economic power by Russia and China, combined with the new US president's challenge to international trading regimes and the British decision to leave the EU, means that the world confronting the EU in 2018 is quite different from the more benign international context of only half a decade earlier. This applies not least to the world of energy, where concerns about oil and gas supplies are increasingly linked to worries about Russia's geopolitical agenda. This chapter explores the range of strategies available to the EU—from soft normative power to hard mercantilism—and concludes that, if the EU wishes to exercise any kind of international leadership in the energy sector, it must choose between assertive use of its regulatory power and more muscular use of its economic power.²²⁶

5.1. Developments of the EU Energy Policies

In 2010 the EU adopted the “2020 energy strategy”. This strategy aimed to reduce its greenhouse gas emissions by at least 20%, increase the share of renewable energy to at least 20% of consumption, and achieve energy savings of 20% or more. This strategy also requires the all EU members to achieve a 10% share of renewable energy in their transport sector. The Energy 2020 strategy for competitive, sustainable and secure energy sets targets to help the EU combat climate change and air pollution. The strategy also helps the EU to decrease its dependence on foreign fossil fuels while keeping energy affordable for consumers and businesses.²²⁷

The 2050 energy roadmap adopted in 2011 could be considered as the first EU strategy for the total decarbonization of energy system in the long-term(2050) outlook. The roadmap was noted by the Council in its conclusions of 17 May 2011, and endorsed by the European Parliament in its resolution of 15 March 2012. This strategy calls for reducing greenhouse gas emissions by 80-95%, when compared to 1990 levels, by 2050. Same as all the other EU energy policies, the Energy

²²⁶ Andreas Goldthau and Nick Sitter, ‘Regulatory or Market Power Europe? EU Leadership Models for International Energy Governance’, *New Political Economy of Energy in Europe* (Springer 2019).

²²⁷ ‘EUR-Lex - 52010DC0639 - EN - EUR-Lex’ <<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1409650806265&uri=CELEX:52010DC0639>> accessed 2 January 2020.

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Roadmap 2050 is based on the energy trilemma approach and explores the transition of the energy system in ways that would be compatible with this greenhouse gas reductions target while also increasing competitiveness and security of supply. The strategy requires policies that promote a stable business climate which encourages low-carbon investments.²²⁸

The 2030 Framework for climate and energy, adopted in October 2014 the European Council agreed on a new including EU-wide targets and policy objectives for the period between 2020 and 2030. This was based on an initial Commission communication on a policy framework for climate and energy from 2020 to 2030 published in January 2014.²²⁹ Further, The European Council adopted conclusions on the 2030 framework in March 2014 and took stock of progress at its meeting in June 2014. EU leaders also discussed the Commission's energy security strategy, which is closely linked to the 2030 framework. the European Council adopted conclusions, and in particular endorsed four important targets. First, a binding EU target of at least 40% less greenhouse gas emissions by 2030, compared to 1990. Second, a target, binding at EU level, of at least 27% renewable energy consumption in 2030. Third, an indicative target at EU level of at least 27% improvement in energy efficiency in 2030. Fourth, support the completion of the internal energy market by achieving the existing electricity interconnection target of 10% as a matter of urgency no later than 2020, in particular for the Baltic states and the Iberian Peninsula, and the objective of arriving at a 15% target by 2030.²³⁰ The 2030 Framework covers the EU's nationally determined contribution (NDC) under the Paris Agreement.²³¹

²²⁸ 'EUR-Lex - 52011DC0885 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/ALL/;ELX_SESSIONID=pXNYJKSFbLwdq5JBWQ9CvYWYJxD9RF4mnS3ctywT2xXmFYhlnIW1!-868768807?uri=CELEX:52011DC0885> accessed 2 January 2020.

²²⁹ 'EUR-Lex - 52014DC0015 - EN - EUR-Lex' <<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576151570629&uri=CELEX:52014DC0015>> accessed 2 January 2020.

²³⁰ 'The 2030 Climate and Energy Framework' (2016) <<https://www.consilium.europa.eu/en/policies/climate-change/2030-climate-and-energy-framework/>> accessed 3 January 2020.

²³¹ 'Paris Agreement | Climate Action' <https://ec.europa.eu/clima/policies/international/negotiations/paris_en> accessed 3 January 2020.

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As was seen, security is one of the main concerns of the energy policy in EU. Despite all the improvements in increasing the share of local resources and efficiency, EU is considerably relying on the imports. The geopolitical tensions in last few decade and specially the Russian Ukraine crisis have altered the security options to the top of the EU energy policy priorities. The European Commission released its Energy Security Strategy in May 2014, and the European Council reached conclusions on the subject in June 2014 and October 2104. The strategy served as a building block for the energy union strategy.²³² This strategy aimed at securing a stable and not interrupted energy supply within the EU by proposes actions for strengthening emergency and solidarity mechanisms, and for protecting critical infrastructure. The strategy calls for completing the missing infrastructure links that consolidate the internal energy market. In case of an extra territorial disruption like the 2014 Ukraine crisis, this would enable quick response by directing energy flows across the EU whenever and wherever necessary.²³³

The latest update in EU energy policy is the Clean energy for all Europeans package. In the words of the European Commission, the EU has agreed a comprehensive update of its energy policy framework to facilitate the transition away from fossil fuels towards cleaner energy and to deliver on the EU's Paris Agreement commitments for reducing greenhouse gas emissions. The Commission considers the package as a significant step towards the implementation of the energy union strategy, adopted in 2015. The Package consists of eight legislative acts. After political agreement by the Council and the European Parliament in 2018 and early 2019, enabling all of the new rules to be in force by mid-2019. The EU countries have 1-2 years to transpose the new directives into national law. The package follows the former decarbonization policies and seeks the carbon neutrality objective by 2050. The Package consists of certain objectives for energy

²³² 'EUR-Lex - 52014DC0330 - EN - EUR-Lex' <<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52014DC0330&qid=1407855611566>> accessed 2 January 2020.

²³³ Ken'ichi Matsumoto, Michalis Doumpos and Kostas Andriosopoulos, 'Historical Energy Security Performance in EU Countries' (2018) 82 *Renewable and Sustainable Energy Reviews* 1737, 1738 <<https://doi.org/10.1016/j.rser.2017.06.058>>.

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performance in buildings, development of renewable energies, improvement of energy efficiency, and reform of electricity market design.²³⁴

According to the data provided by the Commission, buildings are responsible for approximately 40% of energy consumption and 36% of CO₂ emissions in the EU, making them the single largest energy consumer in Europe. As part of the Package, the new building energy performance directives requires new measures and standards and make the energy performance certificates obligatory for sale and rental of buildings.²³⁵

In line with the objectives of the package, the renewable energy directive also updated and entered into force in December 2018. The directive set a binding target of 32% for renewable energy sources in the EU's energy mix by 2030.²³⁶ The Directive requires the members to draft a 10-year National Energy & Climate Plans (NECPs) for 2021-2030, determining their national policies for meeting the 2030 objectives.²³⁷

Improvement of energy efficiency is also one of the main targets of the package. In the word of the Commission, putting energy efficiency first is a key objective in the package, as energy savings are the easiest way of saving money for consumers and for reducing greenhouse gas emissions. By approval of the amending directive on energy efficiency that has been in place since December 2018²³⁸, the EU has set binding targets of at least 32.5% energy efficiency by 2030, relative to a 'business

²³⁴ 'Clean Energy for All Europeans Package | Energy' <<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>> accessed 2 January 2020.

²³⁵ 'Energy Performance of Buildings Directive | Energy' <<https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-performance-of-buildings/energy-performance-buildings-directive>> accessed 3 January 2020.

²³⁶ 'EUR-Lex - 32018L2001 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC> accessed 3 January 2020.

²³⁷ 'Renewable Energy Directive' <<https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive/overview>> accessed 3 January 2020.

²³⁸ 'EUR-Lex - 32018L2002 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0210.01.ENG&toc=OJ:L:2018:328:TOC> accessed 3 January 2020.

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as usual' scenario. Same as the renewable energy objectives, under the new Governance rules, each Member States is required to set out a 10-year integrated National energy & climate plan (NECP) for 2021-2030, outlining how it intends to meet the 2030 targets for energy efficiency.²³⁹

One of the most important contents of the package is the new regulations set for the common electricity market. In the words of the commission, energy can be produced in one EU country and delivered to consumers in another. This keeps prices in check by creating competition and allowing consumers to choose energy suppliers.²⁴⁰ The electricity market design elements consist of four dossiers a new electricity regulation, and amending electricity directive, risk preparedness and a regulation outlining a stronger role for the Agency for the Cooperation of Energy Regulators (ACER).²⁴¹

Moreover, the package includes a robust governance system for the energy union, through which each Member State is required to draft integrated 10-year national energy and climate plans (NECPs) for 2021 to 2030. The NECPs outline how EU countries will achieve their respective targets on all dimensions of the energy union, including a longer-term view towards 2050. The new governance Regulation has come into force since December 2018,²⁴² and all members have submitted their draft NECPs by early 2019. As required under the rules, the Commission published an analysis of each draft plan with recommendations to be taken into account, as EU countries seek to finalise the NECPs by the end of 2019.²⁴³

²³⁹ 'EU 2020 Target for Energy Efficiency | Energy' <<https://ec.europa.eu/energy/en/topics/energy-efficiency/targets-directive-and-rules/eu-targets-energy-efficiency>> accessed 3 January 2020.

²⁴⁰ 'Electricity Market Design' <<https://ec.europa.eu/energy/en/topics/markets-and-consumers/market-legislation/electricity-market-design>> accessed 3 January 2020.

²⁴¹ 'Clean Energy for All Europeans Package | Energy' (n 234).

²⁴² 'EUR-Lex - 32018R1999 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0001.01.ENG&toc=OJ:L:2018:328:TOC> accessed 3 January 2020.

²⁴³ 'Clean Energy for All Europeans Package | Energy' (n 234).

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In addition to the legal acts in the Package, the Commission has started a number of non-legislative initiatives aimed at facilitating the clean energy transition and ensuring that it is a fair transition. These include, the coal regions in transition, the clean energy for EU islands initiative, measures to define and better monitor energy poverty in Europe.²⁴⁴

The policy package is a holistic set of firm measures in all sectors. The main focus of the transition roadmap set by the Package are energy efficiency and renewable energy sources. Relatively, decarbonisation of power generation and the transport sector are key elements. The electrification of the fleet of light duty vehicles requires changes in the infrastructure (building of recharging) which is dependent on the investments by the individuals. Regarding the efficiency measures, the renovation of buildings requires considerable costs for households, which is expected to be recovered during the lifetime of the investments by fuel savings.²⁴⁵

A variety of other technologies such as use of energy saving appliances, low emitting vehicles (such as plug-ins and electric ones) and high efficient industrial equipment are also similarly require investments. The investment expenditures are expected to rise considerably in the decade 2020–30, a decade which has a crucial role to play in the transition. This shift towards capital intensive equipment can be challenging for low-income classes. However, these required technology progress can, at least partly, offset the increase in the energy costs in the long term. In power generation, a significant part of the capital intensiveness is related to development of infrastructure, including recharging of batteries, large-scale grids for the renewable energy sources and smart systems to support decentralized generation and demand response. Developing this infrastructure at a large scale is also a challenge requiring innovative financing approaches. All these developments are expected to occur smoothly and during the time of this transition. The power

²⁴⁴ *ibid.*

²⁴⁵ Pantelis Capros and others, 'Outlook of the EU Energy System up to 2050: The Case of Scenarios Prepared for European Commission's "Clean Energy for All Europeans" Package Using the PRIMES Model' (2018) 22 *Energy Strategy Reviews* 255, 262–263 <<https://doi.org/10.1016/j.esr.2018.06.009>>.

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generation sector is estimated to face a considerable restructuring towards the dominance of variable renewables.²⁴⁶

As was seen, the energy trilemma pillars and the strategy of formation of the energy union has been the backbone of the EU energy policy making and the European Commission has relatively been successful in justifying this approach to the Union level while it formerly was a policy domain which member states used to consider as a purely domestic one.²⁴⁷ One significant point in integration of these three dimensions in EU level could be described as the positive impacts of them on each other. E.g., development of renewable energies as essentially a sustainable policy, encompasses the enhancement of the energy security.

Europe has played a leading role in development of renewable energies. According to the early estimates from the European Environment Agency (EEA), the share of renewable energy in gross final energy use in the EU from 9 per cent in 2005 has reached 18.0 % in 2018.²⁴⁸ This is due to mainly the economic incentives received by the renewable energy sector in the first half of the past decade. The EU is expected to comfortably achieve the targets set in 2020 energy and climate package. However, it is foreseen that current efforts are not sufficient to reach long-term goals of reductions in GHG emissions by 40% until 2030 and 80%–95% until 2050 (compared to 1990 levels). The targets set in the 2030 framework which is legally binding at the EU level faces a risk since EU Members may not be sufficiently encouraged to invest in development of renewables. The success in achieving the 2030 targets depends on the support mechanisms presented by members. Already, group of members like Germany, Italy and the Netherlands are moving towards the market based approach. However, auctions will need to be carried out on an EU

²⁴⁶ *ibid.*

²⁴⁷ Jegen (n 221) 3.

²⁴⁸ European Environment Agency (EEA), 'Share of Renewable Energy in Gross Final Energy Consumption in Europe' (2019) <<https://www.eea.europa.eu/data-and-maps/indicators/renewable-gross-final-energy-consumption-4/assessment-4>> accessed 4 January 2020.

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level as opposed to a Member State level in order to ensure that the 2030 RES targets are met.²⁴⁹

Along with development of the renewables, one of the other key elements of the EU energy strategies is the enhancement of energy efficiency. The corresponding directives requires a number of important provisions to be implemented by Member States in this regard, including: establishing binding national energy efficiency targets, adoption of the national building energy efficiency strategies, the need to renovation of public buildings, requiring to establish energy efficiency obligation plans, and provisions for auditing and metering.²⁵⁰ The recent Package, represents ambitious targets for the continues improvement of energy efficiency. The governance regulation recognizes the crucial role that energy efficiency must play in meeting the Union's 2030 and 2050 climate and energy targets, However, the regulation reveals a striking gap between assessment and enforcement. Moreover, Energy efficiency is recognized as a reliability resource, yet there is no requirement that capacity remuneration mechanisms allow energy efficiency to compete on comparable footing with supply side resources. It is expected that energy efficiency to remain as a challenging issue in the Union level.²⁵¹

One of the main challenges towards the successful achievement of the EU energy policies have been the confrontation between the energy interests of the Central, Eastern and Northern and Western Member States. The central, Eastern bloc has been reluctant to contribute in European decarbonisation strategy. The main challenge of the package in application could be to overcome the blockade in the European energy and climate policy along the East-West cleavage. The other challenge in achievement of the package targets could be the compliance delivery gaps due to the soft governance of the Commission that have been in place. However, Commission has inserted a strong tool into the regulation to ensure the

²⁴⁹ Abhishek Shivakumar and others, 'Drivers of Renewable Energy Deployment in the EU: An Analysis of Past Trends and Projections' (2019) 26 Energy Strategy Reviews 2,3,17.

²⁵⁰ See European Parliament, 'DIRECTIVE (EU) 2018/2002 on Energy Efficiency' (2018) 328 Official Journal of the European Union 210 <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2002&from=EN>>.

²⁵¹ Jan Rosenow and others, 'Assessing the European Union's Energy Efficiency Policy: Will the Winter Package Deliver on "Efficiency First"?' (2017) 26 Energy Research and Social Science 72, 79 <<http://dx.doi.org/10.1016/j.erss.2017.01.022>>.

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effective use of soft coordination by pursuing additional legislation at European level that the Commission inserted in the event of insufficient ambition on the part of Member States.²⁵²

Lack of fossil fuels and the security challenges of the oil and gas supply during the last few decades has encouraged the EU energy policies to firstly take ambitious policies for development of indigenous renewable resources, secondly to pursue energy efficiency improvement strategies, and thirdly to work on establishment and strengthening the energy union. Limiting the energy demand and integrating the principles of sustainability, security of supply, and affordability remains in the core of EU energy policy making.²⁵³

5.2 Chapter Conclusion

The successful implementation of the package and the changes in EU energy demand paradigm could have considerable implications for the major external energy suppliers. Most of the recent research on the International influences of EU's energy policy focuses on firstly, how the EU seeks to enforce its energy rules outside the union, for example, in the antitrust case against Gazprom or in the regulatory battles over the Nord Stream pipelines and secondly, on the geopolitics of energy, energy security and energy-related tensions with Russia. However, by the implementation of the package, EU climate policy probably cause far greater consequences for international energy relations than geopolitics or regulatory expansion. According to IEA, the EU imports more oil and gas than any country in the world. The decarbonization target could significantly affect demand for different types of fossil fuel, however the dimensions of this influence is hard to predict. Regarding the coal, the outlook for the the exports of current suppliers is bleak. Whereas it is is a flexible commodity, by gradual loose of the EU market, external suppliers of coal to the EU such as Australia, Colombia, South Africa and

²⁵² Marc Ringel and Michèle Knodt, 'The Governance of the European Energy Union: Efficiency, Effectiveness and Acceptance of the Winter Package 2016' (2018) 112 *Energy Policy* 209, 218–219.

²⁵³ Marie-Claire Aoun, 'European Energy Security Challenges and Global Energy Trends: Old Wine in New Bottles?' (2015) 15 *IAI Working Papers* 16
<<http://www.iai.it/sites/default/files/iaiw1503.pdf>>.

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the USA, are expected to attempt to redirect their coals to other markets. However, if other markets follow the EU in trying to phase out coal, this flexibility will not help.²⁵⁴

For the EU's oil suppliers, the situation is less clear but also bleak. However, to an even greater extent than coal, oil is a fungible, global commodity, and developments in the EU are therefore not necessarily decisive for oil producers. On the other hand, if disruptive technologies are developed for energy storage in the transport sector, oil consumption may be drastically reduced throughout the world and not only in the EU. The situation for natural gas is the same and even more ambivalent. Around 2011, there was considerable enthusiasm for natural gas as a bridge fuel to a low-carbon energy system, but some of this motivation has since abated. The future of natural gas is now less bright or at least less clear than it was then. China and Russia have agreed to expand their natural gas trade to 38 billion cubic metres (bcm) per year upon completion of the Power of Siberia pipeline. The Norwegian case is of particular interest because some 97 per cent of Norwegian oil and gas exports go to the EU. Moreover, Norway is by far the best positioned of the major external suppliers to adapt to the ongoing changes in EU energy demand..²⁵⁵

Despite the discussion on the EU energy policies, it could be argued that the EU's energy *acquis communautaire* has influenced the concept of energy policymaking beyond the EU domain.²⁵⁶ As was seen in the introduction part, the energy law is a novel and evolving legal domain. The impact of EU energy policies and its achievement on the global narratives of sustainability and GHG mitigation, and diversification, and security strategies seems undeniable. As was seen, the conceptualization of energy trilemma mainly developed in European level, has altered to a research and policy making index all around the world. Moreover, embracing the new concerns of energy systems like the energy justice or energy

²⁵⁴ Indra Overland, 'EU Climate and Energy Policy: New Challenges for Old Energy Suppliers', *New political economy of energy in Europe* (Springer 2019).

²⁵⁵ *ibid.*

²⁵⁶ Samkharadze (n 223) 1.

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poverty in EU energy initiatives²⁵⁷ is expected to contribute in the raise the attentions beyond the EU level.

²⁵⁷ For the EU Energy Poverty Observatory (EPOV) initiative see 'About the Observatory | EU Energy Poverty Observatory' <<https://www.energypoverty.eu/about/about-observatory>> accessed 7 January 2020.

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While addressing certain country's energy policies, a wide range of theories may be taken into consideration as an index. However, as it was discussed in the first chapter, this research provides an analysis of the Iranian energy law and policy in light of the energy trilemma pillars of sustainability, security, and affordability. This part of thesis in two related chapters provides an autopsy of the main energy policy documents and analyses the substantive shortcomings of the policies as well as their challenges in implementation.

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More than following mid-term or long-term policies, the Iranian energy sector has developed as a response to short-term needs. Already today, Iran is the world ninth consumer of energy and has the fourth highest level of natural gas consumption after the United States, Russia, and China.²⁵⁸ Moreover, Iran's energy intensity of GDP ranks fifth in the world.²⁵⁹ Meanwhile, the country is facing 5 to 8% increase of energy demand and 5.5% increase in electricity demand as the population and economy grow and access to a national grid of electricity and natural gas expands in the country.²⁶⁰

6.1 Legal nature of Policy in Iranian jurisdiction

Influenced by the continental European legal tradition, the Iranian law is governed by a hierarchical system. In this system, constitution as a fundamental rule has an absolute supremacy over laws enacted by parliament or more recently by regional councils established since 1998.

Nor the constitution neither other ordinary laws don't provide a precise definition of policy in Iranian legal system. However, the word Siasatha (policies) or

²⁵⁸ International Energy Agency, '(1990-2016) Statistics Data Browser' (n 12).

²⁵⁹ Enerdata (n 14).

²⁶⁰ Iran Ministry of Energy (n 11).

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Siasatgozari (policy making) have been mentioned in different laws and regulations including the Constitution.

Substantively talking, policy in Iranian legal system could be defined as *those* regulations outlining the public affair goals that have to be achieved by the government and also principles by which the government is guided in its management of different sectors.

From the legal technical, and formal point of view, the policies could be divided into non-binding polices subject to article 110 of the constitution and the other binding policies outlined by legislations.

Article 110 of the constitution reads:

“The authorities and responsibilities of the leader: 1. determining the overall policies of the Islamic Republic system of Iran after consultation with the Expediency Council²⁶¹; . . . ”²⁶²

General policies subject to Article 110 mainly addresses a set of objectives and ideals without regulating the arrangements required to achieve them. While the hierarchy between different sorts of laws and regulations passed by the parliament or bylaws adopted by the executory organ of the government are clarified by the laws, there isn't any consensus over the legal nature and credibility of the general policies ordered in line with the article 110 of the constitution by the supreme leader.²⁶³

The Guardian Council of the Constitution²⁶⁴ has not provided any interpretation of the legal nature of the polices decreed by the Supreme Leader. Accordingly,

²⁶¹ (in Persian: Majma Tashkhise Maslahate Nezam)

²⁶² ‘The Constitution of Islamic Republic of Iran 1979 as Amended on 1989’.

²⁶³ See. Ibrahim Mousazadeh, ‘Taamoli Dar Mafhoum, Mahiat va Jaygahe Hoghoughie Siasathaye Kollie Nezam)An Analysis of the Concept, Nature and Legal Status of General Policies of the System(In Persian)’ (2008) 17 Feqh va Hoghough 161.

²⁶⁴ Shoraye Negahban Ghanoune Asasi (Guardian Council of the Constitution) is political-legal body that has a double task of control of constitutionality of parliament enactments from one hand

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determining the legal nature of this kind of regulation, from one side and their application in real scope of Iranian legal system, in the other side constitute a practical as well as theoretical challenges for Iranian jurists. According to Esmaeili and TahanNazif, general policies of the system are determined based on the principles and goals of the Islamic Republic of Iran delimiting the frameworks and directions of the state in all governmental fields. Numerous ambiguities have been there in theory and practice due to the absence of a theoretical basis concerning these policies. An important and key issue which requires consideration and removing its ambiguity would involve various effects and results is the nature of these policies in IRI constitution.

In fact determination of the nature of these policies gives rise to removing ambiguities from the issues such as the position of these policies in IRI constitution and the quality of supervising over their proper enforcement. As a result, positive effects arising from it would be manifested or materialized in or through governmental powers and institutions. It is quite likely that this institution would turn into a model worthy of consideration in the constitutional law for the movement of a reasonable political system towards its objectives. Emsaeili and TahanNazif has interpreted these policies as Hokme Hokoumati(a binding command by the Supreme Leader under the absolute guardianship of the Islamic Jurist recognized by the Constitution).²⁶⁵ Mousazadeh, in contrast, argues that these general policies shall not be neither considered as laws or bylaws, neither Hokme Hokoumati, rather, they are of political nature. According to Mousazadeh, the Guardian Council is not entitled to avoid ratification of the Parliament enactments by considering them in violation of these general policies. In the same way, these

and consistency to Sharia Law (Article 4 of the Constitution) from the other hand. The Guardian Council is the competent organ to give opinion on the compatibility of the parliament enactments to the constitution provisions and principles. In case of the second emphasis of the parliament over its enactment following the opinion of the Guardian Council considering the enactment in contrast with the constitution and Sharia Law, the conflict case shall be resolved by the Majmae Tashkhise Maslahate Nezam (Expediency Discernment Council of the System)

²⁶⁵ Mohsen Esmaeili and Hadi Tahan Nazif, 'Analysis of the Nature of the Institution of the General Policies of the Islamic System in the Cionstitutional Law of the Islamic Republic of Iran(In Persian, Tahlile Mahiate Nahade Siasathaye Kollie Nezam Dar Hoghoughe Asasie Jomhourie Eslamie Iran)' (2009) 9 Islamic Lae Research Journal(In Persian: Pazhouheshname Hoghoughe Eslami) 93, 126–127 <http://ilr.journals.isu.ac.ir/article_1264.html>.

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policies could not be cited in the courts decisions.²⁶⁶ I believe that the Mousazadeh interpretation is a more accurate interpretation. Lack of reference to these policies in judicial decisions also strengthen this interpretation.

In some cases the content of ordered polices by the Supreme Leader under Article 110 has been later altered to inspiration of legislations by the parliament.²⁶⁷ Based on what was said, the binding legal policies in this context are those laws passed by the parliament that determine general goals of certain public affairs, and plans adopted by different specialized policy-making bodies established by the laws.

The other general consideration regarding the policies is the Impacts of International commitments on Iranian energy policies. According to Article 9 of Iranian Civil code, ratified international treaties shall to be invoked as an applicable law in Iranian legal system.²⁶⁸ Iran is a member of several international agreements. Generally talking, these agreements shall be divided to two categories of political and legal documents. According to Principle 77 of the Constitution international treaties requires the parliament ratification to enter into force in line with Article 9 of the Iranian Civil Code. After providing an analysis on legal nature and impacts of Iran's international commitments in regard to energy sector, their application in real scope of Iranian legal system will be assessed. This could constitute a practical as well as theoretical challenges for Iranian jurists. At the same, the ambiguous link between Iranian domestic law and international norms in this context could complicate more and more the substantive legal situation concerning energy sector.

6.2. General Policies and Administration of Energy Sector

As it was discussed in Chapter 2, the modern economy of Iran has been shaped around the development of petroleum sector and injection of petroleum incomes to

²⁶⁶ Mousazadeh (n 263) 173,174.

²⁶⁷ I.e. the general policies pertaining to Article 44 of the Constitution.

²⁶⁸ See: Mohammadjavad Shariatbagheri, 'Bartarie Moahedate Beinlolmelali Nesbat Be Ghavanine Adi(The Supremacy of International Treaties over Ordinary Laws)' (2012) 56 Shahid Beheshti University Journal of Legal Studies 279.

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the other sectors of economy by Pahlavi Government. As a consequence, the economy of Iran specially from 1950s to the end of 1970s altered to a state centred *rentier* economy. In the post-revolutionary era, a substantial change in restructuring the country's economy neither was followed nor was possible to realize in short term. The left communism ideology with a wide impact on different political oppositions to Pahlavi even intensified the designing of a structure in which the government more intensely dominates the economy. As a result, the corresponding principles of the new constitution after 1979 revolution have formed around the same approach to the economy.

Following the revolution, many of the major private industries have been expropriated believing that they have been formed and developed by some sort of corrupt relation with the Shah's regime officials. As a result, the private sector has been even more weakened during the first decade after the revolution. In the new constitution the mixed ownership divided to public, private and cooperative has been recognized, however, the public sector recognized as the main actor of the economy.²⁶⁹ The state-centred structure of Iran's economy could be found from article 44 of the Constitution. This article reads:

The economy of the Islamic Republic of Iran is to consist of three sectors: state, cooperative, and private, and is to be based on systematic and sound planning. The state sector is to include all large-scale and mother industries, foreign trade, major minerals, banking, insurance, power generation, dams and large-scale irrigation networks, radio and television, post, telegraph and telephone services, aviation, shipping, roads, railroads and the like; all these will be publicly owned and administered by the State...

As far as the energy related activities concerned, according to article 44, the petroleum sector as one of the major industries, and other major energy related

²⁶⁹ Seyed Ahmad Asgari Arjanki, 'Legal Principles of Privatization in Iranian Legal Order(In Persia: Mabani Hoghoughi Khosousisazi Dar Nezame Hoghoughie Iran)', *4th National Conference of Legal and Judicial Studies* (2017) 1–2.

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sectors including the electricity infrastructures, and petroleum resources as instance of mines and resources, are owned and managed by the state. As a result, following the revolution, governmental monopolies have been strengthened in many economic sectors including energy. This article has been considered for many years as an obstacle for development of many economic activities by private sector in Iran.²⁷⁰ By enactment of Law of Implementation of General Policies of Article 44(LIGPA44) in 2008, a substantial reform in the Iranian economic structure has been designed by ordering the privatization of many state owned enterprises and activities.

6.2.1. Privatization in the Absence of Competition

Many countries have taken a range of measures to reduce the role of government in the production and distribution of goods and services. Privatization of state-owned enterprises has become an important public policy issue of the late 1980s and early 1990s. Each country carries out privatization in accordance with its municipal laws. Privatization has been a successful experience in the term of promoting competition in some countries like Japan and the UK. This has created the belief that it promotes the competition and as a result improves the operating efficiency and profitability of the companies.²⁷¹

Privatization is subject to different economic, political, and legal discussions and different paradigms could be classified by the experiences of privatization in all around the world.²⁷² Freeman believes that the privatization not only not

²⁷⁰ *ibid* 3.

²⁷¹ Yacob Haile-Mariam, 'Privitization of State-Owned Enterprises and the Law: Issues and Problems' (1993) 7 *Emory Int'l L. Rev.* 35, 35–38.

²⁷² See, Judith Clifton, Francisco Comín and Daniel Díaz Fuentes, 'Privatizing Public Enterprises in the European Union 1960-2002: Ideological, Pragmatic, Inevitable?' (2006) 13 *Journal of European Public Policy* 736.

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compromising democratic norms of accountability, due process, equality and rationality, but in fact privatization might extend these norms.²⁷³

As discussed, role of state in Iranian economy has expanded following the 1979 revolution. After the Iraq-Iran war the infrastructures and the economy experienced a reconstruction period during the 1990s. Meanwhile, by the end of 1990s and beginning of 2000s, in a more stabilized ambient in term of the territorial security, boosting the economic growth has altered to the priority of the government. Soon, a consensus over liberalization of the economy through privatization of state owned enterprises has been formed among politicians and policy makers.²⁷⁴ It was believed that privatization could improve the efficiency of enterprises, boost the competition, and improve labour market.²⁷⁵ Also, it has been considered as one of the requirements for Iran's accession to WTO.²⁷⁶

By recognizing the privatization as a necessary measure and inspired from the international experiences, in June 2005 the Supreme Leader decreed *The General Policies Pertaining to Article 44 of the Constitution (2005 Decree)* in accordance with the principle 110(1) of the Constitution.²⁷⁷

The Article A of the 2005 Decree has set certain limits for the expansion of the governmental sector economic activities and calls for the development of the economy by non-governmental entities (both private and cooperative). According to Article A (1). the government does not have the right to enter to new economic

²⁷³ Jody Freeman, 'Extending Public Law Norms through Privatization' (2003) 116 Harvard Law Review 1285, 1285.

²⁷⁴ Atefe Ajari Aysak, 'Legal Analysis of the Possibility of Ownership Transfer of Public Properties, Comparative Study of Iran and French Law(In Persian: Barresi Hoghoughi Ghabeliate Khosousisazie Amvale Omoumi , Motale Tatbighie Hoghough Iran va Farance)' (2016) 78 In Persian: Faslname Pazhoheshname Bazargani 179, 197 <<http://ensani.ir/fa/article/367173>>.

²⁷⁵ Asgari Arjanki (n 269); Heidar Mohammadnezhad, 'Privitazation of Public Services in Economic Law System of Iran, France and England(In Persian: Khosousisazi Khadamate Omoumi Dar Nezame Hoghoughie Eghtesadie Iran, Farance va Engelestan)' (2018) 17 Administrative Law Scientific and research Quaterly(In Persian: Faslname Elmi Pazhouheshi Hoghoughie Edari) 75.

²⁷⁶

²⁷⁷ Supreme Leader, 'The General Policies Pertaining to Principle 44 of the Constitution of the Islamic Republic of Iran(In Persian: Siasathaye Kollie Asle 44)' (2005) <<http://farsi.khamenei.ir/news-content?id=165>> accessed 20 October 2019.

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activity outside those listed in the beginning of the Article 44. The government also required to transfer any kind of activity (including the continuation and profiting from pre-existing business activities that are not covered by the Article 44) to the cooperative, private, or non-governmental public entities, at the latest by the end of the fourth 5-year development plan (an annual decrease of 20% of activity). Considering the responsibility of the Islamic republic of Iran's system [*Nezam*] in the proper governance, initiation and continuation of necessary economic activities by the government, outside of the restrictions stipulated in the beginning of Principle 44, is allowed for a defined period based on recommendations by cabinet ministers and approval of the parliament. This law does not cover sensitive and confidential management and manufacture of products for the military, security aims, and armed forces, and their intelligence units.²⁷⁸

According to Article A (2) Investment, ownership, and management in the areas mentioned in the beginning of Principle 44 of the Constitution by public, non-governmental entities and organs, and the cooperative and private sectors is permissible in the following industries:

2.1 Large industries, "mother industries" (including large industries derivative of oil and gas), and large mines (excluding oil and gas).

2.2 Foreign commercial activities within the framework of national currency and trade policies.

2.3 Banking by public, non-governmental entities and cooperative, publicly-traded companies under limited share ownership (Limited Liability Partnership) of each shareholder as determined by the law.

2.4 Insurance.

²⁷⁸ *ibid.*

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2.5 Energy supply including production and import of electricity for internal consumption as well as export.

2.6 All businesses of post and communications excluding the mother communication networks; telecommunications frequency allocation management; the main [postal] networks for exchange, network analysis, and distribution management of basic postal services.

2.7 Roads and railroads.

2.8 Airlines (air transportation) and ship lines (sea transportation).

2.9 Construction and use of large dams and the large water distribution networks while maintaining all the privileges for the those who have the right to water.²⁷⁹

As mentioned above, oil and gas resources remains as an exception and even the domestic private entities couldn't achieve any concession right, ownership or partnership rights over the non-exploited hydrocarbon resources. According to the last part of Article A(2), the optimum balance of shares between government and non-governmental entities in the activities listed in the beginning of Principle 44 will be determined in accordance with the laws and in consideration of maintaining the authority of the government [in enforcing the rules related to the privatization process], the independence of the country, social justice, and economic growth and expansion.

As a general rule, the economy of Iran is divided to three State, Private and cooperative (Taavon) sectors. Cooperative or Taavon sector has driven from the Quranic and Islamic teachings. Islamic literature has many references to cooperation in Quran. In the Quran, the term cooperation is equivalent to Taavon and muslims are requested to cooperate in their community based in good faith and

²⁷⁹ Unofficial translation of the law : <http://irandataportal.syr.edu/the-general-policies-pertaining-to-principle-44-of-the-constitution-of-the-islamic-republic-of-iran>

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meeting God's satisfaction and are prohibited from performing illegal actions and disobeying God. Taavon is implied in some other concepts referred in the Quran, including bounding to vow, praying with a group of people together, Friday prayers, alms, giving donation, charity, interest-free loan, devotion, Jihad, encouraging good acts and discouraging bad acts, counselling and sacrifice. The relationship of people with each other is of great significance, and it is believed that Allah has allocated important topics in the Quran about this issue.²⁸⁰ The economic concept of Taavon in the constitution of Islamic republic of Iran is a narrow conceptualization of the broader concept in Islamic thoughts.

Article B of the Decree sets general policies for the Cooperative Sector. It firstly calls for Increasing the share of the cooperative sector in the country's economy to 25% by the end of the fifth 5-year program. Article B (2) requires determined effort by the government in supporting the establishment of cooperatives by the unemployed for the purpose of job creation. According to Article B (3) government required to provide supports for the creation and growth of cooperatives by policies such as tax exemptions, providing supportive credit facilities via all financial institutions in the country, and not collecting any extra fees from the cooperatives relative to the private sector. Article B (4) calls for Removing any limitations on active cooperatives in all economic sectors including banking and insurance. Article B (5) orders for establishment of the "Cooperative Development Bank" with investment from the government aimed at enhancing the share of the cooperative sector in the national economy. Article B (6) requires the government to provide the support for the cooperatives' ability to have access to markets and providing fair and comprehensive information to this sector.²⁸¹

Article B (7) calls for enacting the legal enforcement role of the government in implementing the ratified laws within the framework of providing policy and supervision. Avoiding interference in executive and management affairs of the

²⁸⁰ Alireza Irajpour, Fereshteh Ghaljaei and Mousa Alavi, 'Concept of Collaboration from the Islamic Perspective: The View Points for Health Providers' (2015) 54 *Journal of Religion and Health* 1800, 1802–1803 <<http://dx.doi.org/10.1007/s10943-014-9942-z>>.

²⁸¹ Supreme Leader (n 277).

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cooperatives. Article B (8) orders for the expansion of technical and professional training and other necessary support to increase efficiency and strength of the cooperatives. Article B (9) sets the flexibility and diversity mechanisms in methods of increasing investment and distributing shares in the cooperative sector. It also orders for taking proper measures so that new cooperatives (in addition to the already existing ones) may be established in the framework of a Limited Liability Partnership (LLP) with a limitation set on the number of shares of each owner as determined by the law. According to Article B (10) government supports have to be allocated for each cooperative by considering the proportion to the number of members. And finally, Article B (11) orders for establishing cooperatives across the nation to provide security for the bottom 30% of society in order to eliminate poverty.

The Article C. of the Decree deals with General Policies for Expansion of Non-Government Sectors by Transferring Government Activities and Businesses.

This article acknowledges the necessity of accelerating the nation's economic growth and expansion; while implementing the principles of social justice and poverty reduction within the framework of the national 20-year perspective; Article C is decreed in order to change the role of the government from direct ownership and management of businesses to a policy-making, supervisory, and advisory role.

Article C requires the government to:

- Strengthen the private and cooperative sectors and support them to be competitive in international markets.
- Prepare domestic businesses for a rational interaction with the rules of international commerce in a gradual and targeted process.
- Increase human capital in basic and expert knowledge.
- Expand and upgrade national standards and conform quality control systems with international standards.

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- Direct privatization with the aim of increasing productivity and competition and expansion of public ownership in accordance with the recommendation of the Expediency Council.²⁸²

Article D sets general policies for privatization. The article firstly defines certain requirements for the Privatization Process. The requirements are as followed:

1.1 Strengthening the private and cooperative sectors to prepare them for widespread economic activities and management of large economic entities.

1.2 Supervision and support of the relevant authorities after the transfer in order to realize the goals of the transfer.

1.3 Utilizing legitimate and lawful methods for privatization with an emphasis on the stock exchange; strengthening the infrastructure for privatization; establishing a transparent process for releasing information; creating equal opportunities for all; and taking advantage of incremental release of shares of large companies in the stock exchange in order to achieve the baseline price for the share.

1.4 Preventing conflict of interest of the officials and governmental decision makers in charge of the transfer process.

1.5 Observing the general policies pertaining to the cooperative sector in the transfers.

Article E of the order sets general policies for enforcing the application of the law and preventing monopolies: hereupon, the government firstly shall continue to enforce the laws of the country after entry of non-governmental sectors [into the national economy] by establishing new policies; implementing [existing] laws and regulations; and supervision, especially with respect to religious and legal edicts regarding non-governmental banks. Secondly, the government has to prevent

²⁸² Unofficial translation of the law : <http://irandataportal.syr.edu/the-general-policies-pertaining-to-principle-44-of-the-constitution-of-the-islamic-republic-of-iran>

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influence and domination of foreigners over the national economy. And thirdly the government has to prevent the creation of monopolies by non-governmental economic institutions by drafting regulatory legislations.

In 2008 the Law of Implementation of General Policies of Article 44(LIGPA44) was enacted by the Parliament with the aim of determining the details of the policies decreed by the Supreme Leader.

In 2005 decree and further 2008 Law, general bans of the Article 44 of the constitution were reformed and the government was required to privatize all of the state companies, economic activities, and institutions, except for the mentioned exceptions determined under group 3 of Article 2 of LIGPA44.

“Article 2) Economic activities in the Islamic Republic of Iran, comprising production, purchase and/or sale of goods or services, fall into three distinct groups: Group 1: All economic activities except the points mentioned in groups two and three of this article. Group 2: Economic activities cited early in the beginning of Principle 44 of the Constitution, excluding the points referred to in group three of this article. Group 3: Activities, institutions and companies falling under this group are: 1. Mother telecommunication networks and frequency allocation management, 2. Main networks providing exchanges, management of distribution of essential postal services, 3. Secret or necessary military, disciplinary and security production falling under the jurisdiction of armed forces general command, 4. National Iranian Oil Company and crude oil and gas drilling and production companies, 5. Oil and gas wells, 6. Central Bank of the Islamic Republic of Iran, Melli Bank of Iran, Sepah Bank, Industry and Mines Bank, Export Development Bank of Iran, Agricultural Bank, Housing Bank and Bank of Cooperative Development, 7. Central Insurance Company and Iran Insurance Company, 8. Main power transmission networks, 9. Civil Aviation Organization and the Ports and Shipping

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Organization of the Islamic Republic of Iran, 10. Dams and major irrigation networks, 11. Radio and Television.”²⁸³

Regarding the energy sector, The National Iranian Oil Company(NIOC), oil and gas reservoirs, and electricity transmission grid, are in the list of exceptions and shall remain in the hands of the State.²⁸⁴ Despite the results which will be analysed later, this significant policy document was looking for a reconstruction of the Iranian economy through privatization and decreasing governments domination and was seeking a substantial change in economic structure of the country with certain impacts on energy related activities. Privatization is an undergoing procedure, however Table... demonstrates the outlook of management of energy companies and activities following the implementation of LIGPA44.

Table 6. Administration and Ownership of Energy Activities under LIGPA44

Sector/Activity	LIGPA44	Notes
Upstream oil and gas	Excluded	Remains under the control of different subsidiaries of Ministry of Petroleum. Ministry of Petroleum could engage in certain type of contracts with local and foreign companies. ²⁸⁵
Downstream oil and gas	Subject to Privatization	New refineries could be developed by private sector. Existing refineries(under the management of National Iranian Oil Refining and Distribution Company) are subject to privatization

²⁸³ Law of Implementation of General Policies of Article 44(In Persian: Ghanoone Ejraye Siasathaye Kollie Asle 44) 2008.

²⁸⁴ *ibid.*

²⁸⁵ See Chapter 8.

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Electricity transmission grid	Excluded		Remain under the control of Iran Grid Management Company IGMC ²⁸⁶ (a subsidiary company of TAVANIR ²⁸⁷
Electricity generation	Subject to Privatization	to	New power plants shall be constructed by the private sector. Some of the state owned power plants are privatized and the rest are subject to privatization
Electricity distribution	Subject to Privatization	to	Some of the regional distribution companies are privatized, the rest are legally subject to privatization.

Iran Privatization Organization (IPO)²⁸⁸ a Subsidiary of Ministry of Finance established in 2009 by the decision of the Council of Ministers for the implementation of the LIGPA44 required by the law. The Privatization Organization has been incorporated based on Article 15 of the 3rd Economic, Social and Cultural Development Plan of the Islamic Republic of Iran which is confirmed to be effective in Article (9) of the 4th Social and Cultural Development Plan of the Islamic Republic of Iran -ratified in 2004-. The new Articles of Association of Privatization Organization –based on the "Law on Implementation of General

²⁸⁶ Following the restructuring of Iran's Electricity Industry and in compliance with Note 12 of Article (G) of the Budget Law of 2004, Iran Grid Management Company (IGMC) was established and became active in the second half of 2005. Article (G), note 12: "In 2004, Iran Power Transmission, Generation and Distribution Company (TAVANIR) is authorized to purchase all shares of one of its subsidiaries through its own financial resources, and transfer the entire tasks of national grid management, electricity transactions & transit, and establishing the electricity market to this company." The company's statute, proposed by the Ministry of Energy, confirmed by the state Management and Planning Organization (MPO), approved by the Council of Ministers, and reconfirmed by the Guardian Council, eventually was served to the Ministry of Energy by the Cabinet. See, Iran Grid Management Company, 'Our History, Iran Grid Management Company' <<https://www.igmc.ir/en>> accessed 18 November 2019.

²⁸⁷ Iran's Electric Power Generation Organization (TAVANIR). See, 'Iran's Electric Power Generation Organization(TAVANIR)' <<https://www.tavanir.org.ir>> accessed 20 November 2019.

²⁸⁸ See, 'Iranian Privatization Organization, Short History' <<https://en.ipoi.ir/index.jsp?fkeyid=&siteid=83&pageid=1338>> accessed 22 November 2019.

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Policies of Article (44) of the Constitution" - was ratified by Council of Ministers in 2009. This Organization has practically commenced its activities with the new objectives and tasks –based on the "Law on Implementation of General Policies of Article (44) of the Constitution"- since 2008. The Privatization Organization is a governmental company affiliated to the Ministry of Economic Affairs and Finance, having legal entity and financial independence. The president of IPO and the head of its Executive Board is the Deputy Minister of Economic Affairs and Finance. Since 2000 by now, the secretariat of the Divesting Board is located in Privatization Organization and based on the Law, the IPO is considered as the secretariat of the mentioned Board.²⁸⁹ Many of the state owned companies has been transferred by the IPO by offering their shares in the stock market, and through the public bids.

The privatization realized by IPO has been criticised by the economists and arguing that they haven't led to improvement of the enterprises efficiencies.²⁹⁰ There are several cases of corruption in the assignment and transfer of the state owned enterprises and in many cases rather than real privatization, these enterprises have been transferred to semi-governmental entities.²⁹¹

While the financially successful experiences of privatization around the world has encouraged the idea of following it as a paradigm for enhancing the competition and efficiency of the publicly owned enterprises, the social consequences are often ignored. Thus, even the firmest advocates of privatization were at a loss to explain its unpopularity in the United Kingdom as the birthplace of the idea in the Europe.²⁹² Similarly in Iran, in many cases, the privatizations have caused serious social consequences like the opposition and manifestation of the employees of the

²⁸⁹ See, Mohammadnezhad (n 275).

²⁹⁰ See, Soheyla Mahdavi, 'Performance Evaluation of State Owned Enterprise in Iran before and after Privatization Process Using Data Enveloped Analysis (DEA)(In Persian:Arzyabi Karaie Sherkathaye Dolati Khosousishode Dar Iran, Ghabl va Baad Az Vagozari Be Bakhshe Khosousi Ba Estef' (2015) 15 In persian: Motaleate Hesabdari va Hesabresi(Accounting and Audit Studies Journal) <<http://ensani.ir/fa/article/350975>>.

²⁹¹ E.g., The Mostazafan Foundation of Islamic Revolution, The Social Security Organisation

²⁹² Clifton, Comín and Fuentes (n 272) 737.

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enterprises. In some cases, not only the competition and efficiency improvement have not been realized, but also major and successful companies have ended up with bankruptcy and failure following the privatization.²⁹³

Moreover, rather than using the privatization as a tool for enhancing competition and boosting the enterprises' efficiency, privatization itself has been altered to the objective of the LIGPA44. In the amendments to the LIGPA44 in 2008, a chapter (Article 43 to 52) dedicated to the competition regulations and established the Competition Council as the competent regulatory organ dealing with competition related complaints.²⁹⁴ This chapter of LIGPA44 is known as the Competition Law in Iran.²⁹⁵ Article 45 forbids the certain acts which hinder competition including A. Hoarding and refusal to enter into transaction, b. Discriminatory pricing Supply or demand for a similar good or services in prices, C. Discrimination in trade conditions Discriminating trade with different persons under equal conditions, D. Aggressive price setting, E. Misleading verbal, written or practical comments portraying the competitors' goods or services as being of low quality, F. Forced sale or purchase, G. Supplying substandard goods or services that do not comply with compulsory standard limits specified by authoritative bodies, H. Intervening in internal affairs or dealings of a firm with a rival company Using the voting right, share transfer, disclosure of confidential information, I. Abusing dominant economic condition, J. Restricting re-sale prices, conditioning supply of goods or services to the purchaser, K. Unauthorized profession, abusing information and position of persons.²⁹⁶

²⁹³ See, 'Here's How Protests and Strikes Are Leading Change in Iran' <<https://www.atlanticcouncil.org/blogs/iransource/here-s-how-protests-and-strikes-are-leading-change-in-iran/>> accessed 20 November 2019.

²⁹⁴ See, Abdolreza Barzegar, 'Nature and Functions of the Competition Council in Iran Legal System (In Persian: Jaygah va Vazayefe Shoraye Reghabat Dar Nezame Hoghoughi Iran' (2014) 1 Administrative Law Scientific and research Quaterly (In Persian: Faslname Elmi Pazhouheshi Hoghoughi Edari) 147.

²⁹⁵ See, Kheloud Ahmed Al-busaidi, 'The Politics of Privatization in Iran' (2010) 14 Middle East Review of International Affairs 39 <<https://www.nber.org/papers/w15827.pdf>>; Asgari Arjanki (n 269).

²⁹⁶ Law of Implementation of General Policies of Article 44 (In Persian: Ghanoone Ejraye Siasathaye Kollie Asle 44) (n 283) Article 45.

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The Competition Law regulates the conduct and organization of business corporations, however it lacks any specific regulation for reforming the public services including energy monopolies. In a condition that huge amounts of subsidies are allocated by the government to energy careers, and while the state owned companies maintain the monopoly and remain as the major supplier and distributor of the energy careers, privatization could not be successful in establishing a rivalry process between the companies offering the products and services. Even, further to the possible privatization of the energy companies, under the current circumstances, the state monopolies will alter to the private monopolies.²⁹⁷

In energy sector, the end user prices of the majority of petroleum products and the end user electricity prices are subsidized and imperatively determined by the government. From 2012 and by the establishment of the Iran Energy Exchange (IRENEX)²⁹⁸, the prices of electricity of privatized power plants are to be purchased by TAVANIR is subject to the competition in this market.²⁹⁹ IRENEX also covers the trade of some of petroleum products. However, as mentioned, the energy career pricing still highly depends on the government.

²⁹⁷ See, Farhad Khodadad Kashi and Mohammad Nabi Shahiki Tash, 'Economic Structure and Scope of Competition Law' (An Iranian Case Study)' (2008) 9 Law & Politics Research Journal 143; Reza Tajarlo and Mohammadali Karbasian, 'Efficiency and Role of Law in the Iranian Competition Law Order' (2018) 47 University of Tehran Public Law Studies Quarterly 979; Amirabbas Alaeddini and Mehrzad Shiri, 'Competition Law in Iran and It's Developments in the Light of the General Policies of Article 44 of the Constitution (In Persian: Ghavaede Hoghoughe Reghabat Dar Iran va Tahavvolate An Dar Parto Siyasathaye Kollie Asle 44)' (2017) 16 Judgment Quaterly (Fasname Ghezavat) 119 <http://www.ghazavat.org/article_42461.html>.

²⁹⁸ Iran Energy Exchange operates with the aim of organizing, listing, supervising and easing the trade of energy carriers and energy carrier based securities, providing non-discriminatory and fair access of trading platforms to members, cooperation and coordination with financial institutions, companies, organizations and establishment of energy markets trustees such as ministries of Petroleum, Energy, Industry, Mine and Trade and the companies of National Iranian Oil Co., National Iranian Oil Refining & Distribution Co., National Iranian Petrochemical Co., Tavanir, Iran Grid Management Co., Iran Water Resources Management Co. and Environmental Protection Organization and also performing other duties assigned in the company statute. Iran Energy Exchange was established on July 7, 2012 with the license of the Supreme Council of Securities & Exchange as the fourth official exchange of the country and as a public stock company under the supervision of the Securities & Exchange Organization. See, 'IRENEX, About Us' <<http://en.irenex.ir/Irenex>> accessed 20 November 2019.

²⁹⁹ Except the power plants holding Energy Conversion Agreement (ECA) contract with TAVANIR.

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6.2.2. Integration of Energy Policy Making

Iranian energy policy framework as will be discussed in details, is a patchwork formed by a variety of laws and regulations pertaining directly and indirectly to the management of the energy cycle that are firstly passed for meeting the short term needs and in many cases are contrary and opposing one another.

lack of long-term energy policies and ungoverned increasing energy demand caused many challenges not only for domestic energy supply but also for oil and natural gas exports as the engine of country's economy. In the lack of a comprehensive energy policy, already today the massive amount of natural gas far beyond the global consumption standards dedicated to electricity generation and household, commercial and industrial uses. That is why despite the gradual development of the natural gas sector in recent decades, the country has not benefited from exports of natural gas to regional and global markets.

By recognizing the challenge of integration of energy policies among different bodies including Ministry of Petroleum, Ministry of Energy, Municipalities, Department of Environment and etc. in 2011 Law on Reforming Energy Consumption Pattern (hereafter LRECP) enacted. LRECP establishes a novel regulatory body called Supreme Energy Council³⁰⁰ (hereafter the Council) with the aim of integrating energy policies among different corresponding organizations. In April 2016, The Council adopted the National Energy Strategy Plan(hereafter the NESP) that could be considered as the first comprehensive national plan aiming to regulate energy policies in Iran with the long-term perspective of 2041. Before the adoption of this plan, energy policies in Iran were mainly made by Five Years Development Plan Acts. Inspired by global experiences, the plan has a general literature written on the basis of SWOT³⁰¹ analysis. The preamble of the NESP defines itself as a comprehensive plan for management and governance of country's

³⁰⁰ As there are several bodies dealing with energy sector in Iran including Ministry of Petroleum, Ministry of Energy, Department of Environment, Municipalities and many other organizations, the Council established to regulate energy policies among different organizations and to make integrity over energy policy-making.

³⁰¹ Strengths, Weaknesses, Opportunities, and Threats

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energy sector with the perspective of 2041. The Plan firstly analyses current challenges, secondly, determines main objectives and thirdly prescribes related strategies to achieve targets during the term of the plan.³⁰²

Part A of the Plan deals with determining current challenges of the energy sector in Iran. High energy intensity, Low energy efficiency, the negligible participation of private sector in energy market, dependency of annual budget to oil exports, subsidized prices of energy carriers, restriction to access international financial resources and new technologies, low rate of private investment in the sector, import and production of low energy efficient products, negligible share of renewable energy in country's energy supply and high rate of GHG emissions are examples of the general challenges recognized by the Plan.

The NESP orders for separation of authority and management duties in the energy sector with an emphasis on exercising the national sovereignty right over natural resources in the petroleum sector.

The government domination in both authority and management is one of the main challenges of Iranian petroleum sector. Ministry of petroleum not only exercises the sovereignty and authority over oil and gas activities but also is the exclusive body managing all the activities of the sector. This fact considered as one of the main challenges against the participation of private sector. While NESP is ordering for separation of authority and management or operation duties there is no promising prospect for any evolution in this case

The other contents of the plan will be analysed in accordance with their relation to the security, sustainability and equity policies.

Article 45 of 6th FYDPA oblige the Ministry of Energy and Oil to adopt the Executive Plan of Comprehensive National Energy Scheme(EPCNES) in line with the corresponding regulations and the NESP within a duration of one year from the

³⁰² Shoraye Aliye Energy(Supreme Energy Council), Sanade Mellie Rahbord Energie Keshvar(National Energy Strategy Plan) 2016.

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entry into force date of this law.³⁰³ It seems that by ordering for the adoption of EPCNES, the legislators are seeking two objectives, firstly to clarify the details of the NESP policies, and secondly by assigning this task jointly to Ministry of Energy and Oil and involving other governmental bodies, to approach and harmonize the two ministries and other corresponding institutions internal plans.

The proposal of the EPCNES has been subject to the delay³⁰⁴ and finally was submitted to the Cabinet of Ministers in September 2018.³⁰⁵ It was expected that EPCNES cover the shortcomings of the NESP in determining a detailed roadmap for development of energy sector. Nevertheless, EPCNES also has a general literature without defining possible scenarios. The document only addresses some general agendas and objectives without precisely ordering any details.

Despite the substantive discussion on the policies of these plans, determining the legal nature of this kind of regulation, from one side and their application in real scope of Iranian public law, on the other side constitute a practical as well as theoretical challenges for the jurists.

³⁰³ Ghanone Barname Sheshome Tose'e 1395-1399 (Sixth Islamic Republic of Iran's Development Plan Law 2017-2021) 2017 Article 44.

³⁰⁴ See 'Parliament's Energy Commission Ltimatum to MPO for the Submission of NECP' (2018) <<https://www.irna.ir/news/82907084>> accessed 10 September 2019.

³⁰⁵ Cabinet Office, 'The CNES Submitted to the Cabinet of Ministers for Approval' <<http://cabinetoffice.ir/fa/news/4071>> accessed 10 November 2019.

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As discussed in the first chapter, this thesis analyses the energy policies from the trilemma perspective. The review of current energy statistics and the index provided by the World Energy Council(WEC) indicates that Iranian energy system performance faces serious challenges in sustainability scoring 44 out of 100, and ranking 113 in the world.³⁰⁶

As was seen, trends shows that access to affordable energy has been considerably improved in last few decades, however, the energy supply remained highly dependent on fossil fuels. As a result, Iran faces an uncontrolled raise in energy consumption and a raising level of emissions with considerable consequences like air pollution in local level and in being ranked as tenth CO2 emitter in global level.

7.1. Energy Security

In its pre-modern use, energy for centuries was the source of handling main needs of human beings, such as heating, cooking and producing. Along with development of urbanization and civilization, industrial revolution highlighted the need of efficient and portable energy resources.³⁰⁷ Energy in the modern era is the backbone of the economies and almost all of our economic and daily life activities depends on the access to energy.³⁰⁸ As an important element of energy policy, the concept of energy security may vary from a country to another according to their availability of reliance on energy resources.

Energy demand has been growing in past few decades, particularly in the developing countries, making energy security is an integral part of national security.

³⁰⁶ World Energy Council, 'Energy Trilemma Index' (2019) <<https://trilemma.worldenergy.org/>> accessed 10 November 2019.

³⁰⁷ Reza Hafezi, Amir Naser Akhavan and Saeed Pakseresht, 'Projecting Plausible Futures for Iranian Oil and Gas Industries: Analyzing of Historical Strategies' (2017) 39 Journal of Natural Gas Science and Engineering 15, 15 <<http://dx.doi.org/10.1016/j.jngse.2016.12.028>>.

³⁰⁸ Thai Ha Le and Canh Phuc Nguyen, 'Is Energy Security a Driver for Economic Growth? Evidence from a Global Sample' (2019) 129 Energy Policy 436, 436 <<https://doi.org/10.1016/j.enpol.2019.02.038>>.

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Energy security is also an important element and the source of interdependence in international relations.³⁰⁹

The primary genesis of the concept formed around securing of energy resources supply. By this mean, energy security concept originated from oil supply instability in Europe during the Suez Crisis in 1956. After two oil crises in 1973 and 1979 triggered by the Yom Kippur War and the Iranian Revolution respectively, energy security was originally meant as a continuous supply of oil against geopolitical risks such as conflicts between or within nation state(s), especially in the Middle East region. Following these tensions, the energy security has been altered to a top priority for developed countries. As a response, International Energy Agency (IEA) was established by these developed countries in 1974 and pledged to build oil stockpiles in order to countervail oil supply restrictions by petroleum producing countries. Since the beginning of the 21st Century, three major incidents of 9/11 terrorism attack, Russia-Ukraine gas dispute of 2005-2006, and Hurricane Katrina have changed and expanded the dimensions of energy security concept. According to Irie, since the beginning of the 21st Century, the concept of energy security has expanded with the addition of new non-state actors and the inclusion of new threats to energy supply such as natural disasters, man-made disasters and cyber-attacks. Even though the stability of energy supply, which once was the core meaning of energy security, remains unchanged.³¹⁰

The domain and definition of the energy security term has not been clarified yet. According to Winzer, for some the main objective of energy security is the protection of the poor against commodity price volatility. Others emphasize on the importance of protecting the economy against disruptions of energy supplies, by allowing the prices of commodities to rise during periods of scarcity. For some people the goal of energy security is the reliable provision of fuels and the role of

³⁰⁹ L Proskuryakova, 'Updating Energy Security and Environmental Policy: Energy Security Theories Revisited' (2018) 223 *Journal of Environmental Management* 203, 203 <<https://doi.org/10.1016/j.jenvman.2018.06.016>>.

³¹⁰ Irie Kazutomo, 'The Evolution of the Energy Security Concept and APEC Energy Cooperation' [2017] *Meeting the Energy Demands of Emerging Economies, 40th IAEE International Conference*, June 18-21, 2017 38, 38 <internal-pdf://93.69.76.30/Irie_2016 - Evolution of ES concept.pdf>.

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nuclear energy is one of enhancing security. For others, energy security is concerned with a reduction of hazards from accidents and proliferation and the expansion of the nuclear industry is a potential threat to energy security. In the absence of a clear definition, energy security has thus become an umbrella term for many different policy goals. Despite these differences, there seems to be an agreement that security is concerned with risks. Winzer argues that the explicit and implicit definitions provided in the literature intersect with other concerns over energy policy including sustainability. Therefore Winzer suggests that the energy security in the term frequently used should best be relabeled to the less ambiguous term of 'energy supply continuity'. It is an umbrella term for the concepts of 'commodity supply continuity', 'service supply continuity' and resulting impacts on the 'continuity of the economy'. The additional meanings that are attached to the term of 'energy security' are largely contained in other policy goals.³¹¹

For the countries highly relying on oil exports like Iran and other OPEC members, and gas exporting countries like Russia and Qatar, the domain of the security concept could be extended to security of demand, meaning securing the continuous and not interrupted demand guaranteeing the exports of their product. Whereas the security of demand is a concern of the limited major oil and gas exporter states, it has been less embraced in the discussions and energy security as an essential pillar of energy policy both in academics and the international organizations document have been developed around the concern of the secure energy supply.³¹² Hence, in the analysis of the Iranian energy policies from the security point of view the broader concept of energy security will be taken into account.

NESP is the first Iranian legislation that directly uses the energy security term. As mentioned, part B determines the general objectives of the energy sector in 2041 horizon and Part C later determines the corresponding strategies that are in line with the objectives of the Plan. Part B(8) of NESP sets the *improvement of energy supply security in a reliable and sustainable manner* as one of the main targets. The energy

³¹¹ Christian Winzer, 'Conceptualizing Energy Security' (2012) 46 Energy Policy 36, 2,9.

³¹² See, Dike (n 186).

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security term has only once being explicitly referred to in NESP. However, many other contents of the document implicitly are dealing with energy security.

The corresponding strategies of the NESP for enhancement of energy security could be categorized as:

1. Maintaining and developing oil and gas exploration and production (Part B(2, 3, 13))
2. Improvement of energy efficiency, reform of subsidies and control of consumption (Part B(1,10, 13))
3. Diversification of energy supply sources by development of renewable and nuclear energies (Part B(9))

Considering the high reliance of energy supply on oil and gas, maintaining and developing the oil and gas production is a crucial policy of the NESP. Part A(2) considers the maturity and decline of the production rate of hydrocarbon reservoirs as a serious challenge caused by lack of using adequate recovery technologies. Therefore Part B(2) sets the improvement of the recovery of oil and gas reserves as one of the targets of the plan.

Part C (2) of directive directly orders oil and natural gas strategies. The following strategies have been ordered to be followed during the policy term in line with the targets sets in Part B. As mentioned, maintaining and developing oil and gas production are among the main targets of NESP. Therefore, Part C(2) accordingly requires:

1. *At least 5% per unit Increase of recovery rate of oil reservoirs by the end of 2041 through the implementation of enhanced oil recovery and maximum efficiency rate mechanisms.*

In fact, erosion and decline of the production rate of hydrocarbon reservoirs is a serious challenge to the energy security both for the supply of the national demand and maintaining the exports. As many Iranian hydrocarbon reservoirs are producing

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oil for many years and they have passed their primary production period, Iranian need to utilize secondary or tertiary oil production mechanisms in order to maintain oil production rates since the production rate of hydrocarbon reservoirs declines naturally after primary production times. Also, most of the Iranian reservoirs are of a naturally fractured type, which their natural ultimate recovery are lower than non-fractured reservoirs, so they need artificial drive mechanism to obtain reasonable ultimate recovery. Performing secondary or tertiary oil recovery mechanisms in a field scale not only need more manpower and workers but also need top-notch technologies and facilities. Furthermore, in most EOR processes a nonindigenous agent must be injected into the reservoir to push oil into a production well, for example in surfactant injection expensive chemical agents are injected into oil reservoirs. All aforementioned factors result in a higher cost per barrel of produced oil and require more investments. As an example, the oil recovered with aim of CO₂ injection costs around 40\$/bbl, while the naturally produced oil costs around 10-20\$/bbl based on labour cost and the country.³¹³

2- Development and maximum exploitation of all of cross-border oil and gas fields in the event of conserving national interests.

In addition to NESP, Article D(3) of LMPTD requires the Ministry of Petroleum to stimulate foreign and domestic investments for development and raise of the production from cross border oil and gas fields.³¹⁴

In the lack of mutual agreements that determine the production share of neighbors, a competition in expanding the production from trans-border oil and gas fields is in progress between Iran and the neighbor states. According to an Iran newspaper report, Iran has 28 trans-border oil and gas fields that could be exploited by at least Iran, and one of the neighbor countries, 18 of them are oil fields, 4 of them are gas

³¹³ SUNIL KOKAL and ABDULAZIZ AL-KAABI, 'EOR Challenges and Opportunities. S. Kokal, 2010' (2010) 12 World Petroleum Council: Official Publication 64, 64
<http://ep.npdc.mi.th/documents/P64-69_Kokal-Al_Kaabi.pdf> accessed 10 May 2017.

³¹⁴ Official Gazette of Islamic Republic of Iran No 15955 dated 19/02/1391(08 May 2012), Ghanoone Vazayef va Ekhtiarate Vezarate naft(Ministry of Petroleum Tasks and Authorities Law).

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fields, and the other 6 have both oil and gas reserves. 15 of these shared or trans-border reserves are offshore located in the Persian Gulf, and 13 others are onshore fields. According to Iran's land and sea borders, most of these common fields are shared by neighbour Arab countries; Iraq with 12 common fields is at the top of this list, followed by the United Arab Emirates (UAE) with 7 fields, Saudi Arabia with 4, Qatar with 2 and Oman, Kuwait and Turkmenistan with 1 field each.³¹⁵

While Iran has a competition with its neighbours for the development of these huge reserves, in the recent years most of the developing projects have faced delays. According to a report of the Iranian Centre for Strategic Research, many Iranian petroleum development projects have faced delay since 2009. From 2009 till the end of 2011, following the sanctions against Iranian nuclear program, 15 different foreign companies and investors left their projects in Iran.³¹⁶ Expanding the share of exploitation from trans-border fields is one of the main challenges of the Iranian government. This challenge has not only generated different development plans declared by the Petroleum Ministry but has also affected the legislation by the parliament. Legislators have considered this issue in the enactment of related petroleum regulations that will be discussed later.

3- Expanding exploration of oil and gas throughout the country with the aim of providing back-ups for the current oil and gas production.

As was seen in the Chapter 3, Iran holds some of the biggest proven oil and gas reservoirs. However, the energy policies requiring the Ministry of Petroleum to expand on the exploration oil and gas fields. The new explorations firstly provides the possibility of compensating the production decline of mature oil and gas fields, and moreover provides opportunities for development of the sector. As instance, in late 2019 a new giant oil field with has been explored in the country's south with over 53 billion barrels of crude. Some 53 billion barrels would be added to Iran's proven reserves of roughly 150 billion. The new oil field could become Iran's

³¹⁵ <<http://www.iran-newspaper.com/newspaper/page/6317/6/151601/0>> accessed 20 September 2016.

³¹⁶ Sayyadi Mohammad and Beraksheli Fereidoun, 'Asarate Kootahmoddat va Boland Moddate Tahrimhaye Beinolmelali Bar Bakhsh Energy Iran (Short Term and Long Term Impacts of International Sanctions on Iranian Energy Sector) [2012] Strategic Report I <http://www.csr.ir/files/fa/news/1395/6/3/415_716.pdf> accessed 10 May 2017.

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second-largest field after one containing 65 billion barrels in Ahvaz. The field is 2,400 square kilometers (925 square miles), with the deposit some 80 meters (260 feet) deep. Iran currently has the world's fourth-largest proven deposits of crude oil. New explorations, if proven could move Iran's position in the oil reserve holders ranking.³¹⁷

4- Increasing Iran's quota in OPEC and enhancing country's share of global markets with meanwhile considering maximum efficient production.

Since March 1982, members of the OPEC have established overall production ceilings with the aim of preventing the oversupply to the global market and allocated those ceilings among themselves. OPEC is not complying with an explicit formula determining the allocations to members. The production capacity is among the most important factors in determination of the quotas.³¹⁸ In addition to the production capacity, the efficiency and lower production costs are also factors which are taken into account in allocation of the quotas.³¹⁹ Increasing Iran's quota in OPEC has been set as one of the strategies of the oil sector, however NESP doesn't determine any detail on the subject.

6- Using different types of domestic and foreign financing mechanisms for implementation of oil and natural gas projects and enhancing the role of private sector.

Development of oil and gas fields requires huge amounts of investments and high technologies. Host states like Iran have their petroleum upstream and/or downstream sectors open to investment by private firms or the International Oil Companies (IOCs) through a range of agreement types. These agreements are adopted to reduce government exposure, by sharing the risks throughout between

³¹⁷ See, 'Iran President: New Oil Field Discovered With Over 50 Billion Barrels of Crude' <<https://time.com/5723456/iran-new-oil-field-crude/>> accessed 8 December 2019.

³¹⁸ John Gault and others, 'How Does OPEC Allocate Quotas?' (1999) 4 Journal of Energy Finance & Development 137, 137,146.

³¹⁹ Samuel J Okullo and Frédéric Reynès, 'Imperfect Cartelization in OPEC' (2016) 60 Energy Economics 333, 334 <<http://dx.doi.org/10.1016/j.eneco.2016.10.010>>.

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the host country and the investor and attracting the transfer of technology, expertise and capital from the IOCs.³²⁰ The legal framework for the investment in Iranian petroleum sector will be discussed in detail in Chapter 7.

7- Considering oil and gas by strategic approach as the stimulant engine of country's economy.

The world strategic is thrown around different parts and in the title of the NESP. However, NESP doesn't provide any clarification on the definition and circumstances of the *strategic approach*.

As was seen in chapter 3 In addition to supplying the majority portion of the domestic energy demand, oil exports form an important part of the total exports of the country. According to OPEC statistical review, in 2018, exports of petroleum products reached 60,198 million US dollars counting about 60 percent value of the total 107,435 million US dollars exports of the country.³²¹ It could be argued that the strategic approach required by NESP is an emphasis on maintaining the stability and development of oil and gas sector, because of the crucial role it plays on overall economy of Iran. In the same section dealing with oil and gas policies, two other policies of the NESP may help in clarification of the strategic approach. *11- Securing the demand for country's oil by partnership in foreign refineries* and *12- Adopting required measures in energy diplomacy with the aim of increasing country's share in global natural gas and oil products markets.*

Recent re-imposition of the sanctions by the US has significantly decreased the amounts of Iranian crude exports during the 2019. Over the past year, Iran's oil exports have come down drastically to around 500,000 barrels per day from 2.8 million bpd before the sanctions. In the politics domain, decreasing and annual budgets dependency has claimed by the officials.³²² However, whereas different

³²⁰ Abdulaziz Al-Attar and Osamah Alomair, 'Evaluation of Upstream Petroleum Agreements and Exploration and Production Costs' (2005) 29 OPEC Review 243, 245.

³²¹ OPEC, 'OPEC Annual Statistical Bulletin 2019' (n 53) 19,20.

³²² Hassan Saad, 'Can Iran Reduce Its Reliance on Oil?' <<https://www.trtworld.com/middle-east/can-iran-reduce-its-reliance-on-oil-31665>> accessed 10 November 2019.

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policies are requiring the expansion of oil and gas production, this paradigm shift could not be described as a chosen policy, rather it is the only possible option to resist against the sanctions.

8- Allotting natural gas to different sectors by considering the holistic national approach

As was discussed in Chapter 3, Iran holds huge reserves of the natural gas, and altered to the third worldwide natural gas producer. Currently over 90 percent of the massive amounts of produced natural gas being consumed locally. The expansion of natural gas network has been a national policy during the last few decades and currently over 90 percent of the whole population and many industries are connected to the network. but an overwhelming majority of its supply thus far has been absorbed by domestic demand. Space heating (29%), power generation (24%), non-petrochemical industries (15%), petrochemical industry (13%), reinjection for oil recovery (9%), and transportation(3%) constitute the largest consumers of natural gas in Iran.³²³

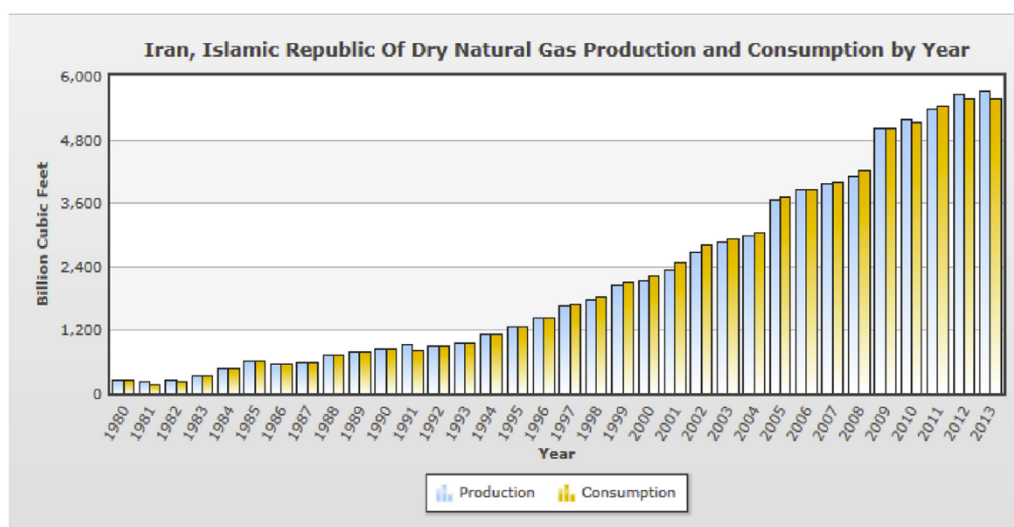
Moreover, the fuel of many of the power plants and industries which traditionally were using the fuel oil has been substituted by natural gas due to rapid development of the south pars field and the affordability, less amount of GHG emissions, and competitiveness of the natural gas. According to the governmental report to UNFCCC, natural gas has dominated as the main source of energy carrier in national fuel mix. Substitution of liquid fuels with natural gas is one of the main policies to move towards low carbon economy in national economy-wide.³²⁴

³²³ Pooya Azadi and others, 'The Outlook for Natural Gas, Electricity, and Renewable Energy in Iran' [2017] Stanford Iran 2040 Project 5 <https://iranian-studies.stanford.edu/sites/default/files/publications/the_outlook_for_natural_gas_electricity_and_renewable_energy_in_iran_2.pdf%0Awww.iranian-studies.stanford.edu/iran2040>.

³²⁴ Islamic Republic of Iran, 'Iran's Third National Communication to UNFCCC' (2017) 50,51 <[https://unfccc.int/sites/default/files/resource/Third National communication IRAN.pdf](https://unfccc.int/sites/default/files/resource/Third%20National%20communication%20IRAN.pdf)>.

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Figure 32. Iran's Gas Production and Consumption by the Year



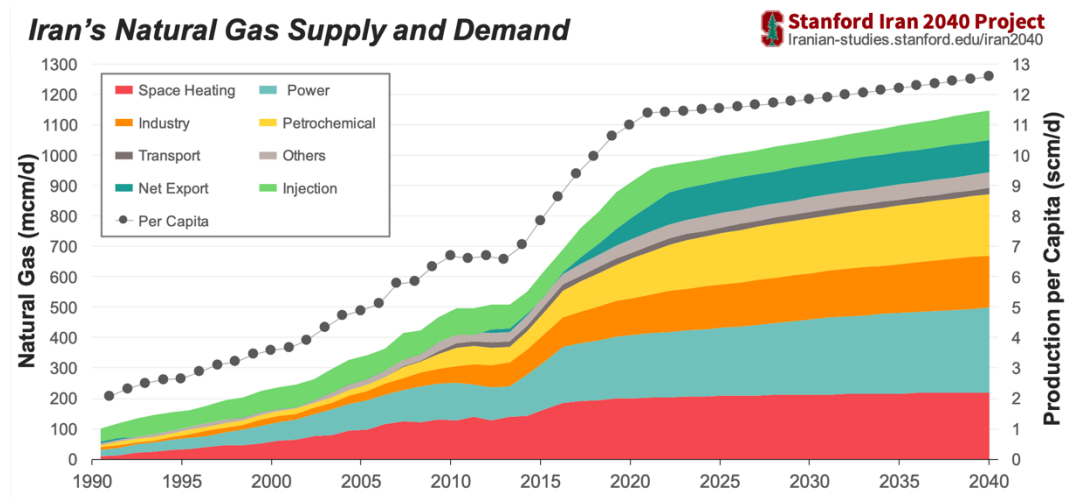
Source: US Energy Information Administration (EIA)

Low and subsidized domestic supply price of natural gas, in-appropriate, inefficient and abundant use of natural gas are among the factors that have led to the increase in domestic natural gas consumption. This amount of uncontrolled local consumption raises certain issues; on one hand, one may assume that increased natural gas consumption (comparing to the other fossil fuel alternatives like coal and fuel oil) for the economic and manufacturing activities will pose less environment damages, while on the other hand however, others have suggested that generally talking, massive resource extractives often crowds out other economic activities, especially manufacturing, and reduces the growth impact of other sectors of the economy. Thus, it is substantially important to examine how development and cheap access to natural gas resources affects the economic growth of Iran. Also, while natural gas demand may be able to affect economic growth, economic growth may also have effect on natural gas demand, as the strength of an economy can influence the energy market.³²⁵

³²⁵ Daniel Balsalobre-Lorente and others, 'A Road to Enhancements in Natural Gas Use in Iran: A Multivariate Modelling Approach' (2019) 64 Resources Policy 101485, 2,3
<<https://doi.org/10.1016/j.resourpol.2019.101485>>.

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Figure 33. Iran's Natural Gas Supply & Demand

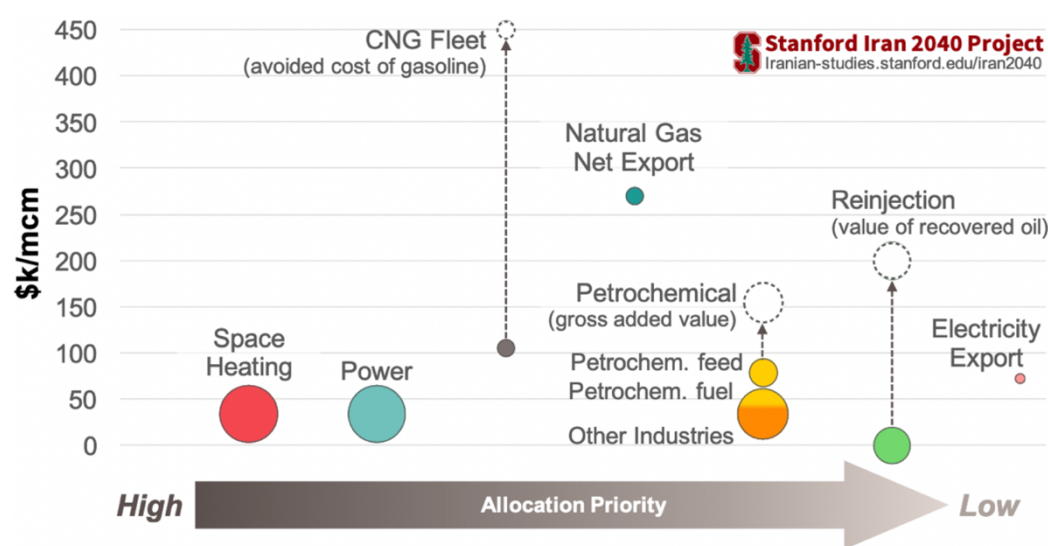


Source: Stanford Iran 2040 Project

The NESP orders for allocation of natural gas to different sectors based on the holistic national approach. However, neither the NESP itself nor other regulations don't determine a comprehensive and holistic approach to the natural gas as one of the country's most important energy sub sector i.e. to determine the outlook for the role of natural gas in energy and more generally in the whole economy of the country. Is the ongoing expansion of the production and local consumption of the natural gas is aimed by policy makers? Shall in line with the development of the sector, the domestic consumption of natural gas be limited in favour of expansion of the exports? What are the detail of natural gas allocation to transport, industrial and public uses?

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Figure 34. Iran's Natural Gas Allocation & Revenues



Source: Stanford Iran 2040 Project

There are questions that were expected to be clarified by the NESP and other corresponding policies. However, the NESP and other energy policies haven't provide any clear answer to these questions yet. Iran could potentially alter to a leading country in exportation of natural gas to domestic markets. The current importers like Iraq and Turkey are able to absorb larger amounts of the Iranian natural gas. Moreover, the shelved peace pipeline project could potentially bring back to the table. The expansion of natural gas exports could be translated to development of the country's exports, obtaining foreign exchange in favour of balancing the overall trade balance, and the economic growth. Moreover, the expansion of natural gas exports directly contributes in diversification of exports and also has considerable geopolitical consequences. However, under the current policies the natural gas roadmap remains unclear.

The abundant and cheap access to natural gas resources have led to the increase of the share of natural gas in supplying natural energy demand comparing to oil products. Whereas natural gas relatively produce less GHG emissions comparing to oil products, the substitution oil products with natural gas has contributed in reduction of the GHG emissions. However, it could be considered as an obstacle against the development of clean and renewable energies due to much less capitals

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required for the generation of the electricity(excluding the carbon and emissions' costs).

In addition to development of the oil and gas sector, part C(4) of the NESP sets certain policies regarding the improvement of security in electricity sector. Article 2 of the electricity strategies calls for improvement of security and reliability of national electricity network.

The other security oriented policy of the NESP is determined in Part C(4) pertaining to the nuclear sector. The first note orders for the implementation of national and international nuclear radiation standards.

The second note orders for securing the supply of the nuclear fuel required for the nuclear power plants. In 2010, Iran, in collaboration with Russia, loaded fuel on its first nuclear power plant at the west coast of the Persian Gulf Bushehr. Additionally, the Atomic Energy Organization of Iran (AEOI) called for vast exploration of uranium mines across the country to secure its growing demand for nuclear fuel.³²⁶

In addition to the NESP policies regarding the security, 6th FYDPA orders certain security oriented policies and objectives mainly regarding the security of supply. According to Article 48(F). and regarding the development of oil and gas capacities, Ministry of Oil is required to, 1. offer, oil and gas exploration, production, and operation (and not ownership) incentives to non-governmental entities, with a focus on trans-border fields and in line with the LIGPA44 policies. 2. By the end of the first year of this law, with the aim of enhancing the influence on the global oil and gas markets, the Ministry of Oil is required to increase its strategic oil and gas reserves with a focus on maintaining and developing oil and gas production capacities, especially in the transboundary fields.

³²⁶ Beheshti (n 154) 6351.

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Regarding the increase in power generation capacity, Article 48 (D) obliges the Ministry of Energy to add a 25,000 MW power generation capacity by enhancing non-governmental investments through the BOO and BOT agreement.

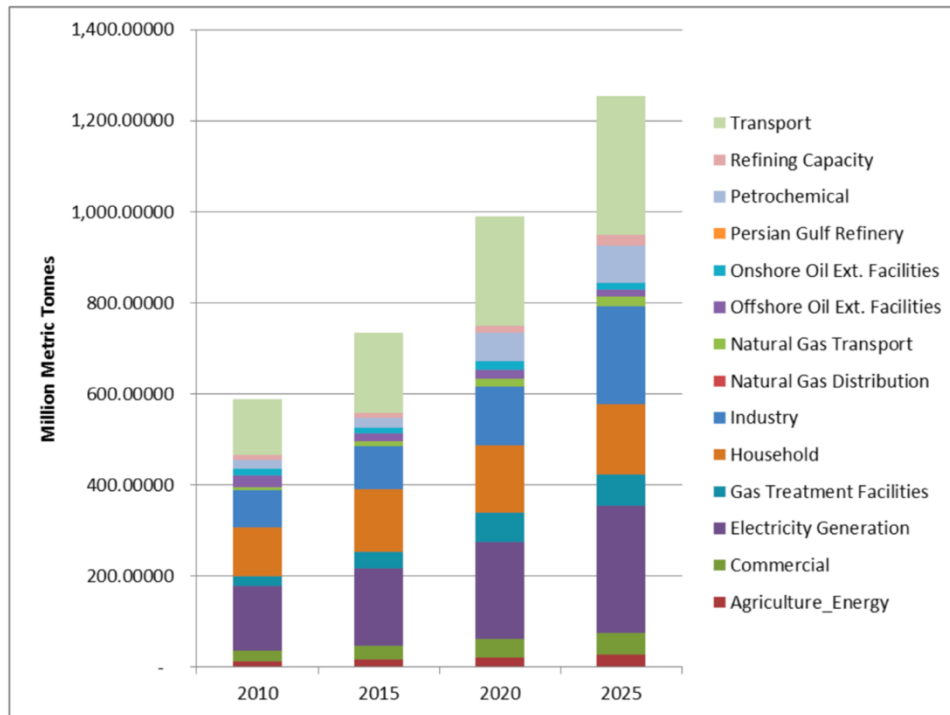
7.2. Sustainability

As it was seen in Chapter 1, sustainability is the most serious issue of the Iranian energy system. Unsustainable development of the Iranian energy sector could be considered as a concern both from the global and national point of view. Iran has altered to the tenth CO₂ emitter worldwide. According to the Iran's Third National Communication to UNFCCC, in 2010, the energy sector contributed 81% of total emissions in the country while other sectors' emissions including Industrial Processes and Product Use (IPPU), agriculture, forestry and waste were relatively inconsiderable in comparison with the energy sector (8%, 5%, 3% and 3%, respectively). In addition, CO₂ had the highest contribution in total GHGs emissions, 77.5%, and CH₄ has the second place, 18.9% while other gases had no significant contribution including N₂O, HFCs, SF₆, CF₄ and C₂F₆ (3%, 0.05%, 0.015%, 0.39% and 0.055%, respectively).³²⁷

³²⁷ Islamic Republic of Iran (n 324) 25.

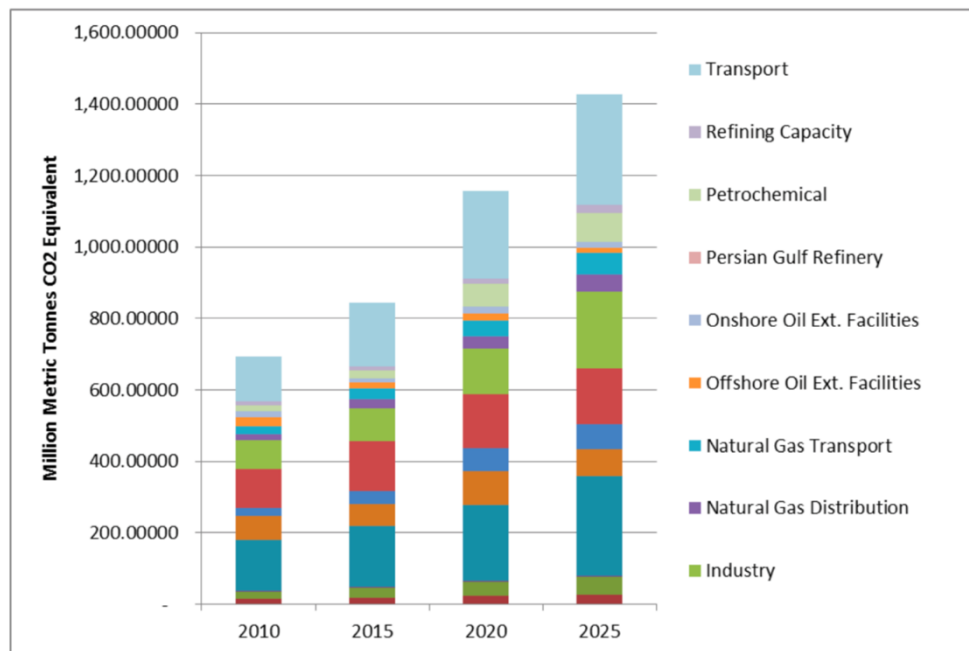
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Figure 35. CO2 Emissions from Energy Sub-Sectors in BAU Scenario



Source: Iran’s Third National Communication to UNFCCC

Figure 36. Total Greenhouse Effect of Energy Sector in BAU Scenario



Source: Iran’s Third National Communication to UNFCCC

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Moreover, the unsustainable development of energy sector has directly and directly caused serious problems in national level. Ambient air pollution in many major cities like Tehran, Isfahan, Shiraz, Ahvaz, and Tabriz is a considerable cause of mortality and morbidity.³²⁸ Huge consumption of the low quality petroleum products under subsidized prices for the urban transportation is the main issue of the current air pollution in major cities like Tehran. The cause of these pollutions could not be limited to the energy sector. Lack of sufficient development of the public transportation systems, low automobile standards, polluting industrial activities close to the cities are among other causes of this phenomena. However, the role of the unsustainable energy system is undeniable.

Moreover, the petroleum operations has changed many areas (specially in south and southwest of the country) to highly contaminated zones. Naderizadeh et al. have performed a study on the contaminations in southern provinces of Bushehr and Khuzestan. According to the results, a significant concentration of heavy metals was found in dust industrial and urban areas of Bushehr city and Assaluyeh.³²⁹

³²⁸ For the analysis of the air pollution in Iranian metropolitans and their health side effects, See Farzaneh Taksibi, Hossein Khajehpour and Yadollah Saboohi, 'Science of the Total Environment On the Environmental Effectiveness Analysis of Energy Policies : A Case Study of Air Pollution in the Megacity of Tehran' (2020) 705 *Science of the Total Environment* 135824 <<https://doi.org/10.1016/j.scitotenv.2019.135824>>; Reza Bayat and others, 'Health Impact and Related Cost of Ambient Air Pollution in Tehran' (2019) 176 *Environmental Research*; Fatemeh Yousefian and others, 'Long-Term Exposure to Ambient Air Pollution and Autism Spectrum Disorder in Children: A Case-Control Study in Tehran, Iran' (2018) 643 *Science of the Total Environment* 1216; Morteza Seifi and others, 'Exposure to Ambient Air Pollution and Risk of Childhood Cancers: A Population-Based Study in Tehran, Iran' (2019) 646 *Science of the Total Environment* 105; Maryam Dastoorpoor and others, 'Air Pollution and Hospital Admissions for Cardiovascular Diseases in Ahvaz, Iran' (2019) 652 *Science of the Total Environment* 1318 <<https://doi.org/10.1016/j.scitotenv.2018.10.285>>; Sara Torbatian and others, 'Air Pollution Trends in Tehran and Their Anthropogenic Drivers' [2019] *Atmospheric Pollution Research* 0 <<https://doi.org/10.1016/j.apr.2019.11.015>>; Zahra Soleimani and others, 'Air Pollution and Respiratory Hospital Admissions in Shiraz, Iran, 2009 to 2015' (2019) 209 *Atmospheric Environment* 233 <<https://doi.org/10.1016/j.atmosenv.2019.04.030>>; Hamed Vafa-Arani and others, 'A System Dynamics Modeling for Urban Air Pollution: A Case Study of Tehran, Iran' (2014) 31 *Transportation Research Part D: Transport and Environment* 21 <<http://dx.doi.org/10.1016/j.trd.2014.05.016>>; A Hassani and V Hosseini, 'An Assessment of Gasoline Motorcycle Emissions Performance and Understanding Their Contribution to Tehran Air Pollution' (2016) 47 *Transportation Research Part D: Transport and Environment* 1 <<http://dx.doi.org/10.1016/j.trd.2016.05.003>>; Yusef Omidi Khaniabadi and others, 'Mortality and Morbidity Due to Ambient Air Pollution in Iran' (2019) 7 *Clinical Epidemiology and Global Health* 222 <<https://doi.org/10.1016/j.cegh.2018.06.006>>.

³²⁹ Assaluyeh is located near the Pars Special Energy/Economic Zone. Huge industrial facilities of natural gas refining and petrochemical complexes have been developed in this area in last two decades.

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According to the results, dust Zinc concentration in Assaluyeh was higher than in other areas. According to Naderizadeh et al., the increase in Zinc, Copper and Lead concentrations in Assaluyeh industrial can be attributed to industrial activities and traffic emissions to the atmosphere, respectively. The results of the dust and sand tests provided in the research implies that dust samples of the study area generally contain significant contaminants, probably due to traffic and industrial sources. The analysis were able to identify two main sources for different heavy metals in the atmospheric dust of the Bushehr province. Zinc, Copper, and Lead appear to mainly derive from anthropogenic sources such as traffic and industrial activities. The contamination of heavy metals are not limited to the land field, and harmful effects of dust may cause damage to the marine environment in the coastal border of Assaluyeh to Persian Gulf.³³⁰

As was discussed, the development of energy sector has posed serious environmental concerns. Sustainability could be considered as the most neglected aspect of development of energy sector in Iran.

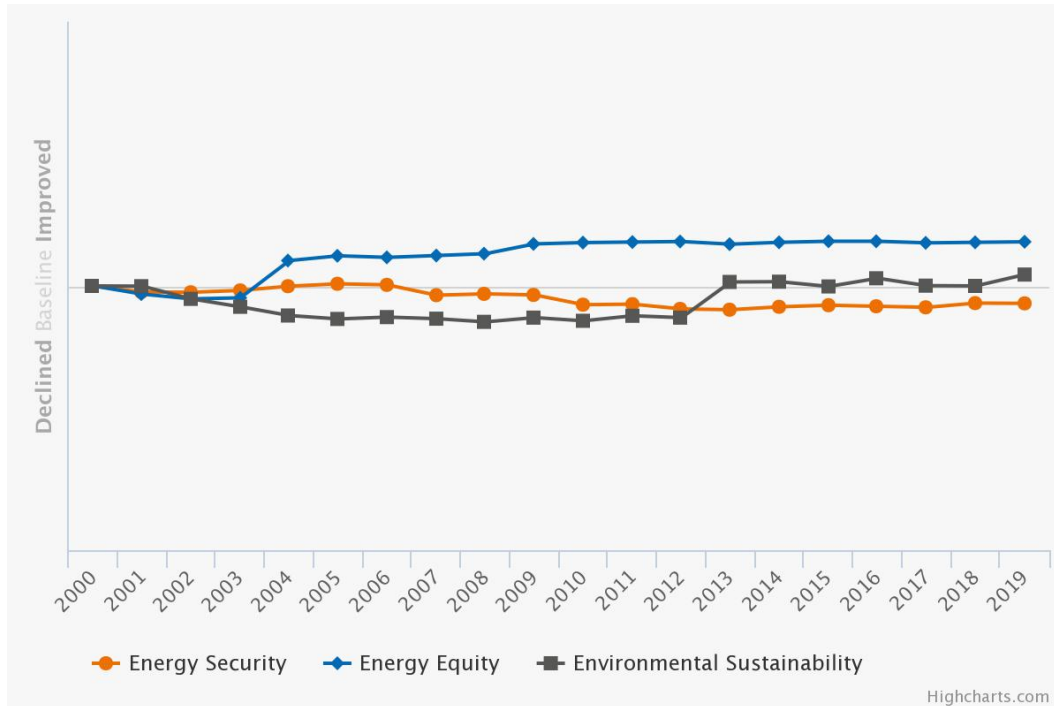
In the index provided by WEC, environmental sustainability of the Iranian energy system scores 44 out of 100, and 113th in ranking of 128 countries subject to the analysis of the organization. The environmental sustainability analysis provided by WEC is based on an analysis of the three factors of final energy intensity(Ratio of final energy consumption over GDP), Low carbon electricity generation(Percentage of electricity generation from decarbonised sources), and CO₂ emissions per capita.

³³⁰ Zeinab Naderizadeh, Hossein Khademi and Shamsollah Ayoubi, 'Biomonitoring of Atmospheric Heavy Metals Pollution Using Dust Deposited on Date Palm Leaves in Southwestern Iran' (2016) 29 *Atmosfera* 141, 152,153 <<http://dx.doi.org/10.20937/ATM.2016.29.02.04>>. See also Mehrzad Keshavarzifard, Farid Moore and Reza Sharifi, 'The Influence of Physicochemical Parameters on Bioavailability and Bioaccessibility of Heavy Metals in Sediments of the Intertidal Zone of Asaluyeh Region, Persian Gulf, Iran' (2019) 79 *Chemie der Erde* 178 <<https://doi.org/10.1016/j.geoch.2018.12.007>>; M Faghihifard and MA Badri, 'Simulation of Oil Pollution in the Persian Gulf near Assaluyeh Oil Terminal' (2016) 105 *Marine Pollution Bulletin* 143 <<http://dx.doi.org/10.1016/j.marpolbul.2016.02.034>>.

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Figure 27 Proves that in the last two decades, the sustainability hasn't achieve any major improvement.³³¹

Figure 37. Historical Trilemma Scores



Source: WEC. Note: Trend Lines Track the Country's Performance in Each Dimension, Beginning with a Baseline of 100 in the Year of 2000,

The constitution doesn't directly address the sustainable development. However, Article 50 of the constitution has embraced the environmental protection. Article 50 which is the only constitutional principle precisely dealing with protection of environment.³³² According to Article 50:

the economy of country has to be based on the criteria including "The preservation of the environment, in which the present as well as the future

³³¹ World Energy Council, 'Historical Trilemma Scores' <[https://trilemma.worldenergy.org/#!/country-profile?country=Iran \(Islamic Republic\)&year=2019](https://trilemma.worldenergy.org/#!/country-profile?country=Iran%20(Islamic%20Republic)&year=2019)> accessed 10 November 2019.

³³² For the background and development of the environmental protection in Iran, see Z Javaherian and others, 'Investigating the Impacts of Global Environmental Evolutions on Long-Term Planning of Natural Resources in Iran' (2013) 7 International Journal of Environmental Research 561.

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generations have a right to flourishing social existence...” Hereupon, “...economic and other activities that inevitably involve pollution of the environment or cause irreparable damage to it are therefore forbidden.”³³³

Regarding this article two points should be mentioned; firstly this article contain a general obligation that should be completed by an organic law as residual impact of French constitutional tradition on Iranian legal system. Secondly, the notion of environment is an unclear concept and until now the ordinary laws failed to determine all different aspects of this concept. But as a general norm, development of RE could be interpreted as a required measure to promote the protection of environment and consequently encouraged by the Iranian legislature. The importance of this article is related to the application of organic laws related to RE.

According to part B of the NESP, energy efficiency and energy security improvement, energy diversification and moving towards a non-subsidized energy market are the main targets desired by the plan to be reached during the policy period. As was discussed, security is a more influential driver in the policies set by the NESP. However, NESP provides certain objectives for the environmental sustainability of the energy system.

Part B(9) of the NESP calls for enhancing efficiency in oil and natural gas industry through the development of human resources, technologies, management systems and utilizing up to dated equipment.

In addition to domestic legislation, Iran’s Third National Communication to UNFCCC and Iran’s proposed NDC to Paris Agreement are also addressing the sustainability concerns. According to the Third National Communication greenhouse gas emissions, particularly CO₂ and acid gases such as SO₂ and NO_x, suspended particles, industrial waste water contaminated with heavy metals, and other contaminants are issues which have to be dealt with in the electric power

³³³ ‘The Constitution of Islamic Republic of Iran 1979 as Amended on 1989’ (n 262).

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industry. The electric power industry in Iran is striving to extend its monitoring activities to maintain national and international regulations.³³⁴

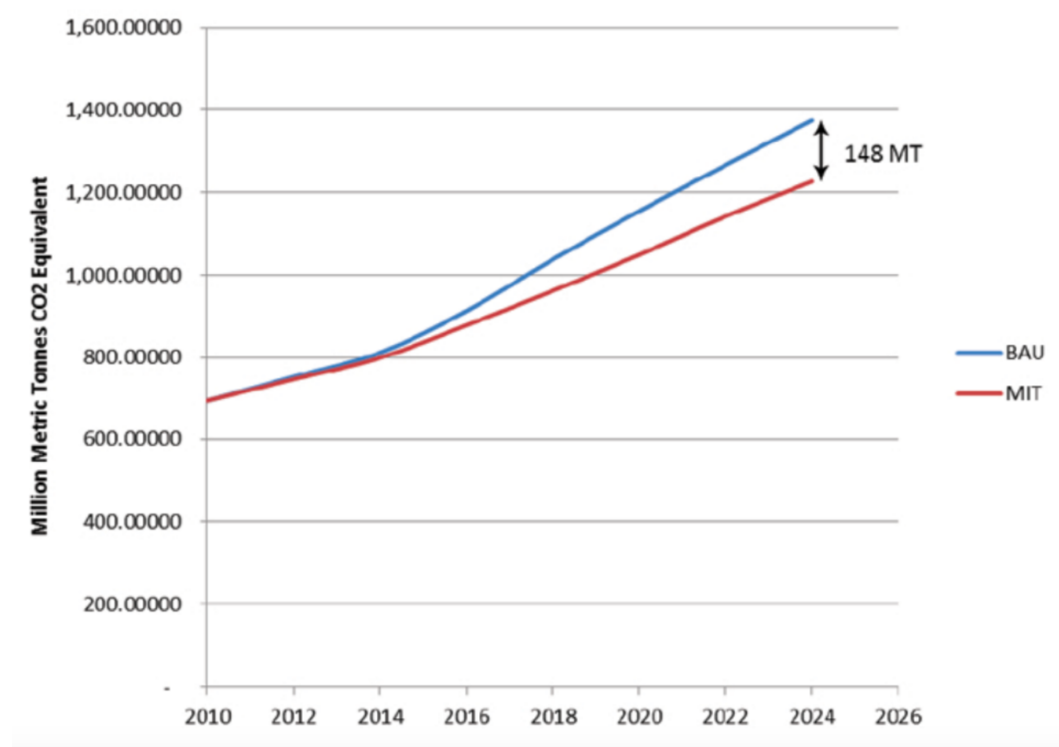
Third National Communication determines an 11% Percent GHG emission reduction under the mitigation scenario comparing to BAU scenario. According to Iran's Third National Communication to UNFCCC, Iran GHGs inventory could be smaller by 11% in 2025 with respect to BAU scenario, provided that there would be constructive international cooperation regarding technology transfer and financial aids. This new mitigation regime, if implemented properly, could prevent cumulatively up to 897.5 million tons of CO₂-eq. (740 of which as a result of mitigation measures in energy sector and 157.5 million tons from non-energy sectors) from being released into the atmosphere. IPPU, waste and agriculture activities are the major sources of GHGs emissions in the non-energy sectors. In 2025, the overall GHGs mitigation potential is 179.5 million tons, with energy sector being responsible for 148 million tons, while the GHGs mitigation potential in non-energy sectors is about 31.5 million tons CO₂ eq. IPPU with some 9.9 million tons, have the highest mitigation potential in non-energy sector, while land use change and forestry with 5.01 million tons have the lowest GHG mitigation potential.³³⁵

³³⁴ 'Electric Power Restructuring in Iran : Achievements and Challenges' 82.

³³⁵ Islamic Republic of Iran (n 324) 26.

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Figure 38. Total Greenhouse Effect in Mitigation Scenario vs. BAU Scenario in Energy Sector



Source: Iran's Third National Communication to UNFCCC

Iran's NDC also contains targets for the mitigation. Iran's NDC is divided into two unconditional and conditional actions. An unconditional commitment has to be achieved under any political and economic circumstances. According to the registered NDC, Iran intends to participate by mitigating its GHGs emission in 2030 by 4% compared to the Business As Usual (BAU) scenario. Iran's NDC argues that this level of unconditional emission reduction will be achieved through development of combined cycle power plants, renewable energies, and nuclear power, as well as reduction of gas flare emissions, increasing energy efficiency in various consuming sectors, substituting high-carbon fuels with natural gas, strategic planning for utilizing low-carbon fuels, intensifying economic diversification and participation in market-based mechanisms at the national and international levels. The second part of Iran's commitment is conditioned to termination and non-existence of economic sanctions, availability of international resources in the form of financial support and technology transfer, exchange of carbon credits, accessibility of bilateral or multilateral implementation mechanisms and transfer of

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clean technologies. It is argued that if the aforementioned conditions will be realized, Iran has the potential of mitigating additional GHGs emission up to 8% against the BAU scenario (i.e. 12% in total).³³⁶

Iran's NDC has a general literature calling for GHG mitigation by several measures including development of RE. However, RE have not benefited from a particular and specific consideration of policy makers. Despite the fact that after the ratification of the agreement by Iranian Parliament the government will be legally bound to 4% GHG reduction, in the lack of certain targets and policies for development of renewable energies, it is not expected that this document will significantly influence further domestic renewable energies laws and policies. However, the document could be considered as a reference for those policy makers and political camps or authorities in favour of development of renewable energies.

Sustainability and environmental concerns are the influencing elements encouraging Iranian energy policy to open a room for development of RE. Currently, Iran faces serious environmental challenges. Although climate change is not the only cause of these challenges but considered as one of the main factors in this context. Hence, even a non-ambitious renewable energies development policy could contribute firstly as a part of expected commitments in line with global efforts tackling climate change and secondly as starting the point energy transition in long-term.

7.2.1. Gas Flaring

Part B(10) orders for capturing and refining flare gases by taking environmental and economic concerns into account. NESP is not the only policy document calling for the absorption and reduction of gas flaring. Article 48(A) of 6th FYDPA, required certain policy of regarding the flaring and associated gases, the government is required to: by determining a fair rates for the feeding fuels, to assign all of the plans and projects of the collection, containment, control, and utilization

³³⁶ Department of the Environment, 'Intended Nationally Determined Contribution, Islamic Republic of Iran' (2015) <http://www4.unfccc.int/submissions/INDC/Published/Documents/Iran/1/INDC_Iran_Final_Text.pdf> accessed 30 March 2019.

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of associated and flare gases in all oilfields and oil industry facilities to the non-governmental sector within a maximum of three months from the entry into force date of this law. By the end of the period of this law, 90 % of flare gas shall be contained and controlled. Regarding the electricity generation capacity.³³⁷

7.2.2. Improvement of the Petroleum Products Quality

Part C(2)[5] of NESP decrees for the improvement of the quality of refinery and petrochemical products with more added values through utilization of new technologies and according to updated standards.

In addition to the development of renewable energies and the energy transition towards a low carbon system which is the essential element of the sustainable development, increasing the efficiency and decreasing the environmental impacts of the fossil fuels combustion are expected to be simultaneously taken into account. Low efficiency in industries contributes greatly to environmental degradation, global warming, and social unsustainability. Thus, improving the efficiency of the oil and gas industry can reduce the negative environmental and simultaneously empower the economy to achieve challenging long-term goals of green transition in oil-dependent economies like Iran. As was seen in the Chapter 3, energy supply in Iran is highly dependent to oil and gas resources and relying to the refinery capacities, the country is currently self-sufficient in supplying the petroleum products. Simultaneous to the development of renewable and green energies, improvement of the fossil fuels production and combustion standards could contribute in decreasing the environmental degradation. Petroleum refineries are the key link of the oil supply chain, therefore measuring the efficiency of refineries can contribute to the prosperity of an oil-dependent economy. Refineries act as the

³³⁷ Article 48, Sixth FYDPA

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main plants to transform crude oil and gas condensates into a wide range of consumable petroleum products.³³⁸

NESP orders for the improvement of the quality of petroleum products, however, similar to all other strategies of the plan, it doesn't determine any specific numeral targets or details. Prior to NESP, the Law on Altering Energy Consumption Patterns(LAECPP) passed in 2011 has in fact ordered more details for the improvement of the fuel standards.

Regarding the refineries outputs, article 11 of LAECPP establishes a working group formed by members from Ministry of Petroleum, Ministry of Energy, Department of the Environment, the Institute of Standards & Industrial Research of Iran, and the Management and Planning Organization of Iran to design the energy and contamination labelling for the fuels as well as the combustors. Standards set by this working group have to be passes by the cabinet of ministers as bylaws.³³⁹

6th FYDPA also addresses the improvement of the refinery products. Article 44(a)[2] to provide required facilities to realize a of 2.7 million barrels per day crude oil and gas condensate refining capacity with high complexity index by the non-governmental sector. Such refineries shall produce the lighter products and the amount of the fuel oil output shall not exceed the 10 % of the total production.

Moreover, Article 18 of Clean Air Act of 2017 requires the Ministry of Petroleum to adopt the refined petroleum products to the national standards. Later the article requires the Standard Organization to prevent the production of non-standard fuels.³⁴⁰

³³⁸ Keyvan Hosseini and Agnieszka Stefaniec, 'Efficiency Assessment of Iran's Petroleum Refining Industry in the Presence of Unprofitable Output: A Dynamic Two-Stage Slacks-Based Measure' (2019) 189 Energy 139.

³³⁹ Article 11, Islamic Consultative Assembly, Consumption Pattern Reform Act 2011.

³⁴⁰ July 16 2017, Ghanoune Havaye Pak(Clean Air Law) 2016 1.

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7.2.3. Energy Efficiency and Energy Labelling

LAECP establishes the general information and definitions, policies and major guidelines, structure and organisations, criteria and standards for energy consumption. It follows the decreed policies from the Supreme Leader on the Reform of Consumption Patterns of 2010, which called for a change in the culture of consumption, promotion of energy saving culture, and promotion of productivity and efficiency.³⁴¹

According to the LAECP, this change of consumption patterns requires the use of cultural and educational capacities, promoted through public education, training programs at various levels, and an emphasis on accountable indicators. It calls for the improvement of energy efficiency in power plants, industries, in the transport sector, and in residential and commercial buildings. This improvement should be promoted through the establishment of energy standards and labelling, financial incentives, among other mechanisms. The Law aims to reduce energy intensity by half in 2020.³⁴²

6th FYDPA provides more details for the improvement of efficiency. According to Article 44(a)[1], with the aim of increasing the added value and the energy efficiency, and achieving the complete value chain, government is required to take necessary measures to decrease the energy waste in buildings by 5% per year. Article 44(a)[3] set certain regulation for the automobile energy consumption and contamination standards, banning the matriculation of the automobiles not meeting the euro 4 standard. Article 44(b), also sets certain policies for improvement of efficiency. Regarding the efficiency in electricity generation, Ministry of Energy shall: 1. issue the permits and licenses for the construction of high efficient(55 to

³⁴¹ Supreme Leader, General Policies for Reform of Consumption Pattern(In Persian: Siasathaye Kollie Eslah-e Olgouye Masraf) 2010.

³⁴² The Grantham Research Institute on Climate Change and the Environment, 'Climate Change Laws of the World, Iran, Law on Altering Energy Consumption Patterns' <<https://climate-laws.org/cclow/geographies/80/laws/1352>> accessed 10 August 2019.

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60% efficiency rate) power plants, and 2. to determine the electricity prices by the IRINEX mechanism.³⁴³

As was discussed, air pollution has been altered to the most harming environmental challenge for Iranian metropolitans and is the main concern of a majority of large urban population. Tehran, the capital, tragically experienced only less than a month with clean air in 2017.³⁴⁴

The other recent enactment that determines certain regulations for the improvement of efficiency and the decrease of contaminations is the Clean Air Act. Article 4 of Clean Air Act requires that meeting pollution standards required by the department of environment is mandatory for matriculation of vehicles.

By the end of application period of the sixth FYDPA, Department of Environment and National Standard Organization shall update the Pollution standards for automobiles to international levels.

Article 4 sets energy consumption and pollution limits for the imported and domestically manufactured vehicles. The standards shall be determined and supervised by National Standard Organization.

Article 6 binds vehicle owners to obtain annually technical inspection labelling. The funds gained by fining not complied vehicles shall be used by the Ministry of Interior for renovation of public transport systems in cities with more than 200.000 population.

Article 9 exempts hybrid and electric vehicles from the added value taxes.

³⁴³ Ghanone Barname Sheshome Tose'e 1395-1399 (Sixth Islamic Republic of Iran's Development Plan Law 2017-2021) (n 303) Article 44.

³⁴⁴ 'Number of Clean Days in Tehran' <<https://theiranproject.com/blog/2015/04/08/number-of-clean-days-in-tehran-up-five-fold/>> accessed 13 August 2019.

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Article 19, Ministry of Energy is required that 30% of the capacity of new constructed power plants shall be generated by renewable resources.

Article 20(2) requires the government and municipalities in three years from the application of this law to design plans for stimulating private investments for development of waste to energy power plants.

7.2.4. Development of Renewable Energies

Article 2 of Vision 2025 Decree requires that any laws and regulations have to be adopted in line with the current policy plan. Among the other issues, section B of the energy policies calls for diversification of energy supply, increase of renewables share in energy mix, and enhancement of efforts in achieving renewable energy technologies and technical sciences. The order for development of renewable energies has mentioned generally and the document doesn't inherit any specific target for development of renewables.

The NESP also addresses the development of the renewables. In a very general words, the NESP calls for commercialization of renewable energy and increase of the share of renewable energy in electricity generation mix. Although addressing renewable energy could be considered as a promising element in the NESP, the document does not ordain any numeral target for renewable energy to be included in the electricity mix. The only numeral target set by the NESP is 4% to 8% decrease in GHG emissions which could be achieved not only by the development of renewable energies but also by the increase of energy efficiency and use of modern technologies in petroleum and other sectors.

Based on the general orders for development of renewables in aforementioned policies, it is expected that those targets to be followed in FYDPs. The Sixth FYDP(2017-2021) comprises certain regulations for the development of RE. According to article 61 of the law, by the March 2021, the government has the obligation to increase the portion of the RE generated by private sector to 5% of total power capacity by stimulating foreign and domestic investments. According to article 59(d), Ministry of Energy has to increase the country's power generation

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capacity by 25.000 MW. The total power generation capacity, after meeting the expected developments estimated to reach 90.000 to 100.000 MW till March 2021. Hence, by this time the Ministry has to realize 4.500 to 5.000 MW power capacity generated by private sector from RE.³⁴⁵ It is worth mentioning that development of RE by the Ministry is not limited to the amount required by FYDPs through private sector investments. In addition to the aforementioned 4.500 to 5.000 MW nominal capacity, the Ministry will follow construction of new and improvement of current large scale hydroelectric power plants(adding 25.000 MW capacity to the current 11.5 MW planned by 6th FYDP.

The 4.500 to 5.000 MW target required by Sixth FYDPs could be considered as an ambitious goal. As of May 2018, by the end of the first year of Sixth FYDPs, 575 MW RE power plants installed³⁴⁶, As mentioned in introduction, geographical potentials for development of RE is massive and far beyond the current capacity. In addition to technical and geographical privileges, policies, laws and regulations passed in recent years have tried to provide a stimulating framework for development of RE by private sector under a Feed-in-Tariff mechanism. In next section, we analyse the corresponding laws and proposed contractual framework by Ministry of Energy.

Article 50 of 6th FYDPA: During the period of this law, the government is required to increase the share of renewable energies(except the major hydro power plants) to at least five percent (5%) of the country's electricity capacity by stimulating local and foreign non-governmental investments.

7.3. Affordability and Social Equity in Access to Energy

The WEC examination ranks the affordability performance of Iran's energy sector in an acceptable situation (scoring 88 out of 100, ranking 47 in the world). The equity performance in world energy council analysis is focused on the affordability

³⁴⁵ Ghanone Barname Sheshome Tose'e 1395-1399 (Sixth Islamic Republic of Iran's Development Plan Law 2017-2021) (n 303).

³⁴⁶http://www.satba.gov.ir/suna_content/media/image/2018/05/6033_orig.jpg?t=636629412826776562

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of energy careers prices and the coverage in the access to energy. WEC examination is based on the three criteria: 1. Access to electricity (Percentage of the population with access to electricity), 2. electricity prices (national electricity price per kilowatt hour as indicator of affordable energy services for domestic and commercial uses), and 3. gasoline and diesel prices (prices per litre as indicator of access to affordable energy services for passenger and commercial vehicles). However, It could be argued that this analysis is not comprehensively cover the equity concept and in case of resource rich countries like Iran, the allocation and distribution of the natural resources revenues and benefits has to be taken into account as the other important factor in analysing the equity performance.

In analysing the affordability and equity, two group of policies could be addressed, firstly the policies set for the expansion of the access to energy careers, and secondly the policies pertaining to the distribution of the energy subsidies and fossil resources revenues.

As was seen in Chapter 3, currently more than 95% of the whole population are connected to national electricity grid and natural gas supply.

Energy subsidies is the current main challenge of the Iranian energy sector. In 2018 the Iranian government has spent \$69.2 billion on fossil energy consumption subsidies and ranked first in the world. The volume of Iranian fuel subsidies extended to its citizens, which increased 42.2% year-on-year, equals 15.3% of Iran's GDP and 16% of total global energy subsidies.³⁴⁷ Under the highly subsidized prices, the richer level of the society owning more private vehicles, bigger houses and as a result more consuming are more benefitting from the huge amount of the subsidies allocated by the government to energy careers. Hence, by considering the consumption factor under subsidized prices, the equity performance of Iranian energy system also faces serious challenges and entail injustices in allocation of fossil resources revenues to the whole population.

³⁴⁷ 'Iran: Largest Fuel Subsidizer in 2018' (n 161).

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The reform of energy subsidies has altered to one of the main priorities in Iranian energy policies. The most important endeavour for the reform of subsidies started by the Targeted Subsidy Law enacted in 2009 and has implemented since December 2010. Prior to this law, subsidies were indirect and it was about 77 billion US \$, 27% of GDP, in 2007. The goal of the subsidy reform has been to gradually replace subsidies on food and energy (80% of total) with targeted social assistance, in accordance with the FYDPA and move towards free market prices in a 5-year period. Subsidies reduction was aimed the increase social justice through targeted social assistance and to decrease air pollution by reducing car traffic in major cities.³⁴⁸

According to the law, the energy (petrol, oil, liquefied gas and kerosene) prices shall gradually increase up to 90 percent of the regional prices in five years (at least 75 percent of the export prices for natural gas). Electricity prices were also addressed and the law required a gradual increase of the prices to the level that covers production cost. The increase of prices (partial removal of subsidies) aimed in the first year of the plan to bring in between \$10 billion to \$20 billion of revenues in government's annual budget. The allocation of the expenditure of this revenue was also specified in the law as follows: 50% to be distributed in the form of cash handouts to households, 30% to support industries affected by the energy price hikes, public transportation, and infrastructure, and 20% to cover discretionary expenses. In the first phase of the implementation of the plan, gasoline prices quadrupled (from 1000 rials to 4000 rials per liter) for the monthly quota of 60 liters per passenger car and increased by a factor of 7 for over the quota consumption. The price of natural gas increased by a factor of 7 (from 100- 130 rials per cm to 700 rials) for households and by a factor of 15 (from 50 rials per cm to 800 rials) for power plants. The price of electricity almost tripled from an average 160 rials (1.6 cents) per kWh to 450 rials (4.5 cents) per kWh. In the first phase of the implementation of the law, the price increases were progressive, and the rates varied among different sectors and regions. The targeted cash payment was the main mechanism of the law to reduce the impact of the subsidy removal on low-income

³⁴⁸ Islamic Republic of Iran (n 324) 49.

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households. However the government later decided to distributed 455,000 rials (about \$45 given the exchange rate then) per month to all individuals who had already registered in a government site online. Upon the implementation of the prices reform, there were some social unrests, however, the first stage of the reform was successfully implemented.³⁴⁹

While the subsidy reform was expected to continue, following the imposition crippling sanctions by the US, EU and the UN, Iran's currency dramatically collapsed in 2012, the significant depreciation of the Iranian currency put a downward pressure on the dollar value of the domestic energy prices.³⁵⁰ Since the dramatic devaluation of Rial, a high rate of inflation imposed to the country's economy and government has decided to shelve the subsidy reforms. Collapsing currency meant that the relative failure in achieving the results were aimed.

The subsidy reform law is not the only enacted policy seeking the reform of subsidies. Part C of the NESP that deals with main energy strategies also addresses the necessity of subsidy reform. Realization of non-subsidized energy carrier prices in the first 5 years from the implementation day of the NESP (by 2021) is one of the main strategies that decreed by the NESP.³⁵¹

As mentioned, following the economic crisis of 2012 the removal of energy subsidies has been postponed, mainly due to the economic consequences like the high inflation it imposes to the economy. Ever since, the electricity price have been slightly increased, however, it remained highly subsidized.

The 6th FYDPA³⁵² also recalls for the gradual reform of subsidies. According to Article 39, in order to promote social justice, increase productivity in water and

³⁴⁹ Saeed Moshiri, 'Energy Price Reform and Energy Efficiency in Iran' [2013] IAEE Energy Forum 33, 4 <<http://www.iaee.org/en/publications/newsletterdl.aspx?id=197>>.

³⁵⁰ Hamed Ghoddusi and Nima Rafizadeh, 'The Effect of Fuel Subsidy Reforms on the Behavior of Gasoline Consumers' [2019] SSRN Electronic Journal 1, 18.

³⁵¹ Shoraye Aliye Energy(Supreme Energy Council) Sanade Mellie Rahbord Energie Keshvar(National Energy Strategy Plan) (n 302).

³⁵² Applicable in March 2017 till March 2021

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energy consumption, and reform of subsidies in favor of increasing the productivity the government is entitled to gradually decrease the subsidies over the water, energy carriers, and other subsidized goods and services till the end of the enforce date of this law(March 2021). The government revenues of the subsidy removals shall be used by the government in accordance with the Subsidy Reform Law provisions for the increase production, employment, support for non-oil exports, productivity, reduction of energy intensity, and reduction of air pollution.

Also, since 2013 the first round of Rouhani's government annual budgets had not fully complied with the subsidy reform law and till December 2019, the prices of gasoline, diesel have been kept changed by the government. Control of the inflation has been in the core of the Rouhani's first round economic agenda. The parliament also haven't reformed the proposed budget acts in favor of the full compliance with the subsidy reform law. In May 2018, Donald Trump administration had withdrawn from the JCPOA and ever since Iranian economy has experienced a second currency devaluation crisis. In December 2019 the government has decided to increase the gasoline prices to cover part of the budget deficit caused by the re-imposition of the US sanctions and the dramatical decrease of the oil exports. Under the price changes, the price for a liter of rationed gasoline rose to 15,000 rials, or about 13 cents, from 10,000 rials per liter, and a monthly ration for each private car was set at 60 liters. Any purchases over that limit would be triple the previous price. This price increase is a huge burden for the population whom already suffering from the economic crisis caused by the new regime of sanctions. This partial removal of the gasoline subsidies has led to massive protests across the country³⁵³ ended up by the use of violence from the police and security forces. The amnesty international has reported 208 casualties.³⁵⁴

³⁵³ The New York Times, 'Protests Incited by Gas Price Hike Grip Iran' (2019) <<https://www.nytimes.com/2019/11/16/world/middleeast/iran-gas-price.html>> accessed 24 December 2019.

³⁵⁴ The Amnesty International, 'Iran: Death Toll from Bloody Crackdown on Protests Rises to 208' <<https://www.amnesty.org/en/latest/news/2019/12/iran-death-toll-from-bloody-crackdown-on-protests-rises-to-208/>> accessed 24 December 2019.

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The reform of energy prices has been decreed by various policies. However, the implementation of these policies are facing serious challenges. Under the current economic situation which is highly suffering from the crippling sanctions imposed by the US, implementation of the laws requiring the subsidy removals seems problematic.

Before remarking the chapter's conclusions, the table 6 provides a resume of the contents of all corresponding policies analysed in this chapter.

Table 7 Mapping Iranian Energy Policies

Title	Year	Key policies
Law of Implementation of General Policies of Article 44	2008	<ul style="list-style-type: none"> • Order of privatization of the state's economic activities. • Regarding energy sector, upstream oil, Electricity transmission grid set as exception of privatization • As the result of general requirements, Ministry of Energy has to privatize electricity generation and distribution activities.
General Strategies of Consumption Pattern Reform	2010	<ul style="list-style-type: none"> •
Law on Altering Subsidies to Targeted Subsidies(Subsidy Reform Law)	2011	<ul style="list-style-type: none"> • Replacing subsidies on food and energy with targeted social assistance. • Article 8, Government is required to invest up to 30% of the funds gained from removal of subsidies on certain cases including the optimization of energy consumption in factories,

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		services and buildings and developing renewable energies.
Law on Reforming Energy Consumption Pattern (LAECP)	2011	<ul style="list-style-type: none"> • Establishes energy consumption standards. Provides definitions and guidelines • Addresses the improvement of energy efficiency in transport sector and buildings • Requires governmental bodies to regulate and establish arrangements for buildings energy labelling.
National Energy Strategy plan	2016	<ul style="list-style-type: none"> • Improving energy efficiency and halving energy intensity rate by the end of 2041. • Liberalization of energy carriers prices during the first five years of implementation.(By July 2022) • Reducing the loss of energy in production, transmission and distribution sectors according to national standards and requirements. • Improving the energy product qualities according to national standards and by establishing regulatory bodies. • Commercialization of environmental friendly technologies and renewable energies • Reducing GHG emissions (without setting precise target) • 5% per unit Increase of recovery rate of oil reservoirs by the end of 2041 through the implementation of enhanced oil recovery and maximum efficiency rate mechanisms. • Development and maximum exploitation of all of cross-border oil and gas fields in the event of conserving national interests.

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- Expanding exploration of oil and gas throughout the country with the aim of providing supports for the current oil and gas production.

Sixth FYDPA 2017

- Article 4: Development of Iran Energy Exchange IRENEX market.
 - Article 38: Providing financial instruments, incentives and grants for waste to energy projects.
 - Article 39: Gradual remove of subsidies by March 2021 and expenditure of subsidy removal funds on (among other purposes) plans for decreasing energy intensity, improve of energy efficiency, tackling air pollution
 - Article 44: With the aim of improving energy value chain, government is required to
 - 5% annual reduction of energy waste in buildings,
 - To facilitate the refinery development plans to achieve 2.7 million barrel per day light refining capacity and to lower down the fuel oil output of refineries to below 10%.
 - To reduce energy consumption and transport sector's carbon emissions and to apply the Euro 4 requirements to automobile matriculation.
 - Ministry of Energy required to grant power plants licences with 55 to 60% efficiency.
 - Article 45: By the end of the first year from the entry into force date of this law, Ministry of Energy and Ministry of Oil required to design the National Comprehensive Energy Plan in line with National Energy Strategy Directive.
 - Article 46: From the second year of this law, Government shall replace low efficient industries and end of law vehicles by 20% rate annually.
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- By the end of the first year from the entry into force date of this law, Ministry of Industry shall design and subsequently implement the renovation and efficiency improvement plan of industries with the aim of decreasing energy intensity and improving the quality of products. Government shall inherit required financial instruments, incentives and facilities in the annual budget laws.
 - Article 48: Government obligations:
 - By the end of the implementation period of this law, government shall decrease by 90% the flaring of accompanied gases in oil and gas industry by planning required policies and by proposing investment projects to public and non-governmental entities.
 - During the five years duration of this law, Ministry of Energy is required to increase the power generation capacity by 25.000 MW through the stimulation of foreign and domestic non-governmental investors by Build Operation and Own(BOO) and Build Operation and Transfer(BOT) contracts. Guaranteed tariffs of power purchase by the Ministry shall be determined by Economic Council.
 - Ministry of Oil shall allocate 1% of its subsidiaries companies' development budget to provide financial instruments for the oil and gas priority technologies and renewable energies and to use these technologies in decreasing energy intensity.
 - Ministry of Oil shall use the non-governmental entities abilities in investment in exploration, production and operation (not the ownership)
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activities specially in cross-border fields, in line with Law of Implementation of General Policies of Article 44 frameworks.

- Government is required to implement necessary steps for the formation of regional electricity market and power hubs to connect the power grid to neighbour countries in north, south, east and west.
- By the end of this law duration, government is required to increase the share of renewable energies share of primary energy supply to 5%.
- Article 60: For improving energy performance in buildings, the energy labelling shall be required for granting certificate of occupancy

Clean Air Act 2017

- Article 4, Meeting pollution standards required by the department of environment is mandatory for matriculation of vehicles.
 - By the end of application period of sixth FYDPA, Department of Environment and National Standard Organization shall update the Pollution standards for automobiles to international levels.
 - Article 4 sets energy consumption and pollution limits for the imported and domestically manufactured vehicles. The standards shall be determined and supervised by National Standard Organization.
 - Article 6 binds vehicle owners to obtain annually technical inspection labelling. The funds gained by fining not complied vehicles shall be used by the Ministry of Interior for renovation of public transport systems in cities with more than 200.000 population.
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- Article 9 exempts hybrid and electric vehicles from the added value taxes.
- Article 19, Ministry of Energy is required that 30% of the capacity of new constructed power plants shall be generated by renewable resources.
- Article 20(2) requires the government and municipalities in three years from the application of this law to design plans for stimulating private investments for development of waste to energy power plants.

Executive Plan of Comprehensive National Energy Scheme	2018	<ul style="list-style-type: none"> • Part one (executive plans for oil and gas sector) requires: 1. The enhancement of maximum efficiency rate and implementation of EOR technologies, 2. Using the maximum possible potentials to increase oil and gas production, 3. Enhancement of efficiency and optimization of the equipment 3. Increase of oil SWAP agreements 4. Investment in of overseas refineries through National Development Fund resources. 5. Completing the value chain in oil and gas sector 6. Stimulating foreign investments through diverse contractual methods such as IPC. 7. Dedicating a share of natural gas for exports to enhance the country's position in the global energy markets. 8. Development, modernization and immunization of pipelines, oil transfer centers, installations and related machinery. 9. Reducing the gas flaring through attracting the investments by private sector. 10. Updating the oil industry environmental standards. 11. Providing financial facilities for replacement of old vehicles.
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- Part two (executive plans for electricity sector) requires:
 1. Increasing the efficiency of power plants through, reconstruction of existing old steam power plants, converting the existing gas power plants to combined cycle, development of heat and power cogeneration units. Dismantling the old and low efficient power plants, Renovating the electricity transmission lines and substations, reducing the transmission and distribution losses.
 2. Increasing the production potential through: Reconstruction of existing old steam power plants, construction of CHP and Distributed Generation (DG) units, and construction of renewable power plants.
 3. Energy efficiency improvement through: Implementation of the plans of replacing streets lighting system by LED lights with priority for metropolitan and administrative spaces, implementation of replacement of existing air conditioners with category A and above with priority of southern provinces, implementation of replacement program of low efficient electromotors with high efficient electromotors.
 4. Expanding renewable energies.
 5. Increasing the share of natural gas in the fuel supply of thermal power plants
 6. Collection, treatment and use of sewage in power plants.
 7. Creating an integrated online environmental monitoring system for power plants
-

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7.4. Chapter Conclusion

The Iranian energy sector faces serious challenges in meeting the sustainability and social equity objectives. The current uncontrolled increase of consumption could also soon impose serious challenges over the security of supply specially in the peak periods of the consumption. The political tensions with world powers and namely the USA, and the crippling economic sanctions have deprived Iran of attracting foreign investments and technologies and hence are among the main reasons of the current situation. However, as was seen in this chapter the role of poor energy policy making could not be neglected. Despite the privatization plans, the energy market in Iran has remained as a governmental monopoly. The government is the sole supplier of energy carriers and sets fixed subsidized prices and out of a liberalized and competitive market mechanism. The current privatization policies are only transferring the ownership of power plants and refineries to non-governmental sector without providing the required basis for the creation and enhancement of competition in the energy market. Under this mechanism, the non-governmental companies are service providers receiving a compensation for the services they provide in processing the energy resources for the government. Hence, unless any major reform is occurred, the structure of energy market and the lack of competition remains as a major barrier for the improvement of sustainability, social equity and the security of Iranian energy system.

One of the main challenges of the energy policies in Iran has historically been the lack of a regulatory body integrating the energy policies among different governmental institutions including corresponding ministries, municipalities, and department of the environment. By the establishment of the Supreme Energy Council, it was expected that this institutional lacuna be covered. However, it could be argued that the council lacks the legal authority over the key energy players, specially the Ministries of Energy and Petroleum. Despite the substantive shortcomings in the policies made by the Council, the council's policies upon the approval by the cabinet of ministers, alter to bylaws with a lower legal value comparing to the laws passed by the parliament. As a result, the Council policies are not seriously embraced by the key actors and rather than an efficient policy

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integrator and harmonizer, the council altered to a ceremonial institution established only to satisfy the legal requirement made by LAECP.

Moreover, the NESP as the main output of the Council doesn't go beyond describing some sort of slogans, instead of practical policies which are precisely determined in detail and are meant to be achieved. Also, the NESP faces serious substantive shortcomings specially for the sustainability and social equity aspect of the energy system. The climate change and a roadmap for transition towards a low carbon energy system has not even once been addressed in the NESP. This plan calls for halving the energy intensity in its 2041 outlook, however it neither defines any BAU scenario nor designs and decrees any possible intended detailed policy. Development of oil and gas sector is the dominant factor among the NESP policies, and sustainability concerns are only ambiguously addressed through the general call for development of renewable energies and improvement of energy efficiency. It was expected that the EPCNES as an executive plan clarify more details for the long-term energy policies. However, EPCNES also follows a similar path and only contain some general objectives that in most cases are not even quantified by any precise number. Similar to the NESP, the EPCNES doesn't enshrine enforcement tools for the objectives required.

The other major challenge of the energy policies is the fragmentation and lack of harmonization in implementation of policies. In fact, the successful outcomes of many policies depends and relies on the proper implementation of others. As instance, by withholding the implementation of Subsidy Reform Law in the first round of the Rouhani's government, the energy carriers prices have remained substantially low and as a result many of the energy efficiency enhancement policies haven't met their targets. This could be brought to a more general concept of the challenge in the rule of the law, where the administrations refuse to implement the laws passed upon the proposal of former administration, and in many cases the parliament also has failed to play an efficient role in this context.

As mentioned, most of the current energy policies are security oriented and are aiming to guarantee the continuous flow of energy for domestic consumption and keeping the export potentials in the short-term of mainly five years. As instance, in

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reacting to the continuous energy demand increase, the FYDPAs mainly decree supply development targets based on the BAU scenario, rather than emphasizing on needing to bolster efforts for improvement of efficiency.

Regarding the renewable energies, by considering the policy documents analysed in this paper, relying on massive oil and gas reserves and production, from the security point of view, development of renewable energies in Iranian energy policy could not be described as an urgent priority. Nevertheless, following to the shelving of the nuclear energy plans, development of renewables considered as the best option for diversification of domestic energy supply. Accordingly, renewable energies also considered as an alternative for responding to energy consumption growth, this could contribute to stabilizing and expanding oil, gas and electricity exports which are vital for the country not only for economic reasons but also for geopolitical and political consequences. Moreover, by recognizing renewable energies as a developing industry, Iranian policies support the development of know-how and technologies with the aim of providing a long-term business opportunity for Iranian manufacturers. Despite all of the mentioned policy references encouraging development of renewables, these policies could not be met until other required energy reform policies specially those related to remove of subsidies will be realized. Another challenge of renewable energy policies could be considered as the uncertainty of application. In fact, other drivers like sanctions against Iranian economy pose serious challenges against the possibility and feasibility of renewable energy development policies. Failure of removing electricity subsidies since 2010 by the implementation of Subsidy Reform Law and uncertainty over the application of Subsidy Reform Law in the coming years could pose the question that to what extent the Ministry could fill the gap between Feed-in-Tariff and end-user prices.

In addition to current persuasive policies, electricity market in Iran requires an applicable policy agenda towards fully liberalizing the electricity market. This may not only increase the Ministry of Energy ability for development of renewable energies but also could highly decrease current energy intensity and approach energy efficiency to international standards.

Part four, An Analysis of Legal Challenges

Part four, An Analysis of Legal Challenges

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Considering the policies analysed, energy laws and regulations are expected to provide the legal basis for the implementation of the policies. In this context, a wide range of laws and regulations are involved. The corresponding laws could be divided into two groups of directly and indirectly influential and involved regulations. From the first group; petroleum, environmental and energy laws and regulations have to be taken into account. Relatively, regulations determining the economic structure of the energy market, and the foreign and domestic investment laws could be addressed as indirectly influential regulations that have to be analysed.

As an answer to the increase of energy demand caused by the developing economy and population of Iran, the secure supply of energy in Iran requires considerable investments for enhancing energy efficiency and developing the sector as required by the policies.

According to the estimates of Iranian Ministry of Petroleum, during 2017-2022 petroleum sector requires 150 billion dollars investment to achieve the Sixth Development Plan targets.³⁵⁵ This investments are not only required for the developments of oil and gas production, but also required for the improvement of the efficiency and production of products causing less environmental degradations. However, during the last 4 decades, the total amount of foreign investment in the sector has not exceeded from 30 billion dollars.³⁵⁶ As it was analysed in policies part, achieving the renewable energy targets also requires considerable investment. Although political barriers have to be considered as major factor not letting Iran to meet the investments required by policies, it could be argued that lack of a clear, relevant and not-internationalized legal regime is also one of the main obstacles in this context.

³⁵⁵ 'The Ministry of Petroleum Proposal, Petroleum Sector Requires 150 Billion Dollars for Sixth Development Plan'

<<http://www.mop.ir/portal/Home/ShowPage.aspx?Object=NEWS&ID=ce06dc2a-5b48-4c21-b8d0-0d27094bade&LayoutID=912a60ab-89b6-4c35-8cc9-ae59d0709689&CategoryID=2e5daab6-b10c-410a-adc4-5e1dec0ca9d1>> accessed 10 April 2017.

³⁵⁶ See Table 7

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In past few years, new enactments have tried to provide a more competitive and relevant legal and contractual framework inspired by the existing practices of other states. Chapter 6 of this Part intends to provide an analysis of general regulations. Chapter 7 provides an autopsy of the legal framework for development Iranian petroleum sector. This chapter starts by analyzing the corresponding constitutional principles. It then focuses on the other related laws and regulations that form the investment framework. It then analyses the former buyback contractual framework that has been the main contractual instrument for the development of petroleum projects after the 1979 revolution. The chapter then analyses the recent developments and provisions of the new contractual framework called IPC. Chapter 8 later addresses the electricity market laws and regulations as the other major compartment of the energy sector followed by an in depth analysis of the recently designed legal framework for investments in renewable energies.

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Before addressing the energy laws and regulations in the chapter 7 and 8, this chapter analyses the general laws and rules regarding the foreign investment and the regulations applying to foreign entities that are interested in entering to the Iranian energy market. Foreign investments have a substantial impact on the energy sector in Iran. Maintenance of the current oil and gas capabilities and realization of expected developments necessarily requires the foreign investment and technologies. Meeting expected development in renewable energies also highly depends on foreign investments. As mentioned in the introduction part, in last few decades Iran has failed to provide a secure and attractive ambiance for the involvement of foreign companies in different sectors of its economy including the energy sector. One may argue that the political tensions between Iran and international community and specially the USA are the main barrier in this context. The political debates specially where they lack legal implications are beyond the scope of this research and hence, this research doesn't address them. However, despite the political challenges, the corresponding laws and regulations in Iran are also face serious shortcomings in stimulating foreign investment and hosting new technologies. In contrary, certain initiatives in renewable energy laws and policies have led to promising achievements in increasing their share in Iranian energy mix. This means that reforms in law and policies, despite the political barriers in place could make certain achievements.

In current order, there are three categories of corresponding laws and regulations that form the Iranian legal framework for foreign investment in the energy sector. Firstly, general regulations concerning commercial activities of foreigners and foreign companies, such as certain provisions of the Constitution, of the Registration of Branches and Agent Offices of Foreign Companies Law(RBAOFCL), of the Law on Management of Free Economic and Industrial Zones(LMFEIZ) and of the Foreign Investment Promotion and Protection Law (FIPPL). Secondly, laws and regulations that include natural resources and specifically petroleum management rules, duties and authorities, such as certain provisions of the Constitution, The Petroleum law from 1987 as amended in 2011, the Ministry of Petroleum Tasks and Authorities Law (MPTAL) from 2012; and

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thirdly, the provisional and temporal laws including certain related regulations, like the Annual Budget Laws and the Five Year Development Plan Laws.³⁵⁷

8.1. The Foreign Investment Promotion and Protection Act (FIPPA)

One of the most important component of every legal system is the regulations concerning the protection of foreign investments. Most of the developing countries that moved from a least developed situation towards a stronger and more developed economy have adopted and applied efficient foreign investment protection regulations. Common principles of the host states' approach towards foreign investors could be identified. Despite the very plurality in the nature of different legal systems, equal treatment under the law; clear limits on expropriations and provision for compensation in the event of expropriation; transferability of investment related funds; restrictions on the imposition of local performance requirements; freedom to choose management personnel; and dispute settlement through international arbitration could be identified and named as common principles applicable to foreign investments.³⁵⁸

8.1.1. An Introduction to FIPPA

FIPPA and as the main Iranian foreign investment law has been ratified in 2002 as an endeavour to establish more clear legal protection for foreign investors specially in the absence of bilateral agreements. In fact, years after expropriations that occurred after the 1979 revolution, and by leaving the consequences of eight years war with Iraq, FIPPA was an attempt to help the more stabilized political ambient for attracting foreign investments. FIPPA Implementing Regulations Bylaw also regulates details of the implementation of FIPPA measures.

³⁵⁷ Every 5 years, Iranian government designs a comprehensive midterm plan for development of country in all of social, cultural and economic aspects. Government proposes these laws to Iranian Parliament for approval. Currently the 5th Five-Year Development plan law is in progress. During other issues, Development Plan Laws determine certain regulations in petroleum sector.

³⁵⁸ **Error! Bookmark not defined.**Michael R Czinkota and Charles J Skuba, 'Contextual Analysis of Legal Systems and Their Impact on Trade and Foreign Direct Investment' (2014) 67 Journal of Business Research 2207, 2209 <<http://dx.doi.org/10.1016/j.jbusres.2014.01.005>>.

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Article 1 determines the meanings of the terms and expressions used in the Act as below:

Investor: Any natural or legal non Iranian or Iranian person utilizing capital of foreign origin having obtained the Investment License referred to in Article 6.

Foreign Capital: All types of capital, including cash or non-cash that has been imported into the country by the Foreign Investor and includes the following:

Sums in cash entering the country in the form of convertible currency through the banking system or other means of transfer approved by the Central Bank of the Islamic Republic of Iran.

Article 1 defines equipment and machinery as: a. Spare parts and tools, raw material, manufacturing parts, additives and auxiliary material b. Patent rights, technical know-how, trade names, trademarks and specialized services c. transferable dividends belonging to the Foreign Investor, and d. other authorized cases with the approval of the Council of Ministers. According to Article 21 of the FIPPA IRB the value of the equipment and non-cash investments have to be evaluated by the Iranian Customs.

Recognizing and referring to intellectual property rights could be considered as a step forward in the act. Specially where in the absence of modern intellectual property regulations, securing these rights have been one of the main concerns of foreign investors.

8.1.2. Admission of Foreign Investment

Under general international law, countries enjoy the freedom to regulate the admission of foreign investment into its territory, in the absence of treaty obligations and contractual commitments. Countries have the discretion to admit or reject foreign investment in accordance with their laws, although the degree of discretion maintained differs from country to country. A state can exercise its jurisdiction over all individuals and property when they cross its frontiers because they fall under the territorial authority of the state, which includes everything within

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its territory including sovereignty over the state's natural resources such as mineral deposits.³⁵⁹

For being covered by the law investment protection mechanisms, FIPPA requires foreign investors to obtain a specific foreign investment licence to be issued in conformity with Article 6 of this Act for each case of Foreign Investment. To obtain an investment licence, an application has to be made to the Organization for Investment, Economic and Technical Assistance of Iran (OIETAI) and such licence will be granted upon meeting certain criteria, including the requirement that the foreign investment should lead to economic growth, promotion of technology and quality of production, and an increase in employment, opportunities and exports.

Organization: The Organization for Investment, Economic and Technical Assistance of Iran (OIETA) subject of Article 5 of the Law on Establishment of Ministry of Economic Affairs and Finance (1974).

Board: Foreign Investment Board subject of Article 6 of this Act.

Chapter Two of the act deals with general criteria for admission of foreign capitals. These criteria have been set to protect the domestic investment and domestic businesses from possible negative impact of foreign investments. Therefore, Article 2 of the Act on the admission of Foreign Investment notes: in compliance with other current laws and regulations of the country must be for development and productive activities in the fields of industries, mines, agriculture and services shall be based on the following criteria:

Shall lead to economic growth, promote technology, promote quality of productions, increase employment opportunities and increase exports

³⁵⁹ Ardeshir Atai, 'Comparative Analysis of the Iranian Foreign Investment Law and the World Bank Guidelines on Treatment of Foreign Direct Investment' (2019) 12 Yearbook of Islamic and Middle Eastern Law Online 111, 113–114.

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Does not jeopardize national security and public interest, harm the environment, disrupt the national economy, or disturb productions dependent on domestic investments.

Mohamed Elheddad has provided a detailed research on the impacts of foreign direct investment and domestic investment from oil-exporting Gulf Cooperation Council(GCC) Economies. Iran is not a member of the council, however, the oil exports based economy of Iran shares many similarities with GCC economies.

In this regard, according to Elheddad, the main concern is whether foreign direct investment crowds-in or crowds-out domestic investment, whether public or private. This is a very important issue. While some studies have found that foreign direct investment stimulates, others have concluded that foreign direct investment replaces domestic investments.³⁶⁰

Elheddad provides novel empirical evidence of the effects of different types of foreign direct investment on the domestic investment ratio in the oil-rich economies of the GCC countries. Theoretically, the consequences of inward foreign direct investment on the host country's domestic investment ratio depend on the motives for investing abroad. Because different types of foreign direct investment cannot be distinguished by sector, the effect of foreign direct investment on the home country's domestic investment becomes a debatable question.

Later, article 2 of the Act addresses this concern and sets defined limits for the foreign investment. According to Article 2, the proportion of the value of goods and services produced by Foreign Investment under this Act in comparison with the value of goods and services supplied in the domestic market at the time of issuance of Investment License, in each economic sector, shall not exceed 25% and in each economic sub-sector shall not exceed 35%. The determination of sub-sectors and

³⁶⁰ Mohamed Elheddad, 'Foreign Direct Investment and Domestic Investment: Do Oil Sectors Matter? Evidence from Oil-Exporting Gulf Cooperation Council Economies' (2018) 103 *Journal of Economics and Business* 1, 11 <<https://doi.org/10.1016/j.jeconbus.2018.11.001>>.

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amount of investment in each will be pursuant to regulations ratified by the Council of Ministers.

Foreign Investment for production of goods and services for exports except for crude oil shall be exempt from such proportions.

Note: The Law Pertaining to Ownership of Immovable Property by Foreign National approved on June 6, 1931 remains applicable. The ownership of any type of land in any amount in the name of the Foreign Investors is not permitted within the framework of this Act.

Using a unique dataset from six oil-producing countries, over the period from 2003 to 2013, aggregate-level results show that foreign direct investment inflows complement public domestic investment, whereas private domestic investment is substituted by inward foreign direct investment. Conversely, outbound foreign direct investment has a positive effect on private domestic investment, ranging in magnitude between 1.02 and 1.38. Sector-level analysis shows that foreign direct investment related to the oil sector contributes to public investments in the GCC economies, but foreign direct investment into other sectors, such as manufacturing and services, has insignificant and unclear effects on domestic investment. According to Elheddad These results provide empirical evidence that foreign direct investment inflow to GCC economies follows the production structure (oil-dependent) rather than leads it.

The findings of this paper have implications for resource-rich economies in general, and GCC countries (oil states) in particular.

Elheddad suggests that these countries should diversify FDI into different productive sectors, such as finance and tourism, improving their financial institutions and giving more space for the private sector to engage with foreign firms, rather than letting foreign investors be manipulated by their state-owned firms, which would limit transformation of technology. GCC countries should adopt screening policies to guarantee that FDI does not displace domestic firms; MNCs should also transform advanced technologies or introduce new products to

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the country's export basket. This process requires administrative skill to implement effective screening policies. Alternatively, these countries might adopt a fairly liberal system and then pursue specific companies that fit well with the process of climbing the quality ladder.³⁶¹

Article 2 of the Act also emphasises on the constitutional prohibition of granting concessions.³⁶² It reads: Licenses shall not involve the granting of concession by the government to Foreign Investors; concession means distinctive rights that place foreign investors in an exclusive and monopolistic position

Article 3 of the act illustrates the admitted contractual frameworks. Article 3 reads: foreign investments admitted in compliance with the provisions of this Act shall enjoy and facilities and protections of this Act. These investments may be admitted by the following means:

1. Direct foreign investment in those fields that private sector activity is authorized
2. Foreign investments in all sectors within the frameworks of “civil partnership”, “buy back”, and “build, operate and transfer (BOT)” where the return of principal and profit arises solely through the economic activity of the same investment project and does not rely on any guarantee by the government or banks or government companies.

Note: While Foreign Investment or the interest thereof invested through the “build, operate and transfer” scheme according to clause (b) of the present Article is not fully amortized, imposition of ownership rights by the Foreign Investor onto the investment project firm in proportion with retained share capital shall be permissible.

Article 4 sets another criteria for investors. Investment in the Islamic Republic of Iran by foreign government(s) shall be approved by the Islamic Consultative

³⁶¹ *ibid* 10.

³⁶² See. Chapter 7.2.2

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Assembly on a case by case basis. Investments by foreign government companies shall be treated as private investment.

Chapter Three of the Act determines the decision making bodies.

As explained before the Organization is the unique body in this context. Article 5 reads: The Organization is the only official body in the country for encouragement of foreign investments and pursuing all the relevant affairs of foreign investment and all requests by foreign investors pertaining to the relevant matters such as admission, entry, utilization, and export of capital shall be submitted to the Organization.

Article 6 later reads: in order to review and decide upon the requests subject of Article 5, a board referred to as the “Foreign Investment Board” shall be set up to be presided over by the Deputy Minister of Economic Affairs and Finance as the head of the Organization and shall consist of Deputy of Minister of Foreign Affairs, Vice-Chairman of the State Management and Planning Organization, Vice-Chairman of the Central Bank of Iran, as well as the deputies of other ministries concerned, as the case may be.

Concerning the request of admission, the Investment Licenses shall be issued upon approval of the Board and confirmation and signature of the Minister of Economic Affairs and Finance.

When accepting Foreign Investment, the Board shall be obliged to observe the criteria set forth in Article 2 of this Act.

Note: Within a maximum of 15 days from the date of application, the Organization shall complete preliminary examination and recommend its decision to the Board. The Board must within one month of receiving the application, examine and announce in writing its final decision in regards to the application.

Requirements set by articles 5 and 6 could be considered as a bureaucratic barrier towards investment. The deadline of 15 days set in the note is not containing any enforceable mechanism.

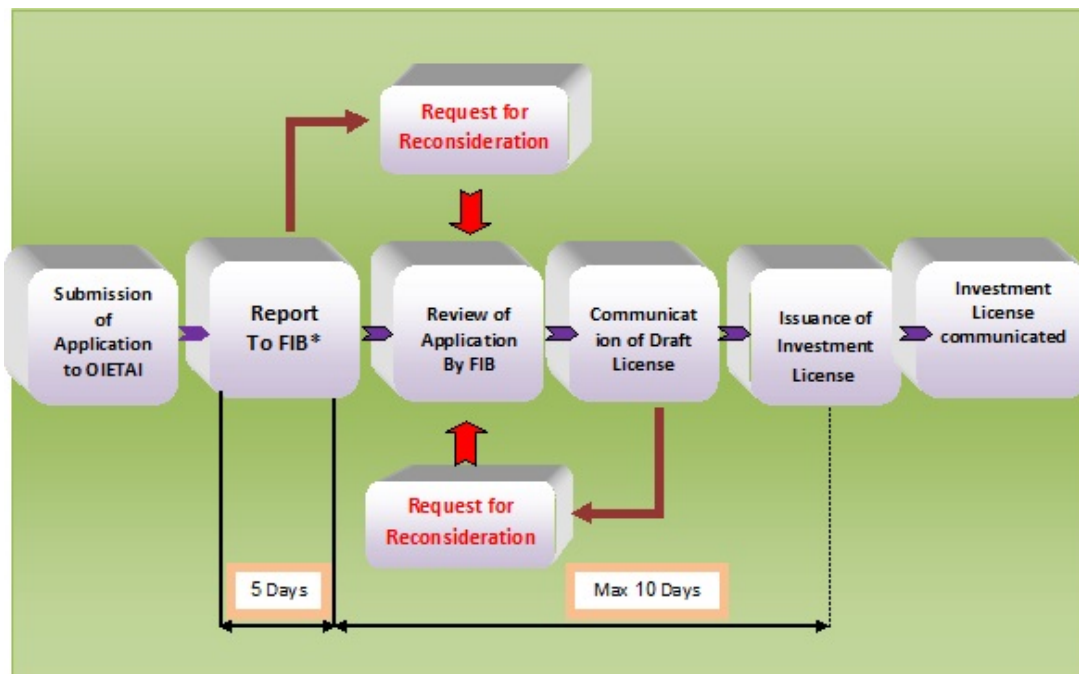
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According to article 7, as a matter of facilitation and acceleration of procedure of acceptance and activity of foreign investments in the country, all relevant organizations including the Ministry of Economic Affairs and Finance, the Ministry of Foreign Affairs, the Ministry of Commerce, the Ministry of Labour and Social Affairs, the Central Bank of the Islamic Republic of Iran, Islamic Republic of Iran Customs, Office for Company Registration and Industrial Ownership and the Environment Protection Organization, are required to introduce a fully authorized representative, certified by the highest official of the entity, to the Organization. The nominated representatives will be recognized act as intermediaries and coordinators of all relevant affairs of that entity and the Organization.

Article 7 has been added to avoid expected delays to set a mechanism for acceleration of the licencing procedures.

The organization has clarified the procedure and an online platform has been designed for acceleration of the procedures.

Figure 39. Investment Licensing Procedure



Source: <https://www.investiniran.ir/en/investmentguide/procedure>

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To conclude the FIPPA criteria for the admission of foreign investment, it is clear that investment is not limited to any particular economic sector except matters relating to national security. Foreign investors can enter the Iranian market without encountering any obstacles provided that the domestic laws and regulations are respected. However, unlike the old foreign investment law, which afforded protection to foreign investment projects involving government payment guarantees, FIPPA protection is only available to projects, which does not depend on any other type of government guarantee. For example, foreign investment through BOT scheme can either have FIPPA protection or the government guarantees but not both.³⁶³

8.1.3. Regulations on Treatment of Foreign Investors

Chapter Four of the FIPPA inherits regulations on Guarantee and Transfer of Foreign Capital and could be considered as one of the most important contents regarding the foreign investments. Fair and equitable treatment against foreign investors, national treatment in providing investment opportunities, security of ownership of properties, ensuring the transfer of investment capital and profits, accessibility to investments and ensuring visa issuance are essential principals of the treatment of foreign investors stipulated by the World Bank guideline.³⁶⁴

Article 8 of FIPPA orders that foreign investments subject to this Act shall enjoy the same rights, protections and facilities available to domestic investments in a non-discriminatory manner.

According to article 10, transfer of all or part of the Foreign Capital to a domestic investor or upon the approval of the Board and confirmation of Minister of Economic Affairs and Finance, to another foreign Investor shall be permissible. In case of transfer to another Foreign Investor, the transferee, who shall have at least

³⁶³ Atai (n 359) 118.

³⁶⁴ See: The World Bank, 'Legal Framework for the Treatment of Foreign Investment (Vol II) Guidelines (Report to the Development Committee and Guidelines on the Treatment of Foreign Direct Investment)' (1992)
<<http://documents.worldbank.org/curated/en/955221468766167766/pdf/multi-page.pdf>>.

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the qualifications of the original investor, will replace and/or become partners with the original investor for the purposes of the regulations of the present Act.

Chapter Five of FIPPA deals with regulations pertaining to admission, import and export of foreign capital.

The permitted manners of importing capitals is clarified by the article 11. Foreign Capital may enter the country and be covered under this Act through one or a combination of the following: Cash sums converted to Rials, Cash sums not converted to Rials to be used directly for purchases and orders related to the Foreign Investment, Non-cash items upon completion of the evaluation process by the competent authorities.

The fluctuations of the Iranian currency is one of the main concerns of foreign investors. Article 12 sets that the applicable foreign exchange rate at the time of entry or exit of Foreign Capital as well as all foreign exchange transfers shall in the case of applicability of a unified exchange rate be that rate prevailing in the country's official network and otherwise the daily free market rate as recognized by the Central Bank of Iran. Relied on exports of petroleum products, the government in Iran is the major holder of the foreign currency. In the majority of the cases, the official rates set by the central bank are different with the market. This article aims to provide the legal basis for foreign investors to exchange their investment capitals by the official currency.³⁶⁵

Regarding the transfer of the capitals invested and its benefits, article 13 determines the details. According to this article, the principal and interest of Foreign Capital or any portion of the capital remaining in the country may be transferred abroad with a three-month notice to the Board upon fulfilment of all outstanding obligations, payment of legal deductions and the approval of the Board and confirmation of Minister of Economic Affairs and Finance. According to the following article(14),

³⁶⁵ See Mohsen Bahmani-Oskooee, 'History of the Rial and Foreign Exchange Policy in Iran' (2005) 10 *Iranian Economic Review* 1; Masoud Nonejad and Masoud Mohammadi, 'The Effect of Exchange Rate Fluctuation on Economic Activities of Iran' (2016) 5 *International Review of Management and Business Research* 353.

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the profits of Foreign Investment may be transferred abroad upon deduction of taxes, duties and legal reserves with the approval of the Board and confirmation of the Minister of Economy and Finance.

According to article 15, payments for the principal part of financial facilities and related expenses of Foreign Investors, contracts related to patent-right, know-how, technical and engineering, trade name and trademark, management and other similar contracts within the framework of Foreign Investment may be transferred abroad pursuant approval of the Board and confirmation of the Minister of Economic Affairs and Finance.

As explained, normally, there is a considerable difference between the official and market rates of exchange. The political sanctions intensifies this gap and it may led to huge loss for investors.³⁶⁶ However, acquisition of the foreign currencies under the official offer by the Central Bank is always subject to conditions. According to article 17 of FIPPA, acquisition of foreign exchange for transfers subject of Articles 13, 14 and 15 is possible through the following methods: first, regarding the purchase of foreign exchange from the banking system Using the foreign currency earned through the export of commodities produced, and/or the foreign currency earned through providing services of the economic firm in which the foreign capital is utilized, and second, export of authorized goods as per a list to be approved for implementation of this clause, by the Council of Ministers with due regard to relevant laws and regulations. This article requires that the application of one or a combination of the above methods shall be provided for in the Investment License. In the case of investments subject of Buy-backs, BOTs and civil partnerships, should laws or government regulations lead to prohibition or cessation of approved financial agreements within the framework of FIPPA, then the government shall

³⁶⁶ See 'US: Sanctions Have Cut Iran's Accessible Foreign Currency to \$10 Billion | Voice of America - English' <<https://www.voanews.com/middle-east/voa-news-iran/us-sanctions-have-cut-irans-accessible-foreign-currency-10-billion>> accessed 7 January 2020.

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procure and pay the resulting damages with the ceiling being the matured and due instalments.³⁶⁷

In case that part of Foreign Capital which is imported into the country within the framework of the Investment License remains unused, according to Article 18, it is not subject to any foreign exchange or imports-exports' laws and regulations.³⁶⁸

To conclude on the treatment regulations, FIPPA guarantees transfer of funds by affording foreign investor protection against political risks including adverse legislation changes. FIPPA also guarantees transfer of instalment payments of the foreign investor in respect of approved financial agreements for investments subject to Article 3(b) (civil partnership, buyback, and BOT), where payments of instalments are interrupted or prohibited due to adverse changes in the law. The Central Bank is under an obligation to make available a foreign currency equivalent of the transferable funds subject to Article 17(a) (purchase of foreign currency from the bank) to the foreign investor by the approval of OIETA.³⁶⁹ However, the fluctuations of Iranian Rial, specially under the significant eventual impacts of the USA sanctions could be considered as a serious challenge for foreign investors. This issue intensifies when the foreign currency official value rate considered by the Central Bank is lower than the real market value and adequate compensation mechanism is not provided by the Central Bank. Recently, following the re imposition of the sanctions by the Donald Trump administration, the value of Iranian Rial has dramatically dropped for over 300% in a sixth month period. Central Bank of Iran also didn't succeed to feel the 200% value gap between the official and market rates. As a consequence, foreign investors have lost huge amount of their investments in Iran.³⁷⁰

³⁶⁷ Official Gazette of Islamic Republic of Iran No 14150 dated 7th of October 1993, Ghanooone Hemayat va Tashviqe Saramayegozarie Khareji (Foreign Investment Promotion and Protection Law) Article 13,14,15.

³⁶⁸ *ibid* Article 18.

³⁶⁹ Atai (n 359) 122.

³⁷⁰ See 'Iran Currency Extends Record Fall as U.S. Sanctions Loom - Reuters'
<<https://www.reuters.com/article/iran-nuclear-currency/iran-currency-extends-record-fall-as-u-s-sanctions-loom-idUSL5N1UP0AF>> accessed 4 January 2020.

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8.1.4. Regulations on Expropriation and Compensation

According to Article 9: Foreign Investment shall not be expropriated or nationalized unless for the public interest, through a legal process, in a non-discriminatory manner, and against payment of appropriate compensation based on the real value of that investment immediately before the expropriation.

Note 1: Requests for compensation must be submitted to the Board within a maximum of one year following the expropriation or nationalization.

Note 2: Disputes resulting from expropriation or nationalization will be settled according to Article 19 of the present Act.

8.1.5. Dispute Settlement under FIPPA

Chapter Six of FIPPA deals with settlement of disputes. Before addressing this chapter, Article 139 of the Constitution shall be taken into account. Article 139 reads: *“Resolving the litigation related to public and state property or referring it to arbitration is contingent, in each case, upon the approval of the Council of Ministers, and must be communicated to the Assembly. In cases where the party to the dispute is a foreigner and in important internal cases, it must also be approved by the Assembly. The law determines the important cases.”*

According to article 19 of FIPPA, any disputes between the government and foreign investors related to the investments subject of this Act which cannot be settled through negotiations, shall be examined by domestic courts of law, unless another mode of settlement of disputes has been agreed upon within a law on bilateral investment agreement with the government of the Foreign Investor.

Article 19 open the rooms for dispute resolution through arbitration in case there is a BIT between Iran and the home country of the investor. Iran has some 71 BITs with other nations.³⁷¹

³⁷¹ United Nations Conference on Trade and Development, ‘Iran, Islamic Republic of | International Investment Agreements Navigator | UNCTAD Investment Policy Hub’

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A shortcoming of FIPPA is the pre-condition for the existence of BIT providing for arbitration as the dispute settlement mechanism before parties can resort to arbitration proceedings. An obstacle for foreign investors involved in a dispute with the government is the aforementioned Constitutional requirement prohibiting recourse to arbitration without the prior approval of the parliament. Therefore, investors wishing to settle disputes arising out of contract with the government through arbitration must obtain the parliament's approval. This implies that the approval of the parliament is required before arbitration can take place even where a suitable BIT exists with the home state of the investor.³⁷²

8.1.6. Other General Regulations

Chapter Seven of FIPPA sets final regulations. Article 20: The relevant executive bodies are required to accommodate the requests of the Organization in matters concerning issuance of visas, residence permits, issuance of work and employment permits on a case by case basis which shall be required for foreign investors, managers and/or experts working of the private sector and connected to foreign investments subject to this Act and for their next of kin. Disputes between the Organization and executive bodies will be settled according to the decision of the Minister of Economic Affairs and Finance.

Article 21 deals with the transparency and public access to the investment opportunities information. According to Article 21 the Organization is required to facilitate public accessibility to all information pertaining to investment and foreign investors, investment opportunities, Iranian partners for the related activity and other information available to the Organization.

Article 22 requires the governmental institutions to provide investment information to Organization. According to Article 22, all ministries and government companies and organizations as well as those public institutes that the applicability of law to

<<https://investmentpolicy.unctad.org/international-investment-agreements/countries/98/iran-islamic-republic-of?type=bits>> accessed 7 January 2020.

³⁷² Atai (n 359) 127.

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them requires specific mention are required to provide the Organization with all information needed for foreign investment and reports on foreign investments made, so that the Organization could act upon according to the Article 21.

According to Article 23, the Minister of Economic Affairs and Finance is required to provide the relevant Parliament commissions with a report on the performance of the Organization with respect to Foreign Investment subject of this Act every six months. The objective of the requirement of the Article 23 is not clarified. It is not clear that the submissions of information to the Parliament is in line with the supervision or legislative role of the Parliament. However, it could be expected that such reports provide the data for the specialized commissions of the Parliament that could guide further economic and investment policies.

According to Article 24: as of the date of approval of this Act and its executive by-laws, the former Law on Attraction and Protection of Foreign Investment (approved on October 29, 1955) and the relevant by-laws are repealed. All foreign capital subject to the former law will be covered by FIPPA. The provisions of FIPPA will be repealed or modified by any subsequent and upcoming laws and statutes only if a specific provision shall be stipulated in them reiterating such nullification or modification.³⁷³

8.2. Domain of the Activities of Foreign Entities

Under the Iranian corporate law, and FIPPA, foreigners could own 100 per cent shares and control a company registered in Iran without any legal restriction.³⁷⁴

Prior to the Islamic Revolution the registration of foreign companies and their branch offices in Iran, used to be governed on the basis of Article 3 of the Act of Registration of Companies approved on May 31, 1932 and its subsequent

³⁷³ 'Foreign Investment Promotion and Protection Act(FIPPA)' <<https://www.investiniran.ir/en/filepool/44/Foreign-Investment-Promotion-and-Protection-Act-English?redirectpage=%2Fen%2Febook%2Fprotectionact>> accessed 10 July 2019.

³⁷⁴ Alireza Hasani and Fatemeh Zahmatisarab, 'The Challenge Immovable Property with Foreign Investments in Iran' (2016) 27 Journal of Poverty, Investment and Development 1, 3.

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amendments in compliance with Articles 4, 5, 6, 7, 8 and 9 of the same law as well as Articles 1 to 24 of the Executive By Laws of the Act of Registration of Companies approved on May 22, 1931 and its subsequent amendments. There existed no obstacle for registration of (Iranian) companies by foreigners and no major difference existed between registration of Iranian companies by foreigners and registration of branches or representative offices of foreign companies.³⁷⁵ After Islamic Revolution registration of Iranian companies by foreigners as well as the registration of branches and representative offices of foreign companies was influenced by the anti-foreigner involvement narrative that was discussed in introduction, and Part two. It was first considered as being contrary to Article 81 of the Constitution which strictly and explicitly bans “granting the concession of formation of companies and institutes to foreigners”. The notion of “granting concession to establish companies” in the Constitution is vague and it is not clear that it refers to a general ban on the formation of companies with foreigners shareholders, or the ban pertains to granting a special Concession to foreigners that provides an special right for doing certain business in Iran.

Several governmental bodies have asked the Guardian Council for an advisory opinion clarifying the notion and domain of the ban under Article 81.³⁷⁶ In a reply to the inquiry by the Prime Minister in 1981, the Guardians Council, mentioned that “foreign companies that have concluded legal contracts with Iranian government organizations may register the branches of their companies in Iran according to Article 3 of the Act of Registration of Companies in order to carry out their legal obligations and conduct their businesses within the limits set forth in the contracts concluded by them and such registration shall not be in contravention of the provisions of the Constitution.”³⁷⁷ In several other opinion, the Council has confirmed this position, therefore, the notion of the prohibition under article 81

³⁷⁵ ‘Registration of Branches and Representatives Offices of Foreign Companies in Iran’ <<http://www.right-dadyaran.com/blog-post-new-test/>> accessed 10 September 2018.

³⁷⁶ See Guardian Council of the Constitution, ‘The Constitution Principles in Light of Opinions of the Guardian Council, Article 81 (In Persian: Osoule Ghanoune Asasi Dar Parto Nazarate Shoraye Negahban, Asle 81)’ <<http://www.shora-rc.ir/portal/file/?235447/Po960511-26.pdf>>.

³⁷⁷ ‘Registration of Branches and Representatives Offices of Foreign Companies in Iran’ (n 375).

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seems to be limited to granting the concession rights and not the formation of companies.

Later, on 1997, The Law Permitting Registration of Branches and Representatives Offices of Foreign Companies was adopted in a single article:

Sole Article- The foreign companies considered as being legal in their own countries of origin may, on provision of reciprocal treatment by their governments in respect of Iranian companies, set up branches and representative offices in Iran to carry out the businesses authorized by the government of Islamic Republic of Iran in due compliance with the Laws of Iran.

In the note to this sole article, all the details of the branch and representative offices has been assigned to the executive By-laws of this law that shall be proposed, by the Ministry of Economy and Finance with the cooperation of other pertinent authorities to be approved by the Cabinet of Ministers.³⁷⁸

As was required by the law, Cabinet of Ministers, in 1999, pursuant to a proposal made by the Ministry of Economy and Finance approved the Executive By-laws which determines the details on the registration procedure of branch offices and representatives, as well as the domain of their activities and their responsibilities. According to article 1 of the bylaw, a foreign company known and admitted as a legal company in the country of registration, shall be authorized to have its branch or representative office registered in Iran, in case of reciprocal treatment of Iranian companies. The branch or representative office is entitled to perform these activities: 1. After-sale services for goods and services supplied by the foreign company. 2. Executive works of the contracts signed between Iranian and foreign companies. 3. Review and preparation of grounds for investment by the foreign company in Iran. 4. Cooperation with technical and engineering companies in Iran, for performance of works in a third country. 5. Promotion of Iranian non-oil exports.

³⁷⁸ *Iran Business Law Handbook Volume 1 Strategic Information and Basic Laws* (International Business Publications(IPB) 2016) 120,121.

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6. Technical and engineering services and transfer of technology and technical know-how to Iran. 7. Activities legally licensed by the authorized Iranian government authorities, in such areas as transportation, insurance, goods inspection, banking, marketing and the like. According to article two of the by-law, A branch office of a foreign company shall be the local office of the principal company which directly functions and attends to business within the objectives and duties undertaken by the principal company. Therefore, any business activity by such branch office shall be in the name and under the responsibility of the principal office of the company.³⁷⁹

8.3. Chapter Conclusion

Enactment of FIPPA could be interpreted as a turning point in post 1979 revolution legislations. In line with internationally recognized principles applicable to foreign investment, the act provides the main coverage required by the foreign investors. Moreover, according to Atai, FIPPA contains many modern and comprehensive provisions which are compatible with the World Bank Guidelines such as free admission of FDI, national treatment standard, protection against expropriation and payment of compensation in the event of nationalisation or expropriation of foreign investment, guarantee for transfer of funds and dispute settlement procedure for resolution of disputes between the investor and the government. FIPPA also recognises foreign investment through contractual arrangements such as civil partnership, buyback and BOT schemes, together with investments in the form of non-cash, including trade mark, know-how and technical services. FIPPA affords foreign investors protection against political risks such as adverse legislative changes. FIPPA, while containing extensive provisions for attraction of foreign investment, requires reform to facilitate greater flow of foreign investment by considering further measures in order to enhance its FDI framework, including: Remove the restriction on the market shares of the foreign investment, which is 25 per cent of the economic sector and 35 per cent in each branch. Remove the

³⁷⁹ Esmacil Karimian and others, *Investment Im Iran—Investment in Iran—سرمایه‌گذاری در ایران: Ein Praxishandbuch Für Die Zeit Nach Den Sanktionen Auf Deutsch, Englisch Und Farsi—A Practical Guidebook for the Post-Sanction Era in German, English and Farsi* (Springer-Verlag 2018) 115–118.

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restriction on the ability of the foreign investor to obtain government guarantees for project finance agreements (civil partnership, buyback and BOT schemes) by allowing investors to benefit from both FIPPA protection and government guarantees. FIPPA protection against political risks such as adverse changes of the laws which are enjoyed only by project finance agreements (civil partnerships, buyback and BOT schemes) should equally apply to FDI projects. Foreign investors should be allowed to have recourse to arbitration without the requirement for the existence of bilateral investment treaties with the investor home state. Recognition of other contractual methods of investments in the energy sector such as the “production sharing agreements” in addition to the currently accepted civil partnerships, buyback and BOT schemes. It is with these measures and continued improvement of the investment climate that the Iranian authorities will further encourage investors to choose Iran as an FDI location.³⁸⁰

³⁸⁰ Atai (n 359) 127.

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Five years after the end of the Iraq-Iran War and in the lack of enough capitals to invest in vital oil and gas industry, for the first time after the Islamic Revolution, in the year 1993 the budget law permitted the National Iranian Oil Company (NIOC) to conclude contracts with foreign companies under special terms and conditions.³⁸¹ The Iranian Parliament followed this new approach in the budget law of 1994 with more detailed conditions and under a new contractual model for development of oil and gas fields that was subsequently called as the Iranian Buy-back.³⁸² The Iranian Buy-back was an initiative of the Iranian legislature to respond to the necessity of foreign investment stimulation by simultaneously not violating existing regulations, especially related provisions of the Constitution. For over ten years, the Buy-back has been the unique instrument for the development of oil and gas projects in Iran. Various buyback contracts have been concluded between the NIOC and the IOCs.

Regardless of some achievements, the previous Buy-back model is disliked by the IOCs for the high risks it poses. The IOCs feel that the Buy-back model tends to immense potential misfortunes in the light of the fact that the IOC has exceptionally constrained choices to put a roof on its capital expenses. Furthermore, the way in which contracts are organized implies that at the time of signing long term pre-characterized operating targets are set that don't take into account the prevailing market condition, new drilling plans, reserve estimates and financing costs.³⁸³

Iranian authorities found out about the unpopularity of buy-backs. Some legal reforms needed to allow the Iranian Ministry of Petroleum to design new contractual models. The former petroleum legal framework of Iran did not authorize the Ministry of Petroleum to award more flexible agreements. Hence, the Iranian Parliament passed a law in 2012 called the MPTAL that adopts a wider approach towards oil and gas contracts. Following the enactment of the MPTAL and

³⁸¹ Budget Law, Islamic Parliament of the Islamic Republic of Iran, Iranian Official Gazette, 1993. No. 13966 dated 25/11/1371 (February 25, 1993).

³⁸² Budget Law, Iranian Official Gazette, 1994. No. 14313 dated 7/2/1373 (April 27, 1994).

³⁸³ < <http://www.clydeco.com/insight/updates/view/irans-new-integrated-petroleum-contracts-1> > accessed 20 July 2015.

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regarding the importance of stimulating foreign investment in Iran's petroleum industry, the Iranian Ministry of Petroleum unveiled the new generation of Iranian contracts that called Integrated Petroleum Contract (IPC). In addition to political challenges, lack of a transparent and explicit legal and contractual framework that stimulate the foreign investments has considered as another challenge towards the development of Iranian petroleum plans and expansion of country's exports to global markets. Recent legal development and the birth of IPC could be considered as a set of essays to answer to the existing legal challenge.

9.1. Opening remarks on legal framework of host governments

As argued by experts of International Energy Law, oil and gas industry in its nature has international elements. Both oil and gas exporters and importers and also international oil companies are affected by global developments, and practices and also influencing them. One of the most prominent legal events that occurred in this field is the effects of international practices on national legal petroleum regimes of the host governments. The legal petroleum regimes of the host governments comprise different types of laws which specially regulate the relation between national oil companies and foreign investors. As was mentioned, in Iran, Constitution, petroleum Laws, Foreign Investment Promotion and Protection Act and finally Ministry of Petroleum Tasks and Authorities Act are the main Iranian laws in this matter.

This has been interpreted as internationalization of national legal regimes. Talus defines the internationalization of national legal regimes:

...despite being part of the national system of the host country, these laws, regulations, and contracts are similar in content regardless of the host state. In this sense, they have an international element embedded in them. Similar provisions, clauses, and approaches can be seen in national petroleum laws and regulations as well as host government contracts regardless of the host state. This international element is not so much a result of a conscious choice to include internationally accepted provisions but more the result of the process of internationalization in this area of law:

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*in order to stimulate foreign direct investment, host governments must offer terms that give investors reasonable assurance that their investments will earn the profits for which they bargain.*³⁸⁴

Petroleum contractual models that are frequently used in different areas of the world such as Concessions, PSAs are implicitly recognized by authorities of host governments as international practices. In other words, the host government that seeks to attract foreign investments to develop their oil and gas fields have practically choose between these fiscal regimes.³⁸⁵

9.2. The Iranian Petroleum Legal Framework

According to Nasrollahi Shahri, Iran is an unusual and probably rare example of a country that during its petroleum industry history has experienced almost all valid and prototypical contractual regimes of all times, namely concessions, Production Sharing Agreements (PSA) and service contracts, all once very popular around the world. These contractual regimes manage the risk and rewards associated with investments in oil and gas projects.³⁸⁶

³⁸⁴ Kim Talus and others, 'Internationalization of Energy Law' in Kim Talus (ed), *Research Handbook on International Energy Law* (first, Edwar Elgar publication 2014) 10.

³⁸⁵ For the common fiscal regimes in different countries, see Lucas S Furtado, Edson Gonçalves and Luciano AR Costa, 'Risk and Rewards Dynamics: Measuring the Attractiveness of the Fiscal Regime in the Presence of Exploratory Risks' (2019) 132 *Energy Policy* 1274 <<https://doi.org/10.1016/j.enpol.2019.05.059>>; Nor Aziah Abdul Manaf and others, 'Towards Establishing a Scale for Assessing the Attractiveness of Petroleum Fiscal Regimes - Evidence from Malaysia' (2016) 88 *Energy Policy* 253; Hafez Abdo, 'Investigating the Effectiveness of Different Forms of Mineral Resources Governance in Meeting the Objectives of the UK Petroleum Fiscal Regime' (2014) 65 *Energy Policy* 48 <<http://dx.doi.org/10.1016/j.enpol.2013.10.021>>; Sylla Naby Moussa, Jiang Deyi and Li Lin, 'Analysis of Guinean New Mining Fiscal Regime: Considerations for Improvement' (2015) 46 *Resources Policy* 113; Andon J Blake and Mark C Roberts, 'Comparing Petroleum Fiscal Regimes under Oil Price Uncertainty' (2006) 31 *Resources Policy* 95; Felipe Costa Araujo and Alexandre Bevilacqua Leoneti, 'How Attractive Is Brazil's Oil and Gas Regulatory Framework to Investors?' (2019) 6 *Extractive Industries and Society* 906 <<https://doi.org/10.1016/j.exis.2019.05.009>>; Peter Mullins and Lee Burns, 'The Fiscal Regime for Deep Sea Mining in the Pacific Region' (2018) 95 *Marine Policy* 337 <<http://dx.doi.org/10.1016/j.marpol.2016.07.018>>; Christopher Hurst, 'Transnational Oil Companies and Natural Gas in Developing Countries' (1989) 17 *Energy Policy* 501.

³⁸⁶ Nasrollahi Shahri, N, *The Petroleum Legal Framework of Iran: History, Trends and the Way Forward*, China and Eurasia Forum Quarterly, Vol 8, No. 1 (2010) p 112

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Different scholars have been categorized the history of foreign investment in Iran's petroleum industry in a variety of literatures, but an act which was passed in 2011 adopt a new approach to Iran's petroleum legal framework, hence this legislature and its following developments should be considered as a turning point in this context. The current petroleum legal framework of Iran is rooted in over one century history of the oil operations.

The first concession that led to oil discoveries ever granted in the whole of the Middle East was in Iran, to William D'Arcy, in the year 1908. Exploration, exploitation and production activities after this concession was continued in a same way until the nationalization movement of Iran which wrapped up by adoption of Iran's oil industry nationalization act in 1951 by leadership of Prime Minister Mosaddegh. Although the nationalization made a historical point in Iran's petroleum history, the former coup d'etat of Mosaddegh's government turned Iran's petroleum contracts back to the before nationalization era but this time with a more complicated contract which formerly named 1953 Oil Consortium. The next turning point in this history was the adoption of second Iranian petroleum act in 1974. Based on this law, the oil industry of Iran declared national but this time in a real sense, but this law did not affect Consortium, and it remained in force until the 1979 Islamic revolution. The new drafted constitution of country entered into force after referendum in December 1979. No provision of constitution directly deals with the oil and gas activities and related foreign investments but according to history of unfair old fashioned oil concessions and under the effects of revolutionary ideas that considers pre-revolutionary economy a dominated economy by foreigner, several articles of constitution have related provisions.

In current order, there is a variety of corresponding laws and regulations that form the Iranian petroleum legal framework. Firstly, the Constitution of Islamic Republic of Iran contains principles regarding the natural resources regulations and petroleum administration. Moreover, the economic principles of the Constitution set certain measures related to the petroleum sector. Secondly, there are several specific laws that determine the powers and duties of Ministry of Petroleum and the subsidiary companies including The Petroleum Law from 1987 as amended in 2011 and the Ministry of Petroleum Tasks and Authorities Law (MPTAL) from 2012.

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Thirdly, there are several laws and legislations that regulate foreign companies' economic activities such as the Registration of Branches and Agent Offices of Foreign Companies Law (RBAOFCL), the Law on Management of Free Economic and Industrial Zones (LMFEIZ) and the Foreign Investment Promotion and Protection Act³⁸⁷ (FIPPA). Fourthly, some of the provisional and temporal laws and adopted plans contain certain related criteria such as Annual Budget Laws, the Five Year Development Plan Laws³⁸⁸ and National Strategic Energy Scheme.

9.2.1. Provisions of the Constitution

Following the 1979 Revolution, the new drafted Constitution of the country entered into force after the respective referendum in December of 1979.

While Ayatollah Khomeini and his loyalists took the leading of revolution, the Islamic approach became the predominant element in formation of the political and legal structure of the new regime.³⁸⁹ Therefore, Islamic principles under Shiite Sharia Law altered to a key factor in drafting the new constitution. It could be argued that the autopsy of mentioned Sharia Law principles not only could provide a better understanding of the Constitution but also could help to realize the governing approaches taken by current Iranian conservatives whom still maintaining a remarkable influence on every aspect of Iranian political, legal and economic developments. The comprehension of Sharia Law principles as a core of current Iranian legal and political order also could provide a better analysis of

³⁸⁷ Official Gazette of Islamic Republic of Iran No 14150 dated 7th of October 1993 Ghanooone Hemayat va Tashviqe Saramayegozarie Khareji(Foreign Investment Promotion and Protection Law) (n 367).

³⁸⁸ As was seen in Part two, Every 5 years, Iranian government designs a comprehensive midterm plan for development of country in all of social, cultural and economic aspects. Government proposes these laws to Iranian Parliament for approval. Currently the 5th Five-Year Development plan law is in progress. During other issues, Development Plan Laws determine certain regulations for petroleum sector.

³⁸⁹ While Shia and Sunni branches share many similarities in their Sharia laws, in case of the political rules there is a considerable distinction. It is worth mentioning that the reference for Islamic Principles in Iranian legal order is based on Shiite Islamic teaching which is one of the schools of Islamic laws. See Mohammed Aly Sergie and Tony Johnson, 'Islam : Governing Under Sharia' [2014] Council on Foreign Relations 1 <<http://www.cfr.org/religion/islam-governing-under-sharia/p8034>>; James Moore, 'The Sunni and Shia Schism: Religion, Islamic Politics, and Why Americans Need to Know the Differences' (2015) 106 The Social Studies 226 <<https://doi.org/10.1080/00377996.2015.1059794>>.

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expected developments in future. There are several principles of The Constitution that explicitly, or implicitly refer to the dominance of Islamic Principles over the Constitution. According to the preamble of the Constitution,

‘The concept of Islamic government, based on the governance of the jurisprudent (velāyat-e faqih)³⁹⁰, which was provided by Imam Khomeini at the height of the repression and oppression by the despotic regime, produced a clear and unifying goal among Muslim people. It opened the way for authentic Islamic doctrinal struggle, and further intensified the struggle of the committed Muslim militants both inside and outside Iran.’

Later in introduction it reads: *‘Based on the sovereignty of the command [of God] (velāyat-e amr) and continuous religious leadership (imāmat), the constitution prepares the background for the actualization of leadership by a qualified jurisprudent who is recognized as leader by the people (“Administration of affairs should be by those scholars who are learned in regard to God and that which He has permitted and that which He has forbidden”) this leadership protects various institutions against deviations in fulfilling their authentic Islamic responsibilities.’*

In addition to the introduction contents that ascertain the Islamic approach as the main inspiration source for every aspect of governance, several articles emphasis on Islamic principles.³⁹¹ Article 1 reads: *‘The government of Iran is the Islamic Republic, which the nation of Iran based on its long-held belief in the rule of the truth and the justice of the Qu’ran, and after its victorious Islamic revolution, under the leadership of marja’-e taqlīd the exalted Grand Ayatollah Imam Khomeini, has established.’* Article 2 considers the Islamic faith as the main basis of the system: *‘The Islamic Republic is a system based on the faith in: 1. one God (“There is no god but Allah”), the exclusive attribution of sovereignty and the legislation of law to Him, and the necessity of surrender to His commands; 2. divine inspiration and*

³⁹⁰ For the concept of *velāyat-e faqih*, see Neil Shevlin, ‘Velayat-e Faqih in the Constitution of Iran: The Implementation of Theocracy’ (1998) 1 U. Pa. J. Const. L. 358.

³⁹¹ See Said Amir Arjomand, ‘Constitution-Making in Islamic Iran: The Impact of Theocracy on the Legal Order of a Nation-State’ [1989] *History and Power in the Study of Law: New Directions in Legal Anthropology* 113.

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its foundational role in the articulation of the laws; 3. resurrection and its constructive role in explanation of laws; 4. the justice of God in creation and legislation; 5. belief in the Imams (imamat), continuous leadership, and its fundamental role in the continuity of the Islamic Revolution; 6. the wondrous and exalted status of human beings and their freedom, which must be endowed with responsibility, before God. These are achieved through a. the continuous striving to reason (ejtehad) of qualified jurists (foqaha) who possess the necessary qualifications based on the book (Qur'an) and the Traditions of the infallible (ma'sumin), peace be upon them all; b. the employment of sciences, technologies, and advanced human experience with the aim of their further development; c. the negation of all kinds of oppression, authoritarianism, or the acceptance of domination, which secures justice, political and economic, social, and cultural independence and national unity.'

Article 4 of the Constitution ordains the most explicit principle of Islamic dominance over all of the country's laws: *'All civil, penal, financial, economic, administrative, cultural, military, political, and other laws and regulations must be based on Islamic criteria. This principle governs all the articles of the constitution, and other laws and regulations. The determination of such compatibility is left to the Fiqaha of the Guardian Council.'*³⁹²

9.2.2. Corresponding Shia Sharia Law Principles

Also, there is not any Islamic paradigm for the economy, some principles under Sharia Law concerns the economic aspects of governance. From the establishment of Islamic republic of Iran since 1979 these principles have been playing a remarkable role in Iranian legal system.³⁹³ As explained in last section any law and regulation that breaches these principles has to be annulled by the Guardian Council

³⁹² For discussion on the role of Fiqaha, and Ejtihad in Islamic Republic Constitution, see Andrew Harding, *Sharia Incorporated: A Comparative Overview of the Legal Systems of Twelve Muslim Countries in Past and Present* (Jan Michiel Otto ed, 2010) 330.

³⁹³ For economic implication of Sharia law in general, see SA Aluko, 'The Social and Economic Implications of Sharia Law' 1
<http://www.nigerdeltapeoplesworldcongress.org/articles/social_and_economic.pdf>.

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of the Constitution. An analysis over all of these Islamic economic regulations is beyond the scope of this thesis. However, for providing a better understanding of related principles, an assessment of these rules is provided in this section.

9.2.2.1 Anfal

There are three types of properties recognized by Shiite Sharia teachings, private properties, public properties and State properties. Public properties are those owned by Islamic government as loot of wars against non-believers. State properties or Anfal are firstly wasteland, secondly natural resources including mines, thirdly property of undetermined ownership, fourthly those properties gained by Islamic government without battle, fifthly those lands gained by Muslims during battles but without the permission of the leader of Islamic government and sixthly properties of the kings gained by conquest of Muslims in battles.³⁹⁴

According to Shiite Sharia laws, these Anfal are under the control of the Islamic government and has to be exploited for public interests. Hereupon, any ownership or control of Anfal by individuals and legal entities are not permitted under the law.

The first related provision is the one indicated in Article 43(8) of the Constitution. Article 43 determines the principles of economic and financial affairs, this article reads:

'In order to secure the economic independence of society, to uproot poverty and deprivation, to fulfill the needs of human beings in the process of growth, while also maintaining liberty, the economy of the Islamic Republic of Iran will be based on the following criteria:

1. Providing the essential needs: housing, food, clothing, health, medical care, education, and the necessary provisions for the starting of a family for all;

³⁹⁴ Hossein Haghani Zanjani, 'Anfal Ya Servathaye Omomi, Anvae Malekiat Dar Islam Va Mavarede Anha(Anfal and Public Properties, Types of Ownership in Islam and Its Instances)' (1990) 3,4 Oloume Ensani Journal, Alzahra University 5, 5–10
<<http://www.noormags.ir/view/fa/articlepage/44968>>.

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2. *providing the circumstances and opportunities for employment for everyone with the prospect of achieving full employment; making means of labour available to everyone who can work but does not have the means; this can be done through cooperatives, interest-free loans, or any other legitimate method that would not lead to the concentration and circulation of wealth in the hands of specific individuals or groups, or turn the government into a large and absolute employer. The application of these measures must take place with regard to the necessary factors; these steps must be taken with due regard for the necessities that determine public planning of the national economy at each stage of growth;*

3. *organizing the country's economic plan in such a way that the form, content, and the working hours would leave each person, aside from his job-related occupations, sufficient time to invest in his own spiritual, political and social growth, to actively participate in the country's leadership, and to cultivate his skills and sense of creativity;*

4. *Respect for an individual's freedom to choose an occupation; refraining from forcing an individual to take a specific job; preventing the exploitation of another's labor;*

5. *Banning the causing of damage to others, monopoly, hoarding, usury, and other invalid and forbidden interactions;*

6. *Banning extravagance and squandering in all areas related to the economy, such as consumption, investment, production, distribution, and services;*

7. *Using science and technology, and training skilled individuals to meet the needs of the nation for advancement and development of the country's economy;*

8. *Preventing the economic dominance of foreigners in the national economy;*

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*9. Emphasis on increasing agricultural, livestock, and industrial productions that fulfill general needs and take the country to a stage of self-sufficiency, and emancipate it from dependence.*³⁹⁵

Article 43(8) bans economic dominance of foreigners in the national economy; nevertheless, the precise and exact circumstances of economic dominance are not clarified in the Constitution. According to article 98 of the Constitution, the interpretation of the constitution is the responsibility of the Guardian Council. This is determined with the approval of three-fourths of its members. The Guardian Council has not provided any interpretation of ‘economic dominance’.

However, a later legislation (FIPPA) comprises several measures for not letting foreign investments dominate the country’s economy.³⁹⁶ Article 2 of FIPPA includes one of the related criteria, according to this article foreign investment shall not involve the granting of concession by the government to Foreign Investors; concession means distinctive rights that place foreign investors in an exclusive and monopolistic position. Article 2(d) determines another limit in this context. ‘The proportion of the value of goods and services produced by Foreign Investment under this Act in comparison with the value of goods and services supplied in the domestic market at the time of issuance of Investment License, in each economic sector, shall not exceed 25% and in each economic sub-sector shall not exceed 35%. The determination of sub-sectors and amount of investment in each will be pursuant to regulations ratified by the Council of Ministers. Foreign Investment for the production of goods and services for exports except for crude oil shall be exempt from such proportions.’ Another corresponding provision in FIPPA is the one indicated in Article 4. Article 4 reads: ‘Investment in the Islamic Republic of Iran by a foreign government(s) shall be approved by the Islamic Consultative Assembly

³⁹⁵ ‘The Constitution of Islamic Republic of Iran 1979 as Amended on 1989’ (n 262).

³⁹⁶ Abdolhossein Shiravi and Fatameh Amin Majd, ‘Foreign Investment in Iran’s Upstream Oil and Gas Operations: A Legal Perspective’ (2015) 8 *Journal of World Energy Law and Business* 269, 269.

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on a case by case basis. Investments by foreign government companies shall be treated as a private investment.³⁹⁷

General ban on ownership of immovable properties by foreigners is one of the most important limits for foreign investors in Iran. This ban ordained by the Law Pertaining to Ownership of Immovable Property by Foreign National approved on June 6, 1931. The late Note under Article 2 of FIPPA reaffirm this general ban: ‘The LPOIPFN approved on June 6, 1931, remains applicable. The ownership of any type of land in any amount in the name of the Foreign Investors is not permitted within the framework of this Act.’

As was seen, 23 years after the day that the Constitution entered into force, in the year 2002, the FIPPA enacted to stimulate and protect foreign investment in Iran. Although The Constitution has adopted a narrow and pessimistic approach to foreign involvement in the country’s economy, further enactments had been trying to answer to the essential economic needs of the country including foreign investment. FIPPA includes several measures trying to stimulate and legally protecting foreign investors, however, the aforementioned measures have been taken to simultaneously ascertain not breaching the Constitution economic principles.

Article 45 of the Constitution contains the most related principle to foreign investment in oil and gas upstream projects; Article 45 states:

“Public wealth and property, such as uncultivated or abandoned land, mineral deposits, seas, lakes, rivers and other public water- ways, mountains, valleys, forests, marshlands, natural forests, unenclosed pastureland, legacies without heirs, property of undetermined ownership, and public property recovered from usurpers, shall be at the disposal of the Islamic government for it to utilize in accordance with the public interest.

³⁹⁷ Official Gazette of Islamic Republic of Iran No 14150 dated 7th of October 1993 Ghanooone Hemayat va Tashviqe Saramayegozarie Khareji(Foreign Investment Promotion and Protection Law) (n 367).

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*Law will specify detailed procedures for the utilization of each of the foregoing items.*³⁹⁸

According to this article, the ownership of oil and gas reservoirs (as instances of mines) is of public property and is under the control and at the disposal of the government. Hereupon from articles 44 and 45 of the Constitution and provisions of the LIGPA it can be concluded that every type of contract by and between the petroleum authorities and any local or foreign investors that transmit ownership over not exploited oil and gas resources is prohibited. These two articles set difficulties for foreign investment in Iranian upstream oil and gas operations.

One of the most controversial provisions of the Constitution in this matter is Article 81. Article 81 reads: The granting of privilege to foreigners for the formation of companies or institutions dealing with commerce, industry, agriculture, services or mineral extraction, is absolutely forbidden. Although at first look it seems that this article banned the constitution of any company by foreigners, further enactments first allow foreigners to register companies in free zones in accordance with the LMFEIZ³⁹⁹. Then, by enacting the RBAOFCL, foreign companies were permitted to form branch and representative offices in mainland as well.⁴⁰⁰ Finally, the FIPPA allows foreigners to form companies in Iran; therefore such ban in practice has been removed. As a result, this limit of article 81 could be interpreted in the way that it exclusively banned granting extensive and exclusive privileges like concessions to foreign companies.⁴⁰¹

According to a history of unfair old fashioned petroleum concessions and under the effects of revolutionary ideas that consider the pre-revolutionary economy as

³⁹⁸ 'The Constitution of Islamic Republic of Iran 1979 as Amended on 1989' (n 262).

³⁹⁹ Official Gazette of Islamic Republic of Iran No 14150 dated 7th of October 1993, 'Ghanoone Chegoonegi Edareye Manateghe Azade Tejari va Sanati(Law on Management of Free Economic and Industrial Zones)'.

⁴⁰⁰ Official Gazette of Islamic Republic of Iran No 15384 dated 17th of December 1997, Ghanoone Ejazeye Sabte Shobe Ya Namayandegiye Sherkathaye Khareji(Registration of Branches and Agent Offices of Foreign Companies Law).

⁴⁰¹ Shiravi and Majd (n 396) 273.

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dominated by foreigners⁴⁰², the idea of guaranteeing sovereignty over natural resources and securing economic independence are the most impressive elements that could be comprehended from the economic contents of the Constitution. That is why according to the Constitution, the economic structure of the country is more a state-centred economy.

Although no provision of the Constitution directly deals with foreign investment in the petroleum industry, the general criteria of the Constitution adopt limitations and bans on the further legislations and regulations and related contracts. Firstly, as the petroleum resources are considered as public property, ownership and sovereignty are restricted to the state sector in all exploitation activities and the private sector, rather domestic or foreigner cannot totally, partially or by partnership obtain possession or control over them. Therefore, this limitation could be considered as a serious obstacle in the path of commonly used investment agreements. Secondly, according to general bans under the Constitution, granting any kind of concessions in respect of mines and natural resources including petroleum resources is forbidden.⁴⁰³

9.2.3. The Petroleum Law, 1987 (Amended in 2011)

The Petroleum Law is a brief law which contains 12 articles that determine general legal outlines of petroleum management and operations. Article 2 of this law reaffirms that the petroleum resources are instances of public property and according to article 45 of the Constitution are under the control and sovereignty of State. The Ministry of Petroleum and its subsidiary companies are responsible for implementing sovereignty over this sector. Articles 5 and 6 of the Petroleum Law directly deal with investment contracts. According to Article 5 every important contract by and between the Petroleum Ministry or its operational units with Iranian or foreign legal and natural persons must be concluded in accordance with a bylaw approved by the Council of Ministers upon the proposal of the Petroleum Ministry.

⁴⁰² Khomeini opposed economic domination by foreigners or non-Muslims, especially Americans and Israelis. Rosser and Rosser (n 40) 490.

⁴⁰³ Shiravi and Majd (n 396) 274.

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It is worth mentioning that this required bylaw has not been approved yet. Article 6 states that every investment in the petroleum sector must be proposed by the Ministry of Petroleum to be included in the annual budget of the country⁴⁰⁴. This mechanism was initiated to fund petroleum projects implemented by domestic companies through service contracts due to the lack of ability of domestic companies to provide the required capitals to invest in high-cost projects. The last part of this article banned foreign companies from benefitting from this mechanism.

Although the Petroleum Law of 1987 includes related articles about investment, these were not changed by the amendment of 2011. One year later, the prominent legal evolution regarding investment carried out by the enactment of a new law concerning powers and duties of the Ministry of Petroleum took place. The contents of this new law will be discussed later.

9.2.4. The Five-Year Development Plan Laws

Every 5 years, Iranian government designs a comprehensive mid-term plan for development of the country in all of the social, cultural and economic aspects. Government proposes these laws to Iranian Parliament for approval. During other issues, Five Year Development Plan Laws(FYDPs) determine certain regulations for energy sector.

In this regard, determining the legal nature of this kind of regulation, from one side and their application in real scope of Iranian legal system, in the other side constitute a practical as well as theoretical challenges for Iranian jurists. At the same, the ambiguous link between Iranian domestic law and international norms in this context could complicate more and more the substantive legal situation concerning energy sector.

⁴⁰⁴ Official Gazette of Islamic Republic of Iran 2011, No 19330 dated 14th of July, Ghanoone Naft(Petroleum Law).

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9.2.5. The Ministry of Petroleum Tasks and Authorities Law (MPTAL) from 2012

In accordance with many important provisions of the MPTAL, especially those about the implementation of oil and gas upstream projects, this law made significant changes and evolutions in relation to the provisions of previous laws and regulations.

According to the priority order of laws, the MPTAL could be considered as the prior law in relation to all of the other above-mentioned laws concerning investment in the oil and gas industry. The novel aim of the legislature in clarifying investment regulations could be also comprehended by the word “NEW” in Article 3(d) 3 of this law.

“Article 3. Ministry of Petroleum tasks and authorities are the following:

[...] D: Financing and investment affairs:

The Approbation of development and investment plans in oil, gas, petrochemical and refinery industries with the aim of supplementation of the production chain and the creation of more value added.

To beget an effective mechanism to attract required domestic or foreign financial resources with the aim of implementation of development and protection of production capacity in compliance with rules and regulations.

Attraction and direction of domestic and foreign capitals with the aim of development of hydrocarbon fields with the priority of trans-border fields through drafting *new* contractual patterns including a partnership with domestic and foreign investors and contractors without transmission of ownership over (not exploited)

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oil and gas in reservoirs and in compliance with criteria of preservation production⁴⁰⁵.⁴⁰⁶

One of the most important provisions of this law is the one from Article 3(d) 3, which refers to concluding new patterns of contracts that include sharing agreements with domestic and foreign investors, and contractors without transmission of ownership over unexploited oil and gas reservoirs and in compliance with the criteria of preservation production. This clause could be considered as a foreword for an essential evolution in Iran's upstream oil and gas laws and regulations after the 1979 revolution. It is necessary to say that before the 1979 revolution and according to various laws, any patterns of contracts, in the broad sense of the word, including sharing and non-sharing contracts were permitted.

Moreover, in Article 3(d) 3, partnership or sharing contractual pattern is mentioned in its general terms and it seems that it involves any class of such agreements like profit sharing agreement, participation in investment agreements and even production sharing agreements under some special terms and conditions.

From the stipulation of the term "without transmission of ownership over not exploited oil and gas in reservoirs" it could be concluded that this law recognized the ownership of investor over a pre-agreed share of exploited product, and it is a privilege that did not exist before. However, it is possible that with the aim of preventing misunderstandings some initiated terms like "delivery of the share of production in specific ports or a pre-agreed place" will be included in contracts. As Hatami has argued, this interpretation seems to be closer to the spirit of the law.⁴⁰⁷ Another surprising point of this law lies in its title. Stimulation and attraction of

⁴⁰⁵ "Preservation production" is the literal translation of the phrase "Tolid e Sianati" which is equivalent to the term Maximum Efficiency Rate (MER).

⁴⁰⁶ Official Gazette of Islamic Republic of Iran No 15955 dated 19/02/1391(08 May 2012) Ghanoune Vazayef va Ekhtiarate Vezarate naft(Ministry of Petroleum Tasks and Authorities Law) (n 314).

⁴⁰⁷ Ali Hatami and Esmacil Karimian, *Hoghough-e Sarmayegozarie Khareji Dar Partoe Ghanoun va Gharardadhaye Sarmayegozari(Foreign Investment Law in Light of Investment Act and Contract)* (1st edn, Teesa Publication 2014) 695.

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domestic and foreign capital with the aim of developing hydrocarbon fields, not only could be seen as the authority of the Ministry but also as one of its tasks and duties.

As it was described above, the necessity of competing with neighbour states in the exploitation of trans-border fields has really affected the literature of laws as its importance and priority as it is explicitly mentioned in article 3(d) 3 of the Law.

9.3. Legal Evolution and the Birth of Iranian Buyback

Five years after the end of the Iraq-Iran War and in the lack of enough capital to invest in vital oil and gas industry, for the first time after the Islamic Revolution, in the year 1993 the budget law permitted the National Iranian Oil Company (NIOC) to conclude contracts with foreign companies under special terms and conditions.⁴⁰⁸ The Iranian Parliament followed this new approach in the budget law of 1994 with more detailed conditions and under a new contractual model that was subsequently called as the Iranian Buyback.⁴⁰⁹ The Iranian buyback was an initiative of the Iranian legislature to respond to the necessity of foreign investment stimulation and simultaneously not violating existing regulations, especially related provisions of the Constitution.

The buyback contract is considered as a short-term service contract between the NIOC (or one of its subsidiaries) and an International Oil Company (IOC) with the aim of developing an oil or gas field. According to the terms of this contract, the IOC is considered as a contractor and cannot benefit from equal rights in dividing the share of crude oil or natural gas. In Buybacks, both parties agree on a percentage of annual repayment rate that will be achieved from the production of the field. Since the IOC is considered as a contractor, the field comes back to the NIOC's control after the payment of the IOC's expenses and benefits.

⁴⁰⁸ Iranian Official Gazette No.13966 dated 25/11/1371 (February 14 1993), Ghanooone Bodjeye Sale 1372 Kolle Keshvar(1372 Budget Law).

⁴⁰⁹ Iranian Official Gazette No.14313 dated 7/2/1373 (April 27 1994), Ghanooone Bodjeye Sale 1373 Kolle Keshvar(1373 Budget Law).

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For over ten years, the buyback has been the unique instrument for the development of oil and gas projects in Iran. Various buyback contracts have been concluded between the NIOC and the IOCs. Table 1 indicates examples of petroleum projects implemented by Buybacks.⁴¹⁰

Table 8. List of Projects Concluded by Buyback Contracts

Project Title	Year	Estimated project cost Billion Dollars	Contractor
Siri Field, A & E	1995	1.2	Total
South Pars Phases 2,3	1997	4.21	Total
South Pars Phase 1	1998	1.02	Petropars Iran
Doroud field	1999	0.99	Elf France- Agip Italy
Balal Field	1999	0.31	Bow Valley Energy, Canada
Soroush and Norouz field	1999	1.46	Shell
Nosrat and Farzam Field	2000	0.18	Petroiran Iran
South Pars Phases 6,7, and 8	2000	4.25	Petropars Iran, Statoil Norway
South Pars Phases 4,5	2000	4.1	Agip Italy – Petropars Iran
South Pars Phases 9,10	2002	2.5	LG south Korea- IOEC, OIEC Iran
Salman field	2000	1.25	Petroiran Iran
Darkhoein field	2001	1.02	Agip Italy
Masjid Soleiman field	2002	0.12	Naftgaran Iran, Sheer Energy Canada
Forouzan & Esfandiar field	2002	0.58	Petroiran Iran
Azadegan field	2004	4.4	INPEX Japan, Nikoo Iran

⁴¹⁰ ‘Negahi Be Tahavvolat va Karname Gharardadhaye Beye Motaghabel’ <<http://www.iribnews.ir/fa/news/1217572>> accessed 15 May 2017.

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South Pars Phase 12	2005	4	Tecnimont Italy, Daelim South Korea
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These buyback contracts were focused mostly on increasing the production of existing explored oil and gas fields. As buyback had been generally fruitful in stimulating foreign investment, the Iranian Parliament in this way approved the NIOC's capacity to use the buyback instrument for both exploration and development of oilfields in particular regions of the country. Taking after these authoritative changes, the NIOC, under modified buyback called foreign investors to participate in tenders to develop exploring and production projects in 16 different blocks. This new version of the buyback was altered to meet the necessities of both exploration and development phases.⁴¹¹ Hence it could be alleged that 15 years after the 1979 revolution, buybacks returned Iran to the international sphere of foreign investment in oil and gas industry.

Certain provisions of buyback were drafted particularly to ensure state sovereignty over oil and gas resources and keeping up government control over oil and gas operations, as established by the Constitution and other laws. One provision, for instance, says that the NIOC approves the IOC to develop operations in the interest and in the name of the NIOC. This implies that the IOC goes about as an NIOC's contractor, and not as a partner or proprietor of the venture. Another provision specifies that all lands gained and resources bought for the undertaking might be the sole property of the NIOC. In this manner, any materials, articles, equipment's and apparatus that should be procured for the project might be purchased by the IOC in the name of the NIOC. The other fundamental target in using buyback in Iran is to become acquainted with the foreign currency and aptitudes needed for the expensive, risky and advanced undertaking of implementing oil and gas projects. In this manner, under buyback, the obligation of financing and developing operations rests singularly with the IOC. At times, be that as it may, the buyback contract has been concluded to a joint venture between IOCs and local companies.

⁴¹¹ Shiravi and Ebrahimi (n 55) 199.

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In these cases, every accomplice is jointly and severally capable towards the NIOC for financing and completing the project.⁴¹²

9.4. Developments of Iran Petroleum Legal Framework, Challenges of Internationalization

Regardless of some achievements, the previous buyback model is disliked by the IOCs for the high risks it poses. The IOCs feel that the buyback model tends to immense potential misfortunes in the light of the fact that the IOC has exceptionally constrained choices to put a roof on its capital expenses. Furthermore, the way in which contracts are organized implies that at the time of signing long term pre-characterized operating targets are set that don't take into account the prevailing market condition, new drilling plans, reserve estimates and financing costs.⁴¹³

At the light of the increased competition between the host governments in the Middle East to stimulate foreign investments to maintain and develop their oil and gas production, Iranian authorities found out about the unpopularity of Buybacks. Besides the political components that are beyond the scope of this article, some legal reforms needed to allow the Iranian Ministry of Petroleum to design new contractual models. The former petroleum legal framework of Iran did not authorize the Ministry to award more flexible agreements. Hence, the Iranian Parliament passed a law in 2012 called the MPTAL that adopts a wider approach towards oil and gas contracts. To prevent any resulting misunderstandings from the title of this law, it is necessary to explain that there is no definitive separation of tasks and authorities (powers) within its content, in some cases the legislator orders the Ministry to follow tasks and therefore the power to perform such tasks is granted.

⁴¹² *ibid* 201.

⁴¹³ < <http://www.clydeco.com/insight/updates/view/irans-new-integrated-petroleum-contracts-1> > accessed 20 July 2015.

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The MPTAL is the latest enactment on this issue, and it is believed that the final will of the Iranian legislature can be found in this law. The further policies and activities of the Iranian Petroleum Ministry prove this argument.

9.4.1. Design of Integrated Petroleum Contract (IPC) Model Under the Impacts of International Practices

Earlier I discussed the importance of oil and gas for Iranian economy and the need of development within this sector. The lack of foreign investment in the recent years has been considered as a challenge for Iran because of the reasons mentioned above. Although the sanctions have been considered as the main obstacle for reaching this aim, according to the nuclear agreement,⁴¹⁴ and with the assumption of lifting sanctions, stimulation of foreign investment requires a competitive legal framework to ensure the appropriate returns for foreign investors. The reality is that even before the sanctions; the former buyback model was not yet competitive to attract IOCs to participate in Iranian petroleum projects.

The petroleum industry has international elements in its own nature. Both oil and gas exporters and importers and also international oil companies are affected by global trends and development. One of the most prominent legal developments that has occurred in this field is the influence of the effects of international practices on national legal petroleum regimes of the host governments. Some experts have called this as “internationalization of national legal regimes”. According to Kim Talus ‘...despite being part of the national system of the host country, these laws, regulations, and contracts are similar in content regardless of the host state. In this sense, they have an international element embedded in them.’⁴¹⁵

⁴¹⁴ On 14 July 2015, Iran and P5+1 (the five permanent members of the United Nations Security Council (China, France, Russia, United Kingdom, United States—plus Germany), and the European Union signed an international agreement on the nuclear program of Iran. Under the agreement, Iran agreed to eliminate its stockpile of medium-enriched uranium and reduce by about two-thirds the number of its centrifuges for at least fifteen years. The agreement provides that in return, Iran will receive relief from U.S., European Union, and United Nations Security Council nuclear-related sanctions. ‘Iran Nuclear Deal: World Powers Reach Historic Agreement to Lift Sanctions | World News | The Guardian’ (n 43).

⁴¹⁵Talus and others (n 384) 10.

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Nowadays international petroleum contractual models that are frequently used in different areas of the world such as Concessions, PSAs, and Joint Ventures, are implicitly recognized by authorities of host governments as international practices. In the other words, the host governments that seek to attract foreign investments to develop their oil and gas production are practically forced to follow these practices; otherwise, the competitors may take advantage in this competition. Hereupon, such internationalization process could be found in different aspects of the Iranian petroleum legal regime. The effects of international practices on Iranian legislation are obvious and it could be understood from different statements of the MPTAL like the phrase “sharing agreements” that was described before.

9.4.2. An Introduction to IPC

Following the enactment of the MPTAL and regarding the importance of stimulating foreign investment in Iran’s petroleum industry, the Iranian Ministry of Petroleum established the Iran Oil Contract Revision Committee in 2013 to revise and modify the Iranian contractual model and to draft a new competitive contract model in accordance with internationally accepted models. This committee in February 2014, unveiled the principles and general structure of the new generation of Iranian petroleum contracts which were named Integrated (or Iranian) Petroleum Contract (IPC).⁴¹⁶ It could be argued that the unveiling of this new contract is another proof of considering Iran’s Petroleum legal framework as a legal order that is changing towards internationalization.

Based on article seven of the MPTAL, general conditions of petroleum contracts should be proposed by the Minister of Petroleum to the government cabinet for confirmation. On the 2nd of August of 2016 the Iranian cabinet confirmed the general conditions of IPC;⁴¹⁷ hence IPC doesn’t face any legal ban to be concluded by and between NIOC and IOCs.

⁴¹⁶ ‘Details of New Petroleum Contracts’ <<http://www.isna.ir/fa/news/93081707530>> accessed 23 January 2017.

⁴¹⁷ ‘Approval of New Petroleum Contracts in Cabinet of Government’.

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IPC is essentially a hybrid contract, which contains substantive elements of PSAs but with an additional condition of joint operation of both parties (NIOC and its subsidiaries and foreign investor). The joint operation condition in this contract is more similar to the sense of State Participation in PSAs rather than the sense of partnership in joint ventures. It called a hybrid contract because in the form of petroleum project operation it benefits from Joint Ventures conditions and in cost recovery it uses a production sharing contracts mechanism. IPC is drafted under the obvious effects of production sharing agreements and the investor is responsible for all of the costs and risks of the project and its partner in the joint venture. The NIOC or its subsidiaries are just technical partners cooperating with the contractor in leading the project in all the related phases.⁴¹⁸

9.4.3. IPC Key Features and Conditions

In contrast with the former Buybacks, the IPC is an integrated contract that includes exploration, development and production phases together. Accordingly, joint exploration, joint development, and joint production companies perform all of these operations respectively. Hence, integration of the operation of the different phases of a project is one of the important features of this contract. According to Mehdi Hosseini⁴¹⁹ ‘In the new contracts, different stages of the petroleum operations (exploration, development, and production) are awarded in an integrated manner.’⁴²⁰

In the IPC petroleum costs will be recovered by an allocated portion of production that does not exceed 50 percent. I believe that cost recovery conditions are one of the most important parts of the contract and this has also been inspired by existing production sharing agreements or contracts which are a common and popular model in foreign investment contracts by and between foreign investors and host

⁴¹⁸ Hatami and Karimian (n 407) 701.

⁴¹⁹ Head of Revision Committee

⁴²⁰ ‘Iran Discloses Draft Model of New Oil Contracts’
<<http://en.nioc.ir/portal/Home/ShowPage.aspx?Object=NEWS&ID=38effb37-80e5-49af-aa08-ffcc5ad9291c&WebPartID=32c9a857-c7f1-42bd-9206-732bb331277c&CategoryID=24c6268f-87ee-4fc0-b389-76d84b6b0f22>> accessed 24 May 2017.

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governments. But, in some aspects as it happens with cost recovery, IPC finds itself with existing legal barriers, according to IPC the foreign investor will be paid with a share of the output, but pre-ownership of reservoirs is not permitted.

One of the key elements in such contracts is the duration of the contract and one of the main criticisms about former Buybacks was the restricted duration. A limited duration that didn't ascertain maximum efficient production either satisfied investors. According to Hosseini: 'One change under the new integrated petroleum contract (IPC) will allow foreign contractors to work on fields over the long term instead of having to hand them over at an early stage to Iranian companies'.⁴²¹

In former Buybacks, the capital cost ceiling was determined as a fixed sum and this condition of the contract represented a high risk for investors. As an example, according to article 18.1.1 of the development of the 12th phase of South Pars contract:

"...In accordance with said Master Development Plan and itemized breakdown of the capital costs envisaged in the M.D.P, Capital costs shall be equal to or less than three thousand two hundred and six million U.S Dollars..." Since this provision, considered as one of the main disadvantages of Buybacks, the IPC offers a flexible Capex mechanism to rationalize the contractor risks. Under the new provisions of the IPC, all costs incurred for successful discoveries shall be aggregated and charged to petroleum costs and the IOC will be entitled to recover them under the terms and conditions of the contract.⁴²²

It could be alleged that the Iranian Petroleum Ministry has tried to cover all of the disadvantages of the former Buybacks, designing a new model that has the ability to compete with all the other existing international practices.

⁴²¹ 'Iran Outlines New Oil Projects for Investors' <<http://www.gulf-times.com/story/382370/Iran-outlines-new-oil-projects-for-investors>> accessed 7 March 2017.

⁴²² Hatami and Karimian (n 407) 707.

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9.5. Chapter Conclusion

The current petroleum policies calls for development of petroleum production for many reasons, including the need for supplying the growing domestic demand, gaining an equal share of production from cross-border fields, expanding the share of global energy markets and boosting the country's economy and accelerating the development of infrastructures. In addition to these facts, international sanctions against the Iranian nuclear program have also caused many delays in the development of petroleum plans in the recent years and therefore more than ever, Iran requires foreign investment and technology to update its existing potentials. International oil companies consider different economic, political and legal circumstances for their investment destinations. The vast reserves of oil and gas and many advantages of the petroleum production in Iran turned it into one of the most popular destinations for investments by international oil companies. Nevertheless, from the legal perspective, a reliable legal regime and a transparent and standard contract model is one of the main requirements for the IOCs to enter into a deal with Iran.

The Iranian petroleum legal framework consists of different laws and regulations. As described in the former sections, revolutionary ideas that considered the economy of the country before Islamic Revolution era as a dominated economy by foreigners affected the provisions of the Constitution. Hence, a narrow approach to foreign economic interferences could be understood from several principles of the Constitution. The Constitution, in a general literature, banned foreign domination over the economy and also banned granting any special privileges to foreigners. Other related contents of the Constitution are regulations concerning natural resources. Laws regulating natural resources, also demonstrate the conservative approach used in drafting the Iranian Constitution showing emphasis on state's sovereignty and ownership over them. The Constitution considered natural resources as public property that must be under the sovereignty of the state and should be exploited for the public interest. Nevertheless, the Constitution does not contain any specific condition for foreign investment in the petroleum sector, but this subject has been developed in the secondary laws. From the assessment of the constitutional dispositions on the subject it can be concluded that although the

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Constitution followed a narrow approach, the only constitutional ban on foreign investment in the petroleum sector could be the illegitimacy of contracts that lead to the transfer of ownership or sovereignty over petroleum reserves and contracts that provide an excessive privilege for foreigners like concessions.

In addition to the Constitution, laws that are part of the legal framework for foreign investment in the petroleum industry also pursued a conservative approach. Much emphasis on state sovereignty and ownership over natural resources, especially petroleum reserves could be found in related laws. Nevertheless, it can be argued that a historical survey of related laws and regulations passed in the last three decades, shows conservativeness is not the only effective element in this context. Perception of foreign investment necessity and providing competitive legal circumstances to stimulate foreign investments are other factors that have affected the corresponding laws and regulations in this context.

Until 2012, general considerations of the constitutional principles and other laws generated doubts and uncertainties about the legitimacy of concluding internationally recognized contracts like Joint Ventures or PSAs. The Iranian Ministry of Petroleum cited temporary permissions granted by annual budget laws and five years development plan laws to design localized Buybacks to develop petroleum projects and Buybacks were successful in many petroleum development projects.

According to recent developments, a new law (MPTAL), passed by the Iranian Parliament in 2012, clarified the authorities and duties of the Petroleum Ministry and underlined that the Iranian Petroleum Ministry could and must conclude partnership and sharing contracts with both local and foreign investors to develop oil and gas projects. The word partnership or sharing for the first time entered into Iranian legal literature through this law in this context and obviously this term derived from related international practices. However, lack of a clear definition of the term Partnership in this law or further legislations still make uncertainty on the possibility of using international contractual frameworks. That is why the legal nature of Iranian contractual framework for foreign and even domestic investments cannot go beyond the risk service agreements. Former Iranian buyback contracts

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were designed by the Ministry of Petroleum according to a specific permission granted by temporal laws but another change under MPTAL is that the permanent power of designing and concluding proper contracts with domestic and foreign investors has been granted to the Ministry under specific conditions. By the enactment of the MPTAL, the Iranian legislator attempted to conservatively consider constitutional and other legal limits, meanwhile attempting to provide the appropriate legal reforms, which are inevitable in a competitive legal framework.

Based on this law, Iran designed the new generation of petroleum contracts named IPC. IPC is a localized contract that has mostly been inspired from usual existing PSAs and Joint Ventures. In the situation, that neighbour states and the other host states in the global sphere benefit from best international practices and suggest these well-known contractual instruments to foreign investors, following the same provisions is inevitable. The influence of considering the advantages of international practices and especially neighbour country's similar contracts could be simply understood from the similarity of the terms of the IPC in comparison with the other internationally common contracts. The unique reason for designing a localized contract rather than concluding the same internationally common partnership contracts like PSAs is for avoiding domestic criticisms that consider some provisions of internationally common contracts as contents that lead to foreign ownership and sovereignty over natural resources.

It is believed that both MPTAL and IPC are the result of the requirements for competing with other host governments and have been designed under the effects of international practices. In this context internationalization procedure is the other important element that has affected this legal order. Therefore, there are existing bans on the transmission of the ownership of resources and a forced control of the Iranian authorities to conservatively design a localized contract that practically provides most of privileges similar to those common to internationally practiced contracts for IOC's and meanwhile theoretically do not breach the national legal requirements.

10. Chapter 10. Electricity Market and Renewable Energy Laws and Regulations

Since the first inauguration of electricity generation project, electricity market has developed by the public sector in last few decades. Access to cheap and massive fossil fuels expanded the access to electricity for more than 96 of urban and rural population. Most of these developments occurred under public organizations, however, in last few years there is an increasing motivation by government to provide opportunities for private sector to participate in electricity market. There are several laws and regulations pertaining to electricity sector. To provide an understanding of the current legal situation of electricity market, a brief analysis of corresponding laws will be provided.

10.1. Law on the establishment of Ministry of Water and Electricity 1964

Before the establishment of Ministry of Water and Electricity there were a variety of mostly public organizations and companies dealing with electricity and water supply in the country. As the sector was growing in different areas of the country, the necessity of establishment of an organization that regulates corresponding activities perceived. Furtherly, Ministry of Water and Electricity established in 1964. All of the related existing companies and organizations considered as subsidiaries of the Ministry of Water and Electricity 1964 and it ordered to manage water and electricity sector.⁴²³ Ministry of water and Electricity furtherly altered to Ministry of Energy (hereafter the Ministry) in 1975. In addition to all of the former tasks and responsibilities, management of nuclear energy plans also assigned to the Ministry. As of 1975, the Ministry is responsible for policy-making and management of generation, transmission and distribution of electricity.⁴²⁴

⁴²³ Official Gazette of Iran No 5586 dated 25th April 1964, Ghanone Tasisse Vezezat e Ab va Bargh (Law on the establishment of Ministry of Water and Electricity).

⁴²⁴ Iranian Official Gazette No.8791 dated 19/12/1353 (March 10 1975), Ghanooone Tasisse Vezezate Niroo(Law on the Establishment of Ministry of Energy) 1975.

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10.2. Law of the Electricity Organization of Iran 1967

This law ordains details of electricity management by the Ministry. According to article 1, the Ministry has the obligation to design and realize required plans according to general economic and constructional programs of the country. Article 2 gives the capacity to the Ministry to establish regional electricity companies without considering the provincial divisions. According to article 5, obtaining the license from the Ministry is mandatory by all of the entities for any activities regarding generation or distribution of electricity. According to article 6, all of the active entities in the field have to submit their licence application to the Ministry within 3 month from the date this law entered into force. Article 9 grants the Ministry the exclusive right to determine electricity fees and tariffs. The last important content of this law pertaining to the procedure of owning required lands by Ministry for transmission and distribution purposes.⁴²⁵

10.3. Corresponding Principles of the Constitution

According to the article 44 of the Constitution, power generation and electricity transmission and distribution network will be publicly owned and administered by the government. Although article 44 of the Constitution put all of major economic activities including power generation, transmission and distribution under the control of the State, failure of the state-centred economic paradigm in 2008 led to enactment of the Law of Implementation of General Policies of Article 44 aiming to exclude many of economic activities from the State monopoly. In this law the government was ordered to privatize all of state companies, economic activities and institutions, except the mentioned exceptions in article two. Electricity transmission system is one of the exceptions of article 2 and has to remain under the control of government, but there is no ban for generation and distribution sector to be privatized.

⁴²⁵ Official Gazette of Iran No 5586 dated 12th of August 1967, Ghanone Sazmane barghe Iran (Law of the Electricity Organization of Iran) 1967.

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10.4. TAVANIR Company Statute

Since 1975, different specialized public companies have established by the Ministry to perform each related assigned duties. In electricity sector TAVANIR⁴²⁶ as one of the subsidiary companies of the Ministry is responsible for generation, transmission and distribution of electricity in the country. Tavanir has its regional subsidiary companies: the Regional Electricity Generating Companies and Regional Electricity Distributing Companies that perform general duties of the mother company according to regional divisions.

In order to differentiate governance issues from supervisory ones, and ultimately, to cut back on the government's supervision,

TAVANIR as, the electricity deputy of the Ministry of Energy is in charge of a substantial number of responsibilities and authorities such as planning, coordination, performance monitoring, operation, and, management of electricity supply and demand.⁴²⁷

According to article 2 of Tavanir Co. Statute, Tavanir is responsible for performing any required activities to generate, transmit and distribute electricity for all of the household, industrial, agricultural and commercial uses. Currently, 39 different Power Generation Management Companies, 39 Distribution Companies(DISCOs), some generation companies and 16 Regional Electricity Companies(RES) providing all the required services under the supervision of Tavanir. RECs are responsible for transmission and selling of electricity in transmission level in their regions. RECs also own public power plants in their territory so they also have a generation role within their region. DISCOs are responsible for all of operations

⁴²⁶ Generation, Transmission and Distribution of Electricity Company

⁴²⁷ aR Karbassi, Ma Abduli and E Mahin Abdollahzadeh, 'Sustainability of Energy Production and Use in Iran' (2007) 35 Energy Policy 5171, 5173.

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required for distribution of electricity including development and maintenance of the distribution grid.⁴²⁸

10.5. Renewable Energy and Energy Efficiency Organization (SATBA)

Further to the policies drawn up by Ministry of Energy, SATBA (formerly Renewable Energy Organization of Iran, SUNA) was constituted in 1996 to implement the above objectives and acquire the up-to-date information and technologies for utilization of renewable energies' resources, evaluate the existing potentials and implement numerous projects (solar, wind, geothermal, hydrogen, and biomass) , guarantee the purchase of electricity generated from renewable sources with the aim of attracting private sector's participation in this field, study the research policies in order to prepare the comprehensive plan for development of renewable energies in the country. According to Article 2 of its Articles of Association, SATBA has to support private sector engagement in development of RE in Iran. Except the large-scale hydropower power plants, all of the other forms of renewable power plants have to be developed under the management of SATBA. Article 6(1) requires SATBA to design short, mid and long-term plans to realize its missions under the supervision of the Ministry. According to article 6(5, and 6) SATBA has the obligation to determine regulations, contracting provisions and details, standards and tariffs to purchase electricity generated by private RE power plants. Article 6 (7, 8, and 9) requires SATBA to perform and support RE research and pilot projects.⁴²⁹

In 2000 the volume of done measures of renewable energy organization of Iran caused the Ministry of Energy to propose to the cabinet the possibility to count SUNA as a state organization in order to fill the gap of an executive body in the government for development of renewable energies. The cabinet eventually agreed to the establishment of SATBA as a state company on 2000.02.27. It is worth to

⁴²⁸G Rez Yousefi and others, 'Electricity Industry Restructuring in Iran' (2017) 108 Energy Policy 212, 26 <<http://www.sciencedirect.com/science/article/pii/S0301421517303026>>.

⁴²⁹ Iranian Official Gazette No.20939 dated 06/11/1395 (January 25 2017), Ghanoone Asasname Sazman Energihaye Tajdidpazir va Bahrevarie Energie Bargh(Statute of Renewable Energy and Energy Efficiency Organization) 2017.

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mention that organizations such as Atomic Energy Organization of Iran, Ministry of Agriculture Jihad and Iranian Fuel Conservation Company were also involved in this field, but with the aim of optimization and effective utilization and exploitation of renewable energy, Supreme Administrative Council, based on parliament's resolution on 2004.12.18, centralized all missions and legal operations on renewable energies in Ministry of Energy and subsequently the Ministry assigned this responsibility to SUNA on 2005.03.21. It is necessary to note that the responsibility for activities related to wind operated water pumping facilities and solar water-heating systems still remain with Iranian Fuel Conservation Company. In late 2006, upon the restructuring of Ministry of Energy and formation of Electricity and Energy Deputy, the office of new energies which was the headquarters of this field in the ministry, was merged into SATBA and all the staff and the projects were also transferred to SATBA accordingly.

10.6. Law of Regulating Part of Governmental Financial Provisions (RPGFP)

Law of Regulating Part of Governmental Financial Provisions (RPGFP) is another corresponding legislation in this context. According to article 62 of RPGFP, Ministry of Energy required to purchase electricity generated by private renewable power plants under a guaranteed price. The main reasons of this order as mentioned in the article 62 are the environmental privileges of REs, development of the sector and preserving fossil energy resources. Following this order, the Ministers Cabinet adopted a bylaw determining details of guaranteed purchase of electricity generated by renewable power plants by Ministry of Energy.⁴³⁰ Following to this order, the responsibility to implement this plan assigned to SATBA by Minister of Energy in 2016. This plan as the current legal framework for the development of RE will be analyzed in details.⁴³¹ According to this law, SATBA has to estimate the annual costs of purchasing electricity from RE power plants and accordingly the Ministry of

⁴³⁰ Iranian Official Gazette No.20668 dated 27/11/1394 (February 16 2016), Aeinname Ejaiae Madde 61Ghanoone Eslahe Olgoye Masrafe Energy(Eccutive Bylaw on implementation of Article 66 of Energy Consumption Pattern Reform Act) 2016.

⁴³¹ Official Gazette of Iran No.16628, Ghanone Tanzime Bakhshi az Mogharrarate Malie Dolat (Law of Regulating Part of Governmental Financial Provisions) 2002.

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Energy has to account it in annual budget law. In fact, the law establishes a feed in tariff mechanism for development of RE by private sector.

10.7. An analysis of Guaranteed Electricity Purchase Plan

Based on the permission granted by aforementioned laws, SATBA offers a guaranteed purchase contract to both local and foreign investors. It could be argued that this contractual framework inspired from the internationally common practices on Feed-in-Tariff contracts. According to the guideline provided by SATBA, any private investor intending to invest in a RE power plant and enter to a guaranteed purchase contract with SATBA has to follow 4 different phases. Phase1. Registration and issuance of License; After performing required feasibility studies, interested investors have to submit their application including details of the proposed project to obtain Registration and Construction License from SATBA. After analyzing applicant qualifications, the License will be granted to the applicant. Phase2. Obtaining required permits: before concluding the contract, three different permits have to be obtained by the holder of License within six months; Environmental permit by the Environmental Department, grid connection permit by Grid Management Company and land use permit by Land Affairs Organization (a subsidiary of Ministry of Agriculture). Phase3. Contracting and construction of power plant: After signing the Power Purchase Agreement (PPA) between parties, the investor has to construct the plant within determined period. The plant will be connected to the grid after construction Phase4. Operation: Ultimately after the commencement of operation, the price of generated power will be paid monthly by SATBA during the contract period.⁴³² Figure 14 shows the project implementation steps.

⁴³² Renewable Energy and Energy Efficiency Organization(SATBA), 'Application and Permit Issuance Process' (2018)
<<http://www.satba.gov.ir/en/investmentpowerplants/applicationandpermitissuanceprocess>>
accessed 30 March 2019.

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Figure 40. Renewable Energy Project Implementation Steps



Source: SATBA

According to the provisions of proposed contractual pattern, the duration of the contract is 20 years. The investor called vendor and SATBA is the purchaser of electricity. The vendor is responsible for all of the expenses of construction including expenses for obtaining required permits and connecting the power plant to the national grid. After the power plant commissioned, purchaser issues a letter of credit in favor of the vendor as a warranty of further payments. As the power plant starts operating the generated power will be calculated monthly and purchaser issues invoices according to provisions of the contract. The purchaser has the obligation to pay every invoice within 75 working days; otherwise, delay has to be compensated.⁴³³ The prices are set in the contract according to the latest annual plan issued by Economic Council.

To avoid vendor's losses due to change of currency value, the tariffs will be adjusted annually by considering changes of currency exchange rate.⁴³⁴ The contract

⁴³³ Iranian Official Gazette No.20668 dated 27/11/1394 (February 16 2016) Aeiname Ejaie Madde 61Ghanoone Eslah Elogoye Masrafe Energy(Ececutive Bylaw on implementation of Article 66 of Energy Consumption Pattern Reform Act) (n 430).

⁴³⁴ *ibid.*

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offers higher tariffs for the first 10 years of contract with the aim of providing incentives for investors for recovery of capitals invested. At the beginning of eleven year, tariffs will be multiplied by 0.7. Tariffs will be proportionately increased up to 30% if the power plant is constructed using local equipment.⁴³⁵

The current framework for investments in renewable energy is welcomed by investors. The Iranian feed in tariff has several clear legal basis that ensure the stability of contracts. Moreover, well-defined tariffs, tax and customs exemptions, technical and other local advantages same as access to cheap lands and high efficiency are the other factors that stimulate investments. However, the proposed contracts also faces several legal shortcomings that may concerns the investors. These issues could be listed as below:

1. Termination Clause:
 - A. Under the proposed PPA, in the case of early termination of the contract by SATBA as buyer, a compensation mechanism is not defined and the compensations aren't guaranteed. This impose the bankability issue for the investors. Without compensating the value of the project, it is not possible to raise debts from the finance providers.⁴³⁶
 - B. The current PPA doesn't provide adequate right of termination for investor in case of breach of contractual obligations by SATBA.
2. Applicable law and dispute settlement:
 - A. Under the article 9 of the proposed draft of the contract, the Contract shall be governed in all respects by the laws of the Islamic Republic of Iran. It is true that FIPPA provides regulations pertaining to protection of foreign investment, however, setting the Iranian laws as the governing law may be objected by investors.
 - B. The proposed PPA offers a three step dispute resolution mechanism. In first level, parties are required to endeavour to resolve the dispute within

⁴³⁵ *ibid.*

⁴³⁶ See 'Solarplaza Weighing up the Bankability of Iran's Renewable Energy PPA' <<https://www.solarplaza.com/channels/markets/11606/weighing-bankability-irans-renewable-energy-ppa/>> accessed 6 January 2020.

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a thirty (30) day period upon receipt of a notice from the other "Party" by mutual negotiations. In second step, the dispute shall be referred to a committee consisting of one representative from each party to the contract and a mutually agreed expert, and finally, in case no agreement is reached in choosing a mutually agreed expert or in case either of the parties objects to the opinion of the expertise committee, the dispute has to be brought to the competent legal authorities.⁴³⁷ The dispute resolution clause in not determining any details on the procedure of settlement by the expert committee. Moreover, It seems that the "competent legal authorities" is referring to local Iranian courts. As a frequent practice all around the world, normally the ultimate competent organ is an international arbitration mechanism. Reference of the dispute to municipal courts shall raise the risk for investors. It seems that SATBA is facing the challenge of the referring to arbitration set by the Article 139 of the Constitution. Article 139 of the Constitution reads: "Resolving the litigation related to public and state property or referring it to arbitration is contingent, in each case, upon the approval of the Council of Ministers, and must be communicated to the Parliament. In cases where the party to the dispute is a foreigner and in important internal cases, it must also be approved by the Parliament. The law determines the important cases." The article 139 of the Constitution remain as a main barrier towards the foreign investments in Iran. In case of the PPAs, it could be possible that SATBA, ask for a permission to be issued by the parliament.

10.8. Chapter Conclusion

As was discussed in part three, the recent energy policies have opened a room for development of renewable energy in Iran. Iran also faces serious environmental challenges. Although climate change is not the only causer of these challenges, but considered as one of the main factors in this context. Hence, Iran wills to develop

⁴³⁷ SATBA, 'Draft of Power Purchase Agreement of Renewable and Clean Electricity(Translation Provided by the SATBA)' <http://www.satba.gov.ir/suna_content/media/image/2018/07/6097_orig.pdf>.

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renewable energy as a part of expected contribution in global efforts tackling climate change. In current Iranian energy policy, renewable energy also considered as an alternative for responding to domestic energy consumption growth, this could contribute to stabilizing and expanding oil, gas and electricity exports which is vital for country not only for economic reasons but also because of geopolitical and political consequences. Moreover, by recognizing renewable energy as a developing industry, Iranian policies support development of know-how and technologies with the aim of providing a long-term business opportunity for Iranian manufacturers.

As was discussed, attracting investments of private sector for achieving a 5.000 MW renewable energy capacity required by 6th FYDPA is an ambitious target for Iran. However, by the January 2020, only 850 MW of renewable power plants by private sector has been installed, and reaching the 5.000 MW by 2022 seems impossible.

The political tensions that raised by the Trump administration withdrawal from JCPOA and the re-imposition of sanctions are among the main reasons getting SATBA away from reaching this target. However, the policies and regulatory shortcomings which were analysed above are also affecting the investments and specially the domestic ones. Failure of removing electricity subsidies since 2010 by the partial implementation of Subsidy Reform Law and uncertainty over the removal of subsidies in the coming years could pose the doubt that to what extend Ministry of Energy could fill the margin between feed-in-tariff and end-user tariffs. While due to the dramatic devaluation of the national currency during the 2019-2020, the capital expenditures required for development of renewable power plants have significantly increased, the government has not been able to adequately adjust the feed-in-tariffs. Therefore, investment in renewables is not a beneficial business under current pricing policies. In addition to current persuasive policies, electricity market in Iran requires a policy agenda towards liberalization. This may not only increase the Ministry of Energy ability for the development of renewable energy

but also could highly decrease current energy intensity and increase energy efficiency.

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11. Chapter 11. Summary, and Conclusion

11.1. Summary

Scientific research proves that the warming of the global climate system is unequivocal. Widespread melting of snow and ice, increases in average global air and ocean temperatures, and the rise of sea levels are consequences of this change in the earth system that has been defined as the environmental crisis by the vast majority of scientists. The scientific research dispels most, if not all, of the doubts that these changes are the result of human activities. In this context, humans are considered a powerful altering geological force in the Earth system. Therefore, it is most likely that we have entered the Anthropocene. According to scientific research, the concentration of carbon dioxide and other greenhouse gas emissions is the leading cause of the current change in the Earth system. Current energy production resulting from human manipulation and transformation of fossil fuel resources has a significant share in the concentration of these emissions. The current development paradigm is mostly dependent on the exploitation and the use of fossil fuels. Convincing scientific evidence is proving the consequences of this crisis in the global sphere.

The climate change consequences may vary from one region to another; however, it is a global concern and expected to be confronted by a worldwide endeavour. Moreover, the consumption of fossil-fuels could impose severe environmental issues like air pollution at the national level. Hence, ecological degradation and climate change could be considered as one of the main concerns over the current energy system. The Paris Agreement is the existing legal foundation for global cooperation in mitigating the greenhouse gas emissions and in moving towards the decarbonisation of energy systems. Based on the bottom-up approach, the Paris Agreement requires the parties to determine their contribution to mitigation policies nationally. Therefore, from a global perspective, it could be argued that more studies on every member's energy and environmental policies are required to meet the Paris Agreement 1.5 and 2-degree targets. Due to the importance of environmental and climate issues, the sustainability of energy systems is expected to be the main concern of energy policies. However, the concerns over the energy

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system are not limited to environmental sustainability. The vital role of the energy in every economy and for modern human life requires steady and affordable access to energy resources for all the economic entities and total population of a nation. No commercial activity could be imagined without dependency on energy.

Moreover, the significant impact of the new forms of energy like electricity on daily life and welfare for nations is undeniable. This requires the unceasing flow of energy for the uses of industries, and individuals, as well as transport.

Therefore, the security of energy supply, and affordability and the social equity in access to energy are also vital elements of the energy system. These three essential principles of sustainability, security, and affordability and social equity are known as energy trilemma have been widely considered as the pillars of energy policy-making. The EU regulation also embraced the energy trilemma and have contributed to the conceptual development of this index.

To meet the significance of the research, we have to take into account that, the cheap oil production costs and vast reserves have made Iran as the major oil and natural gas producers within the last century. Iran's domestic energy supply highly depends on the oil and natural gas consumption (over 97%). Iran is the tenth world consumer of energy and has the world's fourth-highest level of natural gas consumption after the United States, Russia, and China. Moreover, Iran's energy intensity is 60 per cent higher than the world average. As a result, Iran is the world's eighth most top CO₂ emitter and is contributing to 2% of the global CO₂ emissions. This is while Iran is home to only 1% of the world population and holds 0.56% of the world's GDP. At the domestic level, the gradual development of both hydrocarbon and electricity sectors have led to significant achievements in self-sufficiency, energy security and expansion of access to energy resources for almost every Iranian. However, in addition to considerable global contribution in GHG emissions, the massive reliance on oil and gas resources and the supply of energy under the highly subsidised prices have led to significant environmental issues including the dangerous air pollution levels in metropolitan areas, as well as social injustices in allocating the oil and gas revenues to the whole population.

Part five: Summary and Conclusion

The purpose of this thesis is to critically analyse the existing Iranian energy laws and policies in light of energy trilemma. Hereupon, the central question of the thesis is: What are the main legal and policy-making challenges for the development of the Iranian energy sector in light of sustainability, affordability and security? This question then will be followed by the second question, which is: How have the energy policies in the last decade affected the sustainability and GHG emissions mitigation?

Therefore, the thesis is structured in five main parts, (1) Introduction and Background, (2) an Overview of International and European Energy Instruments (3) Critical analysis of Iran's Policy Challenges (4) an Analysis of Legal Challenges and (5) Conclusions. The research has considerable significance for global efforts tackling climate change, as well as, Iranian society, energy policy-makers, and sustainability of Iranian energy economy.

Extensive research was conducted on almost all of the corresponding laws and policies. The study found that legal and policy challenges could be addressed as essential barriers to the balanced development of the Iranian energy system in light of security, sustainability, and affordability and social equity. The study shows that from the formal point of view, Iranian energy policies at different level could be challenged in terms of legal value. It could be argued that from Sharia Law principles in the Constitution to the ordinary legislation, and from the strategies approved by different governmental bodies to the orders of the Supreme Leader, the question of hierarchy and legal value remains unclarified for Iranian jurists. The other formal challenge has been found as dispersion and fragmentation of policies. Several energy-related bodies are involved in energy activities, and energy policies are not integrated among them. In the most recent development and by the establishment of the Supreme Energy Council (primarily initiated to integrate the energy policies), it was expected that the Council play an integrating and coordinating role in this context. However, the study shows that the work of the Council also faces the challenge of legal value and has failed in integrating energy policies. As a result, regardless of the substantive debates, the policies are facing a relative failure in harmonisation.

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Moreover, the research found that, despite the privatisation policies, the energy market in Iran has remained as a governmental monopoly. The government is the sole supplier of energy carriers and sets fixed subsidised prices and outside of a liberalised and competitive market. Also, the current privatisation policies are only transferring the ownership of power plants and refineries to the semi-governmental sector without providing the required basis for the creation and enhancement of competition in the energy market. Hence, unless any significant reform has occurred, the structure of the energy market in oil and gas products as well as electricity, and the lack of competition, remain substantial barriers for the improvement of efficiency and sustainability of the Iranian energy system.

By analysing the laws and policies in light of energy trilemma, the research also found that energy policies are facing serious substantive shortcomings for sustainability and social equity. By analysing all corresponding regulations, this research found a substantial shortcoming in the development of the legal basis of the protection of the environment and sustainable development in the Iranian legal system. Although Article 50 of the Constitution explicitly addresses the obligation of environmental protection and the right of future generations of a healthy environment, during the past 40 years, the Guardian Council has only once recognised a parliament enactment as unconstitutional by referring to the Article 50. Also, the Court of Administrative Justice has not considerably contributed to providing a jurisprudence in this context. Protection of the environment is far from being a fundamental norm in Iranian legal order, and consequently, climate change has not been explicitly referred to even once in recent legislation. Hence, the research found that the unsustainable approach to energy policy-making is rooted in this serious substantive legal lacuna. As a result, the current and even recently enacted policies are still mainly focusing on maximising the exploitation of hydrocarbon resources. Also, in the past few years, policies have failed to enhance energy efficiency and to reform energy subsidies as the main requirement for achieving energy equity. The research discovers that the sustainability and social equity approach could not be considered as primary drivers in existing policies, and it could be argued that the policies are more security-oriented. By analysis of the all corresponding laws and policies provided through this research, the headlines of the expected reforms of Iranian energy laws and policies could be: 1. adoption of a

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market reform policy that instead of setting privatisation as a target, gradually establishes and promotes competition in the energy market and breaks the current monopolies; 2. adoption of a complementary subsidy reform law and regulating its requirements in the annual budget laws. This reformed law would clarify the annual subsidy removals and simultaneously the allocation of the social assistance to the most vulnerable classes of the society; 3 enactment of a holistic Iran energy and climate package by the parliament instead of the bylaws adopted by the governmental bodies like the NESP and EPCNES. This package is expected to design a clear and practical road map to bring regulatory certainty, which facilitates the gradual decarbonisation of the energy system and the economic transition towards lower hydrocarbon dependency. This act is also required to harmonise and regulate the energy policies between all the corresponding actors. This comprehensive package also must regulate the gradual improvement of efficiency by defining the quantified targets for mid and long-term.

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11.2. Final Conclusions

First.- Based on the results of the scientific research, the warming of the global climate system is unequivocal. Widespread melting of snow and ice, increases in average global air and ocean temperatures, and the rise of sea levels are consequences of this change in the earth system that has been defined as the environmental crisis by the vast majority of scientists. The scientific research dispels most, if not all, of the doubts that these changes are the result of human activities. In this context, humans are considered a powerful altering geological force in the Earth system. Therefore, it is most likely that we have entered the Anthropocene.

Second.- According to the scientific research, the concentration of carbon dioxide and other greenhouse gas emissions is the leading cause of the current change in the Earth system. Current energy production resulting from human manipulation and transformation of fossil fuel resources has a significant share in the concentration of these emissions. The current human development paradigm is mostly dependent on the exploitation and the use of fossil fuels. Convincing scientific evidence is proving the consequences of this crisis in the global sphere. The climate change consequences may vary from one region to another, however, it is a global concern and expected to be confronted by a global endeavour. Hence, environmental degradation and climate change could be considered as one of the main global concerns over the current energy system.

Third.- Due to the contradictory nature of States' interests in the global energy economy, a cohesive, and comprehensive agreement pertaining to the governance of energy has not been formed at the global level. Energy plays a significant role in providing for human needs and considered the lifeblood of economies. Energy also could be considered one of the most critical drivers in realising the right to development that has been enshrined in the body of international law by adopted resolutions of the UNGA. The genesis of sustainable development could be considered an endeavour for the formation of concurrence between environmental concerns and the right to development.

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Fourth.- The theoretical discussion over strengthening the legal instruments pertaining to tackling climate change remain in place. However, the Paris Agreement is the current legal foundation for global cooperation in mitigating the greenhouse gas emissions and in moving towards the decarbonisation of energy systems. Based on the bottom-up approach, the Paris Agreement requires the parties to determine their contribution in mitigation policies nationally. Therefore, from a global perspective, it could be argued that more studies on every member's energy and environmental policies are required to meet the Paris Agreement 1.5 and 2-degree targets. Moreover, data sharing, including the best energy and environmental policies and practices of each state party, is required to realise an overall assessment on the achievements and shortcomings in meeting the Agreement goals.

Fifth.- According to estimates by International Energy Agency and OPEC, although by the end of 2040 the renewable and nuclear energies will supply a larger portion of world's energy demand, oil and gas will remain as the source of approximately half of total world energy supply. In the crude oil sector, according to IEA and OPEC reports, it is expected that by the end of 2040 the share of oil in supplying the world primary energy demand will decrease from 31% in 2014 to 26%. Although, it will remain one of the main world energy sources. In the natural gas sector, unlike the oil, it is expected that by the end of 2040 natural gas will supply a more significant portion of world primary energy demand compared to the current share. Natural gas advantages same as less greenhouse gas emissions, competitive prices, and flexibility of consumption uses make it a more reliable source of energy. Even under the sustainably oriented scenarios, it is expected that the demand for natural gas will rise in the 2040 outlook. The continuous global reliance on oil and gas resources could be considered one of the drivers encouraging Iranian energy laws and policies emphasis on development of the exploitation of these resources in the long-term.

Sixth,- The cheap oil production costs and vast reserves have altered Iran to become one of the major oil and natural gas producers within the last century. Iran's domestic energy supply highly depends on the oil and natural gas consumption (over 97%). Iran is the tenth world consumer of energy and has the world's fourth-highest level of natural gas consumption after the United States, Russia, and China.

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Moreover, Iran's energy intensity is 60 per cent higher than the world average. As a result, Iran is the world's eighth highest CO₂ emitter and is contributing to 2% of the global CO₂ emissions. This is while Iran is home to only 1% of the world population and holds 0.56% of the world's GDP.

Seventh,- The domination of the oil and gas sector has also been extended to the research in academics. Unlike a considerable amount of the legal research that has limited the Iranian energy laws and policies to oil and gas laws and policies, principles of energy trilemma concept derived from the EU energy policies have been used as the index in analysing all of the energy-related laws and policies in the research. This could be a novel approach that instead of focusing on a one-dimensional quest for the development of the energy sector, is focusing on a legal and policy framework that provides an equilibrium between the underlying concerns over the energy sector, including sustainability, affordability and social equity, and security. By analysing all of the corresponding regulations, the research found that the Iranian energy laws and policies face considerable formal and substantive shortcomings for enhancing sustainability and social equity in the energy system.

Eighth,- Legal and policy challenges could be addressed as essential barriers to the symmetrical development of the Iranian energy system in light of security, sustainability and social equity. Iran's energy administration and governance are weak and fragmented. The energy system in Iran faces the lack of a unique body that regulates energy policies. The Ministry of Petroleum, Ministry of Energy, Department of the Environment and many other institutions have direct roles in the energy sector. Moreover, many other institutions including the Transportation Ministry, municipalities and City Councils, Targeted Subsidies Organization, and Fuel and Transportation Organization have indirect roles in the country's energy governance. As a result, the energy sector in Iran is struggling with many parallel and contradictory decisions and policies. This research found that the Supreme Energy Council as a novel regulatory institution established in 2011, has not been relatively successful in integrating energy policymaking among the aforementioned institutions. The study found that policies adopted by the Council face the challenge of legal value and have failed in influencing the corresponding regulations and

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integrating energy policies. As a result, regardless of the substantive debates, the Council's policies are facing a relative failure in application.

Ninth,- At the domestic level, the gradual development of both hydrocarbon and electricity sectors have led to significant achievements in self-sufficiency, energy security and expansion of access to energy resources for almost every Iranian. However, in addition to considerable global contribution in GHG emissions, the massive reliance on oil and gas resources and the supply of energy under the highly subsidised prices have led to significant environmental issues including the dangerous air pollution levels in metropolitan areas, as well as social injustices in allocating the oil and gas revenues to the whole population.

Tenth,- The research found that, despite the privatisation policies, the energy market in Iran has remained as a governmental monopoly. The government is the sole supplier of energy carriers and sets fixed subsidised prices and outside of a liberalised and competitive market. The current privatisation policies are only transferring the ownership of power plants and refineries to the non-governmental sector without providing the required basis for the creation and enhancement of competition in the energy market. Hence, unless any significant reform has occurred, the structure of the energy market, in oil and gas products as well as electricity, and the lack of competition, remain significant barriers for the improvement of efficiency and sustainability of the Iranian energy system. Also, the Energy subsidies are one of the main challenges of the Iranian energy system, and subsidy reforms have become one of the main priorities in different legislation. However, the government monopoly and the current energy market structure could be described as the main barrier to the implementation of subsidy reforms.

Eleventh,- The research found that more than following mid-term or long-term policies, the Iranian energy sector has developed as a response to short-term needs met by short-term plans and policies. Despite the substantive shortcomings, enactment of the NESP with a long-term 2041 vision could be considered a step forward in Iranian energy policymaking because of the long term outlook it represents. However, the NESP sets a series of ideals and slogans rather than implementable strategies. The NESP rarely requires quantified targets. Hence it

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could not be a reference for guiding the short and mid-term legislations. The document also lacks any scenario-defining and does not reflect the energy production, consumption and efficiency outlooks based on the comparison of the BAU and other possible scenarios. Considering the EU experience in energy policymaking, the objectives set by different energy strategies have been relatively successfully transposed by the further directives determining a practical pathway for achieving those targets. In comparison, the objectives set by long-term policies like the NESP are not further followed by detailed regulations similar to the EU directives. This remains one of the main barriers to the achievement of the desired policies.

Twelfth,- The other general challenge of energy policies is lack of integration and harmonization. For instance, as a consequence of the failure in the application of the Subsidy Reform Law, which was expected to remove energy subsidies gradually, Iran remains the first country in allocating the subsidies to energy carriers. As a result, many of further adopted policies have not been realised due to dependency on the successful application of the subsidy reforms. It was expected that the funds received by the removal of subsidies would be used by the government for certain social aid. As a consequence of the partial implementation of the law, the prices of many energy-related products have been raised, and the social aid of the government remained at the amounts approved in 2012. This has intensified the injustice and inequity in access to the energy benefits, and the lower classes of the society are more affected by these consequences. Meanwhile, the funds that were expected to be gained from the implementation of the law to be used as financial instruments for enhancing energy efficiency and developing renewable energies have not been realised, and many simultaneous policies have not been implemented. As a result, in the past few years, policies have failed to enhance energy efficiency and to reform energy subsidies as the main requirement for achieving energy equity.

Thirteenth,- By analysing all corresponding regulations, this research found a substantial shortcoming in the development of the legal basis of the protection of the environment and sustainable development in the Iranian legal system. Although Article 50 of the Constitution explicitly addresses the obligation of environmental

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protection and the right of future generations of a healthy environment, during the past 40 years, the Guardian Council has only once recognised a parliament enactment as unconstitutional by referring to the Article 50. Also, the Court of Administrative Justice has not considerably contributed to providing a jurisprudence in this context. Protection of the environment is far from being a fundamental norm in Iranian legal order, and consequently, climate change has not been explicitly referred to even once in recent legislation. Hence, the research found that the unsustainable approach to energy policymaking is rooted in this serious substantive legal shortcoming.

Fourteenth,- The current and even recently enacted policies are still mainly focusing on maximising the exploitation of hydrocarbon resources. The entire content of the NESP and other policies follows the oil and gas domination status-quo and lacks an energy transition towards a low carbon system approach in a long-term vision. In recent enactments, there is a room for improvement of energy efficiency and development of renewable energies. However, under the shade of the petroleum dominance, these sustainable policies are far from being ambitious. The research discovers that the sustainability and social equity approach could not be considered the main drivers in existing policies. The research concludes that relying on the massive reserves and production of fossil fuels, maintenance and development of these capacities remain as the main policy for securing the supply of domestic energy demand. However, the continuance of the current energy trends and lack of efficient diversification and efficiency improvement policies could pose security concerns in the near future.

Fifteenth,- The research found that international essays have made a positive impact on the formation and improvement of the sustainability approach in Iranian energy policies. For instance, unlike most of the domestic policies, Iran's national communication to UNFCCC contains quantified mitigation scenarios. The research also found that the European renewable energies support schemes have influenced the recent Iranian energy policies and have led to adopting a feed-in-tariff plan for the development of renewable energies in the past few years. Also, the European energy efficiency legislations, i.e. energy labelling mechanisms have influenced the recent Iranian energy policies. In some cases, the bylaws and standards determining

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energy efficiency indicators have explicitly referred to euro standards. Iran's NDC to the Paris Agreement is also the other policy that contains GHG mitigation objectives by several measures, including the enhancement of energy efficiency and development of renewable energies. However, following the ratification of the agreement by the Iranian Parliament, the government will be legally bound to 4% GHG reduction compared to BAU scenario, in the lack of particular targets and policies for energy efficiency and development of renewables, the Iran's NDC is not expected to impose any eventual reforms on Iranian energy and environmental policies. As mentioned, unless the substantial structural and subsidy reforms are not realised, even the current unambitious mitigation targets are not very likely to be achieved.

Sixteenth,- Under the current policies, both the oil and gas, and electricity sectors require vast amounts of domestic and foreign investments for maintenance and development of domestic energy supply, increasing the export potential, and using higher and more efficient technologies. Enactment of FIPPA could be considered a turning point in the post-1979 revolution legislation. FIPPA covers a wide range of concerns over foreign investment, including the equal national treatment under the law, clear limits on expropriations and provision for compensation in the event of expropriation, transferability of investment-related funds, restrictions on the imposition of local performance requirements, and freedom to choose management personnel. However, FIPPA has not legally influenced the very nature of Iranian petroleum agreements. Because of the aforementioned legal constraints, FIPPA fails to recognise other contractual methods of investments in the energy sector such as the "production sharing agreements" in addition to the currently accepted civil partnerships, buyback, and BOT schemes. Moreover, Foreign investors should be allowed to benefit from the arbitration for dispute resolution without the requirement for the existence of bilateral investment treaties with the investor home state. The ongoing ban of referring to arbitration, due to the prohibition of Article 139 of the Constitution, remains a severe challenge in this context.

Seventeenth,- Regarding the hydrocarbon sector, the conservative approach to foreign involvement in petroleum operations has led to a decisive level of ensuring

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sovereignty over these natural resources from one hand but has led to a minimal stimulation of foreign investments. The development of the sector itself, and reducing environmental harms like massive gas flaring in the upstream and downstream petroleum operation requires foreign investments and technologies, the legal framework for foreign investments in the petroleum sector is vague and challenging and has not reformed in light of best international practices. The research concludes that narrow approaches to foreign investment regulations in the petroleum sector derived from the Sharia Law principles and the politicised approach of the Guardian Council in the interpretation of those regulations could be interpreted as legal barriers not letting the Iranian petroleum sector stimulate foreign investments as expected. Moreover, the petroleum and economic laws affirmed the public ownership and the sole authority of government on the sector that could be considered one of the main barriers of development and modernisation of the petroleum industry. As a result, in the absence of foreign investments and technologies, the hydrocarbon sector has not even met the desired developments in line with national policies. The experience of LIGPA⁴⁴ enactment has shown that a political decision by the Supreme Leader could substantially change the legal approach to an essential national subject. However, as far as the petroleum contracts are concerned, such a decision has not been made yet. Despite the recent efforts to adopt a more investment-friendly approach, the constitutional prohibition of granting ownership and partnership rights to investors remains in place, and the very nature of investment contracts in Iran's petroleum sector could not move beyond risk service contracts like the already experienced buy-backs and the current IPC. It obviously could be suggested that once and for all the legal circumstances for foreign investment in the petroleum sector should be clarified. As explained, this requires a political will by the supreme leader, and once the political decision is made, it is not expected that neither the Parliament nor the Guardian Council opposes such reform. By enactment of MPTAL in 2012, it was expected that the Ministry of Oil obtains a broader authority to enter to new patterns of investment contracts with foreign investors. MPTAL widen the Ministry of Oil's hands in the management of the hydrocarbon resources. However, it fails to break the legal barrier for entering to new forms of production sharing contractual frameworks. Nevertheless, it could be argued that the new form of proposed risk service contracts (IPC) are covering most of the concerns of foreign investors. Failure by the Ministry

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of petroleum in entering agreements with foreign investors inside the IPC framework is mainly due to the re-imposition of the sanctions.

Eighteenth,- Despite the lack of a decarbonisation roadmap, the energy policies adopted in the last decade have provided a basis for the development of renewable energies. This research found that the incentives proposed by the government for the current feed-in- tariff scheme have been relatively successful in promoting investments in renewables. However, the study found that under the current electricity market regulations, the 5 GW target by 2021 is not going to be achieved. In fact, failure in full implementation of Subsidy Reform Law and uncertainty over the subsidy reforms in the coming years could pose the question as to what extent the government could fill the gap between Feed-in-Tariff and end-user prices.

Nineteenth,- The research found that the protection of the environment lacks an efficient legal basis in the current Iranian legal order. The concept of protection of the environment and sustainability mentioned in Article 50 of the constitution has not been elaborated in ordinary legislation. While energy-related laws and policies provide a patchwork of scattered environmental regulations, the country still lacks a comprehensive climate and environmental legal framework. As a consequence, the Iranian energy system is highly unsustainable, not only because of the considerable contributions to world CO₂ production, but also for the environmental harms that the current system is imposing at the domestic level. Moreover, the research found a variety of examples of noncompliance even with existing regulations. This could be equated more generally to a low level of rule of law. Therefore, Iranian energy laws and policies require substantial reform.

Twentieth,- By analysis of the all corresponding laws and policies provided through this research, the headlines of the expected reforms could be: 1. adoption of a market reform policy that instead of setting privatisation as a target, gradually establishes and promotes competition in the energy market and breaks the current monopolies; 2. adoption of a complementary subsidy reform law and regulating its requirements in the annual budget laws. This reformed law would clarify the annual subsidy removals and simultaneously the allocation of the social assistance to the most vulnerable classes of the society; 3 enactment of a holistic Iran energy and

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climate package by the parliament instead of the bylaws adopted by the governmental bodies like the NESP and EPCNES. This package is expected to design a clear and practical road map to bring regulatory certainty which facilitates the gradual decarbonisation of the energy system and the economic transition towards lower hydrocarbon dependency. This act is also required to harmonise and regulate the energy policies between all the corresponding actors. This comprehensive package also must regulate the gradual improvement of efficiency by defining the quantified targets for mid and long-term.

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11.2. Conclusiones Finales

PRIMERA.- Según los resultados de las investigaciones científicas, el calentamiento global del sistema climático es inequívoco. El derretimiento generalizado de la nieve y el hielo, el aumento de la temperatura media global del aire y de los océanos, y el aumento del nivel del mar son consecuencia de este cambio en el sistema terrestre que la gran mayoría de los científicos han estipulado como la crisis medioambiental. Las investigaciones científicas confirman en su mayoría que estos cambios vienen motivados por las actividades humanas. En este contexto, se considera a los humanos como una nueva fuerza geológica en el sistema terrestre. Por lo tanto, es muy probable que ya hayamos entrado en la era del Antropoceno.

SEGUNDA.- Según las investigaciones científicas, las emisiones de dióxido de carbono y de otros gases de efecto invernadero (GEI) son generadas, en su mayoría, por la capacidad humana de manipular y transformar los recursos, como los combustibles fósiles para la producción de energía, siendo esta la principal causa del actual cambio en el sistema terrestre. El paradigma actual de desarrollo humano depende en gran medida de la explotación y el uso de combustibles fósiles. Hay evidencias científicas convincentes que prueban las consecuencias de esta crisis en la esfera global. Las consecuencias del cambio climático pueden variar de una región a otra, sin embargo, es una preocupación mundial y se espera un esfuerzo global para hacer frente a estos problemas. Por lo tanto, la degradación ambiental y el cambio climático podrían considerarse como una de las principales preocupaciones mundiales sobre el sistema energético actual.

TERCERA.- Debido a la naturaleza contradictoria de los intereses de los Estados en la economía energética global, no se ha desarrollado un acuerdo coherente e integral sobre la gobernanza de la energía a nivel global. La energía juega un papel importante en la provisión de las necesidades humanas y se considera un elemento vital de las economías. La energía también podría considerarse como uno de los impulsores más importantes en la realización del derecho al desarrollo que ha sido consagrado en el cuerpo del derecho internacional por las resoluciones aprobadas por la Asamblea General de las Naciones Unidas.

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La génesis de la idea del desarrollo sostenible podría considerarse como un esfuerzo para aunar en un mismo concepto las preocupaciones ambientales y el derecho al desarrollo.

CUARTA.- La discusión teórica sobre el fortalecimiento de los instrumentos jurídicos relacionados con el cambio climático sigue vigente. Sin embargo, el Acuerdo de París es la base jurídica actual para la cooperación global de cara a mitigar las emisiones de gases de efecto invernadero y avanzar hacia la descarbonización de los sistemas energéticos. Basado en el enfoque anterior, el Acuerdo de París requiere que las partes determinen a nivel nacional su contribución en las políticas de mitigación. Por lo tanto, desde la perspectiva global, se podría argumentar que se requieren más estudios sobre las políticas energéticas y ambientales de cada Estado miembro para cumplir con los objetivos del Acuerdo de París de limitar el calentamiento global hasta un máximo de 1,5-2 grados. Asimismo, es necesario el intercambio de datos para realizar una evaluación general sobre los logros y las deficiencias en el cumplimiento de los objetivos del acuerdo, incluyendo las mejores políticas y prácticas jurídicas energéticas y ambientales entre los Estados miembros. .

QUINTA.- Según las estimaciones de la Agencia Internacional de la Energía (AIE) y la Organización de Países Exportadores de Petróleo (OPEP), a pesar de que para finales del año 2040 las energías renovables y nucleares abastecerán la mayor parte de la demanda mundial de energía, el petróleo y el gas seguirán siendo la fuente de aproximadamente la mitad del suministro mundial total de energía. En el sector del petróleo crudo, aunque según los informes de la AIE y la OPEP se espera que para finales del 2040 la participación del petróleo en el suministro de la demanda mundial de energía primaria disminuya del 31% del 2014 al 26%, este seguirá siendo una de las principales fuentes mundiales de energía. En el sector del gas natural, a diferencia del petróleo, se espera que para finales del 2040, suministre una mayor porción de la demanda mundial de energía primaria en comparación con la participación actual. Las ventajas del gas natural son la reducción de las emisiones de GEI, los precios competitivos y la flexibilidad de los usos del consumo, lo que lo convierten en una fuente de energía más fiable. Incluso en escenarios orientados a la sostenibilidad, se espera que la demanda de gas natural

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umente para el 2040. La continua dependencia mundial de los recursos de petróleo y gas podría considerarse como uno de los impulsores que alientan las leyes y políticas energéticas iraníes a enfatizar el desarrollo de la explotación de estos recursos a largo plazo.

SEXTA,- Los costes de producción de petróleo baratos y las enormes reservas configuraron a Irán como uno de los principales productores de petróleo y gas natural del siglo pasado. El suministro de energía doméstica del país depende en gran medida del consumo interno de petróleo y gas natural (más del 97%). Irán es el décimo consumidor mundial de energía y tiene el cuarto nivel más alto de consumo de gas natural del mundo después de Estados Unidos, Rusia y China. Además, la intensidad energética del país es un 60 % más alta que el promedio mundial. Como resultado, Irán es el octavo emisor de CO₂ del mundo y contribuye con el 2% de las emisiones globales de este gas. A la vez, Irán es el hogar de solo el 1% de la población mundial y posee el 0,56% del PIB mundial.

SÉPTIMA,- El dominio del sector del petróleo y del gas también se ha extendido a las investigaciones académicas. A diferencia de un número considerable de investigaciones jurídicas que solo se enfoca a las leyes y políticas de petróleo y gas, en esta tesis, los principios del concepto de trilema energético derivados de las políticas energéticas de la UE se han utilizado como índice para analizar todas las leyes y las políticas relacionadas con el sector energético de Irán. Este podría ser un enfoque novedoso que, en lugar de una búsqueda unidimensional para el desarrollo del sector energético, se centra en un marco jurídico y político que proporciona un equilibrio entre las preocupaciones básicas sobre el sector energético, incluida la sostenibilidad, la asequibilidad e igualdad social y la seguridad. Al analizar todas las reglamentaciones correspondientes, en la investigación se llegó a la conclusión de que en las leyes y políticas energéticas iraníes se encuentran considerables deficiencias formales y sustantivas para mejorar la sostenibilidad y la equidad social del sistema energético.

OCTAVA,- Los desafíos jurídicos y políticos podrían abordarse como barreras importantes hacia el desarrollo simétrico del sistema energético iraní a la luz de la seguridad, la sostenibilidad y la equidad social. La administración y gobernanza

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energética de Irán es débil y se encuentra fragmentada. La energía en el país se enfrenta a la falta de un organismo único que regule las políticas energéticas. En este sentido, el Ministerio del Petróleo, el Ministerio de la Energía, el Departamento de Medio Ambiente y muchas otras instituciones tienen funciones directas en el sector energético. Además, muchas otras instituciones, incluidos el Ministerio del Transporte, los municipios y los ayuntamientos, la Organización de Subsidios Dirigidos y la Organización de Combustible y Transporte, tienen roles indirectos en la gobernanza energética del país. Como resultado, el sector energético lucha contra muchas decisiones y políticas paralelas y contradictorias. En esta investigación se constató que el Consejo Supremo de Energía, como una nueva institución reguladora establecida en 2011, no ha resultado relativamente exitosa en la integración de la formulación de políticas energéticas entre las instituciones mencionadas anteriormente. En el presente estudio se llegó a la conclusión de que las políticas adoptadas por el Consejo enfrentan el desafío del valor jurídico y no han logrado influir en las regulaciones correspondientes ni en la integración de las políticas energéticas. Como resultado, independientemente de los debates sustantivos, las políticas del Consejo se enfrentan a un relativo fracaso en su aplicación.

NOVENA,- A nivel nacional, el desarrollo gradual de los sectores de los hidrocarburos y la electricidad ha llevado a logros significativos en la autosuficiencia, la seguridad energética y la expansión del acceso a los recursos energéticos para casi todos los iraníes. Sin embargo, además de la considerable contribución global a las emisiones de GEI, la dependencia masiva de los recursos del petróleo y gas y el suministro de energía bajo los precios altamente subsidiados, han conllevado importantes problemas ambientales, incluidos los peligrosos niveles de contaminación aérea en las ciudades metropolitanas, así como las injusticias sociales en la asignación de los ingresos del petróleo y del gas para toda la población.

DÉCIMA,- En la presente investigación también se constató que, a pesar de las políticas de privatización, el mercado energético en Irán se ha mantenido como monopolio gubernamental. El gobierno es el único suministrador de los vectores de energía y establece precios fijos subsidiados y fuera de un mercado liberalizado y

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competitivo. Las políticas de privatización actuales solo transfieren la propiedad de las plantas de energía y refinerías al sector no gubernamental sin proporcionar la base requerida para la creación y mejora de la competencia en el mercado de la energía. Por lo tanto, a menos que se produzca una reforma importante, la estructura del mercado energético, tanto en los productos de petróleo y gas, como en la electricidad, junto con la falta de competencia, siguen siendo una barrera importante para la mejora de la eficiencia y la sostenibilidad del sistema energético iraní. Además, los subsidios a la energía constituyen uno de los principales desafíos del sistema energético del país. Así, las reformas de los subsidios han emergido como una de las principales prioridades en diferentes legislaciones. Sin embargo, el monopolio gubernamental y la estructura actual del mercado energético podrían describirse como la principal barrera para la implementación de reformas de los subsidios.

DÉCIMO PRIMERA,- La presente investigación constató que, más que seguir políticas a medio o largo plazo, el sector energético iraní se ha desarrollado como respuesta a las necesidades a corto plazo derivadas de los planes y políticas cortoplacistas. A pesar de las deficiencias sustanciales, la promulgación del Plan Estratégico Nacional de Energía (NESP, por sus siglas en inglés), con una visión a largo plazo para 2041, podría considerarse un paso adelante en la formulación de las políticas energéticas iraníes debido a la perspectiva a largo plazo que representa. Sin embargo, el NESP establece una serie de ideales y lemas en lugar de estrategias que puedan ser implementadas. El NESP rara vez requiere objetivos cuantificables, por lo tanto, no constituye una referencia para guiar las legislaciones a corto y medio plazo. El documento también carece de cualquier escenario definitorio y no refleja las perspectivas de producción, consumo y eficiencia energética basadas en la comparación con el escenario “*Business as Usual*” (BAU) y otros posibles. Teniendo en cuenta la experiencia de la UE en la formulación de políticas energéticas, los objetivos establecidos por las diferentes estrategias energéticas se han transpuesto con bastante éxito en las directivas adicionales que determinan la vía práctica y los detalles para alcanzar esos objetivos. En comparación, los objetivos establecidos por las políticas a largo plazo, como el NESP, no son seguidos por regulaciones detalladas similares a las directivas de la UE. Esto sigue siendo una de las principales barreras para el logro de las políticas deseadas.

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DÉCIMO SEGUNDA,- El otro desafío general de las políticas energéticas es la falta de integración y armonización. Por ejemplo, como consecuencia de la falta de aplicación de la Ley de Reforma de Subsidios, que esperaba eliminar gradualmente los subsidios a la energía, Irán sigue siendo el país del mundo que más subsidios asigna a los vectores energéticos. Como resultado, muchas de las políticas energéticas no se han llevado a cabo debido a la falta de la aplicación exitosa de las reformas de los subsidios. Se esperaba que los fondos recibidos por la eliminación de los subsidios fueran utilizados por el gobierno para ciertas ayudas sociales. Sin embargo, como consecuencia de la implementación parcial de la Ley, se han elevado los precios de muchos productos relacionados con la energía y la ayuda social del gobierno se ha mantenido en las cantidades aprobadas en 2012. Esto ha intensificado la injusticia y la inequidad en el acceso a los beneficios energéticos, por lo que las clases bajas de la sociedad se encuentran más expuestas a las consecuencias negativas. Mientras tanto, los fondos que se esperaban obtener de la implementación de la Ley para ser utilizados como instrumentos financieros para mejorar la eficiencia energética y el desarrollo de las energías renovables, no se han logrado y muchas políticas y legislaciones relacionadas no se han implementado. Como resultado, en los últimos años las políticas no han logrado mejorar la eficiencia energética y reformar los subsidios energéticos como el principal requisito para lograr la equidad energética.

DECIMO TERCERA,- Tras el análisis de todas las regulaciones correspondientes, esta investigación constató una deficiencia sustancial en el desarrollo de la base jurídica de la protección del medio ambiente y el desarrollo sostenible en el sistema jurídico iraní. Aunque el artículo 50 de la Constitución aborda explícitamente la obligación de proteger el medio ambiente y el derecho de las generaciones futuras a un medio ambiente sano, durante 40 años, el Consejo Guardián de la Constitución solo ha reconocido en una ocasión que la promulgación del parlamento es inconstitucional al referirse al artículo 50. Además, a la Corte Administrativa de Justicia no ha contribuido considerablemente a proporcionar una jurisprudencia en este contexto. La protección del medio ambiente está lejos de ser una norma fundamental en el orden jurídico iraní y, como consecuencia, el cambio climático no ha sido mencionado explícitamente ni una sola vez en las legislaciones recientes. Por lo tanto, en la presente investigación se constató que el insostenible

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enfoque en la formulación de las políticas energéticas está enraizado en esta grave deficiencia legal sustantiva.

DECIMO CUARTA,- Las políticas actuales e incluso las promulgadas recientemente se centran principalmente en maximizar la explotación de los recursos de hidrocarburos. Todo el contenido del NESP y de otras políticas sigue el statu-quo de dominación del petróleo y del gas y carece de una transición energética hacia un enfoque de sistema bajo en carbono en una visión a largo plazo. En las promulgaciones recientes, existe cierto margen para mejorar la eficiencia energética y el desarrollo de energías renovables. Sin embargo, bajo la sombra del dominio del petróleo, estas políticas sostenibles están lejos de ser ambiciosas. La presente investigación también revela que el enfoque de sostenibilidad y equidad social no puede considerarse como el principal impulsor de las políticas existentes. La investigación concluye que, confiando en las reservas masivas y la producción de combustibles fósiles, el mantenimiento y el desarrollo de estas capacidades siguen siendo la principal política para asegurar el suministro de la demanda interna de energía. Sin embargo, la continuidad de las tendencias energéticas actuales, junto con la falta de diversificación eficiente y de políticas de mejora de la eficiencia, podrían plantear problemas de seguridad en un futuro próximo.

DECIMO QUINTA,- La investigación constató, a su vez, que los ensayos internacionales han tenido un impacto positivo en la formación y mejora del enfoque de sostenibilidad en las políticas energéticas iraníes. Por ejemplo, a diferencia de la mayoría de las políticas nacionales, la comunicación nacional de Irán a la CMNUCC contiene escenarios de mitigación cuantificados. La presente investigación también reveló que los esquemas europeos de apoyo a las energías renovables han influido en las recientes políticas energéticas iraníes y han llevado a adoptar un plan de tarifas de alimentación a la red («Feed-in Tariffs») para el desarrollo de energías renovables en los últimos años. Además, las legislaciones europeas sobre eficiencia energética, como por ejemplo los mecanismos de etiquetado energético, han influido en las recientes políticas energéticas iraníes. En algunos casos, los estatutos y las normas que determinan los indicadores de eficiencia energética se han referido explícitamente a las normas europeas. La contribución nacional determinada (NDC, por sus siglas en inglés) de Irán al

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Acuerdo de París también constituye una política que contiene objetivos de mitigación de GEI mediante varias medidas, incluida la mejora de la eficiencia energética y el desarrollo de energías renovables. Sin embargo, a pesar de que después de la ratificación del Acuerdo por el Parlamento iraní, el gobierno estará jurídicamente obligado a una reducción del 4% de sus emisiones de GEI en comparación con el escenario BAU, en ausencia de ciertos objetivos y políticas para la eficiencia energética y el desarrollo de energías renovables, no se espera que la NDC de Irán imponga una reforma eventual en las políticas energéticas y ambientales del país. Como se mencionó anteriormente, a menos que se realicen reformas sustanciales de las estructuras y de los subsidios, es muy probable que no se lleguen a alcanzar incluso los muy poco ambiciosos objetivos actuales de mitigación.

DECIMO SEXTA,- Según las políticas actuales, los sectores del petróleo, gas y electricidad requieren grandes cantidades de inversiones nacionales y extranjeras para el mantenimiento y el desarrollo del suministro de la energía nacional, aumentar el potencial de exportación y utilizar tecnologías superiores y más eficientes. La promulgación de la Ley de Promoción y Protección de la Inversión Extranjera (FIPPA, por sus siglas en inglés) podría considerarse como un punto de inflexión en las legislaciones posteriores a la revolución de 1979. La FIPPA cubre una amplia gama de inquietudes sobre la inversión extranjera, incluido el trato nacional igualitario ante la ley; límites claros a las expropiaciones y provisión de indemnización en caso de expropiación; transferibilidad de fondos relacionados con inversiones; restricciones a la imposición de requisitos de desempeño local y libertad para elegir personal administrativo. Sin embargo, la FIPPA no ha influido jurídicamente en la naturaleza misma de los acuerdos petroleros iraníes. Debido a las restricciones legales antes mencionadas, la FIPPA no reconoce otros métodos contractuales de inversiones en el sector energético, como los "acuerdos de producción compartida", además de las asociaciones civiles, readquisiciones y esquemas de servicios de construcción de infraestructura, operación y transferencia (BOT, por sus siglas en inglés) actualmente aceptados. Además, los inversores extranjeros deberían poder beneficiarse del arbitraje para la resolución de disputas sin el requisito de la existencia de tratados bilaterales de inversión con el Estado de origen del inversor. La prohibición actual de referirse al arbitraje debido a la

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prohibición del artículo 139 de la Constitución sigue siendo un serio desafío en este contexto.

DECIMO SÉPTIMA,- Con respecto al sector de los hidrocarburos, el enfoque conservador de la participación extranjera en las operaciones petroleras ha llevado, por un lado, a un nivel decisivo a la hora de garantizar la soberanía sobre estos recursos naturales pero, por otro lado, ha traído consigo un estímulo muy limitado de las inversiones extranjeras. Si bien el desarrollo del sector en sí mismo y la reducción de los daños ambientales, como la quema masiva de gas en las operaciones petroleras aguas arriba y aguas abajo, requieren inversiones y tecnologías extranjeras, el marco jurídico para las inversiones extranjeras en el sector petrolero es difuso y desafiante y no se ha reformado a la luz de las mejores prácticas internacionales. Al respecto, en la presente investigación se concluye que los enfoques restringidos a las regulaciones de inversión extranjera en el sector petrolero derivados de los principios de la Ley Sharia y del enfoque politizado del Consejo Guardián de la Constitución en la interpretación de esas regulaciones podrían interpretarse como barreras jurídicas que no permiten que el sector petrolero iraní estimule las inversiones extranjeras como se esperaba. Además, las leyes petroleras y económicas afirmaron la propiedad pública y la única autoridad del gobierno en el sector, lo que podría considerarse como una de las principales barreras para el desarrollo y la modernización de la industria petrolera. Como resultado, en ausencia de inversiones y tecnologías extranjeras, el sector de los hidrocarburos ni siquiera ha alcanzado los desarrollos deseados en línea con las políticas nacionales. La experiencia de la promulgación de la Ley de Implementación de Políticas Generales del Artículo 44 de la Constitución (LIPGA44) ha demostrado que una decisión política del Líder Supremo podría cambiar sustancialmente el enfoque jurídico de un tema nacional tan importante. Sin embargo, en lo que respecta a los contratos petroleros, dicha decisión aún no se ha tomado. A pesar de los esfuerzos recientes hacia la adopción de un enfoque más favorable a la inversión, la prohibición constitucional de otorgar derechos de propiedad y asociación a los inversores sigue vigente y la naturaleza misma de los contratos de inversión en el sector petrolero iraní podría no ir más allá de los contratos de servicios de riesgo, como la ya experimentada readquisición y el actual IPC. Obviamente, podría sugerirse que de una vez por todas se aclararan las

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circunstancias jurídicas para la inversión extranjera en el sector petrolero. Sin embargo, como se explicó, esto requiere una voluntad política del Líder Supremo pero una vez que se tomara la decisión política, no se esperaría que ni el Parlamento ni el Consejo Guardián de la Constitución se opusieran dicha reforma. Mediante la promulgación de la Ley de Actividades y Autoridades del Ministerio de Petróleo (MPTAL, por sus siglas en inglés) en 2012, se esperaba que el Ministerio del Petróleo obtuviera una mayor autoridad para desarrollar nuevos patrones de contratos de inversión con inversionistas extranjeros. La MPTAL amplía las posibilidades del Ministerio de Petróleo en la gestión de los recursos hidrocarburíferos, sin embargo, no rompe claramente la barrera jurídica para desarrollar nuevas formas de producción que compartan marcos contractuales. No obstante, se podría argumentar que la nueva forma de contratos de servicios de riesgo propuestos (IPC) está solventando la mayoría de las preocupaciones de los inversores extranjeros. El fracaso del Ministerio del Petróleo en la firma de acuerdos con inversionistas extranjeros dentro del marco del IPC se debe principalmente a la reimposición de las sanciones.

DÉCIMO OCTAVA,- A pesar de la falta de una hoja de ruta de descarbonización, las políticas energéticas adoptadas en la última década han proporcionado una base para el desarrollo de las energías renovables. Esta investigación constató que los incentivos propuestos por el gobierno por el actual esquema de tarifas de alimentación a la red (“Feed-in Tariffs”) han sido relativamente exitosos a la hora de promover las inversiones en energías renovables. Sin embargo, en el presente estudio también se demostró que , según las regulaciones actuales del mercado eléctrico, el objetivo de 5 GW para 2021 no se logrará. De hecho, el fracaso en la plena implementación de la Ley de Reforma de los Subsidios y la incertidumbre sobre las reformas de los subsidios en los próximos años podrían plantear la cuestión de hasta qué punto el gobierno podría solventar la brecha entre la tarifa de alimentación y los precios al usuario final.

DÉCIMO NOVENA,- La investigación constató, a su vez, que la protección del medio ambiente carece de una base jurídica eficiente en el ordenamiento jurídico iraní actual. El concepto de protección del medio ambiente y la sostenibilidad mencionado en el artículo 50 de la Constitución no se ha desarrollado

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en las legislaciones ordinarias. Si bien en las leyes y políticas relacionadas con la energía existe un mosaico de regulaciones ambientales dispersas, el país aún carece de una ley climática y ambiental integral. Como consecuencia, el sistema energético iraní es altamente insostenible, no solo por la considerable contribución en la producción mundial de CO₂, sino también por los daños ambientales que el sistema actual está imponiendo a nivel doméstico. Además, en la investigación se constató una variedad de ejemplos de incumplimiento, incluso con las regulaciones existentes. Esto podría entenderse desde una perspectiva más amplia como un bajo nivel del estado de derecho. Por lo tanto, las leyes y políticas energéticas iraníes requieren una reforma sustancial.

VIGÉSIMA,- Mediante el análisis de las leyes y políticas correspondientes, proporcionado mediante la presente investigación, los títulos de las reformas previstas podrían ser: 1. la adopción de una política de reforma del mercado que, en lugar de establecer la privatización como un objetivo, establezca y promueva gradualmente la competencia en el mercado energético y rompa los monopolios actuales; 2. la adopción de una ley complementaria de reforma de subsidios y regulación de sus requisitos en las leyes de presupuesto anual. Se espera que la reforma de esta ley aclare la eliminación anual de subsidios y, simultáneamente, establezca la asignación de ayudas sociales a las clases más vulnerables de la sociedad; 3. la promulgación del paquete holístico de energía y clima de Irán por parte del Parlamento en lugar de los estatutos adoptados por organismos gubernamentales como el NESP y el plan ejecutivo de esquema nacional integral de energía (EPCNES, por sus siglas en inglés). Se espera que este paquete diseñe una hoja de ruta clara y práctica para brindar la certidumbre regulatoria que facilite la descarbonización gradual del sistema energético y la transición económica hacia una menor dependencia de los hidrocarburos. Esta reforma también es necesaria para armonizar y regular las políticas energéticas entre todos los actores correspondientes. Este paquete integral debe regular, a su vez, la mejora gradual de la eficiencia mediante la definición de objetivos cuantificados a medio y largo plazo.

Bibliography

Bibliography

- Aalto P, 'The New International Energy Charter: Instrumental or Incremental Progress in Governance?' (2016) 11 *Energy Research and Social Science* 92
- Abbas G and C-Y. CL, 'Do Iran's Buy-Back Service Contracts Lead to Optimal Production?' [2012] *Energy Policy* 181
- Abdo H, 'Investigating the Effectiveness of Different Forms of Mineral Resources Governance in Meeting the Objectives of the UK Petroleum Fiscal Regime' (2014) 65 *Energy Policy* 48 <<http://dx.doi.org/10.1016/j.enpol.2013.10.021>>
- Abdul Manaf NA and others, 'Towards Establishing a Scale for Assessing the Attractiveness of Petroleum Fiscal Regimes - Evidence from Malaysia' (2016) 88 *Energy Policy* 253
- 'About the Observatory | EU Energy Poverty Observatory'
<<https://www.energypoverty.eu/about/about-observatory>> accessed 7 January 2020
- Abrahamian E, *The Coup: 1953, the CIA, and the Roots of Modern U.S.-Iranian Relations* (The New Press 2013)
- Afsharzade N and others, 'Renewable Energy Development in Rural Areas of Iran' 743 <<http://dx.doi.org/10.1016/j.rser.2016.07.042>>
- Agency IE, 'World Energy Model, Scenario Analysis of Future Energy Trends'
<<https://www.iea.org/weo/weomodel/>>
- Ajari Aysak A, 'Legal Analysis of the Possibility of Ownership Transfer of Public Properties, Comparative Study of Iran and French Law(In Persian: Barresi Hoghoughi Ghabeliate Khosousisazie Amvale Omoumi , Motale Tatbighie Hoghough Iran va Farance)' (2016) 78 In Persian: Faslname Pazhoheshname Bazargani 179 <<http://ensani.ir/fa/article/367173>>
- Al-Attar A and Alomair O, 'Evaluation of Upstream Petroleum Agreements and Exploration and Production Costs' (2005) 29 *OPEC Review* 243
- Al-busaidi KA, 'The Politics of Privatization in Iran' (2010) 14 *Middle East Review of International Affairs* 39 <<https://www.nber.org/papers/w15827.pdf>>
- Alaeddini A and Shiri M, 'Competition Law in Iran and It's Developments in the Light of the General Policies of Article 44 of the Constitution(In Persian: Ghavaede Hoghoughe Reghabat Dar Iran va Tahavvolate An Dar Parto Siyasathaye Kollie Asle 44)' (2017) 16 *Judgment Quaterly(Faslname Ghezavat)* 119 <http://www.ghazavat.org/article_42461.html>
- Alavi SA, 'History of Oil Industry in Iran' (California Institute of Asian Studies 1977)
- Aluko S, 'The Social and Economic Implications of Sharia Law' 1
<http://www.nigerdeltapeoplesworldcongress.org/articles/social_and_economic.pdf>
- ANA News Agency, 'Iran's Power Generation Capacity Reached 80.500 MW'
<<https://ana.ir/fa/news/51/379958>> accessed 7 September 2019
- Aoun M-C, 'European Energy Security Challenges and Global Energy Trends:

11. Chapter 11. Summary, and Conclusion

Old Wine in New Bottles?’ (2015) 15 IAI Working Papers

<<http://www.iai.it/sites/default/files/iaiw1503.pdf>>

‘Approval of New Petroleum Contracts in Cabinet of Government’

Arababadi R, Parrish K and Asmar M El, ‘Waging War on Climate Change: Mapping Energy Policies to Their Strategic, Tactical, and Operational Levels’ (2016) 145 *Procedia Engineering* 11

<<http://dx.doi.org/10.1016/j.proeng.2016.04.002>>

Aras B and İşeri E, ‘The Nabucco Natural Gas Pipeline: From Opera to Reality’ [2009] SETA policy brief 1

Araujo FC and Leoneti AB, ‘How Attractive Is Brazil’s Oil and Gas Regulatory Framework to Investors?’ (2019) 6 *Extractive Industries and Society* 906

<<https://doi.org/10.1016/j.exis.2019.05.009>>

Arfa H, ‘Reza Shah Pahlavi’, *Britannica Encyclopaedia* (2017)

<<https://www.britannica.com/biography/Reza-Shah-Pahlavi>>

Arjomand SA, ‘Constitution-Making in Islamic Iran: The Impact of Theocracy on the Legal Order of a Nation-State’ [1989] *History and Power in the Study of Law: New Directions in Legal Anthropology* 113

Asgari Arjanki SA, ‘Legal Principles of Privatization in Iranian Legal Order (In Persia: Mabani Hoghoughi Khosousisazi Dar Nezame Hoghoughie Iran)’, *4th National Conference of Legal and Judicial Studies* (2017)

Asif M and Muneer T, ‘Energy Supply, Its Demand and Security Issues for Developed and Emerging Economies’ (2007) 11 *Renewable and Sustainable Energy Reviews* 1388

Atai A, ‘Comparative Analysis of the Iranian Foreign Investment Law and the World Bank Guidelines on Treatment of Foreign Direct Investment’ (2019) 12 *Yearbook of Islamic and Middle Eastern Law Online* 111

Authors M, ‘Banking in Iran’, *Encyclopaedia Iranica* (Encyclopaedia Iranica New York) <<http://www.iranicaonline.org/articles/banking-in-iran>> accessed 9 May 2017

———, ‘Caucasus and Iran’ (*Encyclopaedia Iranica*)

<<http://www.iranicaonline.org/articles/caucasus-index>> accessed 9 May 2017

Azadi P and others, ‘The Outlook for Natural Gas, Electricity, and Renewable Energy in Iran’ [2017] Stanford Iran 2040 Project <https://iranian-studies.stanford.edu/sites/default/files/publications/the_outlook_for_natural_gas_electricity_and_renewable_energy_in_iran_2.pdf%0Awww.iranian-studies.stanford.edu/iran2040>

Azimi F and Afshar I, ‘FORŪGĪ, MOĤAMMAD-‘ALĪ DOKĀ’-AL-MOLK’, *Encyclopaedia Iranica* (1999) <<http://www.iranicaonline.org/articles/forugi-mohammad-ali>>

Bahmani-Oskooee M, ‘History of the Rial and Foreign Exchange Policy in Iran’ (2005) 10 *Iranian Economic Review* 1

Bakhash S, *The Politics of Oil and Revolution in Iran* (1st edn, The Brookings Institution 1982)

Bibliography

Balsalobre-Lorente D and others, 'A Road to Enhancements in Natural Gas Use in Iran: A Multivariate Modelling Approach' (2019) 64 Resources Policy 101485
<<https://doi.org/10.1016/j.resourpol.2019.101485>>

Bamberg J, *The History of the British Petroleum Company, Volume 2 The Anglo Iranian Years* (Cambridge University Press 1994)

Banisadr A, *Oil and Domination (The Role of Oil in Expansion of Capitalism), in Persian (Naft va Solteh, Naghshe Naft Dar Tosee Sarmayedari* (Mosaddegh Publication 1978)

'Barrel Breakdown' <<http://graphics.wsj.com/oil-barrel-breakdown/>> accessed 10 May 2017

Barzegar A, 'Nature and Functions of the Competition Council in Iran Legal System (In Persian: Jaygah va Vazayefe Shoraye Reghabat Dar Nezame Hoghoughi Iran' (2014) 1 Administrative Law Scientific and research Quaterly (In Persian: Faslname Elmi Pazhouheshi Hoghoughe Edari) 147

Bayat R and others, 'Health Impact and Related Cost of Ambient Air Pollution in Tehran' (2019) 176 Environmental Research

Beheshti H, 'The Prospective Environmental Impacts of Iran Nuclear Energy Expansion' (2011) 39 Energy Policy 6351
<<http://dx.doi.org/10.1016/j.enpol.2011.07.036>>

Behrooz M, 'Tudeh Factionalism and the 1953 Coup in Iran' (2001) 33 International Journal of Middle East Studies 363

Bhattacharjee A, *Social Science Research: Principles, Methods, and Practices*, vol 9 (Global Text Project 2012) <http://scholarcommons.usf.edu/oa_textbooks> accessed 11 May 2017

Blake AJ and Roberts MC, 'Comparing Petroleum Fiscal Regimes under Oil Price Uncertainty' (2006) 31 Resources Policy 95

Bradbrook AJ, 'Environmental Aspects of Energy Law - the Role of the Law' (1994) 5 Renewable Energy 1278

——, 'Energy Law as an Academic Discipline' (1996) 14 Journal of Energy & Natural Resources Law 193

Brexendorff A, Christian U and Kuhn M, 'The Iranian Buy-Back Approach' (2009) 7 Oil, Gas & Energy Law Journal (OGEL)

Britannica E of E, 'William Knox D'Arcy BRITISH ENTREPRENEUR' <<https://www.britannica.com/biography/William-Knox-Darcy>> accessed 11 April 2017

British Petroleum, 'BP Statistical Review of World Energy, 2018, Natural Gas' (2018) 35 <<https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review/bp-stats-review-2018-natural-gas.pdf>> accessed 30 March 2019

——, 'BP Statistical Review of World Energy Statistical Review of World, 2019' <<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2019-full-report.pdf>>

11. Chapter 11. Summary, and Conclusion

- Cabinet Office, 'The CNES Submitted to the Cabinet of Ministers for Approval' <<http://cabinetoffice.ir/fa/news/4071>> accessed 10 November 2019
- Capros P and others, 'Outlook of the EU Energy System up to 2050: The Case of Scenarios Prepared for European Commission's "Clean Energy for All Europeans" Package Using the PRIMES Model' (2018) 22 Energy Strategy Reviews 255 <<https://doi.org/10.1016/j.esr.2018.06.009>>
- Chapman AJ, McLellan B and Tezuka T, 'Proposing an Evaluation Framework for Energy Policy Making Incorporating Equity: Applications in Australia' (2016) 21 Energy Research and Social Science 54 <<http://dx.doi.org/10.1016/j.erss.2016.06.021>>
- Chow E, Ashayeri C and Stanley AJ, 'The Future of Iran's Oil and Gas Industry' (2018) 1 SSRN Electronic Journal
- Chubin S, 'The Politics of Iran's Nuclear Program' [2010] Iran Primer 1 <<http://carnegieendowment.org/2010/09/01/iran-primer-politics-of-iran-s-nuclear-program>>
- Churchill W, *The World Crisis* (First edit, Charles Scribner's Sons 1923)
- 'Clean Energy for All Europeans Package | Energy' <<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>> accessed 2 January 2020
- Clifton J, Comín F and Fuentes DD, 'Privatizing Public Enterprises in the European Union 1960-2002: Ideological, Pragmatic, Inevitable?' (2006) 13 Journal of European Public Policy 736
- 'Climate Rhetoric: What's an Energy Trilemma?' <<https://www.carbonbrief.org/climate-rhetoric-whats-an-energy-trilemma>> accessed 15 October 2019
- Cocciolo E, 'La Unión de La Energía y La Gobernanza Del Sistema Tierra En El Antropoceno: Una Cuestión Constitucional' (2015) 6 Revista Catalana de Dret Ambiental
- , 'Capitalocene, Thermocene and the Earth System: Global Law and Connectivity in the Anthropocene Age', *Research Handbook on Global Climate Constitutionalism* (Edward Elgar Publishing 2019)
- Cox E, Royston S and Selby J, 'From Exports to Exercise: How Non-Energy Policies Affect Energy Systems' (2019) 55 Energy Research and Social Science 179
- Czinkota MR and Skuba CJ, 'Contextual Analysis of Legal Systems and Their Impact on Trade and Foreign Direct Investment' (2014) 67 Journal of Business Research 2207 <<http://dx.doi.org/10.1016/j.jbusres.2014.01.005>>
- Daragahi B, 'Iran Protests: How Tehran Let a Plan to Remove Subsidies Turn into a Threat to the Regime' <<https://www.independent.co.uk/news/world/middle-east/iran-protests-tehran-rouhani-subsidies-a9208021.html>> accessed 20 November 2019
- Dastoorpoor M and others, 'Air Pollution and Hospital Admissions for Cardiovascular Diseases in Ahvaz, Iran' (2019) 652 Science of the Total Environment 1318 <<https://doi.org/10.1016/j.scitotenv.2018.10.285>>

Bibliography

- Dehghan Shabani Z and Shahnazi R, 'Energy Consumption, Carbon Dioxide Emissions, Information and Communications Technology, and Gross Domestic Product in Iranian Economic Sectors: A Panel Causality Analysis' (2019) 169 Energy 1064 <<https://doi.org/10.1016/j.energy.2018.11.062>>
- Department of the Environment, 'Intended Nationally Determined Contribution, Islamic Republic of Iran' (2015)
<<http://www4.unfccc.int/submissions/INDC/Published Documents/Iran/1/INDC Iran Final Text.pdf>> accessed 30 March 2019
- Desta MG, 'OPEC Production Management Practices under WTO Law and the Antitrust Law of Non-OPEC Countries' (2010) 28 Journal of Energy & Natural Resources Law 439
- 'Details of New Petroleum Contracts'
<<http://www.isna.ir/fa/news/93081707530>> accessed 23 January 2017
- Development UNC on T and, 'Iran, Islamic Republic of | International Investment Agreements Navigator | UNCTAD Investment Policy Hub'
<<https://investmentpolicy.unctad.org/international-investment-agreements/countries/98/iran-islamic-republic-of?type=bits>> accessed 7 January 2020
- Dike JC, 'Measuring the Security of Energy Exports Demand in OPEC Economies' (2013) 60 Energy Policy 594
<<http://dx.doi.org/10.1016/j.enpol.2013.05.086>>
- Dubash NK and Florini A, 'Mapping Global Energy Governance' (2011) 2 Global Policy 6
- Early BR, Nance MT and Cottrell MP, 'Global Governance at the Energy-Security Nexus: Lessons from UNSCR 1540' (2017) 24 Energy Research and Social Science 94 <<http://dx.doi.org/10.1016/j.erss.2016.12.007>>
- Ebrahimi M, *The British Role in Iranian Domestic Politics (1951-1953)* (Springer International Publishing 2016)
- Ebrahimi SN and Khouzani AS, 'The Contractual Form of Iran's Buy-Back Contracts in Comparison with Production Sharing and Service Contract' [2003] Middle East Oil Show. Society of Petroleum Engineers
- 'Electric Power Restructuring in Iran : Achievements and Challenges'
- 'Electricity Market Design' <<https://ec.europa.eu/energy/en/topics/markets-and-consumers/market-legislation/electricity-market-design>> accessed 3 January 2020
- Elheddad M, 'Foreign Direct Investment and Domestic Investment: Do Oil Sectors Matter? Evidence from Oil-Exporting Gulf Cooperation Council Economies' (2018) 103 Journal of Economics and Business 1
<<https://doi.org/10.1016/j.jeconbus.2018.11.001>>
- Elm M, *Oil, Power, and Principle: Iran's Oil Nationalization and Its Aftermath* (Syracuse University Press 1994)
- Enerdata, 'Energy Intensity of GDP at Constant Purchasing Power Parities'
<<https://yearbook.enerdata.net/energy-intensity-GDP-by-region.html>> accessed 11 May 2017
- Energy Charter Secretariat, 'The International Energy Charter Consolidated

11. Chapter 11. Summary, and Conclusion

Energy Charter Treaty with Related Documents' 168

<<http://www.energycharter.org/fileadmin/DocumentsMedia/Legal/ECTC-en.pdf>>

'Energy Performance of Buildings Directive | Energy'

<<https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-performance-of-buildings/energy-performance-buildings-directive>> accessed 3 January 2020

'Energy Poverty' <<https://ec.europa.eu/energy/en/topics/markets-and-consumers/consumer-rights-and-protection/energy-poverty#content-heading-0>> accessed 3 January 2020

Erdogdu E, 'Bypassing Russia: Nabucco Project and Its Implications for the European Gas Security' (2010) 14 *Renewable and sustainable energy Reviews* 2936

Esfahani HS, Mohaddes K and Pesaran MH, 'Oil Exports and the Iranian Economy' (2013) 53 *Quarterly Review of Economics and Finance* 221

<<http://dx.doi.org/10.1016/j.qref.2012.07.001>>

Esmaeili M and Tahan Nazif H, 'Analysis of the Nature of the Institution of the General Policies of the Islamic System in the Constitutional Law of the Islamic Republic of Iran (In Persian, Tahlile Mahiate Nahade Siasathaye Kollie Nezam Dar Houghouge Asasie Jomhourie Eslamie Iran)' (2009) 9 *Islamic Law Research Journal* (In Persian: Pazhouheshname Houghouge Eslami) 93

<http://ilr.journals.isu.ac.ir/article_1264.html>

'EU 2020 Target for Energy Efficiency | Energy'

<<https://ec.europa.eu/energy/en/topics/energy-efficiency/targets-directive-and-rules/eu-targets-energy-efficiency>> accessed 3 January 2020

'EU Sanctions against Iran'

<<http://www.consilium.europa.eu/en/policies/sanctions/iran/>>

'EUR-Lex - 32018L2001 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC> accessed 3 January 2020

'EUR-Lex - 32018L2002 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0210.01.ENG&toc=OJ:L:2018:328:TOC> accessed 3 January 2020

'EUR-Lex - 32018R1999 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0001.01.ENG&toc=OJ:L:2018:328:TOC> accessed 3 January 2020

'EUR-Lex - 52005DC0670 - EN - EUR-Lex' <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52005DC0670>> accessed 9 January 2020

'EUR-Lex - 52010DC0639 - EN - EUR-Lex' <<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1409650806265&uri=CELEX:52010DC0639>> accessed 2 January 2020

'EUR-Lex - 52011DC0885 - EN - EUR-Lex' <https://eur-lex.europa.eu/legal-content/EN/ALL/;ELX_SESSIONID=pXNYJKSFbLwdq5JBWQ9CvYWYJxD9RF4mnS3ctywT2xXmFYhlnlW1!-868768807?uri=CELEX:52011DC0885> accessed 2 January 2020

'EUR-Lex - 52014DC0015 - EN - EUR-Lex' <<https://eur-lex.europa.eu/legal->

Bibliography

content/EN/TXT/?qid=1576151570629&uri=CELEX:52014DC0015> accessed 2 January 2020

‘EUR-Lex - 52014DC0330 - EN - EUR-Lex’ <<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52014DC0330&qid=1407855611566>> accessed 2 January 2020

European Environment Agency (EEA), ‘Share of Renewable Energy in Gross Final Energy Consumption in Europe’ (2019) <<https://www.eea.europa.eu/data-and-maps/indicators/renewable-gross-final-energy-consumption-4/assessment-4>> accessed 4 January 2020

European Parliament, ‘DIRECTIVE (EU) 2018/2002 on Energy Efficiency’ (2018) 328 Official Journal of the European Union 210 <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2002&from=EN>>

Exporting(OPEC) O of P, ‘World Oil Outlook_OPEC’ 72 <<http://library.seg.org/doi/10.1190/1.1439163>>

Fadai D, Esfandabadi ZS and Abbasi A, ‘Analyzing the Causes of Non-Development of Renewable Energy-Related Industries in Iran’ (2011) 15 Renewable and Sustainable Energy Reviews 2690

Faghihifard M and Badri MA, ‘Simulation of Oil Pollution in the Persian Gulf near Assaluyeh Oil Terminal’ (2016) 105 Marine Pollution Bulletin 143 <<http://dx.doi.org/10.1016/j.marpolbul.2016.02.034>>

Farnejad H, ‘How Competitive Is the Iranian Buy-Back Contracts in Comparison to Contractual Production Sharing Fiscal Systems?’ (2009) 7 Oil, Gas & Energy Law Journal (OGEL)

Farzanegan MR, ‘Oil Revenue Shocks and Government Spending Behavior in Iran’ (2011) 33 Energy Economics 1055 <<http://dx.doi.org/10.1016/j.eneco.2011.05.005>>

Farzanegan MR and Habibpour MM, ‘Resource Rents Distribution, Income Inequality and Poverty in Iran’ (2017) 66 Energy Economics 35 <<http://dx.doi.org/10.1016/j.eneco.2017.05.029>>

Florini A, ‘The International Energy Agency in Global Energy Governance’ (2011) 2 Global Policy 40

Florini A and Sovacool BK, ‘Who Governs Energy? The Challenges Facing Global Energy Governance’ (2009) 37 Energy Policy 5239 <<http://dx.doi.org/10.1016/j.enpol.2009.07.039>>

‘Foreign Investment Promotion and Protection Act(FIPPA)’ <<https://www.investiniran.ir/en/filepool/44/Foreign-Investment-Promotion-and-Protection-Act-English?redirectpage=%2Fen%2Febook%2Fprotectionact>> accessed 10 July 2019

Forum GEC, ‘Gas Exporting Countries Forum (GECF) Brief History’ (2003) <https://www.gecf.org/_resources/files/pages/history/gecf-history-file.pdf> accessed 13 June 2018

Fragkos P and others, ‘Coupling National and Global Models to Explore Policy Impacts of NDCs’ (2018) 118 Energy Policy 462 <<https://doi.org/10.1016/j.enpol.2018.04.002>>

11. Chapter 11. Summary, and Conclusion

- Freeman J, 'Extending Public Law Norms through Privatization' (2003) 116 Harvard Law Review 1285
- Furtado LS, Gonçalves E and Costa LAR, 'Risk and Rewards Dynamics: Measuring the Attractiveness of the Fiscal Regime in the Presence of Exploratory Risks' (2019) 132 Energy Policy 1274
<<https://doi.org/10.1016/j.enpol.2019.05.059>>
- Gabriel SA and others, 'Cartelization in Gas Markets: Studying the Potential for a "Gas OPEC"' (2012) 34 Energy Economics 137
- , 'Cartelization in Gas Markets: Studying the Potential for a "Gas OPEC"' (2012) 34 Energy Economics 137
<<http://dx.doi.org/10.1016/j.eneco.2011.05.014>>
- Gabrielle M, 'The WTO in the Emerging Energy Governance Debate'
<https://www.wto.org/english/res_e/publications_e/wtr10_forum_e/wtr10_marceau_e.htm> accessed 21 January 2018
- Gasiorowski MJ and Malcolm B, *Mohammad Mosaddegh and the 1953 Coup in Iran* (Syracuse University Press 2004)
- Gault J and others, 'How Does OPEC Allocate Quotas?' (1999) 4 Journal of Energy Finance & Development 137
- Gharehgozli O, 'An Estimation of the Economic Cost of Recent Sanctions on Iran Using the Synthetic Control Method' (2017) 157 Economics Letters 141
<<http://dx.doi.org/10.1016/j.econlet.2017.06.008>>
- Gheissari A, *Contemporary Iran: Economy, Society, Politics* (Oxford University Press 2009)
- Ghobad F, *30 Sal Naft-e Iran, Az Melli Shodan Ta Enghelabe Eslami (30 Years of Iran's Oil from Nationalisation to Islamic Revolution)* (Mehrandish 2008)
- Ghoddusi H, Nili M and Rastad M, 'On Quota Violations of OPEC Members' (2017) 68 Energy Economics 410
- Ghoddusi H and Rafizadeh N, 'The Effect of Fuel Subsidy Reforms on the Behavior of Gasoline Consumers' [2019] SSRN Electronic Journal 1
- Gholi Majd M, *The Great Famine and Genocide in Persia, 1917-1919* (University Press of America 2003)
- Ghorashi AH and Rahimi A, 'Renewable and Non-Renewable Energy Status in Iran: Art of Know-How and Technology-Gaps' (2011) 15 Renewable and Sustainable Energy Reviews 729
- Giebelhaus AW, 'Oil Industry, History Of' (2004) 4 Encyclopedia of Energy 649
- Gillard R, Snell C and Bevan M, 'Advancing an Energy Justice Perspective of Fuel Poverty: Household Vulnerability and Domestic Retrofit Policy in the United Kingdom' (2017) 29 Energy Research and Social Science 53
- Gm A and others, 'Energy Research & Social Science Navigating a Trilemma : Energy Security , Equity , and Sustainability in the Philippines ' Low-Carbon Transition' (2018) 35 Energy Research & Social Science 37
<<https://doi.org/10.1016/j.erss.2017.10.039>>
- Goldthau A and Sitter N, 'Regulatory or Market Power Europe? EU Leadership

Bibliography

Models for International Energy Governance', *New Political Economy of Energy in Europe* (Springer 2019)

Goldthau A and Witte JM, *Global Energy Governance: The New Rules of the Game* (Brookings Institution Press 2010)

Grimsby LK, 'Securing Energy Equity' (2011) 39 *Energy Policy* 6912

Guardian Council of the Constitution, 'The Constitution Principles in Light of Opinions of the Guardian Council, Article 81 (In Persian: Osoule Ghanoune Asasi Dar Parto Nazarate Shoraye Negahban, Asle 81)' <<http://www.shora-rc.ir/portal/file/?235447/Po960511-26.pdf>>

Gunningham N, 'Managing the Energy Trilemma : The Case of Indonesia' (2013) 54 *Energy Policy* 184 <<http://dx.doi.org/10.1016/j.enpol.2012.11.018>>

Guo F fei, Huang C feng and Wu X ling, 'Strategic Analysis on the Construction of New Energy Corridor China–Pakistan–Iran–Turkey' (2019) 5 *Energy Reports* 828 <<https://doi.org/10.1016/j.egyr.2019.06.007>>

Hafezi R, Akhavan AN and Pakseresht S, 'Projecting Plausible Futures for Iranian Oil and Gas Industries: Analyzing of Historical Strategies' (2017) 39 *Journal of Natural Gas Science and Engineering* 15 <<http://dx.doi.org/10.1016/j.jngse.2016.12.028>>

Haghani Zanjani H, 'Anfal Ya Servathaye Omomi, Anvae Malekiat Dar Islam Va Mavarede Anha(Anfal and Public Properties, Types of Ownership in Islam and Its Instances)' (1990) 3,4 *Oloume Ensani Journal*, Alzahra University 5 <<http://www.noormags.ir/view/fa/articlepage/44968>>

Haile-Mariam Y, 'Privitization of State-Owned Enterprises and the Law: Issues and Problems' (1993) 7 *Emory Int'l L. Rev.* 35

Hakimian H, 'The Impact of the 1970s' Oil Boom on Iranian Agriculture' (1988) 15 *The Journal of Peasant Studies* 218 <<https://doi.org/10.1080/03066158808438358>>

Hallouche H, 'The Gas Exporting Countries Forum : Is It Really a Gas OPEC in the Making ?' (2006) NG13 *Oxford Institute for Energy Studies*

Harding A, *Sharia Incorporated: A Comparative Overview of the Legal Systems of Twelve Muslim Countries in Past and Present* (Jan Michiel Otto ed, 2010)

Hasani A and Zahmatisarab F, 'The Challenge Immovable Property with Foreign Investments in Iran' (2016) 27 *Journal of Poverty, Investment and Development* 1

Hassani A and Hosseini V, 'An Assessment of Gasoline Motorcycle Emissions Performance and Understanding Their Contribution to Tehran Air Pollution' (2016) 47 *Transportation Research Part D: Transport and Environment* 1 <<http://dx.doi.org/10.1016/j.trd.2016.05.003>>

Hassanzadeh E, 'Exports of Iranian Natural Gas to Regional and International Markets' (University of Dundee 2013) <http://discovery.dundee.ac.uk/portal/files/2739074/Hassanzadeh%7B_%7Dphd%7B_%7D2013.pdf>

Hatami A and Karimian E, *Hoghough-e Sarmayegozarie Khareji Dar Partoe Ghanoun va Gharardadhaye Sarmayegozari(Foreign Investment Law in Light of Investment Act and Contract)* (1st edn, Teesa Publication 2014)

11. Chapter 11. Summary, and Conclusion

Heffron RJ, 'The Application of Distributive Justice to Energy Taxation Utilising Sovereign Wealth Funds' (2018) 122 *Energy Policy* 649

——, 'A Treatise for Energy Law' (2018) 11 *Journal of World Energy Law and Business* 34

Heffron RJ, McCauley D and de Rubens GZ, 'Balancing the Energy Trilemma through the Energy Justice Metric' (2018) 229 *Applied Energy* 1191

Heffron RJ and Talus K, 'The Evolution of Energy Law and Energy Jurisprudence: Insights for Energy Analysts and Researchers' (2016) 19 *Energy Research and Social Science* 1 <<http://dx.doi.org/10.1016/j.erss.2016.05.004>>

Heikkurinen P and others, 'The Anthropocene Exit: Reconciling Discursive Tensions on the New Geological Epoch' (2019) 164 *Ecological Economics*

Heradstveit D, *Oil in the Gulf: Obstacles to Democracy and Development* (Routledge 2017)

'Here's How Protests and Strikes Are Leading Change in Iran' <<https://www.atlanticcouncil.org/blogs/iransource/here-s-how-protests-and-strikes-are-leading-change-in-iran/>> accessed 20 November 2019

Höhne N and others, 'Evolution of Commitments under the UNFCCC: Involving Newly Industrialized Economies and Developing Countries' (2003) 201 *Research report* 255 <<http://www.chem.uu.nl/nws/www/publica/Publicaties2003/e2003-155.pdf>>

Hopkins J and Charles FD, 'Three Models of OPEC Leadership and Policy in the Aftermath of Iran' [1973] *Journal of policy modeling*

Hosseini K and Stefaniec A, 'Efficiency Assessment of Iran's Petroleum Refining Industry in the Presence of Unprofitable Output: A Dynamic Two-Stage Slacks-Based Measure' (2019) 189 *Energy*

Hurst C, 'Transnational Oil Companies and Natural Gas in Developing Countries' (1989) 17 *Energy Policy* 501

IEA, '2018 World Energy Outlook - Executive Summary' (*Oecd/Iea*, 2018) 11 <www.iea.org/t&c/> accessed 5 October 2019

International Court of Justice, 'Anglo-Iranian Oil Co. Case (Preliminary Objection)' (1952) <<http://www.icj-cij.org/docket/index.php?sum=82&p1=3&p2=3&case=16&p3=5>>

'International Energy Agency' <<https://www.iea.org/about/ourmission/>> accessed 15 August 2018

——, 'World Energy Outlook, Fossil-Fuel Subsidies'

——, '(1990-2016) Statistics Data Browser' (2018) <[https://www.iea.org/statistics/?country=WORLD&year=2016&category=Energy supply&indicator=TPESbySource&mode=chart&dataTable=BALANCES](https://www.iea.org/statistics/?country=WORLD&year=2016&category=Energy%20supply&indicator=TPESbySource&mode=chart&dataTable=BALANCES)> accessed 30 March 2019

——, 'IEA Atlas of Energy, CO2 Emission from Fuel Combustion' (2019) <<http://energyatlas.iea.org/#!/tellmap/1378539487>> accessed 5 November 2019

Bibliography

——, ‘World Energy Balances’ (2019) <<https://www.iea.org/statistics/balances/>> accessed 1 November 2019

International Energy Forum Publication, ‘A Comparison of Recent IEA and OPEC Outlooks’ 63 <https://www.ief.org/_resources/files/events/seventh-iea-ief-opec-symposium-on-energy-outlooks/final-final-7th-iea-ief-opec_online1.pdf>

Irajpour A, Ghaljaei F and Alavi M, ‘Concept of Collaboration from the Islamic Perspective: The View Points for Health Providers’ (2015) 54 *Journal of Religion and Health* 1800 <<http://dx.doi.org/10.1007/s10943-014-9942-z>>

‘Iran: Largest Fuel Subsidizer in 2018’ <<https://financialtribune.com/articles/domestic-economy/98959/iran-largest-fuel-subsidizer-in-2018>> accessed 18 November 2019

‘Iran’s Electric Power Generation Organization(TAVANIR)’ <<https://www.tavanir.org.ir>> accessed 20 November 2019

Iran’s Ministry of Energy, ‘Iran 2016 Energy Balance Report(in Persian: Tarazname Sale 1395)’ (2018) <<http://pep.moe.gov.ir/getattachment/72efcbc2-a1d1-4167-8e99-03ea18e98600/95-کتاب-ترازنامه-انرژی-سال>>

‘Iran’s New Oil Contract Model Shelved’ <<https://www.tasnimnews.com/en/news/2017/02/14/1328071/>> accessed 12 May 2017

Iran Business Law Handbook Volume 1 Strategic Information and Basic Laws (International Business Publications(IPB) 2016)

‘Iran Crude Oil Production 1973-2017’ <<http://www.tradingeconomics.com/iran/crude-oil-production>> accessed 12 May 2017

‘Iran Currency Extends Record Fall as U.S. Sanctions Loom - Reuters’ <<https://www.reuters.com/article/iran-nuclear-currency/iran-currency-extends-record-fall-as-u-s-sanctions-loom-idUSL5N1UP0AF>> accessed 4 January 2020

‘Iran Discloses Draft Model of New Oil Contracts’ <<http://en.nioc.ir/portal/Home/ShowPage.aspx?Object=NEWS&ID=38effb37-80e5-49af-aa08-ffcc5ad9291c&WebPartID=32c9a857-c7f1-42bd-9206-732bb331277c&CategoryID=24c6268f-87ee-4fc0-b389-76d84b6b0f22>> accessed 24 May 2017

Iran Grid Management Company, ‘Our History, Iran Grid Management Company’ <<https://www.igmc.ir/en>> accessed 18 November 2019

Iran Ministry of Energy, ‘Achievement of Dam Constructions in Iran’ (2017) <<http://news.moe.gov.ir/Detail?anwid=42152>> accessed 30 March 2019

——, ‘Gozareshe Dah Sale Sanate Barghe Iran (Iran’s Electricity Sector, Ten Years Trends and Statistics(2005-2015)’ (2017) <<http://amar.tavanir.org.ir/pages/report/stat93/10sale/10sale93.pdf>>

‘Iran Nuclear Deal: World Powers Reach Historic Agreement to Lift Sanctions | World News | The Guardian’ <<https://www.theguardian.com/world/2015/jul/14/iran-nuclear-programme-world-powers-historic-deal-lift-sanctions>> accessed 11 May 2017

‘Iran Outlines New Oil Projects for Investors’ <<http://www.gulf->

11. Chapter 11. Summary, and Conclusion

times.com/story/382370/Iran-outlines-new-oil-projects-for-investors> accessed 7 March 2017

‘Iran President: New Oil Field Discovered With Over 50 Billion Barrels of Crude’ <<https://time.com/5723456/iran-new-oil-field-crude/>> accessed 8 December 2019

‘Iran Sanctions’ <<https://www.treasury.gov/resource-center/sanctions/Programs/Pages/iran.aspx>>

‘Iranian Privatization Organization, Short History’ <<https://en.ipo.ir/index.jsp?fkeyid=&siteid=83&pageid=1338>> accessed 22 November 2019

‘IRENEX, About Us’ <<http://en.irenex.ir/Irenex>> accessed 20 November 2019

Islamic Republic of Iran, ‘Iran’s Third National Communication to UNFCCC’ (2017) <[https://unfccc.int/sites/default/files/resource/Third National communication IRAN.pdf](https://unfccc.int/sites/default/files/resource/Third%20National%20communication%20IRAN.pdf)>

James Gelvin, *The Modern Middle East* (1st edn, Oxford University Press 2005)

Javaherian Z and others, ‘Investigating the Impacts of Global Environmental Evolutions on Long-Term Planning of Natural Resources in Iran’ (2013) 7 International Journal of Environmental Research 561

Jegen M, ‘Energy Policy in the European Union: The Power and Limits of Discourse’ [2014] Les Cahiers européens de Sciences Po 21 <https://www.sciencespo.fr/centre-etudes-europeennes/sites/sciencespo.fr/centre-etudes-europeennes/files/cahiers_europeens_2014_02_maya.jegen_.pdf>

Jenkins K and others, ‘Energy Justice: A Conceptual Review’ 174

Jernäs M and Linnér BO, ‘A Discursive Cartography of Nationally Determined Contributions to the Paris Climate Agreement’ (2019) 55 Global Environmental Change 73 <<https://doi.org/10.1016/j.gloenvcha.2019.01.006>>

Kakhki MMH, ‘A Critical Analysis of Iranian Buy-Back Transactions in the Context of International Petroleum Contractual Systems’ (Durham University 2008) <http://etheses.dur.ac.uk/2931/1/2931%7B_%7D762-vol1.pdf?UkUDh:CyT>

Kamran Azadi A and Yarmohammad MH, ‘Analysis of Iran’s Crude Oil Export Future Capacity’ (2011) 39 Energy Policy 3316 <<http://dx.doi.org/10.1016/j.enpol.2011.03.023>>

Karbassi a. R, Abduli M a. and Mahin Abdollahzadeh E, ‘Sustainability of Energy Production and Use in Iran’ (2007) 35 Energy Policy 5171

Karimian E and others, *Investment Im Iran–Investment in Iran– سرمایه‌گذاری در ایران: Ein Praxishandbuch Für Die Zeit Nach Den Sanktionen Auf Deutsch, Englisch Und Farsi–A Practical Guidebook for the Post-Sanction Era in German, English and Farsi* (Springer-Verlag 2018)

Karshenas M, *Oil, State and Industrialization in Iran* (Cambridge University Press 1990)

Kaya İ, Çolak M and Terzi F, ‘A Comprehensive Review of Fuzzy Multi Criteria Decision Making Methodologies for Energy Policy Making’ (2019) 24 Energy Strategy Reviews 207

Bibliography

- Kazutomo I, 'The Evolution of the Energy Security Concept and APEC Energy Cooperation' [2017] Meeting the Energy Demands of Emerging Economies, 40th IAEE International Conference, June 18-21, 2017 38 <internal-pdf://93.69.76.30/Irie_2016 - Evolution of ES concept.pdf>
- Keshavarzifard M, Moore F and Sharifi R, 'The Influence of Physicochemical Parameters on Bioavailability and Bioaccessibility of Heavy Metals in Sediments of the Intertidal Zone of Asaluyeh Region, Persian Gulf, Iran' (2019) 79 *Chemie der Erde* 178 <<https://doi.org/10.1016/j.geoch.2018.12.007>>
- Khaniabadi YO and others, 'Mortality and Morbidity Due to Ambient Air Pollution in Iran' (2019) 7 *Clinical Epidemiology and Global Health* 222 <<https://doi.org/10.1016/j.cegh.2018.06.006>>
- Khodadad Kashi F and Shahiki Tash MN, 'Economic Structure and Scope of Competition Law' (An Iranian Case Study)' (2008) 9 *Law & Politics Research Journal* 143
- Khojastehmehr M, Madani M and Daryasafar A, 'Screening of Enhanced Oil Recovery Techniques for Iranian Oil Reservoirs Using TOPSIS Algorithm' (2019) 5 *Energy Reports* 529 <<https://doi.org/10.1016/j.egyr.2019.04.011>>
- Khomeini RM, *Sahifeye Imam Volume 5* (5th edn, Moassesseye Tanzim va Nashre Asare Imam Khomeini 2010)
- , *Sahifeye Imam Volume 6* (5th edn, Moassesseye Tanzim va Nashre Asare Imam Khomeini 2010)
- Kinzer S, *All the Shah's Men: An American Coup and the Roots of Middle East Terror* (John Wiley & Sons 2008)
- Kuhn M, *Enabling the Iranian Gas Export Options: The Destiny of Iranian Energy Relations in a Tripolar Struggle over Energy Security and Geopolitics* (Springer Science & Business Media 2014)
- Kuhn M and Jannatifar M, 'Foreign Direct Investment Mechanisms and Review of Iran's Buy-Back Contracts: How Far Has Iran Gone and How Far May It Go?' (2012) 5 *Journal of World Energy Law and Business* and *Journal of World Energy, Law & Business*
- Le TH and Nguyen CP, 'Is Energy Security a Driver for Economic Growth? Evidence from a Global Sample' (2019) 129 *Energy Policy* 436 <<https://doi.org/10.1016/j.enpol.2019.02.038>>
- Leal-Arcas R, 'The European Energy Union' [2016] The quest for secure, affordable and sustainable energy. *European Energy Strategy Studies*, CLAYES&CASTELS
- Leal-Arcas R and Filis A, 'The Fragmented Governance of the Global Energy Economy: A Legal-Institutional Analysis' (2013) 6 *Journal of World Energy Law and Business* 348
- Li J, Chen C and Liu H, 'Transition from Non-Commercial to Commercial Energy in Rural China: Insights from the Accessibility and Affordability' (2019) 127 *Energy Policy* 392 <<https://doi.org/10.1016/j.enpol.2018.12.022>>
- Magazzino C, 'The Relationship between Real GDP, CO2 Emissions, and Energy Use in the GCC Countries: A Time Series Approach' (2016) 4 *Cogent Economics*

11. Chapter 11. Summary, and Conclusion

and Finance 1 <<http://dx.doi.org/10.1080/23322039.2016.1152729>>

Mahdavi P, 'Why Do Leaders Nationalize the Oil Industry? The Politics of Resource Expropriation' (2014) 75 *Energy Policy* 228
<<http://dx.doi.org/10.1016/j.enpol.2014.09.023>>

Mahdavi S, 'Performance Evaluation of State Owned Enterprise in Iran before and after Privatization Process Using Data Enveloped Analysis (DEA)(In Persian:Arzyabi Karaie Sherkathaye Dolati Khosousishode Dar Iran, Ghabl va Baad Az Vagozari Be Bakhshes Khosousi Ba Estef' (2015) 15 In persian: Motaleate Hesabdari va Hesabresi(Accounting and Audit Studies Journal)
<<http://ensani.ir/fa/article/350975>>

Malcolm B, 'CIA Confirms Role in 1953 Iran Coup'
<<http://nsarchive.gwu.edu/NSAEBB/NSAEBB435/>> accessed 11 May 2017

Maleki A, 'Energy Supply and Demand in Eurasia: Cooperation between EU and Iran.', *China & Eurasia Forum Quarterly* (2007)

Matsumoto K, Doumpos M and Andriosopoulos K, 'Historical Energy Security Performance in EU Countries' (2018) 82 *Renewable and Sustainable Energy Reviews* 1737 <<https://doi.org/10.1016/j.rser.2017.06.058>>

Mazarei Adnan J, 'The Iranian Economy under the Islamic Republic: Institutional Change and Macroeconomic Performance (1979–1990)' (1996) 20 *Cambridge Journal of Economics* 289 <<https://doi.org/10.1093/oxfordjournals.cje.a013617>>

Melville CP, Hambly G and Avery P, *The Cambridge History of Iran: Volume 7: From Nadir Shah to the Islamic Republic* (Cambridge University Press 1991)

Ministry of Oil, 'Iran's Annual Hydrocarbon Resources Report' (2019)
<<http://www.iranenergyinfo.ir/فصل-اول/>> accessed 27 August 2019

Mirzaei M and Bekri M, 'Energy Consumption and CO2 Emissions in Iran, 2025' (2017) 154 *Environmental Research* 345
<<http://dx.doi.org/10.1016/j.envres.2017.01.023>>

Mohammadnezhad H, 'Privitazation of Public Services in Economic Law System of Iran, France and England(In Persian: Khosousisazi Khadamate Omoumi Dar Nezame Houghouge Eghtesadie Iran, Farance va Engelestan)' (2018) 17 *Administrative Law Scientific and research Quaterly(In Persian: Fasname Elmi Pazhouheshi Houghouge Edari)* 75

Mommer B, 'Governance of International Oil: The Changing Rules of the Game' [2000] *Oxford Institute for Energy Studies* 42

Moore J, 'The Sunni and Shia Schism: Religion, Islamic Politics, and Why Americans Need to Know the Differences' (2015) 106 *The Social Studies* 226
<<https://doi.org/10.1080/00377996.2015.1059794>>

Moshiri S, 'Energy Price Reform and Energy Efficiency in Iran' [2013] *IAEE Energy Forum* 33
<<http://www.iaee.org/en/publications/newsletterdl.aspx?id=197>>

Mostafa F, *50 Sal Naft e Iran (50 Years of Iran's Oil)* (1st edn, Chehr Publication 1956)

Mousavi B and others, 'Driving Forces of Iran's CO2 Emissions from Energy Consumption: An LMDI Decomposition Approach' (2017) 206 *Applied Energy*

Bibliography

804 <<https://doi.org/10.1016/j.apenergy.2017.08.199>>

Mousazadeh I, 'Taamoli Dar Mafhoom, Mahiat va Jaygahe Hoghoughie Siasathaye Kollie Nezam)An Analysis of the Concept, Nature and Legal Status of General Policies of the System(In Persian)' (2008) 17 Feqh va Hoghough 161

Moussa SN, Deyi J and Lin L, 'Analysis of Guinean New Mining Fiscal Regime: Considerations for Improvement' (2015) 46 Resources Policy 113

Movahhed MA, *Khab-e Ashoftey-e Naft, Doctor Mossadegh va Nehat-e Melli-e Iran(Agitated Oil Dream, Dr Mosaddegh and Nationalization Movement of Iran)* (Karnameh 1999)

Mullins P and Burns L, 'The Fiscal Regime for Deep Sea Mining in the Pacific Region' (2018) 95 Marine Policy 337

<<http://dx.doi.org/10.1016/j.marpol.2016.07.018>>

N. Wagbara O, *How Would the Gas Exporting Countries Forum Influence Gas Trade?*, vol 35 (2007)

Naderizadeh Z, Khademi H and Ayoubi S, 'Biomonitoring of Atmospheric Heavy Metals Pollution Using Dust Deposited on Date Palm Leaves in Southwestern Iran' (2016) 29 Atmosfera 141 <<http://dx.doi.org/10.20937/ATM.2016.29.02.04>>

Nasrollah E and Mohammad S, 'Upstream Oil and Gas Contracts Of Islamic Republic Of Iran and Explanation of Legal Implications and Requirements of New Contracts' (2014) 3 Iranian Energy Economics 1

'Negahi Be Tahavvolat va Karname Gharardadhaye Beye Motaghabel'

<<http://www.iribnews.ir/fa/news/1217572>> accessed 15 May 2017

Nepal R and Pajja N, 'Energy Security, Electricity, Population and Economic Growth: The Case of a Developing South Asian Resource-Rich Economy' (2019) 132 Energy Policy 771 <<https://doi.org/10.1016/j.enpol.2019.05.054>>

No 14150 dated 7th of October 1993 OG of IR of I, 'Ghanoone Chegoonegie Edareye Manatghe Azade Tejari va Sanati(Law on Management of Free Economic and Industrial Zones)'

Nonejad M and Mohammadi M, 'The Effect of Exchange Rate Fluctuation on Economic Activities of Iran' (2016) 5 International Review of Management and Business Research 353

Nowrouzi A and others, 'Optimizing Iran's Natural Gas Export Portfolio by Presenting a Conceptual Framework for Non-Systematic Risk Based on Portfolio Theory' (2019) 26 Energy Strategy Reviews 100403

'Number of Clean Days in Tehran'

<<https://theiranproject.com/blog/2015/04/08/number-of-clean-days-in-tehran-up-five-fold/>> accessed 13 August 2019

Okullo SJ and Reynès F, 'Imperfect Cartelization in OPEC' (2016) 60 Energy Economics 333 <<http://dx.doi.org/10.1016/j.eneco.2016.10.010>>

OPEC, 'Brief History' <https://www.opec.org/opec_web/en/about_us/24.htm>

—, 'OPEC Annual Statistical Bulletin 2019' [2019] Organization of the Petroleum Exporting Countries 132

OPEC O of the PEC, 'OPEC Annual Statistical Bulletin' (2018)

11. Chapter 11. Summary, and Conclusion

Otto IM and others, 'Human Agency in the Anthropocene' (2020) 167 *Ecological Economics* 106463 <<https://doi.org/10.1016/j.ecolecon.2019.106463>>

Ovadia JS and Di Muzio T, *Energy, Capitalism and World Order: Toward a New Agenda in International Political Economy* (Springer 2017)

Overland I, 'Handbook of Clean Energy Systems' [2015] *Handbook of Clean Energy Systems* 4032

—, 'EU Climate and Energy Policy: New Challenges for Old Energy Suppliers', *New political economy of energy in Europe* (Springer 2019)

Pan X and others, 'Exploring Fair and Ambitious Mitigation Contributions under the Paris Agreement Goals' (2017) 74 *Environmental Science and Policy* 49 <<http://dx.doi.org/10.1016/j.envsci.2017.04.020>>

'Paris Agreement | Climate Action' <https://ec.europa.eu/clima/policies/international/negotiations/paris_en> accessed 3 January 2020

'Parliament's Energy Commission Ltimatum to MPO for the Submission of NECP' (2018) <<https://www.irna.ir/news/82907084>> accessed 10 September 2019

'Paul Julius, Baron von Reuter' <<https://www.britannica.com/biography/Paul-Julius-Freiherr-von-Reuter>> accessed 5 April 2017

Pellegrini-Masini G, Pirni A and Maran S, 'Energy Justice Revisited: A Critical Review on the Philosophical and Political Origins of Equality'

Pesaran MH and Mohaddes K, 'One Hundred Years of Oil Income and the Iranian Economy: A Curse or a Blessing?' [2014] *Iran and the Global Economy: Petro Populism, Islam, and Economic Sanctions* 12

Petroleum B, 'BP Statistical Review of World Energy 2018.Pdf' 11

Piai Paiva JC, Jannuzzi GDM and de Melo CA, 'Mapping Electricity Affordability in Brazil' (2019) 59 *Utilities Policy* 100926 <<https://doi.org/10.1016/j.jup.2019.100926>>

Proskuryakova L, 'Updating Energy Security and Environmental Policy: Energy Security Theories Revisited' (2018) 223 *Journal of Environmental Management* 203 <<https://doi.org/10.1016/j.jenvman.2018.06.016>>

Ragin CC, *Constructing Social Research : The Unity and Diversity of Method* (Pine Forge Press 1994)

'Registration of Branches and Representatives Offices of Foreign Companies in Iran' <<http://www.right-dadyaran.com/blog-post-new-test/>> accessed 10 September 2018

Renewable Energy and Energy Efficiency Organization(SATBA), 'Aplication and Permit Issuance Process' (2018) <<http://www.satba.gov.ir/en/investmentpowerplants/applicationandpermitissuanceprocess>> accessed 30 March 2019

'Renewable Energy Directive' <<https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive/overview>> accessed 3 January 2020

Ringel M and Knodt M, 'The Governance of the European Energy Union:

Bibliography

Efficiency, Effectiveness and Acceptance of the Winter Package 2016' (2018) 112 Energy Policy 209

Rohani F, *Tarikh-e Melli Shodan-e Sanat-e Naft-e Iran(The History of Iran's Oil Nationalization)* (Sherkat Sahami Ketabhaye Jibi 1973)

Rosenow J and others, 'Assessing the European Union's Energy Efficiency Policy: Will the Winter Package Deliver on "Efficiency First"?' (2017) 26 Energy Research and Social Science 72 <<http://dx.doi.org/10.1016/j.erss.2017.01.022>>

Rosser JB and Rosser MV (Marina V, *Comparative Economics in a Transforming World Economy* (MIT Press 2004)

Saad H, 'Can Iran Reduce Its Reliance on Oil?' <<https://www.trtworld.com/middle-east/can-iran-reduce-its-reliance-on-oil-31665>> accessed 10 November 2019

Sælen H and others, 'Fairness Conceptions and Self-Determined Mitigation Ambition under the Paris Agreement: Is There a Relationship?' (2019) 101 Environmental Science & Policy 245 <<https://doi.org/10.1016/j.envsci.2019.08.018>>

Samkharadze I, 'Europeanization of Energy Law and Policy beyond the Member States: The Case of Georgia' (2019) 130 Energy Policy 1 <<https://doi.org/10.1016/j.enpol.2019.03.019>>

Sams D, 'The Legal Aspects of Doing Business in Iran' (1983) 17 International Lawyer 23

Sanderink L and others, 'Mapping the Institutional Architecture of Global Energy Governance' (2018)

Santos A, 'The Energy Trilemma of the European Union: Finding the Right Balance' 1

SATBA, 'Draft of Power Purchase Agreement of Renewable and Clean Electricity(Translation Provided by the SATBA)' <http://www.satba.gov.ir/suna_content/media/image/2018/07/6097_orig.pdf>

——, 'Renewable Licensing Statistics', <http://www.satba.gov.ir/suna_content/media/image/2018/05/6033_orig.jpg?t=636629412826776562> accessed 18 January 2019

'Saudi Arabia Ready to "Mitigate" Impact of Iran Oil Sanctions' <<https://www.bloomberg.com/news/articles/2018-05-08/saudi-arabia-ready-to-mitigate-impact-of-iran-oil-sanctions>> accessed 21 July 2018

Sayyadi Mohammad and Beraksheli Fereidoun, 'Asarate Kootahmoddat va Boland Moddate Tahrinhaye Beinolmelali Bar Bakhsh Energy Iran(Short Term and Long Term Impacts of International Sanctions on Iranian Energy Sector' [2012] Strategic Report 1 <http://www.csr.ir/files/fa/news/1395/6/3/415_716.pdf> accessed 10 May 2017

Seifi M and others, 'Exposure to Ambient Air Pollution and Risk of Childhood Cancers: A Population-Based Study in Tehran, Iran' (2019) 646 Science of the Total Environment 105

Sergie MA and Johnson T, 'Islam : Governing Under Sharia' [2014] Council on Foreign Relations 1 <<http://www.cfr.org/religion/islam-governing-under->

11. Chapter 11. Summary, and Conclusion

sharia/p8034>

Shahri NN, 'The Petroleum Legal Framework of Iran : History , Trends and the Way Forward' (2010) 8 *China and EurasiaForum Quarterly* 111

Shariatbagheri M, 'Bartarie Moahedate Beinlolmelali Nesbat Be Ghavanine Adi(The Supremacy of International Treaties over Ordinary Laws)' (2012) 56 *Shahid Beheshti University Journal of Legal Studies* 279

Shevlin N, 'Velayat-e Faqih in the Constitution of Iran: The Implementation of Theocracy' (1998) 1 *U. Pa. J. Const. L.* 358

Shiravi A and Ebrahimi SN, 'Exploration and Development of Iran ' s Oilfields through Buyback' (2006) 30 *Natural Resources Forum* 199

Shiravi A and Majd FA, 'Foreign Investment in Iran's Upstream Oil and Gas Operations: A Legal Perspective' (2015) 8 *Journal of World Energy Law and Business* 269

Shivakumar A and others, 'Drivers of Renewable Energy Deployment in the EU: An Analysis of Past Trends and Projections' (2019) 26 *Energy Strategy Reviews*

Socor V, 'Sourcing the Nabucco Pipeline to Prevail Against South Stream' (2008) 5 *Eurasia Daily Monitor* 1

Sokołowski MM, 'When Black Meets Green: A Review of the Four Pillars of India's Energy Policy' (2019) 130 *Energy Policy* 60
<<https://doi.org/10.1016/j.enpol.2019.03.051>>

'Solarplaza Weighing up the Bankability of Iran's Renewable Energy PPA'
<<https://www.solarplaza.com/channels/markets/11606/weighing-bankability-irans-renewable-energy-ppa/>> accessed 6 January 2020

Soleimani Z and others, 'Air Pollution and Respiratory Hospital Admissions in Shiraz, Iran, 2009 to 2015' (2019) 209 *Atmospheric Environment* 233
<<https://doi.org/10.1016/j.atmosenv.2019.04.030>>

Song L and others, 'Measuring National Energy Performance via Energy Trilemma Index : A Stochastic Multicriteria Acceptability Analysis' (2017) 66 *Energy Economics* 313 <<http://dx.doi.org/10.1016/j.eneco.2017.07.004>>

Sovacool BK, 'Exposing the Paradoxes of Climate and Energy Governance'

Sovacool BK, 'Fuel Poverty, Affordability, and Energy Justice in England: Policy Insights from the Warm Front Program' (2015) 93 *Energy* 361
<<http://dx.doi.org/10.1016/j.energy.2015.09.016>>

——, 'Energy Decisions Reframed as Justice and Ethical Concerns'

——, 'New Frontiers and Conceptual Frameworks for Energy Justice' (2017) 105 *Energy Policy* 677

Sovacool BK and Dworkin MH, 'Energy Justice: Conceptual Insights and Practical Applications' (2015) 142 *Applied Energy* 435

Sovacool BK and Florini A, 'Examining the Complications of Global Energy Governance' (2012) 30 *Journal of Energy & Natural Resources Law* 235
<<http://www.tandfonline.com/doi/full/10.1080/02646811.2012.11435295>>

Sovacool BK and Mukherjee I, 'Conceptualizing and Measuring Energy Security:

Bibliography

- A Synthesized Approach' (2011) 36 Energy 5343
<<http://dx.doi.org/10.1016/j.energy.2011.06.043>>
- Šprajc P, Bjegović M and Vasić B, 'Energy Security in Decision Making and Governance - Methodological Analysis of Energy Trilemma Index' (2019) 114 Renewable and Sustainable Energy Reviews 109341
<<https://linkinghub.elsevier.com/retrieve/pii/S1364032119305490>>
- SUNIL KOKAL and ABDULAZIZ AL-KAABI, 'EOR Challenges and Opportunities. S. Kokal, 2010' (2010) 12 World Petroleum Council: Official Publication 64 <http://ep.npdc.mi.th/documents/P64-69_Kokal-Al_Kaabi.pdf> accessed 10 May 2017
- Supreme Leader, 'The General Policies Pertaining to Principle 44 of the Constitution of the Islamic Republic of Iran(In Persian: Siasathaye Kollie Asle 44)' (2005) <<http://farsi.khamenei.ir/news-content?id=165>> accessed 20 October 2019
- Tajarlo R and Karbasion M, 'Efficiency and Role of Law in the Iranian Competition Law Order' (2018) 47 University of Tehran Public Law Studies Quarterly 979
- Taksibi F, Khajehpour H and Saboohi Y, 'Science of the Total Environment On the Environmental Effectiveness Analysis of Energy Policies : A Case Study of Air Pollution in the Megacity of Tehran' (2020) 705 Science of the Total Environment 135824 <<https://doi.org/10.1016/j.scitotenv.2019.135824>>
- Talus K and others, 'Internationalization of Energy Law' in Kim Talus (ed), *Research Handbook on International Energy Law* (first, Edwar Elgar publication 2014)
- 'The 2030 Climate and Energy Framework' (2016)
<<https://www.consilium.europa.eu/en/policies/climate-change/2030-climate-and-energy-framework/>> accessed 3 January 2020
- The Amnesty International, 'Iran: Death Toll from Bloody Crackdown on Protests Rises to 208' <<https://www.amnesty.org/en/latest/news/2019/12/iran-death-toll-from-bloody-crackdown-on-protests-rises-to-208/>> accessed 24 December 2019
- 'The Consortium Agreement of 1954'
<<http://www.iranreview.org/content/Documents/The-Consortium-Agreement-of-1954.htm>> accessed 15 May 2017
- 'The Constitution of Islamic Republic of Iran 1979 as Amended on 1989'
- The Grantham Research Institute on Climate Change and the Environment, 'Climate Change Laws of the World, Iran, Law on Altering Energy Consumption Patterns' <<https://climate-laws.org/cclow/geographies/80/laws/1352>> accessed 10 August 2019
- 'The International Energy Charter'
<<https://energycharter.org/process/international-energy-charter-2015/overview/>> accessed 10 February 2018
- 'The Ministry of Petroleum Proposal, Petroleum Sector Requires 150 Billion Dollars for Sixth Development Plan'
<<http://www.mop.ir/portal/Home/ShowPage.aspx?Object=NEWS&ID=ce06dc2a-5b48-4c21-b8d0-0d27094baded&LayoutID=912a60ab-89b6-4c35-8cc9->

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ae59d0709689&CategoryID=2e5daab6-b10c-410a-adc4-5e1dec0ca9d1> accessed 10 April 2017

The New York Times, 'Protests Incited by Gas Price Hike Grip Iran' (2019) <<https://www.nytimes.com/2019/11/16/world/middleeast/iran-gas-price.html>> accessed 24 December 2019

The World Bank, 'Legal Framework for the Treatment of Foreign Investment (Vol II) Guidelines (Report to the Development Committee and Guidelines on the Treatment of Foreign Direct Investment)' (1992) <<http://documents.worldbank.org/curated/en/955221468766167766/pdf/multi-page.pdf>>

Torbatian S and others, 'Air Pollution Trends in Tehran and Their Anthropogenic Drivers' [2019] Atmospheric Pollution Research 0 <<https://doi.org/10.1016/j.apr.2019.11.015>>

'Total Energy Consumption' <<https://yearbook.enerdata.net/natural-gas-consumption-in-the-world.html#energy-consumption-data.html>> accessed 10 June 2017

'US: Sanctions Have Cut Iran's Accessible Foreign Currency to \$10 Billion | Voice of America - English' <<https://www.voanews.com/middle-east/voa-news-iran/us-sanctions-have-cut-irans-accessible-foreign-currency-10-billion>> accessed 7 January 2020

Vafa-Arani H and others, 'A System Dynamics Modeling for Urban Air Pollution: A Case Study of Tehran, Iran' (2014) 31 Transportation Research Part D: Transport and Environment 21 <<http://dx.doi.org/10.1016/j.trd.2014.05.016>>

Van de Graaf T and Colgan J, 'Global Energy Governance: A Review and Research Agenda' (2016) 2 Palgrave Communications 15047 <<http://dx.doi.org/10.1057/palcomms.2015.47>>

Verma SK, 'Energy Geopolitics and Iran-Pakistan-India Gas Pipeline' (2007) 35 Energy Policy 3280

Wagbara ON, 'How Would the Gas Exporting Countries Forum Influence Gas Trade?' (2007) 35 Energy Policy 1224

Wang H and Chen W, 'Gaps between Pre-2020 Climate Policies with NDC Goals and Long-Term Mitigation Targets: Analyses on Major Regions' (2019) 158 Energy Procedia 3664 <<https://doi.org/10.1016/j.egypro.2019.01.894>>

Wang H and Chen W, 'Modeling of Energy Transformation Pathways under Current Policies, NDCs and Enhanced NDCs to Achieve 2-Degree Target' (2019) 250 Applied Energy 549 <<https://doi.org/10.1016/j.apenergy.2019.05.009>>

Winzer C, 'Conceptualizing Energy Security' (2012) 46 Energy Policy 36

World Energy Council, 'World Energy Trilemma Index, 2019' <<https://www.worldenergy.org/publications/entry/world-energy-trilemma-index-2019>> accessed 23 October 2019

—, 'Energy Trilemma Index' (2019) <<https://trilemma.worldenergy.org/>> accessed 10 November 2019

—, 'Iran, Trilemma Index Ranking and Balance Score' (2019) <<https://trilemma.worldenergy.org/#!/country-profile?country=Iran> (Islamic

Bibliography

Republic)&year=2018>

World Energy Council, 'Historical Trilemma Scores'

<[https://trilemma.worldenergy.org/#!/country-profile?country=Iran \(Islamic Republic\)&year=2019](https://trilemma.worldenergy.org/#!/country-profile?country=Iran%20(Islamic%20Republic)&year=2019)> accessed 10 November 2019

'WTO Members and Observers'

<https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm>

Yarshater E, 'THE QAJAR DYNASTY (1779-1924)', *Encyclopædia Iranica*

(2004) <<http://www.iranicaonline.org/articles/iran-ii2-islamic-period-page-5>>

Yousefi GR and others, 'Electricity Industry Restructuring in Iran' (2017) 108 *Energy Policy* 212

<<http://www.sciencedirect.com/science/article/pii/S0301421517303026>>

Yousefian F and others, 'Long-Term Exposure to Ambient Air Pollution and Autism Spectrum Disorder in Children: A Case-Control Study in Tehran, Iran' (2018) 643 *Science of the Total Environment* 1216

Zalasiewicz J and others, 'The Working Group on the Anthropocene: Summary of Evidence and Interim Recommendations' (2017) 19 *Anthropocene* 55

Zhou W and others, 'A Retrospective Analysis with Bibliometric of Energy Security in 2000–2017' (2018) 4 *Energy Reports* 724

<<https://doi.org/10.1016/j.egy.2018.10.012>>

2011, No 19330 dated 14th of July OG of IR of I, Ghanoune Naft(Petroleum Law)

2017 J 16, Ghanoune Havaye Pak(Clean Air Law) 2016 1

Assembly IC, Consumption Pattern Reform Act 2011

Consolidated version of the Treaty on the Functioning of the European Union

Court of Justice of the EU. Case 72/83 *Campus Oil v Minister for Industry* [1984] ECR 2727. 1984

Declaration of the United Nations Conference on the Human Environment, Rio de Janeiro, 14 June 1992

Declaration of the United Nations Conference on the Human Environment Stockholm, 16 June 1972

DONALD J. TRUMP, Executive Order Reimposing Certain Sanctions with Respect to Iran

GECF, Statute of GECF

Ghanone Barname Sheshome Tose'e 1395-1399 (Sixth Islamic Republic of Iran's Development Plan Law 2017-2021) 2017

Ghanone Hadafmand Kardane Yaraneha (Law on Altering Subsidies to Targeted Subsidies) 2010 2010

Law of Implementation of General Policies of Article 44(In Persian: Ghanoune Ejraye Siasathaye Kollie Asle 44) 2008

No.13966 dated 25/11/1371 (February 14 1993) IOG, Ghanoune Bodjeye Sale 1372 Kollie Keshvar(1372 Budget Law)

No.14313 dated 7/2/1373 (April 27 1994) IOG, Ghanoune Bodjeye Sale 1373

11. Chapter 11. Summary, and Conclusion

Kolle Keshvar(1373 Budget Law)

No.20668 dated 27/11/1394 (February 16 2016) IOG, Aeinname Ejraie Madde 61Ghanoone Eslahe Olgoye Masrafe Energy(Ececutive Bylaw on implementation of Article 66 of Energy Consumption Pattern Reform Act) 2016

No.20939 dated 06/11/1395 (January 25 2017) IOG, Ghanoone Asasname Sazman Energihaye Tajdidpazir va Bahrevarie Energie Bargh(Statute of Renewable Energy and Energy Efficiency Organization) 2017

No.8791 dated 19/12/1353 (March 10 1975) IOG, Ghanoone Tasise Vezarate Niroo(Law on the Establishment of Ministry of Energy) 1975

No 14150 dated 7th of October 1993 OG of IR of I, Ghanoone Hemayat va Tashviqe Saramayegozarie Khareji(Foreign Investment Promotion and Protection Law)

No 15384 dated 17th of December 1997 OG of IR of I, Ghanoone Ejazeye Sabte Shobe Ya Namayandegiye Sherkathaye Khareji(Registration of Branches and Agent Offices of Foreign Companies Law)

No 15955 dated 19/02/1391(08 May 2012) OG of IR of I, Ghanoone Vazayef va Ekhtiarate Vezarate naft(Ministry of Petroleum Tasks and Authorities Law)

No 5586 dated 12th of August 1967 OG of I, Ghanone Sazmane barghe Iran (Law of the Electricity Organization of Iran) 1967

No 5586 dated 25th April 1964 OG of I, Ghanone Tasise Vezarate e Ab va Bargh (Law on the establishment of Ministry of Water and Electricity)

Official Gazette of Iran No.16628, Ghanone Tanzime Bakhshi az Mogharrarate Malie Dolat (Law of Regulating Part of Governmental Financial Provisions) 2002

Shoraye Aliye Energy(Supreme Energy Council), Sanade Mellie Rahbord Energie Keshvar(National Energy Strategy Plan) 2016

Supreme Leader, General Policies for Reform of Consumption Pattern(In Persian: Siasathaye Kollie Eslahe Olgouye Masraf) 2010

Treaty on the Functioning of the EU (TFEU)

UN Res A/55/2, United Nations Millennium Declaration, adopted on 18 September 2000 2000

UNGA, General Assembly Resolution 3281 (XXIX)

——, Permanent Sovereignty Over Natural Resources: U.N. General Assembly resolution 1803 (XVII) 1962