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Analyzing the Capacity and Energy Policies of Indonesia to Develop Cooperation with Iran

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Highlights

- The focus of oil producers on Southeast Asian countries due to population growth and economic trends;
- Indonesia is prioritized as a new market for Iran due to high population and economic growth;
- Indonesia is forecasted to become fifth-largest economy with increasing energy demand;
- Research investigates Indonesia's capacities using documentary library research method;
- Indonesia is facing rising energy demand as a developing country;
- Indonesia has always focused on significant oil producers;
- The joint venture or take-off method can increase Indonesia's dependence on Iran;
- Joint investment cooperation in the upstream development sector is significant;

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Abstract

Southeast Asian countries have always been the focus of oil producers due to the increase in population and the trend of economic growth. In the last two decades, Indonesia has been prioritized as one of the new markets for Iran due to its high population, and it is forecasted to become the fifth-largest economy in the world with an upward trend of energy demand. This research investigates Indonesia's capacities using the documentary library research method. Indonesia is a developing country with an increasing economic and population growth trend, facing a rising energy demand. For this reason, this market is always the focus of significant oil producers. Our results show that Indonesia's refinery capacity for petroleum products as a joint venture or take-off method to create a sales chain in this country can increase its dependence on Iran. As a result, more market share can be obtained, and the joint investment cooperation in the upstream development sector with Indonesian oil companies to develop its fields is significant. The research questions are the following: "What are the capacities of development in Indonesia's oil industry?" and "What are the capacities of cooperation between Iran and Indonesia in the field of oil industry?"

Keywords: Indonesia, Oil industry, Energy, Refining, Iran

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1. Introduction

The Republic of Indonesia is one of the Southeast Asian countries that, in recent years, by setting up and implementing long-term economic development plans, has put turning toward industry as its top

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priority and has followed the policy of industrial development through import substitution. This is mainly through oil revenues, financial aid, and foreign government loans, leading to significant economic growth. In the meantime, Indonesia was a member of OPEC in the years before 2016. After its oil consumption exceeded its production, the country's membership was suspended by the consensus of the members of this organization. One of the critical issues regarding the prediction of the International Monetary Fund (IMF) and the World Bank (WB) to be among the five largest economies in the world is that Iran, having oil and gas resources, can have economic cooperation in the field of energy and especially in the oil industry.

Thus, some experts do not consider the economic ranking of this country to be the 6th economy in the world by 2030, which is far from expected; accordingly, its energy consumption will also grow significantly. In the second stage of industrial development, through import substitution, this country has been able to import many new global technologies and replace the old ones. According to this, international oil companies have also been trying to develop their investments in the oil fields of this country in recent years. In the meantime, critical oil-producing countries, including Saudi Arabia and Nigeria, are trying to acquire a larger share of the country's oil market. However, considering that the refining capacity of this country's sour crude oil is limited, Saudi Arabia seeks to gain more influence in the Indonesian market by improving and modernizing Indonesian refineries, especially following the technical specifications of its exported crude oil.

Indonesia is an ideal location for foreign companies to enter the market. However, the biggest obstacle facing these companies in Indonesia is currently with some of the Government of Indonesia's (GOI) policies, such as protectionism. For significant foreign energy investments in Indonesia, most projects must be owned by Indonesia or the Indonesian state-owned companies as assigned by the government. Other barrier sources include local content regulation (LCR), compulsory standard certification, land and permit issues, foreign worker permits, and procurement transparency.

Since 2015, Indonesia's energy industry has fallen on hard times. Production was well below what it had been just a decade ago, and modernization efforts had not kept pace with those of most other countries; until recently, fuel imports had also been rising continually. Then, the coronavirus crisis hit, causing economic slowdowns that further undermined the sector. The leaders can revitalize the industry despite mounting challenges with a determined push. Also, because the Indonesian oil industry did not have a written plan to be considered an economically reliable business partner for the National Iranian Oil Company, even in recent years, most of the imported oil required has been provided through the intermediary and national and international companies.

In addition to those barriers mentioned above, the government has created policies to reduce imports due to recent trade balance deficits and weakening local currency. This includes the import duty tariff for certain products such as high-calorie coal and lubricant, as was 2.5%–5.0% to 7.5%–10.0%, and requires some industries to mix at least 20% palm oil or biofuel into the transportation fuel.

One of the ways by which Iran can increase its national security factor is to pay attention to foreign policy based on energy security. Energy diplomacy consists of carrying out diplomatic missions supporting trade, the financial part of encouraging the economic situation, and the country's primary development goals in the energy sector, including encouraging domestic and foreign investment in the energy field. In other words, diplomatic mobility, economic planning, improvement of technical capabilities, and utilization of financial resources can provide the necessary grounds for the activation of energy diplomacy. From another point of view, energy diplomacy can be a crucial parameter in increasing energy security, especially in the international oil and gas markets. Regarding energy

security, energy transit is critical and strategic due to the long-term and joint investment in energy export through the pipeline and reducing the possibility of sanctions on oil and gas trade.

At the beginning of 1402, the president of our country visited Indonesia with a delegation. It was decided to develop cooperation between the two countries in different oil, gas, refining, and petrochemical sectors. It was agreed that a delegation from Indonesia would visit the water fields of Timor and Mansouri to travel to Iran. In the meantime, Iran's oil rivals, such as Saudi Arabia and Nigeria, have gained a considerable share in this country. Saudi Arabia's efforts to invest in Indonesia's downstream sector continue to ensure the future supply of oil and gas to Indonesia's refineries. According to some reports, Iran also had a 4% share in the Indonesian market in 2011, and the possibility of supplying oil to Indonesia will be investigated this year. Moreover, since 2014, the country's net import of petroleum products has been about 592 thousand barrels per day, of which 53% is related to gasoline. Other imported petroleum products have been allocated to gas oil for transportation and power plants, LPG for residential use, and jet fuel. However, although this country is a net importer of crude oil and oil products, due to the benefit of its geopolitical position, despite being among oil importers, it also exports oil to continue its role in the international oil trade market. It is essential to acknowledge that the European and Asian markets have less capacity than emerging markets such as Indonesia. Therefore, it is suggested that the National Iranian Oil Company should consider this market one of its export markets in term contracts (not spot contracts) to diversify its markets.

2. Background research

Razavi and Bayat (2018), in an article entitled "Lessons of the Islamic Republic of Iran's Oil and Gas Trade Based on Russia's Oil and Gas Trade Strategies during the Sanctions Period", have investigated Russia's strategies in the field of oil and gas. Among Russia's unique approach, the authors pointed out such things as making the economy of European countries dependent on Russian oil and gas, regulating prices, handing over shares of state-owned oil companies to international companies, developing oil and gas pipelines, changing the direction of cooperation from the West to the East, and establishing active diplomacy. The authors presented lessons learned by Russia in the field of energy for Iran.

According to Safitriani (2014), international trade is two essential economic activities related to each other. The advantages and benefits of global trade that a country can obtain is that it allows the opportunity to specialize in acquiring goods and services at lower prices. According to Sitorus (2020) and Pershing et al. (2016), international trade is buying and selling commodities with other countries whose payment processes use foreign currencies. Trade between countries will improve good relations and establish cooperation in terms of meeting the needs of goods from one country to another. Export–import activities are motivated by different resource conditions, and each country has its criteria regarding available resources; these differences are not the same for each country, which causes international trade interactions.

In 1980, the price of oil worldwide experienced a sharp decline when oil was produced on a large scale in 1970, accompanied by a slowdown in world economic activity in 1973 due to the energy crisis. The dollar strengthened drastically, world oil prices were low, and the United States began a shale gas revolution.

Making international crude oil prices touch at $45 per barrel produced. The fall in oil prices at that time reduced inflation and unemployment worldwide (Queye et al. 2007). The decline in oil prices can benefit countries that are major oil consumers, such as Europe, Japan, the United States, and developing countries. However, it has a detrimental impact on oil-producing countries such as Northern Europe,

Latin America, Mexico, and the Soviet Union (Falianty, 2015). In addition, Iran's petroleum industry dates back to 1908, when the first oil field was discovered. The country has since found more than 145 hydrocarbon fields and 297 oil and gas reservoirs.

2.1. Upstream

National Iranian Oil Company (NIOC) is Iran's oil producer and explorer. Since the Middle East's first oil well was drilled in Masjed Soleiman in 1908, this company has seen new oil and gas recovery developments. Iran's oil, gas, and gas condensate production capacity stood at 4 mb/d, 850 mcm/d, and 750,000 b/d, respectively. Meantime, gas injection was reported at 77 mcm/d. The South Pars Gas Field is the most significant of the discoveries registered in Iran following the 1979 Islamic Revolution. Iran is recovering more than 600 mcm/d from this field, which is shared with Qatar, where it is known as North Dome.

2.2. Downstream

Abadan Refinery was constructed as the first oil refining complex in Iran, and the first oil pipeline from Masjed Soleiman to Abadan was erected. Thus, refining and distribution industries were established in the Middle East. However, the National Iranian Oil Refining and Distribution Company (NIORDC) was established on 26 February 1991 as one of the principal Petroleum Ministry subsidiaries. NIORDC should organize oil transportation operations from oil production facilities to oil refineries, exportation jetties, oil refining, transportation, production, storage, and distribution of oil products, oil depots, and facilities. The responsibility for the telecommunication network overall national oil industry areas with unique and efficient complex.

In addition, NIORDC has governmental supervision on eight private refineries: Isfahan Refinery, Tehran Refinery, Bandar Abbas Refinery, Tabriz Refinery, Imam Khomeini Shazand Refinery, Shiraz Refinery, Lavan Refinery, Kermanshah Refinery, and Persian Gulf Star Refinery. It supervises 10 refineries and uses around 14000 km of pipelines of various sizes, making it one of the world's largest oil complexes. This company also has 186 pump stations, 298 telecommunication centers in 12 operational areas of pipelines, 4300 governmental and private gas stations, 2336 CNG stations, 50 aviation jet fuel centers, and an oil depot and storage capacity of 13 billion liters.

The Special Economic Petrochemical Zone, located in a unique natural and geographical position and enjoying legal facilities granted to particular zones, has been established to develop industry and trade, particularly in the petrochemical sector and associated industries, pursuing economic, social, and national interests and attracting new technologies and creating jobs. The Special Economic Petrochemical Zone officially started in 1998 as a subsidiary of the National Petrochemical Company, under a decision dated July 1997 of the Supreme Council of Free Trade–Industrial Zones, to manage and realize the development of industrial and economic activities, particularly in the petrochemical sector. It is open to domestic and foreign investment.

3. Theoretical framework

One of the primary goals for all countries to pursue a robust foreign policy and cross-border partnership worldwide is to create a network of friends and allies. In today's interdependent world, such linkages are necessary to pursue countries' interests. These interests include national security (that is, the safety and survival of the government in any situation) as well as political, economic, and other interests, which extend to areas such as culture, education, environment, science and technology, and tourism. Governments mainly seek to maximize their interests wisely but in a way that benefits other partners because this is the only way to create a lasting relationship. The strengthening of international law in

recent years also supports the theory that the norms of international behavior are accepted and implemented by the international community today more than at any other time in the past. Diplomacy is not very stable in the Hobbesian situation, including a chaotic world and the jungle law. In most cases, diplomacy is no more than a payoff from an algebraic zero-sum game because the advantage and profit of one actor do not end at the cost of another actor's loss. In most situations, both parties benefit. One of Indira Gandhi's favorite expressions was that he compared the country's relations to the care and cultivation of a plant, which requires the same long-term attention and effort to grow it. This analogy is appropriate in diplomacy (S.Rana, 2007:16).

In the current situation, diplomacy has acquired a broad, multi-layered, and multifaceted meaning and concept, and diplomatic activities are not only formed in political and security issues. In this regard, fundamental activities under economic diplomacy are one of the more critical dimensions than even the political dimension. Economic diplomacy has always been present in diplomacy (Sousa, 2019:1 de). It is crucial to examine the development of economic diplomacy and understand how it evolves. Economic diplomacy should be considered decision-making and negotiation on the central issues of international economic relations, such as trade, investment, and financial affairs. Economic diplomacy not only causes the economic prosperity of the states but also, as the occasion creates and the opportunities allow, manipulates the foreign commercial and financial relations of the states to support their foreign policy. Issues such as environment and development also have significant economic implications for policies in this area. Economic diplomacy is also called negotiation about the framework of international economic relations and other negotiations that influence the creation and promotion of global economic activities. Today, countries' economic development projects cannot be defined independently of others. In other words, development occurs in an international platform with asymmetric and complex interdependence among countries (Qanberlu, 1393: 106). Economic diplomacy is the key to countries' foreign relations in the present era. Countries use less classical diplomacy daily and define more strategies to help increase their exports, internationalize their companies, and attract foreign investment.

Although there is no precise definition for energy diplomacy, it is related to government-related external activities to ensure a country's energy security and promote business opportunities related to the energy sector. Among the set of foreign policy instruments that can be used to support the energy interests of a country in the global energy arena, diplomacy, which can be bilateral or multilateral, is one of the most important. The geopolitical challenges that arise in the course of energy transfer make the establishment of unique bilateral diplomatic relations increasingly important (Griffiths, 2019:3). In fact, energy diplomacy is a strategic, community, and efficient plan that codifies international interactions in the field of energy for a country and defines the general framework of agreements. Energy diplomacy and economic diplomacy are tools to achieve strategic goals in the field of economy and energy.

4. Research method

In a way, this research is comparative political research. In the following, policy research and naturalistic study are introduced as two methodological approaches.

4.1. Political research

The science of policymaking or determining the path to advance macro goals in societies is based on a rational approach. In this approach, social problems should be investigated, analyzed, organized, and systematically.

Policy research injects rationality and professionalism into policymaking and is considered a scientific method to investigate social issues and problems (Qalipour et al., 2013). Policy research is researching

a significant social problem or analyzing it to provide practical recommendations to policymakers to solve the problem (Majchrzak, 1394: 15).

Majerzak defines the political research process in five stages: grounding, conceptualization, technical analysis, proposals and recommendations, and communication and transfer of results to policymakers.

The third stage, technical analysis, is one of the main steps. It includes the following stages: Operationalizing the variables, presenting a methodology plan for research, analysis process, conclusion, and presenting initial suggestions.

To present the design of the research method in political research, several methods have been introduced: focused composition; secondary analysis; field experiment; quantitative methods; survey; analysis of cost, benefit, and efficiency; polling; and case study (Dokshir and Terlo, 2002: 4–8).

5. Main economic policies

5.1. Economic geography

Indonesia has an approximate area of 1.9 million square kilometers and has 17,000 islands with a population of 281.9 million people (2023), after China and India; it is one of the most populous countries in Southeast Asia. Just about 6,000 of these islands are habitable, although about 65% of the country's population lives on the island of Java. Also, this country has a hot and humid tropical climate due to its location on the equator. In addition, until World War II, Indonesia was one of the Dutch colonies the Dutch East India Company administered. The struggles of the nationalist movement in this country led to the signing of a treaty for its independence in 1949. Further, about 300 ethnic groups live in different regions of this country; more than 85% of its people are Muslims, and others are mainly Protestants and Catholics or follow Hinduism, Buddhism, or Confucianism. In addition, the agricultural sector (animal husbandry, fisheries, and forestry) is considered the main activity of this country in terms of employment and production. Indonesia has rich mines such as silver, tin, and bauxite. However, it should also be pointed out that in recent years, this country's tourism industry enjoyed good growth, so the income from tourism reached $2824.75 million in the first three months of 2023 (Bank Indonesia, Financial Statistics Report, 2020).

5.2. Economic growth

Since economic growth is considered one of the critical indicators for checking each country's energy demand situation, checking the trend of this parameter is very important for Indonesia. The economic growth of this country, like other countries in the world, due to the unfavorable situation of the global economy during the period of COVID-19 from 2019 to 2021, has a downward trend; for example, in 2020, the economic growth of this country was–1.2% (according to current prices) (World Bank, 2021). The macroeconomic policies of this country focus on the growth and stability of the investment process.

Figure 1

The geographic map of Indonesia (National Geographic, 2022)

Figure 2

Indonesia's economic growth trend from 1961 to 2021 (IMF, 2022)

In the meantime, with the re-growth of the investment rate in recent years, the economic growth rate of this country increased to 3.7% in 2021. Investment in Indonesia's oil and gas industry reached $17 billion in 2022, while investment in 2021 and 2020 was $15.9 and $13.01 billion, respectively. Already a net oil importer, Indonesia may also become a net importer of natural gas by around 2030. The COVID-19 crisis has caused a short-term drop in demand, but it will recover by 2022 (McKinsey's analysis, 2021).

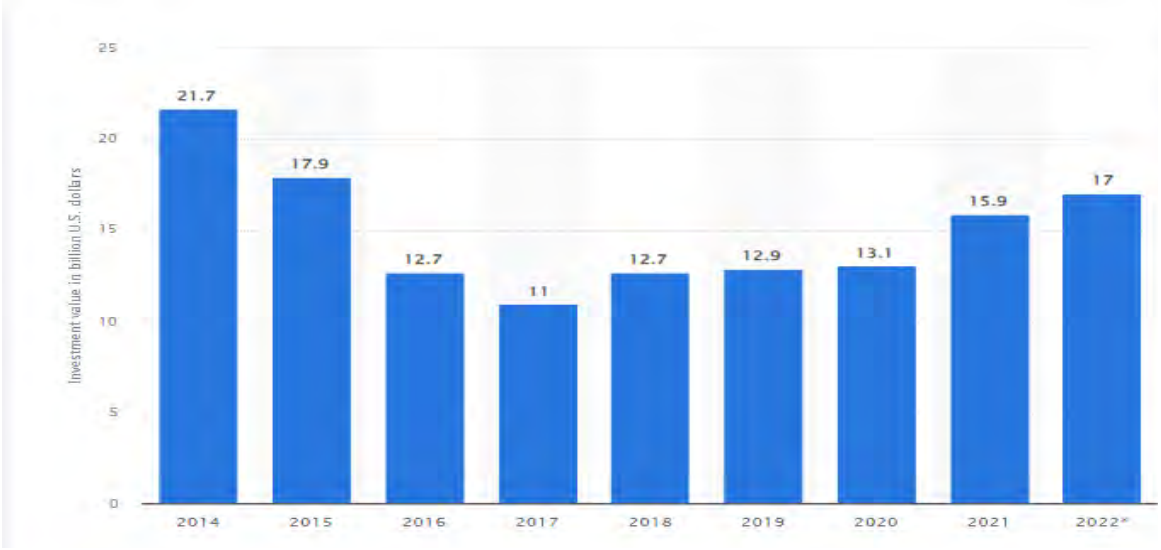

Figure 3

The trend of investment in the Indonesian oil industry (Statista, 2023)

Indonesia's GDP growth rate will increase by 3.5% in 2022, the fastest growth since 2013. This figure was 3.7% in 2021. In 2020, due to the entry into the period of the COVID-19 pandemic, the GDP in Indonesia decreased by 2.07%.

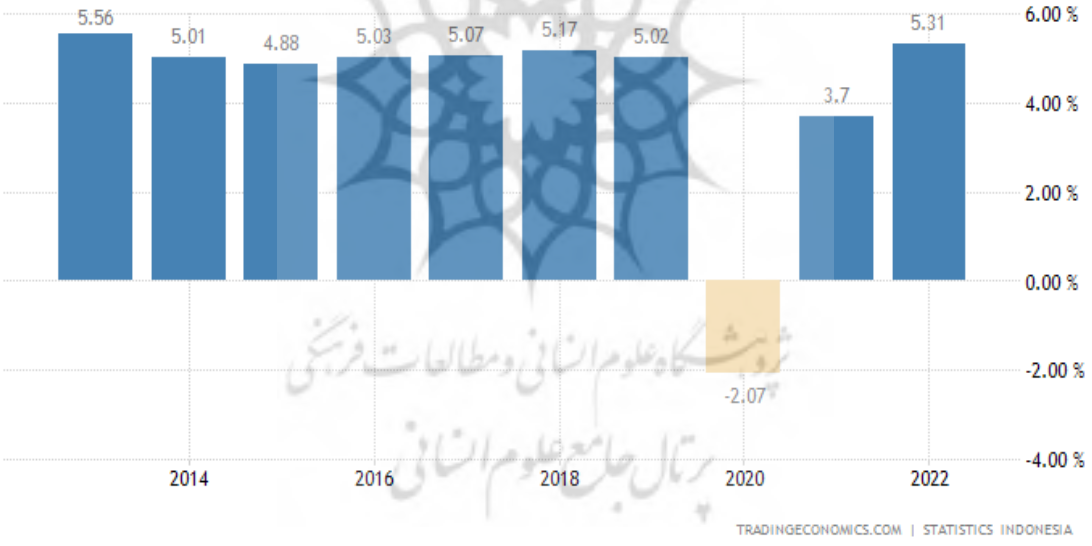

Figure 4

Changes in Indonesia's GDP in different years (Statistic Indonesia, 2021)

According to the annual GDP growth of Indonesia (7%), this amount has surpassed the economic development of Germany and the United Kingdom. If this trend continues, this country will become the sixth-largest economy in the world by 2030 (Wood Mackenzie Institute, Economic Report, 2022).

In addition, Indonesia has reduced its debt from 82% of its GDP in 2002 to 24% in 2012 and reduced its budget deficit to less than 2% of GDP in 2015. Further, the number of people in this country whose annual income reached more than $3,600 in 2010 is about 45 million and is expected to reach 170 million in 2030. One of the reasons for the increase in the income level of the mentioned people can be considered the growth of foreign investments after the economic crisis of 1997–1998. This country's

highest growth of foreign investment was in 2010, which increased by more than 163% compared to the previous year, reaching $12.8 billion. While its foreign investments decreased in 2015 due to the unfavorable economic situation of the world, it increased again in 2016.

6. Indonesia's energy policies

6.1. Energy consumption portfolio and its outlook

As mentioned in the previous sections, Indonesia is the fourth most populous country in the world, which also plays a vital role in increasing its energy consumption. It should be acknowledged that the growth of the industrial sector in recent years, along with the increase in Indonesia's urban population, has caused the country's demand for raw materials and energy to experience significant growth.

Indonesia's total energy consumption has grown by about 16% between 2010 and 2020. Moreover, the share of crude oil consumption in this country's consumption basket, which has been decreasing since 2018, has taken the second share after coal in this country's consumption basket, with 32% in 2020. Between 2010 and 2019, coal consumption has doubled in this populous country. Although natural gas is a relatively cheap fuel in this country, coal production is also attractive economically.

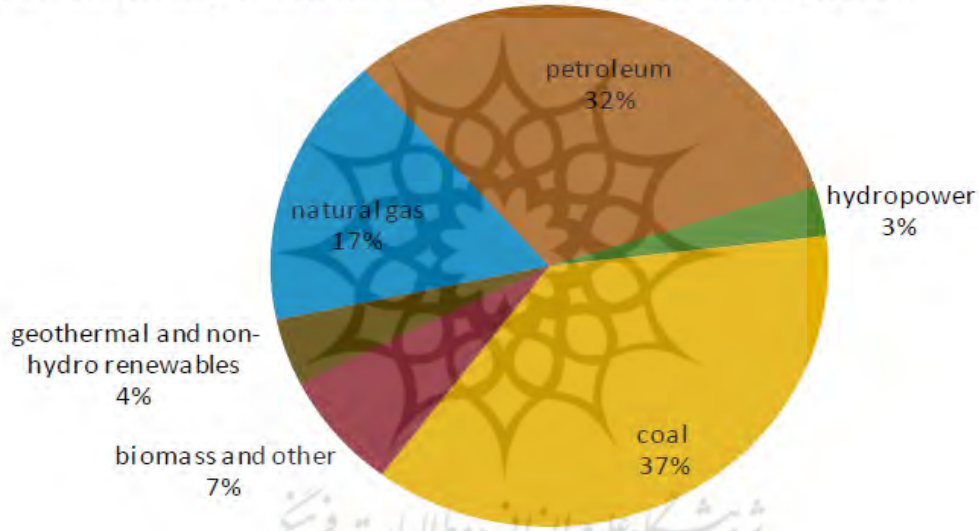

Figure 5

Indonesia's energy consumption basket according to the type of fuel consumed (EIA, 2022)

In addition, this country plans to change the focus of its energy policy from oil consumption to renewable energy and natural gas by 2025. The following charts show the share of each energy carrier in 2011, 2025, and 2050. One of Indonesia's strategies is to expand the use of renewable energy; therefore, in recent years, it has developed its investments in renewable energy, especially geothermal. It is worth mentioning that this country currently has about 40% of the world's geothermal energy resources (equivalent to 27,000 MW). In addition, Indonesia is the third country that produces electricity using the mentioned energy.

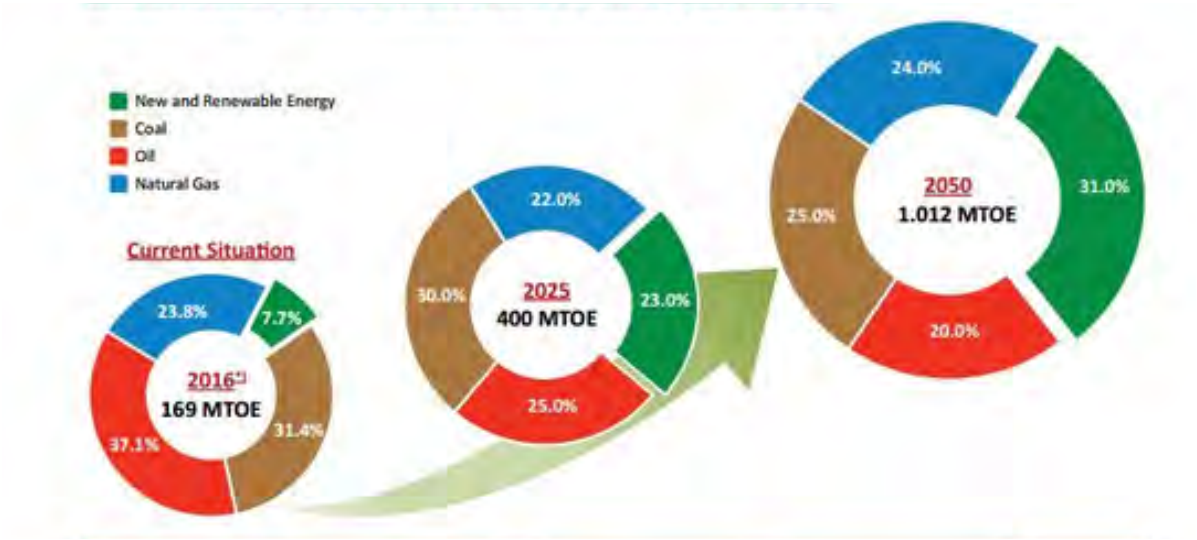

Figure 6

Prospects of Indonesia's energy consumption portfolio in the coming years (SKK Migas, 2022)

6.2. Oil sector policies

The average oil production in 2021 is about 804,000 barrels per day compared to the target program of 815,000 barrels daily. Of this figure, 224,000 barrels of oil per day (28%) were produced by Chevron. ExxonMobil, Pertamina, Petronas, and PetroChina are other significant crude oil producers in Indonesia.

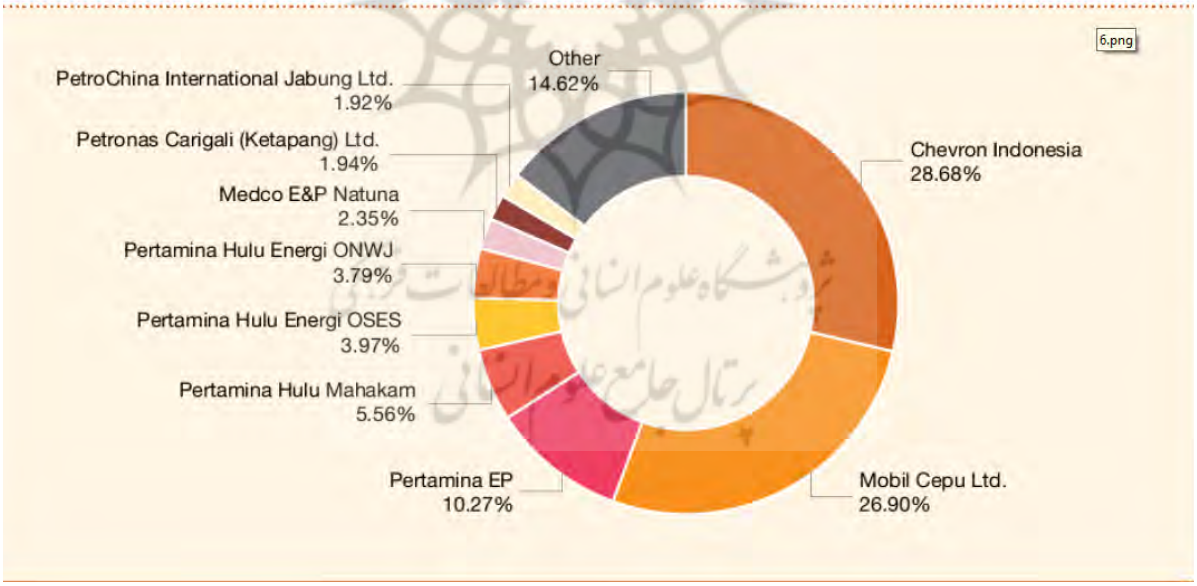

Figure 7

Indonesia's leading oil and gas producers (IEA, 2022)

For decades, Indonesia relied on the contribution of the oil and gas sector in economic growth. However, in recent years, the share of the oil and gas sector in the government's revenues has decreased significantly, along with the reduction of reserves and production. Hence, in 2019, only 7% of the country's total income of 2.165 Rp trillion rupiahs was from the was from the revenue from the sale of oil and gas.

Table 1

Comparison of Indonesia's total revenues with oil revenues (IIES, 2020)

Year	State revenue (Rp trillion)	Oil and gas revenue (Rp trillion)	% of Contribution
2004	403	85	21.09
2005	494	104	21.05
2006	636	158	24.84
2007	706	125	17.71
2008	979	212	21.65
2009	847	126	14.88
2010	992	153	15.42
2011	1,205	193	16.02
2012	1,338	205.8	15.38
2013	1,438	203.6	12.56
2014	1,538	216.9	14.11
2015	1,508	78.2	4.46
2016	1,555	44.1	2.84
2017	1,666	81.8	4.91
2018	1,942	143.3	7.38
2019	2,165	159.8	7.38

On the one hand, continuing economic growth has increased demand for energy, especially oil. On the other hand, the lack of investment in developing Indonesia's energy resources has caused this country to join the net importers of energy, including oil, since 2002. Nevertheless, these conditions did not make Indonesia stop trading oil in the world markets, and it tried to gain more benefits in the region by participating in the international oil trade while continuing its global activities in the market.

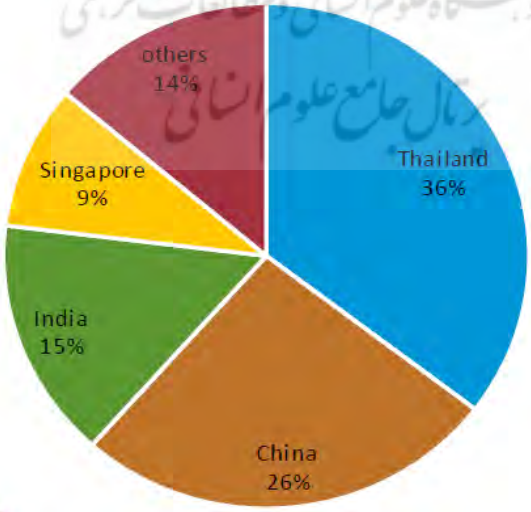

Figure 8

Indonesia's crude oil and condensate export destinations (EIA, 2022)

6.3. Gas sector policies

Indonesia's proven gas reserves reached 49.7 trillion cubic feet in 2021, more than 50% less than 100.4 trillion cubic feet in 2019. This country's gas reserves are the third largest in the Asia-Pacific region after China and Australia. The natural gas production of this country in 2021 was an average of 59.3 billion cubic meters per day, slightly less than 59.5 billion cubic meters in 2020. About 20% of this figure is accounted for by Total Company. Indonesia's natural gas production increased by 13% between 2000 and 2013, and this country is now one of the world's gas exporters (EIA, Exclusive Summary Report, 2021).

One of Indonesia's plans in previous years was to replace natural gas with oil, so its domestic demand for natural gas faced a sharp increase in 2016 and reached about two times its amount in 2015. Moreover, the Indonesian government has started building new terminals and natural gas transmission lines for domestic consumers in the country for some time, which will reduce the number of exports if exploration activities are not developed. This country exports its gas through pipelines and LNG. The chart below shows the trend of natural gas consumption and production in this country.

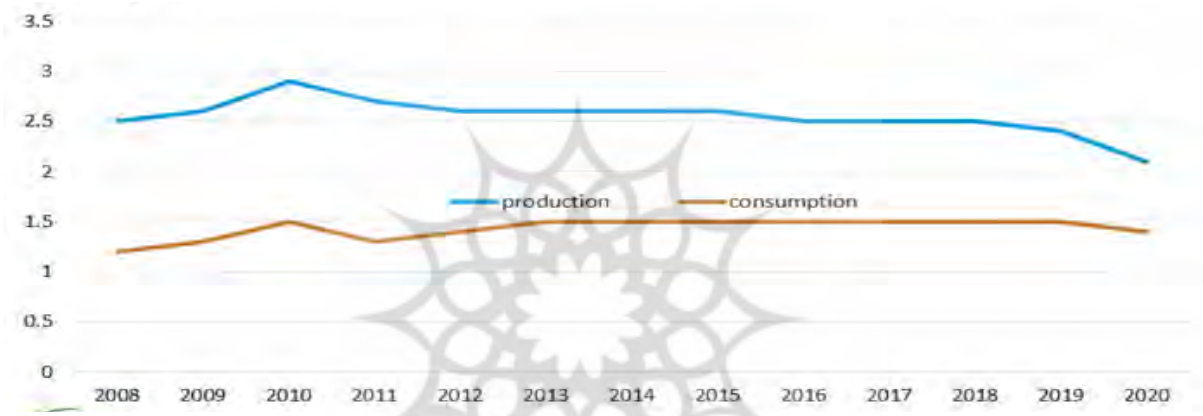

Figure 9

The trend of natural gas production and consumption in Indonesia (EIA, 2022)

International companies such as Total, BP, Inpex, ConocoPhillips, and ExxonMobil have played a significant role in Indonesia's upstream sector, and these companies accounted for more than 50% of its natural gas production in 2013. This country's natural gas production in 2021 was an average of 59.3 billion cubic meters per day. Since 2014, international companies have focused their activities on production from new offshore gas fields (especially in the eastern regions of this country). The average annual growth rate of gas production in this country is about 2.4%, and its maximum gas production until 2021 is 87 billion cubic meters; meanwhile, the amount of gas production in this country decreased by an average of 4.4% annually from 2011 to 2014. This issue has been mentioned due to the decrease in the attractiveness of foreign investment in the field of its gas fields in deep waters, the lack of financial incentives for international companies, and extensive technical problems for production from these fields. On the other hand, due to the lack of infrastructure for the use of associated gases produced in oil fields, more than 66 billion cubic feet of associated natural gas were burned in 2020 in Indonesia, which has placed this country among the top 20 countries in the world in the production of related gases.

This country's most extensive offshore gas field is located in the Aceh region in South Sumatra, which has been operated by the Total Company since 1967, and its production is about a quarter of the gas produced in the land areas of that country. Of course, the gas it produces is also used to implement the Bontang LNG project. In 2016, Chevron Company announced its interest in developing gas fields in

the country's deep waters, located in East Kalimantan. This field's gas and condensate production reached a maximum of 450 billion cubic feet in 2016 and 58,000 barrels per day.

In 2014, Indonesia was among the countries that exported LNG although it could only have a share of less than 7% of the global market; it took only 4.4% of the market share in 2020 and became the 7th largest exporter of LNG globally. In addition, its LNG export in the current year was about 593 billion cubic feet, which increased from 582 billion cubic feet in 2019. According to the current trend of increasing LNG demand, this country has become a regional exporter of this product and exports only to Japan, South Korea, and China. In recent years, this country has given its market share to Qatar, Malaysia, Australia, and America.

6.4. Energy subsidies policies

One of the policies of the Indonesian government during the last decade is the allocation of a large number of subsidies to the energy sector, especially petroleum products, which has increased the country's budget. Fuel subsidies in Indonesia drain the public treasury and divert funds from potential projects that could deliver long-term economic impact. Fuel prices are lower now than in recent decades, providing an optimal opportunity for the government to restructure its subsidy program and provide benefits where they are most needed.

Although this policy was aimed at supporting the low-income deciles of this country, due to the increase of the middle-class people, this support policy increased the consumption of petroleum products, leading to a more significant budget deficit in 2016. Therefore, the government of this country increased the price of oil products in 2015 to solve its budget deficit, which was about 10% lower than the international level. In addition, to adjust the price of gasoline with a high octane grade, other costs, including taxes, have been included in the price of this product. Therefore, the Indonesian government has minimized gasoline subsidies since 2014 to reduce its expenses. The increase in the import of oil products due to the high price level before the second half of 2014 caused a 17% increase in Indonesia's budget even though the subsidy allocated for gasoline was removed in January 2015 due to the drop in oil prices and the necessity of implementing the government's policy for reducing the budget. Still, a fixed subsidy was set for diesel fuel.

Indonesia's subsidies have declined to one-fifth of past levels but remain massive. To illustrate, the current annual subsidy is the equivalent of investing in a major refinery upgrade every one to two years or a new refinery complex every four to five years. If 10 years' worth of subsidies, about $40 billion, were redirected to existing and new refineries, the impact would be enough for Indonesia to become self-sufficient in creating oil products.

The current climate provides a valuable opportunity to reform the country's energy policies. Low global oil prices have reduced the pressure to offer these subsidies. Moving toward market rather than regulated prices has shifted some of the burden and potential benefits of pricing decisions to Pertamina. Resurgent global oil prices, however, would make the current system unsustainable while at the same time making reform more difficult politically.

India, Malaysia, and other countries have found ways to achieve the twin goals of providing help to people experiencing poverty while reducing subsidies overall. For example, they have adopted new technologies, such as unique personal identification numbers and direct cashless payments, to ensure that support reaches the lowest-income households. If global oil prices rise, Indonesia would also need subsidy caps to keep control of the program.

Reform plans during recovery should be bold and comprehensive to achieve success. In countries where reform has been deployed in phases, each successive phase has met renewed resistance from various

interest groups, reigniting an acrimonious debate and sometimes eroding the political will to move forward (McKinsey Analysis, 2021).

6.5. Overview of energy policy laws

The upstream laws of the national development of Indonesia's energy sector have been explained in the long-term and medium-term sectors (see Table 2). The purpose of regulating these laws is to ensure the effective, efficient, highly competitive, and sustainable exploration and exploitation of oil and gas; processing, transportation, storage, and responsive commercial businesses through fair and transparent commercial competition; ensuring the efficient and adequate supply of oil and gas as a source of energy and providing internal needs; improving national capacity; increasing government income; and justly strengthening public welfare by maintaining environmental standards.

A supportive regulatory framework would include measures to ease cost recovery when operators change. When there is a change in operatorship, rather than a renewal with the same operator, regulations play an essential role in the cost recovery of investments made in the transition period. Without such measures, operators minimize investments as the expiration year nears, resulting in lower production and potential damage to the reservoir.

In addition, the government task force SKK Migas could make more significant efforts to oversee smooth transitions. For example, it could enforce the creation of dedicated transition teams that bring together representatives of incumbent and future operators committed to transparent project timelines. Industry experience suggests that these teams should convene for 18 to 24 months during the transition period to allow adequate time to achieve handover milestones.

Furthermore, the Indonesian government has introduced a model of new production-sharing contracts with "gross sharing" for upstream business activities, which was applied to new contracts from 2018 onward. This new regime has fundamentally changed the principles and regulatory framework of the (conventional) cost recovery model in the upstream sector, which has been operating for over 40 years (IIES, Indonesia Economic Review Report, 2021).

Table 2

Upstream regulations of the Indonesian energy sector (SKK Migas)

Program name	Approving body	Time
National long-term development plan	Government of Indonesia, national development planning agency (Bappenas)	2005–2025
National medium-term development plan	Government of Indonesia, national development planning agency (Bappenas)	2015–2019
National energy policy	Government of Indonesia, National Energy Council	2014–2050

The first framework for Indonesian oil and gas sector income tax and expense reimbursement regulations is the costs and tax combinations for the upstream sector of Indonesian oil and gas. In response to the concerns raised by the upstream industry regarding the application of Regulation 79, the government approved Regulation No. 27 on June 19, 2017, by amending it. On March 31, 2015, the Indonesian Minister of Finance presented new procedures for reimbursing and reporting government income from co-production activities through the new law PMK70.

7. Oil upstream and downstream sector policies

7.1. Oil production

The total production of crude oil and condensates in Indonesia in 2022 reached about 613,000 barrels per day, which is recorded in the following table of the output of companies active in the oil industry of this country by the amount of production. As of January 2021, Indonesia totaled approximately 2.5 billion barrels of proven crude oil reserves. According to the Deputy Minister of Energy and Mineral Resources, the replacement rate of oil reserves dropped to 50% in 2018 because of declining oil exploration and technology limitations. In 2020, Indonesia's petroleum and other liquid production averaged 887,000 barrels per day. Petroleum and other liquid production fell from a recent high of nearly 1.7 million barrels per day in 1991 (EIA, Country Analysis, 2021).

7.2. An overview of Indonesia's policies in international organizations

Indonesia has been the only member of the Southeast Asian Organization of Petroleum Exporting Countries (OPEC) for several decades. Still, its membership was canceled due to the limitation of oil production and imports exceeding its domestic consumption (net oil importer) (OPEC Bulletin, 2010). It should be noted that Indonesia rejoined OPEC in early 2016 after a seven-year suspension, which was suspended again on November 30 of the same year. Analysts believe that this country's attempt to rejoin OPEC is due to the security of increasing energy demand and attracting foreign investment to supply its domestic energy (in the central provinces of Java and Sumatra).

Table 3

The share of each international company in Indonesia's oil production in 2022(Statistic Indonesia, 2022)

Oil operators	Average barrels per day in 2022
ExxonMobil Cepu Ltd	165,906
Pertamina Hulu Rokan	159,254
Pertamina EP	70,157
Pertamina Hulu Energi ONWJ	27,584
Pertamina Hulu Mahakam	25,091
Pertamina Hulu Energi OSES	19,638
PetroChina International Jabung Ltd	15,610
Medco E&P Natuna	10,255
Pertamina Hulu Sanga Sanga	9,374
Pertamina Hulu Kalimantan Timur	9,013
Bumi Sakti Pusako (BSP)	8,240
Saka Indonesia Pangkah Ltd	7,624
JOB Pertamina Medco Tomori Sulawesi	7,839
Petronas Carigali Ketapang Ltd	7,579
Husky-CNOOC Madura Ltd	6,421

In addition, international oil companies, especially Chevron and Total, are active in the upstream sector of Indonesian oil. As a state company, Pertamina is also responsible for supplying the country's domestic oil needs, and Indonesia's refineries are also managed under the supervision of this company. In addition to the mentioned companies, ConocoPhillips, ExxonMobil, and BP operate in Indonesia's

oil and gas field. Further, Pertamina Company was responsible for about 47% of Indonesia's oil production last year.

Indonesia's crude oil reserves reached 2.5 billion barrels at the beginning of 2021. According to the Indonesian Ministry of Energy and Mineral Resources, due to the decline in exploration operations, lack of timely investment, and technological limitations for extracting oil from offshore sources, the replacement rate of oil reserves decreased to 50% in 2018. In addition, the existence of administrative bureaucracy and structural problems in this country's law field has caused an increase in investment risk, a rise in investment costs, and the limitation of long-term oil contracts in this field.

The most oil production of this country is from its fields located in the western parts of Indonesia. Recently, discoveries in this country have changed direction from the east to the west. In addition, about 60% of exploration fields are located in deep waters, which requires advanced technologies and large-scale investment to exploit them. In addition, in recent years, the oil production trend in this country has been declining because drilling activities have also decreased due to the sharp drop in oil prices in the last two years. However, the probability of discovering large oil fields is very high compared to other fields. One of these fields is Banyu Urip, located in East Java, which contains 450 million barrels of crude oil, 45% of which belongs to ExxonMobil. It is expected that the oil production of this field will reach 165,000 barrels per day at its peak.

7.3. Oil consumption policy

Indonesia is one of the largest energy consumers located in Southeast Asia, and its energy demand is expected to increase by more than 80% by 2040 compared to 2014. Additionally, since 2015, this country has been trying to replace clean and renewable energy instead of fossil energy. Meanwhile, its oil consumption has always continued its upward trend, so domestic oil production cannot meet domestic demand. The increase in the population of the middle-income class and the consequent growth in the demand for oil products in this country can make Indonesia a suitable market for oil exports. Figure 10 depicts the trend of domestic oil production and consumption in this country.

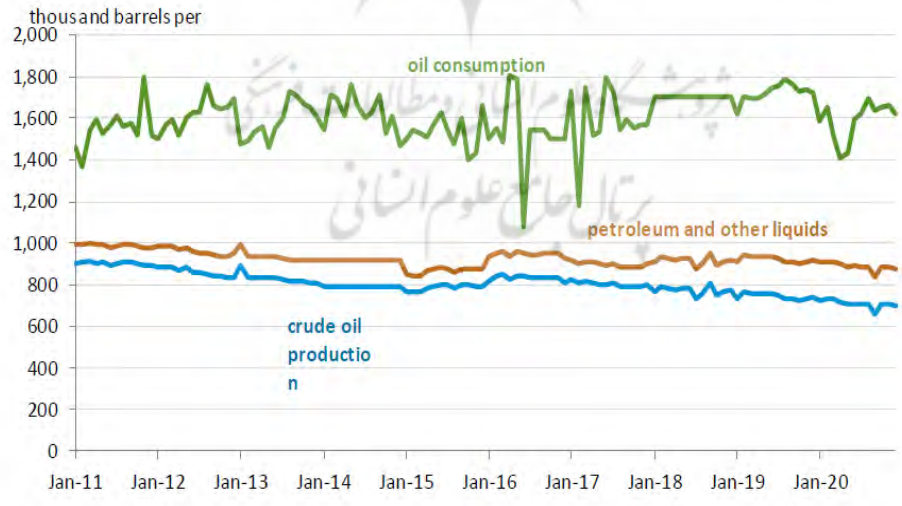

Figure 10

Indonesia's oil consumption and production trend in different years (EIA)

7.4. Oil refining policy

The total refining capacity of Indonesia at the beginning of 2020 was about 1.1 million barrels per day in 6 major refineries and small refining facilities, while the average refining utilization factor was less than 80% in 2014. Most refineries in this country are of simple type, and only two large refineries are complex and capable of refining sour crude oil. Being aware of this issue, Saudi Arabia has been seeking to expand its export of sour crude oil to Indonesia for some time. Further, this country is looking for a larger market share by investing in the construction and development of refining centers. It should be remembered that crude oil exported from West Africa, especially Nigeria, is also suitable for Indonesian refineries. Moreover, due to the growth of oil demand in this country, its government has been forced to modernize and upgrade the quality and quantity of its refining facilities to reduce the import of petroleum products, which improves the refining products, incredibly high-octane gasoline; oil products with the Euro 5 standard have also helped further reduce pollution in this country by reducing their sulfur content. The consumption of petroleum products in Indonesia in 2020 was about 1.7 million barrels per day, and the amount of its refined products provided about 55% of the country's domestic needs.

Pertamina Company is responsible for the ownership and production operations in most of the country's refining facilities. It plans to increase the country's refining capacity to 1.8 million barrels per day in 2027 with an investment of $48 billion. Indonesia's most important imported products are gasoline and diesel fuel (for consumption in the transportation sector). Saudi Arabia (38%), Malaysia (18%), Nigeria (17%), and Australia (11%) were the biggest sellers of petroleum products to Indonesia in 2020, respectively. However, Indonesia still had a small amount of petroleum product exports.

8. Conclusions

Due to its large population, the fourth largest in the world, and the growth of its urban population, Indonesia will become one of the biggest consumers of energy, especially oil and gas, in the future. In 2016, during the agreements made between the oil authorities of Iran and Indonesia, PT Kilanindo Golden Star signed a contract to build a refinery in East Java with 600,000 barrels per day and receive Iranian heavy crude oil. The matter was followed up through the National Iranian Oil Company.

At the beginning of 2023, the president of our country visited Indonesia with a delegation. It was decided to develop cooperation between the two countries in different oil, gas, refining, and petrochemical sectors. It was agreed that a delegation from Indonesia would visit the water fields of Timor and Mansouri to travel to Iran. In the meantime, Iran's oil rivals, such as Saudi Arabia and Nigeria, have gained a considerable share in this country. Saudi Arabia's efforts to invest in Indonesia's downstream sector continue to ensure the future supply of oil and gas to Indonesia's refineries. According to some reports, Iran also had a four percent share in the Indonesian market in 2011, and the possibility of supplying oil to Indonesia will be investigated this year. Furthermore, since 2014, the country's net import of petroleum products has been about 592,000 barrels per day, 53% of which are related to gasoline. Other imported petroleum products are gas oil for transportation and power plants, LPG for residential use, and jet fuel. However, although this country is a net importer of crude oil and oil products, due to the benefit of its geopolitical position, despite being among oil importers, it also exports oil to continue its role in the international oil trade market. It is essential to acknowledge that the European and Asian markets have less capacity than emerging markets such as Indonesia. Therefore, it is suggested that the National Iranian Oil Company should consider this market as one of its export markets in term contracts (not spot contracts) to diversify its markets.

Nomenclature

CNG	Compressed natural gas
IMF	International monetary fund
LCR	local content regulation
NIOC	National Iranian Oil Company
NIORDC	National Iranian Oil Refining and Distribution Company
WB	World Bank

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