Innovations

Iraq and India Energy Trade

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Abstract

India and Iraq's energy trade relationship has grown significantly and is now a crucial component of their bilateral relations. Iraq has substantial oil reserves, while India is one of the world's biggest energy consumers. Both nations are important participants in the global energy scene. India is becoming more and more dependent on imports to fulfil its expanding energy needs, and one of its main suppliers is now Iraq. Their energy commerce is based primarily on oil, with India importing a sizable amount of crude oil from Iraq. The relationship is advantageous to both parties because the Indian refineries are capable of processing the crude from Iraq. To deepen their energy cooperation, India and Iraq have signed a number of agreements and memorandums of understanding (MOUs) throughout the years. These agreements address a number of topics, such as investment in the energy sector and exploration, production, refining, and marketing. Additionally, both nations have worked together to improve oil storage and infrastructure.

1.1 Introduction

In addition to oil, there have been discussions on diversifying the energy trade to include natural gas and renewable energy sources. India, with its increasing focus on renewable energy, has expressed interest in exploring opportunities for collaboration in renewable projects in Iraq. The India-Iraq energy trade relationship has not only contributed to meeting India's energy needs but has also played a crucial role in Iraq's economic development. It has fostered deeper economic ties and people-to-people exchanges between the two nations. As both India and Iraq continue to strengthen their cooperation, the energy trade relationship is

expected to flourish further. The partnership holds immense potential for sustained growth, energy security, and mutual benefits for both countries. The energy trade between India and Iraq has significant economic implications for both nations. India relies on Iraqi oil imports to meet its energy requirements, ensuring a stable energy supply for its industries and consumers. On the other hand, Iraq benefits from the revenue generated through oil exports to India, which contributes to its economic development and reconstruction efforts. Indian oil companies have actively pursued exploration and production opportunities in Iraq. Indian firms have participated in bidding processes and secured contracts for oilfield development in Iraq, establishing a presence in the country's energy sector. These investments strengthen the energy trade relation while fostering technology transfer and expertise sharing. India and Iraq have signed several bilateral agreements to enhance energy cooperation. These agreements cover areas such as oil exploration, production sharing, and cooperation in the field of oil and gas. The countries also collaborate on training programs, knowledge exchange, and research and development initiatives related to the energy sector.

India possesses significant refining capacities, and its refineries are equipped to process the heavy crude oil imported from Iraq. This compatibility in refining capabilities has further facilitated the energy trade between the two countries, enabling smooth processing and utilization of Iraqi oil resources. Both India and Iraq have engaged in discussions and collaborations to develop energy infrastructure. This includes the establishment of oil pipelines, storage facilities, and refineries, promoting efficient transportation and storage of oil resources. These infrastructure developments strengthen the trade relation and support the long-term sustainability of energy supplies. The India-Iraq energy trade relation holds immense potential for growth and diversification. India's increasing energy demands, coupled with Iraq's vast oil reserves, provide opportunities for further collaboration. There is scope for expanding the trade to include natural gas and exploring renewable energy avenues, aligning with India's commitment to sustainable energy sources.

However, despite the potential benefits of energy cooperation between Iraq and India, there exist several challenges and uncertainties that need to be addressed. The problem statement of this research study revolves around understanding and analysing the role of Iraq in India's energy sector, with a focus on identifying the key challenges,

opportunities, and implications associated with this bilateral energy relationship.

1.2. The Statement of Problems:

The earlier studies are main emphasised the Bialertal trade relations between two countries. The research study is examining the existing trends and patterns of energy trade between Iraq and India. This includes analysing the volume and value of oil and gas imports from Iraq to India, as well as any changes or fluctuations in these trade flows over time. The study is exploring the factors behind India's increasing energy demand and its reliance on energy imports from Iraq. This may involve investigating India's economic growth, industrialization, population dynamics, energy consumption patterns, and policy frameworks that contribute to the energy demand-supply dynamics. The study is identified and analyse the challenges and risks associated with Iraq's role in India's energy sector. These challenges may include geopolitical factors such as regional conflicts and instability, economic considerations such as price volatility and market dynamics, and technological aspects such as infrastructure limitations and transportation logistics. The research work isexamining potential areas of cooperation and collaboration between Iraq and India in the energy sector. This may involve exploring avenues for investment, technology transfer, joint ventures, and exploring alternative energy sources or diversification of energy supplies. The study is assessing the implications of Iraq's role in India's energy sector on the energy security and strategic interests of both countries. This includes analysing the impact on India's energy diversification strategies, the vulnerability of energy supply chains, and the geopolitical implications of energy dependence.

1.3 Objectives:

1. To Examine the trends of energy trade between India and Iraq
2. To assess the impact of Iraq's energy resources on India's energy security.
3. To analyse the policy frameworks and regulatory environments in both countries related to the energy sector.

1.4Hypothesis:

1. Indo Iraq bilateral trade relation has been much more better in recent times. The Indo Iraq trade relation is favourable to both nation

2. Increased collaboration between India and Iraq in the energy sector enhances India's energy security by diversifying its energy sources and reducing dependence on traditional suppliers.

1.5 Research Methodology:

The study is based on secondary data refers to existing data that has been collected by others for different purposes but can be relevant to the research study. The data is related bilateral energy trade between Iraq and India, the data was related to energy production, exports, imports, trade policies etc. The data was collected from government reports, energy sector publications, academic studies, industry reports, statistical databases, and international organizations. Examples of secondary data sources for the study could include reports from the International Energy Agency (IEA), World Bank, OPEC, Indian government agencies, Iraqi government agencies, and energy industry associations. Research articles, industry publications, and reputable research institutions focused on energy and international relations can also serve as important sources of data. The secondary data was collected from 2000-01 to 2019-20 (20 years).

1.6 Scope of Study:

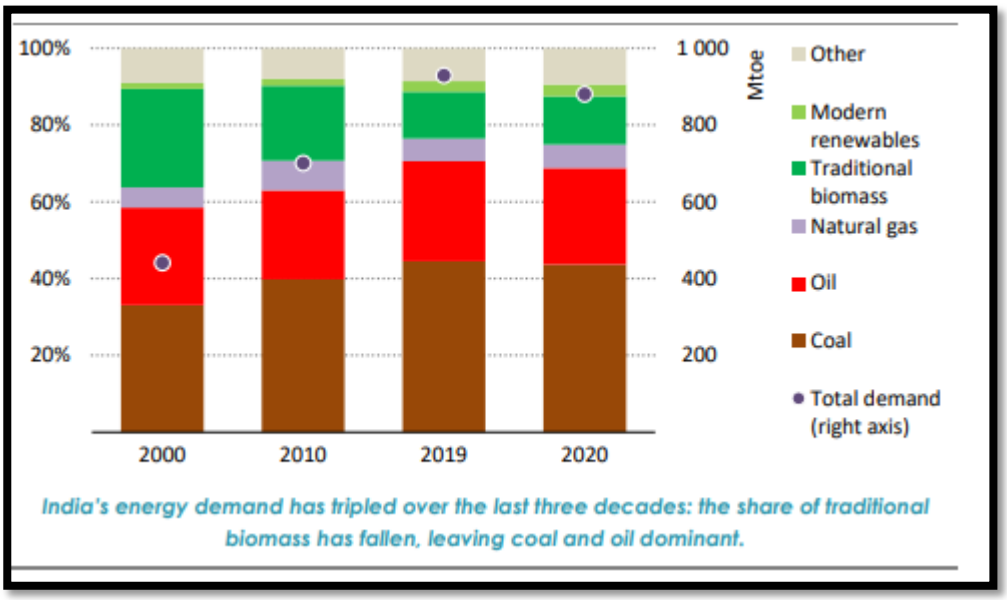
The study was cover a period of around from 2000-01 to 2019-20. The study is primarily focused on energy cooperation between two countries. This study is focused on the bilateral trade in depth with respect to energy sector only. The study is also analyse a recent MOUs and bilateral agreement with Iraqi government. The study is analyse the historical trends, current status, and future prospects of energy trade between India and Iraq. Focus on the types of energy commodities traded, trade volumes, value, and the key factors influencing bilateral energy trade.

1.7 Energy in India

The last India Liveliness Viewpoint was issued six years ago, and since then, the GDP of India had grown up at a steady yearly percentage of 6.7%. The 2015 Outlook had predicted that electrical access would be achieved in 2015, but a considerable additional legislative push on this issue has caused it to happen far sooner. In India, there are now as many energy users as there were in Spain 10 years ago an increase of almost 50 million people yearly. This is one of the most significant recent increases in

the global vivacity power. However, there are still reliability-related worries.

Figure 1
Total Primary Energy Demand in India



Since 2015, the use of renewable energy has increased dramatically, especially in the case of terrestrial sources. For example, India erected around five junctures in 2019 that were of sufficient astronomical dimensions compared to its immobile status in 2015. A significant contributing component in this is the global decline in costs. With the help of ambitious policy goals and auctions, the deployment of international photovoltaic (PV) technology has progressed virtually perfectly in line with whatever mounted predictable in the India Liveliness Standpoint 2015 below the Indian Dream Condition.

1.8 Issues for Energy Trade

1.8.1 Coal

Firewood lasts be the cornerstone of Republic of India reduced liveliness, which places it third among the Group of 20 (G20) countries with a 44% share of the essential liveliness composition. The second-main ember flea market cutting-edge the biosphere is located in India, which has a sizable domestic coal deposit. In Indian mines, typically in the easterly states of Odisha, Chhattisgarh, Jharkhand, and Madhya Pradesh, more than 700 mountain tonnes (Mt) of coal are produced yearly. The primary source of production is open pit mining. Since the 1970s, the nation's top coal producer has been government-owned Coal India

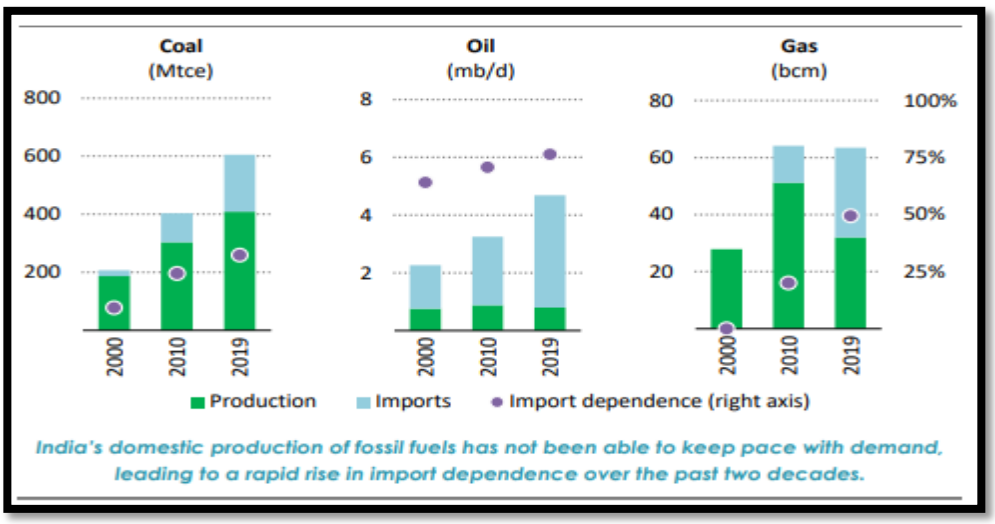
Imperfect (CIL), which contributes more than 80% of the coal produced domestically. The largest coal mining company in history is CIL at the moment.

The fifth-largest known coal reserves in the world are in India, but local production capacity has not been able to keep up with demand. This has consequently resulted in a rise in imports that has been consistent throughout the last several centuries, albeit the development of the present dependency on coal imports has slowed down as of the middle of the 2010s due to increased local supply and slower demand growth. Because coking coal is required by the steel industry and is much less accessible locally than updraft coal, there is a requirement for imports. Also located in the United States are 18 GW (8% of the fleet) of coal-fired power plants.

Constructed to use imported coal rather than subpar indigenous grades and are located in coastal areas. Additionally, the price of production, transportation, and maintenance rises due to the low calorific value and high ash content of domestic coal. The government hopes to stop ingresses by 2025 by encouraging domestic oil production, despite these barriers. The government regulates the supply of coal ensuring that it reach important industries while keep the cost of logistics and transportation low. The majority of domestic coal generated in the east must travel over great distance by train to reach consumption centres in the north and west.

Figure 2

India Production and Trade of Coal, Crude Oil and Natural Gas



As a result, coal uses a significant portion of the railway capacity that is available for the transportation of bulk commodities, and carriage costs

represent a sizable portion of the real cost of coal, particularly when they are used as a cross-subsidy for curb side train prices.

Most of the coal is provided by public-sector businesses at the rates specified in FSAs with petroleum suppliers. These values are still mostly constant and unrelated to production costs or competitive pressures; rather, they are established at a level that ensures average effectiveness among supplier companies. After notification to "priority" clients like power plants, coal prices are lowered. Although a very small amount of coal is often transferred in this way, there are also related auctions where varied amounts of coal may be completed. Following notice, coal prices are lower for plants. There are also connected auctions where customizable amounts of coal may be completed at a premium price, even though conventionally only a small portion of coal is swapped in this fashion.

1.8.2 Oil

In contrast to petroleum, India's local oil supplies remain constrained, and it heavily depends on introduced petroleum to satisfy its problems. Subsequently Ceramic, India is now the second-largest net shipper of oil. Indian refineries near the western coast receive crude oil via ship from the Central East, Latin America, in contrast to petroleum, India's local oil supplies remain constrained, and it heavily depends on introduced petroleum to satisfy its problems. Subsequently Ceramic, India is now the second-largest net shipper of oil. Indian refineries near the western coast receive crude oil via ship from the Central East, Latin America, & Africa. India is now dependent on imported crude oil to a degree of almost 75 per cent.

The administration takes augmented the size of its strategic firewood fallback (SPR) in directive to counter probable concerns brought on by a increasing reliance on imports. India is now dependent on imported crude oil to a degree of almost the administration has increased the amount of its strategic firewood backup (SPR) in an effort to allay any worries caused by a growing reliance on imports. African lands belonged to India. Almost 75 per cent of India's crude oil needs are now met by imports. The administration has increased the amount of its strategic firewood backup (SPR) in an effort to allay any worries caused by a growing reliance on imports. As of the middle of 2020, India has 40 mountain containers worth of grease stored throughout its SPR, or equivalent to ten days' worth of net

oil introductions. The administration acknowledged India's long-standing aim to become less reliant on oil imports. The government increases the amount of critical firewood it has on hand.

The 40 mountain containers of grease in its SPR as of the middle of 2020, which is about equal to 10 days substance of net oil introductions. India has extended desire 40 mountain containers. As of the middle of 2020, easing in its SPR, which is equivalent to around 10 days' worth of net oil imports, is expected. e 40 mountain containers of grease in its SPR as of the middle of 2020, which is about equivalent to 10 days' worth of substance of net oil arrivals, is part of India's on-going effort to become less dependent on oil imports, the government announced. By the middle of 2020, India planned to have 40 mountain containers of grease in its SPR, which is about equivalent to 10 days' worth of net oil imports. India's administration agreed to its long-standing ambition to become less reliant on oil imports. India's domestic emollient supply is limited, unlike that of petroleum, and it significantly relies on imports. Mountain containers of grease in its SPR as of the middle of 2020, which is about equal to 10 days' substance of net oil introductions. India has extended desired to become less dependent on oil imports, and the government declared in. In contrast to petroleum, India's local emollient supplies are constrained, and it heavily depends on introduced petroleum to satisfy its weights.

Table 1
Trade between India and Iraq

Year	India-Iraq Trade (USS Millions)			India's Total Trade (USS Millions)			Iraq's Share of India's Total Trade
	Import	Export	Total	Import	Export	Total	(%)
2000-2001	6.9	84.02	90.9	50,536	44,560	95,097	0.1
2001-2002	0.04	206	206	51,413	43,827	95,240	0.22
2002-2003	0.03	214	214	61,412	52,719	1,14,132	0.19
2003-2004	0.14	75.1	75.3	78,149	63,843	1,41,992	0.05
2004-2005	1.12	131	132	1,11,517	83,536	1,95,053	0.07
2005-2006	2.05	155	157	1,49,166	1,03,091	2,52,256	0.06
2006-2007	5,515	203	5,718	1,85,735	1,26,414	3,12,149	1.83
2007-2008	6,837	272	7,109	2,51,654	1,63,132	4,14,786	1.71
2008-2009	7,709	437	8,147	3,03,696	1,85,295	4,88,992	1.67

2009-2010	7,026	477	7,504	2,88,373	1,78,751	4,67,124	1.61
2010-2011	9,008	678	9,686	3,69,769	2,49,816	6,19,585	1.56
2011-2012	18,918	763	19,682	4,89,320	3,05,964	7,95,283	2.47
2012-2013	19,247	1,278	20,525	4,90,737	3,00,401	7,91,137	2.59
2013-2014	18,520	918	19,438	4,50,200	3,14,405	7,64,605	2.54
2014-2015	14,247	829	15,076	4,48,033	3,10,339	7,58,372	1.99
2015-2016	10,837	1,004	11,841	3,81,008	2,62,291	6,43,299	1.84
2016-2017	11,707	1,111	12,819	3,84,357	2,75,852	6,60,210	1.94
2017-2018	17,615	1,462	19,078	4,65,581	3,03,526	7,69,107	2.48
2018-2019	22,372	1,788	24,161	5,14,078	3,30,078	8,44,157	2.84
2019-2020	23,740	1,878	25,618	4,74,709	3,13,361	7,88,070	3.25

Source: 1. Statistical Review of World Energy

2. U.S Energy Information Administration (EIA)

Table 1 shows that the bilateral trade between India and Iraq. In 2000-01 India import from Iraq $ 6.9 US million and export around 84.02 million. While in 2019-20 23,740 US million Import and 1878 US millions export. Table also revels the India's total trade Rs. 95097 US$ millions in 2000-2001. It was tremendous increased to 788070, US millions. In 2000-01 Iraq shares of India's total trade only 0.1 per cent but in 2005-06 around 1.83 per cent. It was increased 3.25 per cent in 2019-20.

1.8.3 Natural gas

Even if the amount of conventional smoke has become fashionable, India's overall energy consumption has expanded fast, and there have been noteworthy changes in the demand for conventional vapour in some economic sectors. India has mainly maintained its primary energy mixture consumption at 6 per cent throughout the last several centuries. The usage of continuous blast as a fuel in commerce has risen by nearly ten times since 2010, compared to a normal rise in energy consumption of 50 per cent in the sector. As a result, natural gas now accounts for around 10 per cent of industry, up from less than 2 per cent previously. Similar to how, despite starting off at a low level, the consumption of energy in buildings has tripled over the previous ten years. However, a decrease in the usage of natural gas for transportation and power has essentially countered these gains. About 60 per cent of India's natural gas-based power producing capacity runs at very low capacities as a result of a shortage of reasonably priced gas and continued pressures that led to this decline.

According to a declaration made by India, the country plans to increase the amount of regular petrol in its main fuel blend from 6 per cent

in 2019 to 15 per centin 2030. The administration has been putting in place a number of measures to support this objective of raising local output, enabling imports, and boosting demand. Gas produced from deepwater, ultra-deepwater, and other problematic deposits may be priced and traded freely under HELP in order to boost production.

Using a formula based on hub pricing in other nations like the US, Canada, the UK, and the Russian Federation, the price of gas from all other fields is decided on a semi-annual basis. The Indian Gas Exchange (IGX), a platform for accepting fume exchange, was also introduced by the government in 2020. The recent decline in petrol costs has been a crucial impact, although significant investments in local manufacturing have been discouraged. The dependence on imported LNG has risen as a result of India's rising gas consumption growing faster than domestic production. After only 20 per cent in 2010, imports now make over 50 per cent of India's total petrol consumption.

Six LNG plants are used by India to produce these summaries. India now consumes a 17, 000 km network of pipes to send cloud to consumption regions, but it has plans to further expand this network despite certain technological constraints. Ordinary Bristle Overriding and sparking The country's downstream regulator, Staying in India, is in responsibility of overseeing this expansion and setting the wages that members of this substructure must earn. India has established plans for urban injury campaign (CGD) arrangements to service residences, companies, and factories inside urban regions in addition to this huge system of pipes. Together, there are still 18 locations where CGD governments are in operation, with a goal of covering 70% of all residences by 2030. The following offer includes drinks with granted CGD licenses.

Table2

Average of difference in Trade Percentage

Sr. No	**Year**	**Average of difference in India-Iraq Trade Percentage**	**t**
1	2000-2001	-4.67	-0.56
2	2001-2002	5.60	0.82
3	2002-2003	5.49	0.84
4	2003-2004	15.88	1.57
5	2004-2005	21.91	3.20*
6	2005-2006	4.71	1.78

7	2006-2007	18.51	1.82
8	2007-2008	2.33	0.45
9	2008-2009	24.65	1.49*
10	2009-2010	7.4	0.69*
11	2010-2011	25.91	20.83
12	2011-2012	9.5	4.5
13	2012-2013	13.87	15.87*
14	2013-2014	29.74	20.18*
15	2014-2015	9.42	6.96*
16	2015-2016	51.36	13.93
17	2016-2017	2.38	2.06
18	2017-2018	20.61	3.62
19	2018-2019	0.15	0.05
20	2019-2020	1.49	0.05

*Significant at .05 level

In the above Table 2, the study has taken Data 6 years pre the Trade Percentage and 6 years post the Trade Percentage each from 2011-2016 and from 2017-2022. The study wanted to maintain uniformity in the data set. 2016was the demarcation year when the Trade Percentage of Iran and Iraq energy contribution and was from 49% to 74 per cent. To test whether there is a significant difference in mean Pre and Post the Trade Percentage, the test for comparison of means was applied.

The difference in the Trade Percentage six years prior to the Trade Percentage of Iran and Iraq was analyzed using the t test. Considering the six years of Trade Percentage six year's pre and post the difference was calculated for the six years and then the average change in Trade Percentage was calculated. This average change was tested as to whether it was significantly different from zero.

Ho: Average change in the difference of Trade Percentage pre and post the is not significantly different from zero.

i.e., $\bar{X}=0$

1.9 Trends in India's Foreign Trade in Rupees at Constant Prices

India's trade measured at current prices reflect the impact of rising prices or inflation on the trade flows. Inflation makes trade flows to be artificially very high and inflate the size of exports, imports and trade balances. Accordingly, the trade flows measured at current market prices need to be deflated using price indices to get trade flows at constant prices. Accordingly, the trade flows have been deflated taking 2011-12 as the base year and the original values measured in Indian rupee and CAGRS computed through semi-log function are furnished in Table 3. As could be observed from the table, India's exports (taking the base year of 2011-12) rose from Rs.12.43 lakh crores to Rs.15.58 lakh crores exhibiting a growth of only 25 per cent during the 11 year study period. The Compound annual growth rate has been only 1.44 per cent at constant prices as against 5.50 per cent measured at current market prices (Table 4.1). In contrast to this, India's imports from the world rising from Rs.18.30 lakh crores to Rs.21.04 lakh crores soared by 14.95 per cent between 2010- 11 and 2020-21. In other words, India's imports from the world at constant prices grew by CAGR of paltry 0.82 per cent, whereas India's imports from the world measured at current market prices soared by 4.85 per cent.

Table 3
India's Foreign Trade and GDP at Constant Prices during 2010-11 to 2020-21
(Rupees in Crores)

Year	India's Exports to World	India's Imports from World	India's Total Trade	GDP at Constant Prices	GDP Current Prices
2010-2011	1242740	1830494	3073234	8301235	7634472
2011-2012	1465959	2345463	3811423	8736329	8736329
2012-2013	1514178	2472949	3987126	9213017	9944013
2013-2014	1662143	2369246	4031389	9801370	11233522
2014-2015	1601317	2311136	3912454	10527674	12467959
2015-2016	1416976	2055894	3472870	11369493	13771874
2016-2017	1478929	2061279	3540208	12308193	1591669

2017-2018	1504828	2308206	3813033	13144582	17090042
2018-2019	1708592	2661421	4370012	13992914	18899668
2019-2020	1605158	2430278	4035435	14515958	200748566
2020-2021	1557785	2104151	3661936	14317872	19800914
CAGR in %	1.44	0.82	1.07	6.33	10.59
R^2	0.31	0.07	0.14	0.98	0.98
't' cal value	1.96	0.79	1.21	21.43	29.43
ETI	0.488	0.67	0.551	0.167	0.285
ETI original	1.629	1.95	1.74	1.182	1.329

Note: 1. GDP Data for 2018-19 are Third Revised Estimates, for 2019-20 are Second Revised Estimates.

Source: Government of India (2022), Handbook of Statistics on the Indian Economy, Mumbai: Reserve Bank of India.

Conclusion

The energy trade relation between India and Iraq has witnessed substantial growth and has become an integral part of their bilateral ties. Both countries are major players in the global energy landscape, with India being one of the world's largest energy consumers and Iraq possessing significant oil reserves. India heavily relies on imports to meet its growing energy demands, and Iraq has emerged as one of its key suppliers. Oil forms the backbone of their energy trade, with India importing a significant amount of crude oil from Iraq. The Indian refineries are well-equipped to process the Iraqi crude, making it a mutually beneficial partnership. Over the years, India and Iraq have signed several agreements and memoranda of understanding (MOUs) to further strengthen their energy cooperation.

The study main objective to provide valuable insights into the dynamics of Iraq's role in India's energy sector and offer recommendations for policymakers, industry stakeholders, and other relevant parties to strengthen the bilateral energy cooperation and ensure long-term energy security for India.

The volume of imports from Iraq grew significantly during this decade. During the 2010s, India's oil imports from Iraq experienced significant growth, solidifying Iraq's position as one of the major suppliers of crude oil to India. The volume of oil imports from Iraq to India witnessed

a notable increase during this decade. Iraq became one of the largest suppliers of crude oil to India, competing with other major oil-producing countries such as Saudi Arabia and Iran. However, Iraq has consistently held a significant market share in India's oil imports. India's dependency on Iraq for crude oil imports increased significantly during the 2020s. Iraq emerged as one of the top suppliers, and its share in India's total oil imports grew consistently. This growing dependency on Iraqi oil was driven by factors such as availability, competitiveness, and the compatibility of Iraqi crude with Indian refineries. The 2021s witnessed a shift in the geographical distribution of India's crude oil imports. The share of imports from the Middle East, including Iraq, expanded, while imports from other regions, such as Africa, declined. This shift reflected the increasing importance of the Middle East, and particularly Iraq, as a key supplier to India.

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