

# Iraq's Energy Security Strategy: A Path to Diversity and Energy Independence

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Electricity is a top national security priority for most countries. Thus, access to an uninterrupted flow of low-priced and adequate energy supplies to fuel power generators and sustain the supply of electricity lies at the heart of their energy strategies. On taking office in October 2018, Iraq's former minister of electricity, Luay al-Khatteeb, described electricity as a "national security priority." In a similar vein, in his address to the Atlantic Council on February 7, 2020, US Energy Secretary Dan Brouillette said that in his upcoming meetings at the Munich Security Conference he planned to emphasize the fact that "energy security is indeed national security."<sup>1</sup> For Iraq, a country depleted by wars, terrorism, and incompetent governance, economic recovery is impossible unless infrastructure is restored to functional levels. Iraq's electricity sector needs immediate attention.

Iraq's electricity infrastructure has been neglected since the 1980s. In that decade, Iraqi funds were diverted to the staggering cost of the Iran-Iraq War (1980-88). Early in the 1990s, Iraq's electricity facilities were bombed by a US-led coalition during the Gulf War (1990-91). Following the war, restoration of these facilities was severely restricted as a consequence of stringent economic sanctions imposed on Iraq by the United Nations Security Council. The sanctions would remain in place until Saddam Hussein's regime was toppled in a US-led invasion in 2003. Although Iraq's new political system, which has been in place since 2003, has enjoyed wide international support and the gradual removal of sanctions, the electricity sector has witnessed no real improvement. On July 15, 2020, Iraqi Prime Minister Mustafa al-Kadhimi said that although Iraq has spent more than \$62 billion on electricity since 2003 adequate supplies are still a challenge due to bad planning and corruption. "The state bought electricity stations that depend on gas and Iraq has no

The Atlantic Council's **Iraq Initiative** provides transatlantic and regional policy makers with unique perspectives and analysis on the ongoing challenges and opportunities facing Iraq as the country tries to build an inclusive political system, attract economic investment, and encourage a vibrant civil society.

<sup>1</sup> Atlantic Council, "US energy priorities abroad: A conversation with US Secretary of Energy Dan Brouillette," February 7, 2020, video, 40:07, <https://www.youtube.com/watch?v=RTN-XzYrY7E>.

gas,” he said.<sup>2</sup> Iraq does have gas, but it has not taken measures to fully capture and monetize this resource.

Across the country, terrorists continue to target the electricity infrastructure and make the task of providing the service very difficult.<sup>3</sup> Moreover, with a population boom and the import of appliances that lack energy-saving considerations, Iraq's energy demand has significantly increased over its pre-2003 levels. This situation has been exacerbated by wasteful consumption by some Iraqis who treat electricity as an entitlement to be received at a very low fee or at no cost at all. Therefore, the government has little political room to increase prices in order to reduce or eliminate inefficient and unnecessary energy consumption.

These challenges are made worse by corruption, incompetence, and mismanagement at the Iraqi Ministry of Electricity, which has been treated in the post-2003 political system as a money-generating machine for the parties that nominate and control its upper leadership. If electricity is indeed a national security concern in Iraq, the electricity crisis has so far been a national failure for which Iraq's state and society are to blame.

### The Other Side of the Crisis: Energy Dependence

Iraq's ability to overcome the electricity crisis is reduced further by its lack of self-sufficiency in the fuel used to generate power. Although the country is a leading petroleum producer and the second-largest exporter in the Organization of the Petroleum Exporting Countries (OPEC), Iraq's own gas has been unexploited or flared for decades even while Iraq has to import gas to operate its power generators. After Saddam's ouster in 2003, Iraq's Arab neighbors, particularly oil-producing Arab Gulf states—allies of the United States—refused to cooperate with the new Iraqi government, politically or economically. US efforts to persuade these states to normalize relations with Iraq have proven ineffectual thus far.

On the other hand, post-2003, Iran embraced the Iraqi government and established a robust system of political, economic, security, and social relations. Seventeen years on, Iraq-Iran relations have developed to a degree that has granted Iran

an exclusive advantage at the expense of the reintegration of other regional players into Iraq's economic network. Indeed, such reintegration has become increasingly difficult and inconvenient, particularly given mutual hostilities between certain Arab countries and Iran. The US position on Iraq-Iran relations has fluctuated over the years from pragmatic tolerance to strong disapproval and “maximum pressure,” with demands that Iraq disentangle itself from its relations with Iran and pursue relationships with Arab neighbors instead. However, Iraq-Gulf economic cooperation is unlikely to pick up in the event Iraq distances itself from Iran.

In the case of energy supplies, there is a need for infrastructure and bridges of trust that are hard to establish. For instance, Iraq signed an agreement in 2019 with the Gulf Cooperation Council (GCC) to link their electricity systems through Kuwait. This agreement would require the establishment of the necessary infrastructure on both sides of the borders a full year before electricity can be supplied. From the Iraqi perspective, the ideal outcome would provide “the best products, and the best price, with the best service, with the fastest and best solutions—but all have to be coupled with knowledge and technology transfer.”<sup>4</sup> At present, and from a trade standpoint, the Iraqi government considers Iran as the source that already meets these standards. But it is not all about economics and trade. The political consequences of choosing a trading partner are also important. In light of US sanctions and its “maximum pressure” policy toward Iran, Iraq must consider its options in an effort to avoid suffering similar economic and political consequences. Thus far, US policymakers have realized that Iraq is in no position to be energy independent and have no practical advice on how to accomplish any significant measure of such independence. As a result, Iraq has received a series of waivers from the United States to continue to import Iranian gas to generate electricity and, in peak times, import part of its electricity supply from Iran.

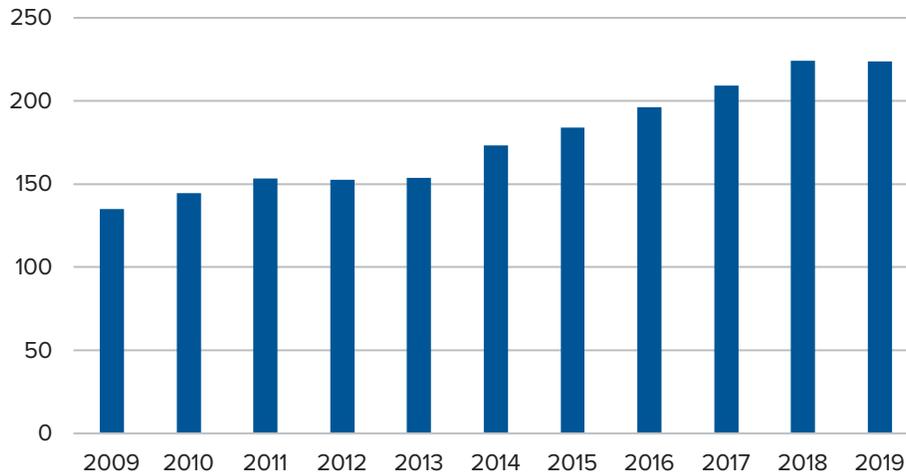
### Iran's Natural Gas and Electricity Production

Iran has one of the world's largest proven natural gas reserves. It hosts about 17 percent of the world's proven natural gas reserves. Iran is also the world's third-largest dry natural gas producer, after the United States and Russia. About 80

2 Media Office of the Prime Minister of Iraq, “The press conference of the prime minister, Mr. Mustafa al-Kadhimi, during his visit to Basra Governorate,” July 15, 2020, video, 24:30, <https://www.youtube.com/watch?v=t67018fldJI>.

3 Baxtiyar Goran, “Armed groups sabotage Iraq's already desperate electricity infrastructure, deepen power crisis,” *Kurdistan 24*, July 29, 2018, <https://www.kurdistan24.net/en/news/84b0bdc4-bec1-442c-a7f4-2302da9ae502>.

4 Waylon Fairbanks, “‘We Have Very Little Time’: MEES Sits Down with Iraq's Electricity Minister,” *MEES*, February 15, 2019, <https://www.mees.com/2019/2/15/power-water/we-have-very-little-time-mees-sits-down-with-iraqs-electricity-minister/63226520-3147-11e9-88ab-b16d8ba91504>.

**Figure 1: Iran Natural Gas Consumption (2009-19) (billion cubic meters)**

Source: BP Statistical Review of World Energy 2020

percent of Iran's gas reserves are from non-associated gas fields. In 2019, Iran produced about 8.011 trillion cubic feet (tcf) [244.2 billion cubic meters (bcm)] of natural gas and consumed 7.335 tcf (223.6 bcm) of natural gas domestically.<sup>5</sup>

### US Sanctions and Natural Gas Production Capacity

US sanctions on Iran's energy industry, which were first imposed by the Obama administration in 2010, were reinforced in 2012 and tightened in 2018 by US President Donald J. Trump when the United States withdrew from the Iran nuclear deal. These sanctions have had a significant and undeniable impact on Iran's gas development projects.

However, despite years of unilateral and multilateral sanctions on Iran's energy industry, Iran has been able to considerably expand its natural gas and condensate production. It should be noted that this was even the case when Iran was under nuclear sanctions and accompanying restrictions on foreign investment. Iran has also succeeded in continuing exploration activities. It announced the exploration of a new gas field, Eram, in October of 2019. This was at the height of the United States' "maximum pressure" policy against Iran.

However, US sanctions on Iran's crude oil and condensate exports since 2016 have been undoubtedly effective in cutting its oil and condensate exports, which have bottomed out at near zero. Since the implementation of the new sanctions regime, beginning in November 2018, Iran has cut its crude oil production to adjust it to export capability. With reduced production of crude oil, Iran's natural gas liquids (NGLs) production also dropped.<sup>6</sup>

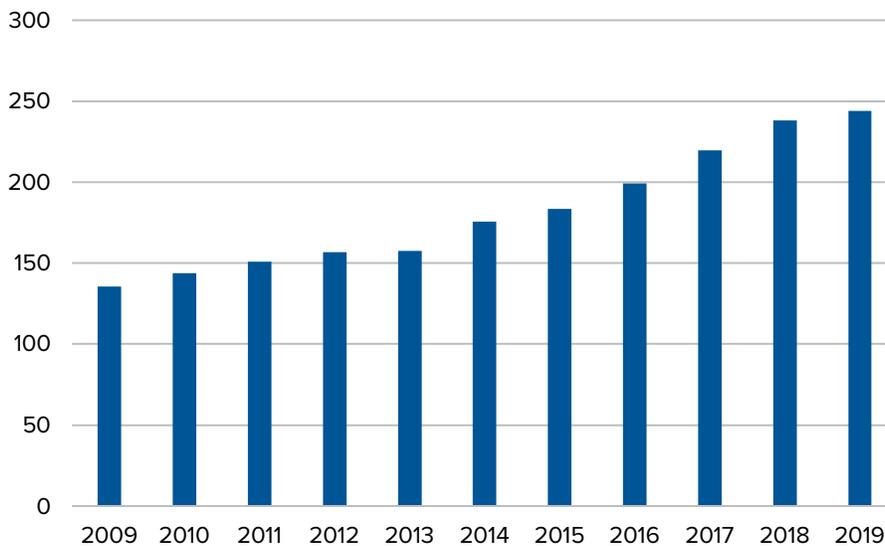
Based on Iran's 6<sup>th</sup> Five-Year Economic Plan (2016-21), its gas production should reach 16,757 tcf (474.5 bcm) a year or [1,300 million cubic meters a day (mcm/d)] by March 2021. This is almost twice its production in 2018.<sup>7</sup> It is hard to reasonably anticipate that Iran will hit its planned production target.

It is crucial to note that the type of upstream oil and gas contracts Iran offered were not originally profitable, especially when weighed against the risk international companies would have to undertake. With the 2015 Joint Comprehensive Plan of Action (JCPOA), the Iran nuclear deal, Iran introduced a new type of upstream contract with the hope of creating incentives for international oil companies to invest in its upstream oil and gas industry. In both

5 BP, *BP Statistical Review of World Energy, 2020*, <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2020-full-report.pdf>

6 Natural gas liquids (NGLs) are hydrocarbons that have the same molecules and formulas as crude oil and natural gas. They are exclusively composed of hydrogen and carbon. Butane, isobutane, ethane, pentane, and propane are all NGLs.

7 Sara Vakhshouri, *Iran's Natural Gas Report*, CEDIGAZ, January 20, 2020, <https://www.cedigaz.org/iran-natural-gas-report/>.

**Figure 2: Iran Natural Gas Production (2009-19) (billion cubic meters)**

Source: BP Statistical Review of World Energy 2020

exploration and development, the highest priority of the National Iranian Oil Company (NIOC) was to focus on oil and gas fields shared with neighboring countries.

South Pars, the giant gas field Iran shares with Qatar, received particular attention for diverting capital and investment for development of this field. Iran's natural gas production increases—in spite of sanctions—were largely from South Pars. Iranian domestic contractors, with the help of Chinese and Russian firms, succeeded in furthering the development of different phases of South Pars along with the construction of gas refineries to process produced gas and condensate. However, attracting Western capital has proven nearly impossible. Iran's attempts to attract Western energy companies' capital and technology were dashed by US sanctions after 2018. But even before 2018, Iran had succeeded in signing merely one contract with the French company Total. Total left the contract immediately after the Trump administration announced new sanctions on Iran in May 2018.

If US sanctions against Iran continue in the long term, and Iran does not succeed in accessing international capital and

technology, it will not increase its natural gas production. In fact, its production levels may start to decline. Production at South Pars, which is responsible for 80 percent of Iran's natural gas output, has already peaked. According to the Pars Oil and Gas Company, the production of natural gas in South Pars will start to decline from 2023. The annual natural decline of the South Pars field is estimated to be equal to the annual output of one of the producing phases, or about 0.99 billion cubic feet (bcf) a day [28 million cubic meters (mcm)] each year.<sup>8</sup> Natural gas is also central to Iran's domestic power generation and has a share of 70 percent.<sup>9</sup>

### Iran's Natural Gas Export to Iraq

With 135 tcf of proven natural gas reserves, Iraq hosts the 12th-largest reserves in the world.<sup>10</sup> Most of Iraq's natural gas reserves—about three-quarters of it—is associated gas produced mostly from its oil fields in the south.<sup>11</sup> Nevertheless, due to a lack of pipelines and adequate infrastructure, huge volumes of this associated gas is not utilized and is flared. After Russia, Iraq flares more gas than any other country in the world. In 2017, for example, Iraq

<sup>8</sup> Vakhshouri, *Iran's Natural Gas*.

<sup>9</sup> EIA (Energy Information Administration), *Iran*, last updated January 7, 2019, <https://www.eia.gov/international/analysis/country/IRN>.

<sup>10</sup> *Oil & Gas Journal*, "Worldwide Look at Reserves and Production," December 20, 2018, <https://www.ogj.com/ogj-survey-downloads/worldwide-production/document/17299726/worldwide-look-at-reserves-and-production>.

<sup>11</sup> IEA (International Energy Agency), *World Energy Outlook Special Report: Iraq Energy Outlook*, October 2012, <https://www.iea.org/reports/iraq-energy-outlook-2012>.



Iraqi Electricity Minister Luay al-Khatteeb (left) shakes hands with Iranian Energy Minister Reza Ardakanian following the renewal of the Iran-Iraq power agreement in Tehran. March 2019. Photo: IRNA, Amin Jalali

flared approximately 629 bcf of natural gas.<sup>12</sup> In 2019, it produced 381.39 bcf (10.8 bcm) of natural gas and consumed about 702.76 bcf, (19.9 bcm) of which only a small portion was used to produce electricity.<sup>13</sup>

Due to shortages of natural gas and electricity, Iraq began importing natural gas from Iran to fuel its power plants in Baghdad and Basra. In 2009, the two countries signed an agreement for Iraq to receive Iranian gas exports; this agreement turned into an export contract in 2011. According to the terms of this contract, Iran committed to export 71 million cubic feet a day to 88 million cubic feet a day (mcf/d) (20 mcm/d-25 mcm/d) of natural gas. This imported gas has largely fed the al-Mansouryah and al-Sadr power plants in

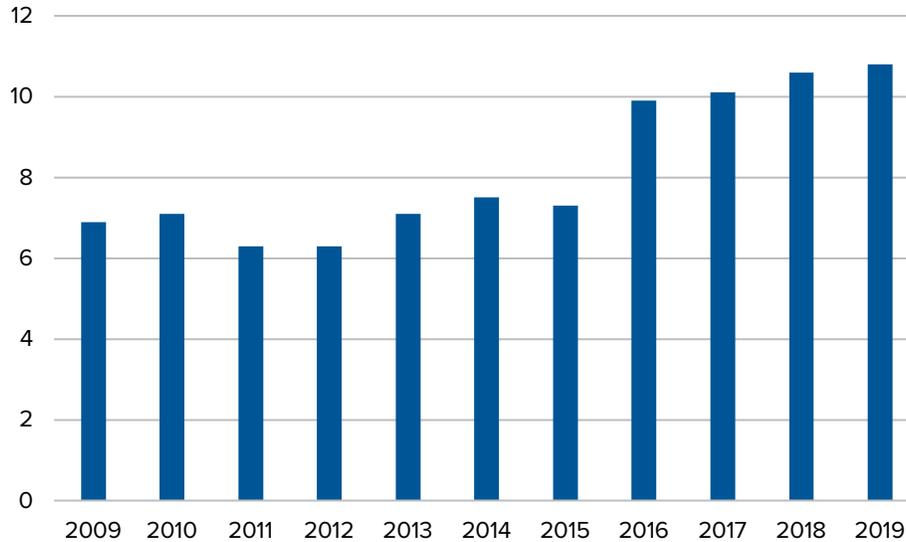
Baghdad. Iran and Iraq signed a second natural gas export agreement in 2015 to export Iran's gas to the Iraqi city of Basra. In June 2017, Iraq officially became a consumer of Iranian natural gas. Iran started its export of natural gas to Baghdad with 25 mcf/d (7 mcm/d). It plans to increase this to 124 mcf/d (35 mcm/d). In 2018, Iran started exporting natural gas to Basra with an average export of 53 mcf/d (15 mcm/d). According to Iran's Ministry of Petroleum, Iran plans to increase its natural gas export to this southern Iraqi city to 141 mcf/d in the next two years.<sup>14</sup> According to the Energy Information Administration (EIA), Iraq's natural gas imports from Iran averaged 132 mcf/d in 2017. These volumes have increased and in the January-May 2018 period, Iraq imported an average of 265 mcf/d.<sup>15</sup>

12 National Centers for Environmental Information, *Global Gas Flaring Observed from Space*, National Oceanic and Atmospheric Administration, accessed July 2018, [https://www.ngdc.noaa.gov/eog/viirs/download\\_global\\_flare.html](https://www.ngdc.noaa.gov/eog/viirs/download_global_flare.html).

13 BP, *BP Statistical Review*.

14 Iranian Students' News Agency, "Why Iran's gas export is crucial for Iraq?" April 2019, <https://www.isna.ir/news/98011906269/بشکایشتای-ح-قار-ع-ی-ار-ب-ن-ار-ی-از-ا-گ-ار-چ>.

15 EIA (Energy Information Administration), *Iraq*, last updated January 7, 2019, <https://www.eia.gov/international/analysis/country/IRQ>.

**Figure 3: Iraqi Natural Gas Production (2009-19) (billion cubic meters)**

Source: BP Statistical Review of World Energy 2020

### Seasonal Supply Interruption or Payment Issue?

Historically, Iran's gas exports to its neighbors (including Turkey) have often been affected during its own domestic peak consumption in winter. During the winter of 2019, for example, Iran's gas exports to Iraq dropped seven times reaching about 11 mcf/d-14 mcf/d (3 mcm/d-4 mcm/d). On January 2020, Ahmed al-Abadi, a spokesman for the Iraqi Ministry of Electricity, announced that Iran's natural gas exports to Iraq had dropped from an agreed 88 mcf/d (3 mcm/d) to 11 mcf/d.<sup>16</sup> Iranian Oil Minister Bijan Namdar Zangeneh said exports had been cut due to a lack of payment from Iraq.<sup>17</sup> Zangeneh was quoted in Iranian media as saying: "They [Iraqis] do not pay us [the Oil Ministry] any money for the gas they import. Iraqis put the blame on Iran's sanctions and banking restrictions imposed by the US [started in 2018] that has almost made it impossible to transfer money through normal financial channels."<sup>18</sup> In

February 2019, the Central Banks of Iraq and Iran signed an agreement to pay Baghdad's debts to Iran, which Iran's Ministry of Petroleum said amounted to \$2 billion due to gas and electricity imports.<sup>19</sup> Iraq and Iran have also developed a financial mechanism to barter Iranian gas and electricity for humanitarian goods. Nevertheless, in January 2020, Iranian officials claimed that the Central Bank of Iraq had blocked the payment of \$5 million to Iran for natural gas imports. Iran cannot use this credit to make any purchases.<sup>20</sup>

### Iran's Electricity Export to Iraq

Iraq's electricity generation totaled about 103 billion kilowatt-hours (BkWh) in 2018.<sup>21</sup> Net generation in Iraq grew by an annual average of about 11 percent between 2007 and 2018.<sup>22</sup> While electricity generation in Iraq has increased over the past decade, distribution losses have also gone

16 Farsi Euronews, "Iran \$5 billion natural gas export revenue blocked in Iraq's Central Bank," January 29, 2020, <https://per.euronews.com/2020/01/29/iran-5-milliard-dollar-gas-export-blocked-iraq-central-bank-us-sanctions>.

17 Al-Arabiya, "Iran's export cut to Iraq was due to payment issue," January 26, 2020, <https://farsi.alarabiya.net/fa/2020/01/26/هیب-تقار-ع-هیب-ناری-اجزا-گت-ار-داص-ش-ه-اک>

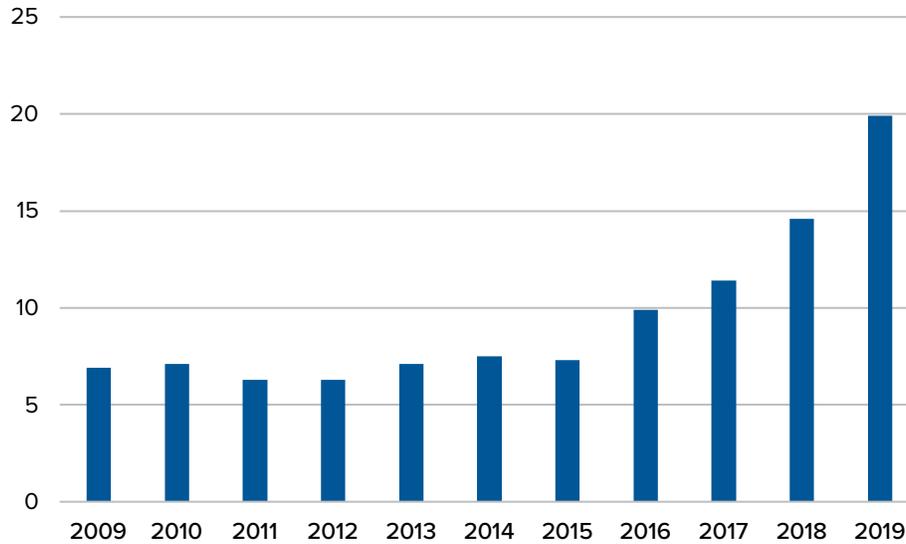
18 Iran Project, "Iraq buying Iran gas, but not paying," January 28, 2020, <https://theiranproject.com/blog/2020/01/28/iraq-buying-iran-gas-but-not-paying/>.

19 Anadolu Agency, "Iraq agrees on ways to pay due debts to Iran," February 6, 2019, <https://www.aa.com.tr/en/economy/iraq-agrees-on-ways-to-pay-due-debts-to-iran/1384979>.

20 Farsi Euronews, "Iran \$5 billion."

21 BP, *BP Statistical Review*.

22 BP, *BP Statistical Review*.

**Figure 4: Iraqi Natural Gas Consumption (2009-19) (billion cubic meters)**

Source: BP Statistical Review of World Energy 2020

up. Iraq lost on average about 42 percent of its total electricity supply between 2006 and 2016.<sup>23</sup>

To generate electricity, Iraq burns crude oil directly at power plants to make up for its limited feedstock of other power-generation fuels. In 2015, at its peak electricity consumption in the hot summer months from July to September, Iraq was using 223,000 barrels a day (b/d) of crude oil to generate electricity.<sup>24</sup> However, Iraq has started to use imported Iranian natural gas to generate electricity. As a result, the share of oil that is used in Iraqi power generation dropped from 169,000 b/d in 2016 to 129,000 b/d in 2017.

Since 2004, Iran has been exporting electricity to Iraq. This started with three lines with capacities of 400 kilovolts (kV). These lines were from Mersad to Diyala, Khorramshahr to Basra, and Karkheh to Al-Amarah. Two other 400 kV lines, from Sarpol-Zahab to Khanaqin and Marivan to Penjwen,

were added later. Iran's electricity exports to Iraq have increased markedly in recent years. From 2018 to June 2019, Iran's average electricity export to Iraq was 135,000 megawatts (MW) per day.<sup>25</sup> This increased to 361,000 MW per day on peak days in October 2019.<sup>26</sup> In 2019, Iraq imported more than 80 percent of Iran's electricity export.<sup>27</sup> On June 4, 2020, Iranian Energy Minister Reza Ardakanian announced the signing of a two-year contract with Iraq to export electricity in 2020 and 2021.<sup>28</sup>

### Iraq's Dependence on Iranian Gas and Electricity

Iraq is significantly dependent on natural gas and electricity imports. It was planning to invest about \$10 billion to reduce its dependence on Iran, but none of those projects have gained traction. According to al-Khatteeb, Iraq imports 1,200 MW of electricity per year and up to about 1.2 billion cubic feet a day (bcf/d) of natural gas during

23 EIA, *Iraq*.

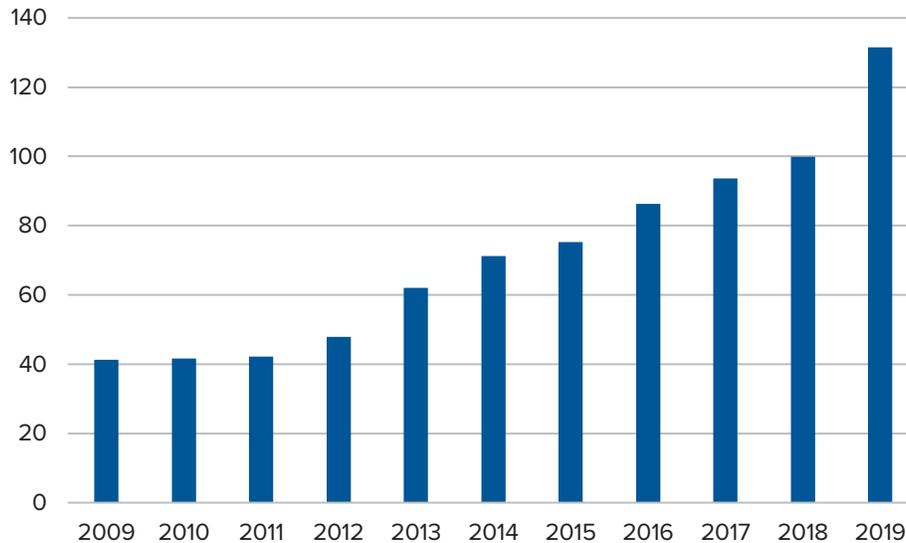
24 Joint Oil Data Initiative, July 2018, <https://www.jodidata.org>

25 IRNA (Islamic Republic News Agency), "Iran's electricity export to Iraq will increase," October 2019, <https://www.irna.ir/news/83537603/تغیای-دهاوخ-شی-ازف-اخراج-هب-ناری-اؤرب-تارداص>

26 IRNA (Islamic Republic News Agency). "Iran's electricity export."

27 Dalga Khatinoglu, "Iraq Has to Import Gas and Electricity from Iran For Years, Says Minister," Radio Farda, April 25, 2020, <https://en.radiofarda.com/a/iraq-has-to-import-gas-and-electricity-from-iran-for-years-says-minister/30576394.html>.

28 Reuters staff, "Iran signs two-year contract with Iraq to export electricity: IRNA," Reuters, June 4, 2020, <https://www.reuters.com/article/us-iran-iraq-electricity/iran-signs-two-year-contract-with-iraq-to-export-electricity-irna-idUSKBN23B131>.

**Figure 5: Iraqi Electricity Generation (2009-19) (Terawatt-hours)**

Source: BP Statistical Review of World Energy 2020

peak consumption.<sup>29</sup> Overall Iraq needs more natural gas and power generation imports to fill the gap between supply and demand.<sup>30</sup> Summer is usually the peak electricity consumption season in Iraq. Temperatures in the country's southern parts can reach 50 degrees Celsius (122 degrees Fahrenheit). Electricity shortages are common due to higher consumption. Electricity supply in Iraq was estimated at 19 gigawatts (GW) in 2019. It is expected to reach to 20 GW in 2020. However, the demand for electricity during peak consumption periods is about 25 GW.<sup>31</sup> Thus far, Iraq has met its electricity demand by importing energy from Iran. But there are still supply shortages during the summer months. US sanctions on Iran's energy exports have created a serious challenge for Iraq. It currently has no alternative sources of supply.

Since the latest round of Iranian sanctions under Trump, the United States has granted waivers to Iraq to maintain

its gas and electricity imports from Iran. These waivers were usually granted for either one hundred and twenty or forty-five days. Nevertheless, on April 26, 2020, the United States granted Iraq only a thirty-day waiver. After al-Kadhimi's government was confirmed in May, the United States granted Iraq a full waiver for one hundred and twenty days as a show of support for the new Iraqi government.<sup>32</sup> Following a phone call between US Secretary of State Michael R. Pompeo and al-Kadhimi on May 6, 2020, the US State Department issued a statement, which said: "In support of the new [Iraqi] government, the United States will move forward with a 120-day electricity waiver as a display of our desire to help provide the right conditions for success."<sup>33</sup>

Al-Khatteeb believes it will take three to four years timeline for Iraq to develop its power sector and implement the economic reform and tariff reform, and also to develop

29 Sara Vakhshouri's discussion with former electricity minister, Luay al-Khatteeb, November 3, 2020, Dania Saadi and Meghan Gordon, "Iraq seen struggling to invest \$10 billion to wean itself off Iranian gas and electricity imports," S&P Global Platts, April 23, 2020, <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/042320-iraq-seen-struggling-to-invest-10-bil-to-wean-itself-off-iranian-gas-and-electricity-imports>.

30 Sara Vakhshouri's discussion with former electricity minister, Luay al-Khatteeb, November 3, 2020,

31 Saadi and Gordon, "Iraq seen struggling."

32 Ali Hashem, "US grants Iraq a summer break from Iran electricity sanctions," Al-Monitor, May 7, 2020, <https://www.al-monitor.com/pulse/originals/2020/05/us-grant-iraq-waiver-iran-electricity-trump-pompeo-kadhimi.html>.

33 US Department of State, "Secretary Pompeo's Call with Iraqi Prime Minister Kadhimi," Office of the Spokesperson, readout, May 6, 2020, <https://www.state.gov/secretary-pompeos-call-with-iraqi-prime-minister-kadhimi/>.



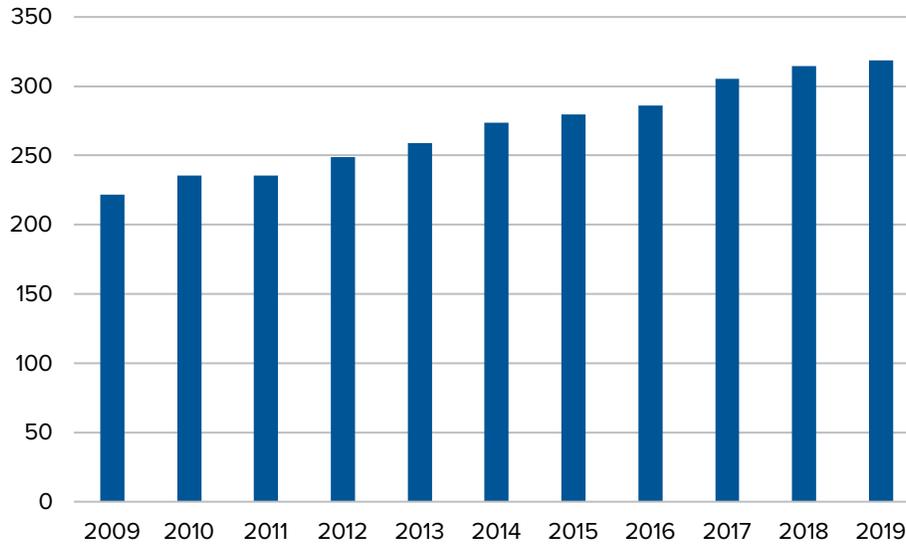
Iraqi Minister of Electricity Karim Waheed (R), U.S. Ambassador to Iraq Zalmay Khalilzad (2nd R) and Iraqi Prime Minister Nuri al-Maliki (3rd R) arrive to attend a ceremony at the Baghdad South Power Plant in Baghdad June 2, 2006. REUTERS/Ali Haider/Pool (BAGHDAD)

its gas network and capabilities.<sup>34</sup> Nevertheless, to reduce its energy independence to Iran and to expand its domestic natural gas and electricity production, Iraq has a serious hurdle to face. According to former minister Al-Khateeb, “achieving this goal requires an uninterrupted and clear government program. My statement on the three to four years of required timeline is a conditional statement because now the government of Iraq is changed and we are out, so the whole plan could be interrupted and could

be compromised.”<sup>35</sup> Iraq has now an interim government and will have an early election in June 2021, hence not only has the whole economic reform been interrupted but also the economic situation in Iraq has changed and COVID-19 has changed the whole game across the globe. Therefore many things have to be restructured in order for economic reform to move forward. “This requires a stable government with full term not something that changes every twelve months. Otherwise it will be impossible to fix the electricity

<sup>34</sup> Sara Vakhshouri's discussion with former electricity minister, Luay al-Khatteeb, November 3, 2020.

<sup>35</sup> Ibid.

**Figure 6: Iranian Electricity Generation (2009-19) (Tera-wat-hours)**

Source: BP Statistical Review of World Energy 2020

sector,” former Iraqi electricity minister al-Khatteeb noted.<sup>36</sup> Noteworthy that a stable government is a key requirement for Iraq to be able to attract international investment in its energy sector.

“Those three to four years need to be an uninterrupted timeline with a government that enjoys full executive authority and no interference from political entities and in an environment that is welcoming to investments and multinational participation,” al-Khatteeb told S&P Global Platts.<sup>37</sup>

### How Could Iraq Strengthen its Energy Security and Risk Resiliency?

US sanctions on Iran’s energy industry and exports have created significant legal and technical challenges for the flow of Iranian natural gas and electricity supplies to Iraq. Iraq has been seeking alternative sources to substitute the Iranian gas and electricity. A portfolio that consists of diverse, affordable, and uninterrupted sources of energy—alongside a demand management strategy—is required

to build a resilient energy system for the country and enhance its national security. On the supply side, capturing associated gas, expanding the share of renewable energy, connecting to the GCC electricity grid, and LNG imports could all address Iraq’s power supply needs. On the demand side, a national energy strategy is required to guarantee healthy demand growth and a sustainable and efficient energy system in the country. There is no doubt that a key to implementation of a solid energy strategy is access to international investment and financial resources, particularly during the COVID-19 pandemic, which has slashed Iraq’s oil revenue and its fiscal muscle.

### Connecting to the GCC Electricity Grid: An Alternative Option

In 2019, Iraq signed its first electricity import agreement with the GCC for a 300-kilometer power line that allows Iraq to import 500 MW of electricity from Kuwait to its southern port of Faw.<sup>38</sup> The two sides agreed that each would build the required infrastructure on its side of the border. Iraq completed its side in June 2020,<sup>39</sup> but not much has been

<sup>36</sup> Ibid.

<sup>37</sup> Saadi and Gordon, “Iraq seen struggling.”

<sup>38</sup> Middle East Monitor, “Iraq signs deals for electricity from Gulf States,” September 16, 2020, <https://www.middleeastmonitor.com/20190916-iraq-signs-deal-for-electricity-from-gulf-states/>.

<sup>39</sup> NAS News, “Iraq declares completion of electric connectivity with the Gulf,” June 27, 2020, <https://www.nasnews.com/view.php?cat=34134>.



A tower at the Basra South oil refinery in the southern Iraq city of Basra flares as it cooks off natural gas in this May 20, 2004 file photograph. REUTERS/Zohra Bensemra CLH/WS

done by the GCC side. The project was to be the highlight of al-Kadhimi's visit to Saudi Arabia on July 20, 2020. On July 16, 2020, the US State Department released a joint US-Iraq-GCC statement expressing the United States' support for the project. "The Government of Iraq, Gulf Cooperation Council, and United States have renewed their full support for the Gulf Cooperation Council Interconnection Authority (GCCIA) project to connect the electricity grids of Iraq and the GCC. The United States is committed to facilitating this project and providing support where needed," the statement said.<sup>40</sup>

However, the government of Saudi Arabia cancelled al-Kadhimi's visit, citing the sudden illness of King Salman bin Abdulaziz. The Iraqi prime minister visited Iran the following day—his first foreign visit as prime minister. The two sides renewed their previous agreements to cooperate on commerce and other sectors.<sup>41</sup>

According to al-Khatteeb, Iraq held separate talks with Saudi Arabia, Jordan, and Turkey to "import electricity not only to supply Baghdad but also the northern part of Iraq as a pathway to other countries."<sup>42</sup> Yet with the huge deficit

40 US Department of State, "Statement on US/Iraq/GCC Cooperation," media note, July 16, 2020, <https://www.state.gov/statement-on-u-s-iraq-gcc-cooperation/>.

41 Abbas Kadhimi, "Iranian foreign minister's visit aggravates Iraqi-Saudi rapprochement," *MENASource*, July 23, 2020, <https://www.atlanticcouncil.org/blogs/menasource/iranian-foreign-ministers-visit-aggravates-iraqi-saudi-rapprochement/>.

42 Kadhimi, "Iranian foreign minister's visit."

in the GCC's overall gas market, the availability of adequate supplies from the GCC as an alternative (and substitute) to Iran's supplies to Iraq is uncertain. Nevertheless, the GCC's gas supply gap could potentially reduce in the medium to long term if the GCC countries expand their LNG import facilities. Kuwait recently announced that it is planning to open the largest LNG receiving terminal in the Middle East in March 2021. The Al-Zour LNG terminal is expected to receive 22 million tons of LNG a year, which will double the region's capacity.<sup>43</sup>

### Capturing Associated Gas

Iraq continues to flare a significant volume of associated gas as a result of insufficient processing facilities. The IEA estimates that it has captured (11.5 bcm) of associated gas and flared (16.8 bcm) in 2018. In August 2020, General Electric Co. and the Iraqi Ministry of Electricity signed two agreements worth more than \$1.2 billion to expand Iraqi power generation capacity and enhance its electricity transmission network.<sup>44</sup> Capturing associated gas and using it as feedstock for power generation is a specific part of these agreements. The first agreement aims to capture 30 percent to 40 percent of the associated gas that is currently flaring and to correspondingly generate 3.3 GW of electricity.<sup>45</sup> Iraq also imports gas from Iran, totaling around (32 mcm) daily as of April 2020.<sup>46</sup> The United States has repeatedly granted waivers for Iraq to import Iranian gas and electricity, recognizing its indispensability. But the periods of these waivers have been inconsistent, and the United States has repeatedly pressured Baghdad to find alternative supplies.

### Renewable Strategy

Iraq could utilize its abundant sunshine, hydropower, and wind to generate electricity. Its gains in electricity generation have been remarkable: 41.3 Terrawatt-hour (TWh) in 2009 to 131.5 TWh in 2019.<sup>47</sup> Out of this, more than half of the electricity was generated from natural gas, and shares of solar and hydropower were 0.057 TWh and 2.5 TWh, re-

spectively. The remainder was generated from crude oil, fuel oil, and diesel. Iraq has possessed considerable hydropower capacity since the 1950s. But the share of hydropower in its electricity generation has dropped significantly over time. In 2004, Iraq generated 5.7 TWh of electricity from hydropower. Dams and hydropower generators have suffered due to poor construction, largely resulting from years of military conflict [the Iran-Iraq War, the US invasion in 2003, and the rise of the Islamic State of Iraq and al-Sham (ISIS)]. Combined with earthquakes, lower levels of available water due to drought, and the effects of dam construction by Turkey and Iran, Iraqi hydropower faces significant hurdles. To achieve a successful renewables strategy, Iraq should allow multinational companies to access the Iraqi market. Joe Anis, president and CEO of Middle East, North Africa and South Asia at GE Gas Power, said in June 2020, "the company is interested in any renewable projects that Iraq could undertake."<sup>48</sup>

### Conclusion

Iraq is struggling to increase its energy security and diversify its supplies. It will take several years, coupled with billions of dollars of investment, for Iraq to reduce its dependence on Iran. Accordingly, in the immediate short term, Iran remains the most economically viable source of energy for Iraq. Iraq's financial and technical capabilities, as well as available options for gas utilization and electricity generation, are limited without access to Iran's supplies. The COVID-19 pandemic has reduced Iraq's oil revenue and left it with a significantly reduced budget which prevents it from increasing both its domestic natural gas production capacity and its ability to capture associated gas.

Connecting to the GCC grid (or relying on gas imports from the GCC) is not a viable and immediate substitute for Iraq's imports of Iranian gas and electricity supplies because of the gas deficit in this market. Specifically, the low prices of Iranian gas and electricity make them a more attractive option for Iraq than LNG. Hence, in the short term, Iranian gas and electricity appear to be the only available supply

43 Verity Ratcliffe and Fiona MacDonald, "Kuwait Aims to Finish Mideast's Biggest LNG Terminal by March," Bloomberg, September 15, 2020, <https://www.bloomberg.com/news/articles/2020-09-15/kuwait-aims-to-finish-mideast-s-biggest-lng-terminal-by-march>.

44 Reuters staff, "GE signs power agreements worth over \$1.2 billion with Iraq," Reuters, August 19, 2020, <https://www.reuters.com/article/us-ge-iraq-idUSKCN25F2SM>.

45 Dania Saadi, "GE ready for talks with Iraq to generate power from capturing flared gas: executive," S&P Global Platts, June 22, 2020, <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/062220-ge-ready-for-talks-with-iraq-to-generate-power-from-capturing-flared-gas-executive>.

46 *Tehran Times*, "Iran's daily gas exports to Iraq at 32 mcm," April 27, 2020, <https://www.tehrantimes.com/news/447238/iran-s-daily-gas-exports-to-iraq-at-32-mcm>.

47 BP, *BP Statistical Review*.

48 Saadi, "GE ready for talks."

source that will meet Iraqi needs in terms of volume and price requirements.

In the long term, however, a portfolio of diverse supply sources is required to create energy resiliency and security for Iraq. Iran's low-cost supply sources will always remain an option, but hostile relations between Iran and the United States could jeopardize the supply flow to Iraq. Therefore, with the help of the World Bank, the International Monetary Fund, and international energy companies, Iraq should expand its domestic capacity in natural gas production, increase its use of associated gas, and expand electricity generation from renewable energy. LNG would also be an option to increase Iraq's energy security and risk resiliency.

At the same time, however, Iraq should implement an energy demand strategy to control its demand growth and efficiency. To achieve these larger targets, domestic stability and national unity remain crucial factors, particularly when it comes to attracting international investment.

At the end, as described in detail and brought up in our discussion with Luay al-Khatteeb, it will take three to four years for Iraq to reduce its dependency on Iran's electricity and natural gas imports. "Those three to four years need to be an uninterrupted timeline with a government that could have full executive authority and no interference from political entities and in an environment that is welcoming to investments and multinational participation."<sup>49</sup>

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49 Sara Vakhshouri's discussion with former electricity minister, Luay al-Khatteeb, November 3, 2020,



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