Igniting Action to Reduce Gas Flaring:
Real Opportunities. Real Projects. Real Results.

Country Case Study:
Arab Republic of Egypt

Columbia Center on Sustainable Investment
A JOINT CENTER OF COLUMBIA LAW SCHOOL AND COLUMBIA CLIMATE SCHOOL

capterio

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Context to this case study

This case study is part of a broader report by the Columbia Center on Sustainable Investment and Capterio, which analyzes gas flaring in depth. The report presents extensive findings and a practical set of actionable recommendations for governments, national oil companies, international oil companies, and other stakeholders. The full report and case studies are available here.

Despite bold commitments made over the past two decades, global gas flaring remains stubbornly high—at around 140–150 BCM per year—emitting up to 1 billion metric tons of CO_2-equivalent greenhouse gases annually, and representing as much as $30 billion per year in lost revenue.

We believe flaring reductions are not only technically achievable, but also commercially compelling. By capturing and using flared gas, companies and governments can increase revenue, enhance energy security, reduce emissions, and accelerate the energy transition. Among all decarbonization options, reducing gas flaring is one of the fastest and most cost-effective "quick wins."

Countries with high flaring levels can make substantial progress—if key commercial, organizational, and political challenges are addressed. Delivering flare-capture projects at scale requires a thoughtful, integrated, and collaborative approach, supported by strong leadership, aligned incentives, and a relentless focus on delivery over rhetoric.

The full report examines six case studies—including this one—to illustrate how flaring can be reduced. We go beyond analyzing the "what" and "why" of flaring, and focus on the "how" of unlocking and accelerating actual delivery. Three of these cases are project-based examples from Angola, the Kurdistan Region of Iraq, and Argentina, where flared gas has been successfully captured and used. The other three country-based studies—covering Federal Iraq, Egypt, and Algeria—highlight both progress and untapped opportunities.

The full report also explores the systemic barriers to progress, the lessons learned from the case studies, together with some innovative life-cycle considerations for greenhouse gas emissions, and a detailed set of recommendations.

We encourage readers of this case study to explore the broader report and the other case studies. Together, we hope they offer a meaningful contribution to global efforts to end routine gas flaring.

Arab Republic of Egypt Case Study

Egypt flares a modest amount of gas compared to other countries, some 1.9 BCM in 2023, placing it 14th globally.[1] The 2023 figure represents recent progress in reducing flaring. Yet Egypt's flaring intensity remains high at 9.1 m^3 per barrel of oil and condensate produced, almost double the global average. Egypt's methane emissions from venting, leaking and incomplete flare combustion in oil and gas production are also significant, adding another 1.0 BCM per year.[2]

Egypt's stated policy for many years has been to reduce flaring and venting—it signed the World Bank's Zero Routine Flaring by 2030 initiative in 2017 and the Global Methane Pledge in 2022, and it has announced ambitious flare capture targets in its national energy efficiency strategy. Egypt also hosted COP27 in 2022 and won the support of the then US administration and the EU for reductions in emissions from flaring, venting and leaking.[3] Several flare reduction projects have been implemented in Egypt in recent years, and there appear to be attractive opportunities to do more.

Gas supply is essential to Egypt's economy, as gas is used to fuel the vast majority of Egypt's electricity generation and accounts for more than half its total energy supply, according to the IEA. While Egypt has historically met most of its gas requirements from its own fields, the gas supply situation in Egypt today is challenging, with demand growing and production declining. Egypt has had to import significant volumes of gas in the form of LNG in recent years, and it relies in part on gas supplies from Israel. It experienced regular power blackouts in the summers of 2023 and 2024 and has announced plans to increase expensive LNG imports to avoid further blackouts in the summer of 2025.

Yet Egypt has a valuable opportunity to capture and use more wasted gas—helping to generate revenue and improving energy security by meeting growing domestic demand while reducing reliance on exports. Our analysis finds that 75% of Egypt's flared volume (most of which is in the Western Desert region) is within 20 km of an existing gas pipeline, which offers hope (should capacity be available) that at least some of the flared and vented gas could be captured and transported to market. Compared to its announced strategy of relying on new non-associated gas licensing rounds (which are long-term solutions and subject to exploration risk), capturing wasted gas represents an attractive "quick win."

If the Egyptian Government is to realize its announced ambitions to reduce flaring, venting and leaking, it will need to translate its visions into concrete steps, by:

- Creating an enabling investment environment by pursuing ongoing gas sector reforms in the long-term, while more immediately ensuring that its state-owned companies (which currently have a *de facto* monopoly on gas purchases) stand ready to buy captured associated gas at an appropriate price, with sufficient financial resources to meet that commitment.
- Fostering common "cluster" infrastructure projects to process and transport gas from multiple scattered flares, to achieve economies of scale.
- Adjusting concession agreements to provide fiscal incentives for flare reduction projects, accompanied by appropriate financial penalties for flaring (and venting), once a favorable investment environment for capturing wasted gas is established.

1 "Global Gas Flaring Data," World Bank Group, June 2024, https://www.worldbank.org/en/programs/gasflaringreduction/global-flaring-data.
2 International Energy Agency (IEA), *Global Methane Tracker 2025*, May 2025 https://www.iea.org/reports/global-methane-tracker-2025.
3 Capterio, "President Biden Supports Capterio's Initiatives on Flare, Vent and Leak Reduction in Egypt," news release, November 11, 2022, https://flareintel.com/news/president-biden-supports-capterios-initiatives-on-flare-vent-and-leak-reduction-in-egypt.

To achieve all of this and meet its laudable vision statements, Egypt needs to make flare reduction a priority. It should create a dedicated task force or commission and focus on realizing concrete results. The task force's first step would be to establish a national flare reduction roadmap to identify opportunities based on robust data. The objective will be to identify readily available projects to implement in the near term, which can then serve as a model for a comprehensive flare reduction program. These efforts should be strongly supported by international and multilateral financial institutions focused on global flaring and methane reduction.

The Crucial Role of Natural Gas in Egypt: A Challenging Environment

Natural gas is the principal form of fuel in Egypt, representing approximately 79% of power generation and 52% of total energy supply in 2022, according to the International Energy Agency.[4] According to the Executive Managing Director of Egypt's main state-owned gas sector holding company, EGAS, approximately 57% of Egypt's natural gas consumption in fiscal year 2022/2023 (which ends in June) was used for electricity, 25% for industry, 10% for petroleum and gas derivatives, 6% for households and the remainder for transportation.[5]

Egypt produces significant volumes of non-associated gas, although it is experiencing shortfalls due to declining production. As recently as 2021, Egypt produced approximately 6.1 BCM of natural gas monthly, but its October 2024 production was reported as only 3.85 BCM.[6] Approximately 75% of Egypt's natural gas production in fiscal year 2022/2023 came from offshore gas fields in the Mediterranean, including approximately 40% from the giant Zohr field operated by a joint venture between ENI and the state-owned EGPC (although Zohr is reported to have experienced recent production declines).[7]

As the graphic below illustrates, Egypt was a substantial gas exporter (as LNG) until 2013, but its exports fell precipitously following a sharp drop in gas production during the Arab Spring and its immediate aftermath. This led the Government to divert supplies from LNG production to the domestic market, generating a dispute that led to the shutdown of one of Egypt's two LNG facilities from 2013 until 2021.[8] As the Zohr field came online and the LNG dispute was settled, Egypt adopted a strategy of becoming a regional energy hub, importing gas from Israel and re-exporting it to increase liquefaction volumes and exports.

Yet despite initial success in increasing exports, a combination of reduced production and increased demand (due to the commissioning of new power plants and greater use of air-

4 "Egypt: Energy Mix," International Energy Agency (IEA), 2022, https://www.iea.org/countries/egypt/energy-mix.

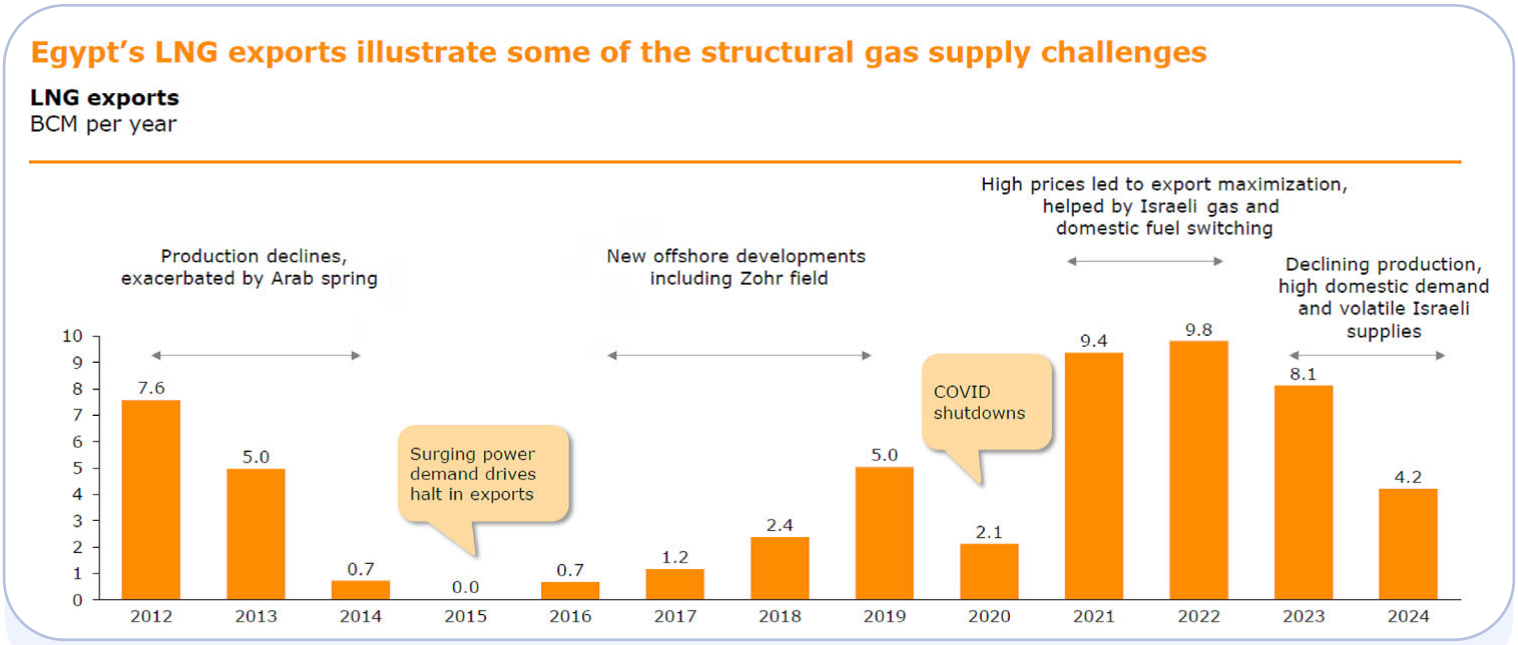
5 Sarah Samir, "Egypt's Natural Gas Production Reaches 6.2 bcf/d in 2022/23," *Egypt Oil & Gas Group*, October 1, 2023, https://egyptoil-gas.com/news/egypts-natural-gas-production-reaches-6-2-bcf-d-in-2022-23/.

6 Stuart Elliott, "Egypt Buoyed by New Upstream Work Amid Flagging Gas Production," *S&P Global Commodity Insights*, January 14, 2025, https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/011425-feature-egypt-buoyed-by-new-upstream-work-amid-flagging-gas-production.

7 Jolly Monsef, Mariam Ahmed, and Abdullah Mostafa, *The Mediterranean Sea and Nile Delta: Egypt's Natural Gas Treasures* (Cairo: Egypt Oil & Gas Group, March 2023), https://egyptoil-gas.com/wp-content/uploads/2023/12/Curbing-Methane-Missions-in-The-Oil-and-Gas-Sector.pdf; Eduard Cousin, "Out of Gas? Egypt's Ambitions to Become a Regional Gas Hub are Dwindling," *Al Jazeera*, October 4, 2023, https://www.aljazeera.com/news/2023/10/4/all-gassed-up-egypts-ambitions-to-become-a-regional-gas-hub-are-dwindling.

8 *See* Ksenia Koroteeva, "Egypt Found Liable for the Shut-Down of an Electricity Plant During the 2011 Uprising," *International Institute for Sustainable Development Investment Treaty News*, December 21, 2018, https://www.iisd.org/itn/2018/12/21/egypt-found-liable-for-the-shut-down-of-an-electricity-plant-during-the-2011-uprising-ksenia-koroteeva/; ENI, "Eni Closes Agreement with Partners for Restart of Damietta Liquefied Natural Gas Plant in Egypt and Amicable Settlement of Union Fenosa Gas Disputes," press release, March 10, 2021, https://www.eni.com/en-IT/media/press-release/2021/03/eni-closes-agreement-partners-restart-damietta-liquefied-natural-gas-plant-egypt.html.

conditioning during lengthy heatwaves)[9] has led to a sharp decline in LNG export volumes in 2023 and 2024, as shown in Figure 1.



Source: CEICdata; Shell LNG report.

Figure 1: Egypt's LNG exports have been volatile over the past decade, with sharp declines recorded in 2023 and 2024.

The gas production decline is at least in part attributed to lower investments by international companies in light of substantial arrears of payments due to IOCs—which are reported to have been on the order of US$6 billion in 2024.[10] The payment issues have been exacerbated by financial pressure from reduced revenues from tourism, lower remittances and a decline in revenues from the Suez Canal due to Houthi attacks on international cargo ships.[11] These have required Egypt to seek waivers of performance criteria under arrangements for financial assistance from the International Monetary Fund put in place in 2023 due in part to increased commodity prices after Russia's invasion of Ukraine.[12] Compounding the supply side challenges, gas supplies from Israel (which Egypt imports to increase the availability of natural gas for liquefaction and export) have periodically been interrupted due to the Gaza conflict.[13]

While Egypt's gas production has declined, gas demand has risen, especially for power generation and within that, for air conditioning. According to the IEA,[14] electricity production from gas rose from 132 TWh in 2015 to 175 TWh in 2020, before falling back somewhat to

9 Heba Saleh and Malcolm Moore, "Egypt's Journey from Gas Bonanza to Power Blackouts," *Financial Times*, September 2, 2024, https://www.ft.com/content/b86c9f85-715e-4b12-a19a-9776c6251c9e.

10 Ibid

11 "Arab Republic of Egypt Third Review Under the Extended Arrangement Under the Extended Fund Facility, Monetary Policy Consultation Clause, Requests for Waivers of Nonobservance of a Performance Criterion and Applicability of Performance Criteria, and Request for Modification of Performance Criteria – Press Release; and Staff Report," IMF Country Report No. 24/274 (Aug. 2024), pp. 9-10, https://www.imf.org/en/Publications/CR/Issues/2024/08/26/Arab-Republic-of-Egypt-Third-Review-Under-the-Extended-Arrangement-Under-the-Extended-Fund-553968 ; IMF, "Executive Board Completes the Fourth Review of the Extended Fund Facility Arrangement for Egypt, Approves the Request for an Arrangement Under the Resilience and Sustainability Facility, and Concludes the 2025 Article IV Consultation," press release, (Mar. 2025) https://www.imf.org/en/News/Articles/2025/03/11/pr-2558-egypt-imf-completes-4th-rev-eff-arrangement-under-rsf-concl-2025-art-iv-consult.

12 *See* International Monetary Fund, "Arab Republic of Egypt: Request for Extended Arrangement Under the Extended Fund Facility – Press Release; and Staff Report," press release, Country Report No. 02/2023, January 10, 2023, https://www.imf.org/en/Publications/CR/Issues/2023/01/06/Arab-Republic-of-Egypt-Request-for-Extended-Arrangement-Under-the-Extended-Fund-Facility-527849.

13 "War and Waste: How Israel-Hamas Tensions Highlight Untapped Gas and Decarbonisation Opportunities in Egypt and Beyond," Capterio, October 10, 2023, https://flareintel.com/news/war-and-waste-how-israel-hamas-tensions-highlight-untapped-gas-and-decarbonisation-opportunities-in-egpyt-and-beyond.

14 "Egypt: Energy Mix," International Energy Agency (IEA), 2022, https://www.iea.org/countries/egypt/energy-mix.

165 TWh in 2022 (EnerData estimates that it increased to 174 TWh in 2023[15]). While Egypt has announced ambitions to increase electricity production from renewable sources[16] (and indeed has, in the Benban Solar Park, at 1.6 GW, one of the largest solar plants in the world), it has not met its initial announced targets, and remains heavily dependent on natural gas for electricity generation.[17]

To attempt to make up for the natural gas production shortfalls, Egypt has recently chartered two floating storage and regasification units, importing approximately US$1.2 billion of LNG (mainly from the United States) in 2024.[18] Despite these imports, the decline in gas production led to widely reported blackouts in the summers of both 2023 and 2024.[19] Capterio's analysis of data from the Energy Institute also shows that, in an effort to conserve gas, some power stations substituted liquid fuels for gas. Egypt has announced that it expects to avoid blackouts in the summer of 2025,[20] relying on growing gas imports – in February 2025, Egypt reportedly signed agreements worth approximately $3 billion with Shell and TotalEnergies to import 60 cargoes of LNG in 2025.[21]

Egypt is pursuing initiatives to increase domestic production of non-associated gas. In August 2024, Egypt's Ministry of Petroleum and Mineral Resources (MoPMR) announced a program of investment incentives designed to increase oil and gas production, and to address its payment arrears through the allocation of increased production to Egypt's international partners. At the same time, the MoPMR announced that EGAS would launch a new bid round for offshore gas exploration and development, for which applications were due in February 2025,[22] plus an additional new bid round was launched in March 2025.[23] In addition, ENI, bp, Chevron and ExxonMobil have reported recent exploration discoveries in the Nile Delta (although it is not clear whether this indicates that Egypt has cleared or reduced its payment arrears).[24]

While these initiatives may prove to be effective in increasing Egypt's production of non-associated gas, this depends on success in identifying commercial discoveries or producing from development wells. Moreover, it will likely take years before much of the increased production will become available, while the cost of the required investments is likely to be substantial. Flare reduction would seem to be an obvious nearer-term solution that can very likely be implemented at a lower cost and with much lower technical/subsurface risk. We turn to the potential for flare reduction in Egypt in the next section.

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15 "Egypt Power Consumption," Enerdata, 2024, https://www.enerdata.net/estore/energy-market/egypt.

16 Arab Republic of Egypt: Ministry of Planning and Economic Development, *The National Agenda for Sustainable Development: Egypt's Updated Vision 2030*, (2023), https://mped.gov.eg/Files/Egypt_Vision_2030_EnglishDigitalUse.pdf.; "Egypt's Second Updated Nationally Determined Contributions" (June 2023), pp. 9, 11–13, https://unfccc.int/sites/default/files/NDC/2023-06/Egypts%20Updated%20First%20Nationally%20Determined%20Contribution%202030%20%28Second%20Update%29.pdf.

17 "Source of Electricity Generation," International Energy Agency (IEA), 2022, https://www.iea.org/countries/egypt/electricity. (showing that less than 5% of Egypt's electricity was produced with wind and solar in 2022, and only 12% was produced from all renewable sources including hydropower).

18 Heba Saleh and Malcolm Moore, "Egypt's Journey from Gas Bonanza to Power Blackouts," *Financial Times*, September 2, 2024, https://www.ft.com/content/b86c9f85-715e-4b12-a19a-9776c6251c9e.

19 "Egypt Temporarily Extends Daily Power Cuts to Three Hours," *Reuters*, June 24, 2024, https://www.reuters.com/world/africa/egypt-temporarily-extends-daily-power-cuts-three-hours-2024-06-24/.

20 "Sarah Samir, "No Power Cuts Expected in Summer 2025, Says Madbouly," *Egypt Oil & Gas Group*, April 10, 2025, https://egyptoil-gas.com/news/no-power-cuts-expected-in-summer-2025-says-madbouly/.

21 Saski Jalan et al., "Egypt Secures $3 Bil LNG Deal With Shell, TotalEnergies to Meet 2025 Demand," *S&P Global Commodity Insights*, February 7, 2025, https://www.spglobal.com/commodity-insights/en/news-research/latest-news/lng/020725-egypt-secures-3-bil-lng-deal-with-shell-totalenergies-to-meet-2025-demand-sources.

22 Arab Republic of Egypt Ministry of Petroleum and Mineral Resources, "MoPMR Announces New Gas Exploration Incentives," press release, August 27, 2024, https://www.petroleum.gov.eg/en/media-center/news/news-pages/Pages/mop_27082024_01.aspx.

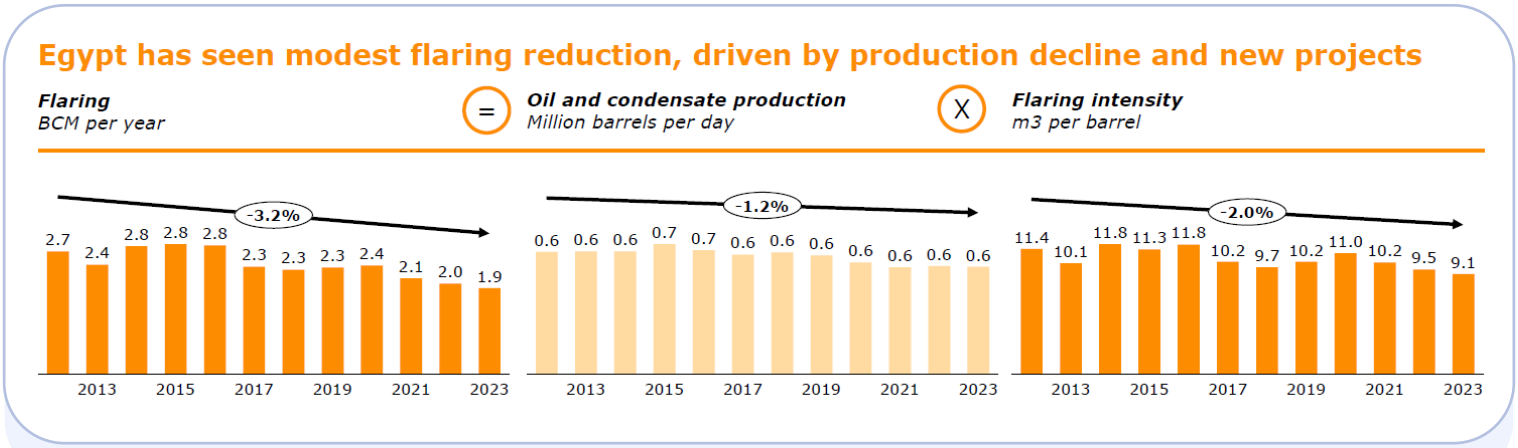
23 Arab Republic of Egypt Ministry of Petroleum and Mineral Resources, "EGAS Launches March 2025 Bid Round," press release, March 3, 2025, https://www.petroleum.gov.eg/en/media-center/news/news-pages/Pages/mop_03032025_01.aspx.

24 Stuart Elliott, "Egypt Buoyed by New Upstream Work Amid Flagging Gas Production," *S&P Global Commodity Insights*, January 14, 2025, https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/011425-feature-egypt-buoyed-by-new-upstream-work-amid-flagging-gas-production.

Gas Flaring in Egypt: Recent Progress and Additional Opportunity

Overview of flaring in Egypt

Egypt's 2023 flaring volume of 1.9 BCM reflects progress, particularly in recent years, with annual flaring down from 2.8 BCM less than a decade ago (Figure 2). While part of the reduction is driven by a decline in oil production (from more than 650 kb/d from 2012 to 2018, to between 560 and 570 kb/d since 2021), Egypt's underlying flaring intensity has also declined, falling by an average of 2% per year since 2012, to 9.1 m^3/bbl in 2023. However, this is almost twice the global average of 4.9 m^3/bbl.



Source: World Bank; Captrio analysis.

Figure 2: Flaring in Egypt and its underlying driver (oil and condensate production) and the derived flaring intensity. Flaring is modestly lower, driven mostly by improving flaring intensity (a measure of performance), but also partly by declining oil and condensate production.

Flared gas represents a substantial economic opportunity for Egypt. When an estimated 1.0 BCM of methane from venting, incomplete combustion at flares and fugitive emissions are included, the total volume of wasted gas that could potentially be captured rises to 2.9 BCM per year, representing up to 60 million CO_2-equivalent metric tons per year.[25] If all of this gas were sold for export at the average DES East Mediterranean Marker[26] for January 2025 ($14.24 per MMbtu[27]), the annual revenue earned would be over US$1.6 billion. Put differently, the gas wasted through flaring, venting, incomplete combustion and leaking represents about half the volume of LNG to be imported under the $3 billion agreement with Shell and TotalEnergies announced in February 2025.

According to a September 2022 analysis by Capterio and the Clean Air Task Force, approximately 90% of Egypt's gas flaring appears to be "routine" in nature, at least in the sense that it happens almost every day,[28] pointing to an opportunity for regular deliveries if the gas can be captured. Capterio highlighted in this study that approximately 75% of the flared volume is within 20 km of an existing gas transmission pipeline. Similarly, a study conducted by Carbon Limits in January 2016 (for the European Bank for Reconstruction and Development, EBRD) found that more than half of Egypt's flaring sites were within 5 km

25 Assuming a Global Warming Potential of methane of 82.5x that of CO2, over a 20-year period.

26 "DES East Mediterranean LNG Cargo Assessment Launched, S&P Global Commodity Insights, December 20, 2023, https://www.spglobal.com/commodity-insights/en/pricing-benchmarks/our-methodology/subscriber-notes/122023-platts-launches-des-east-mediterranean-lng-cargo-assessment.

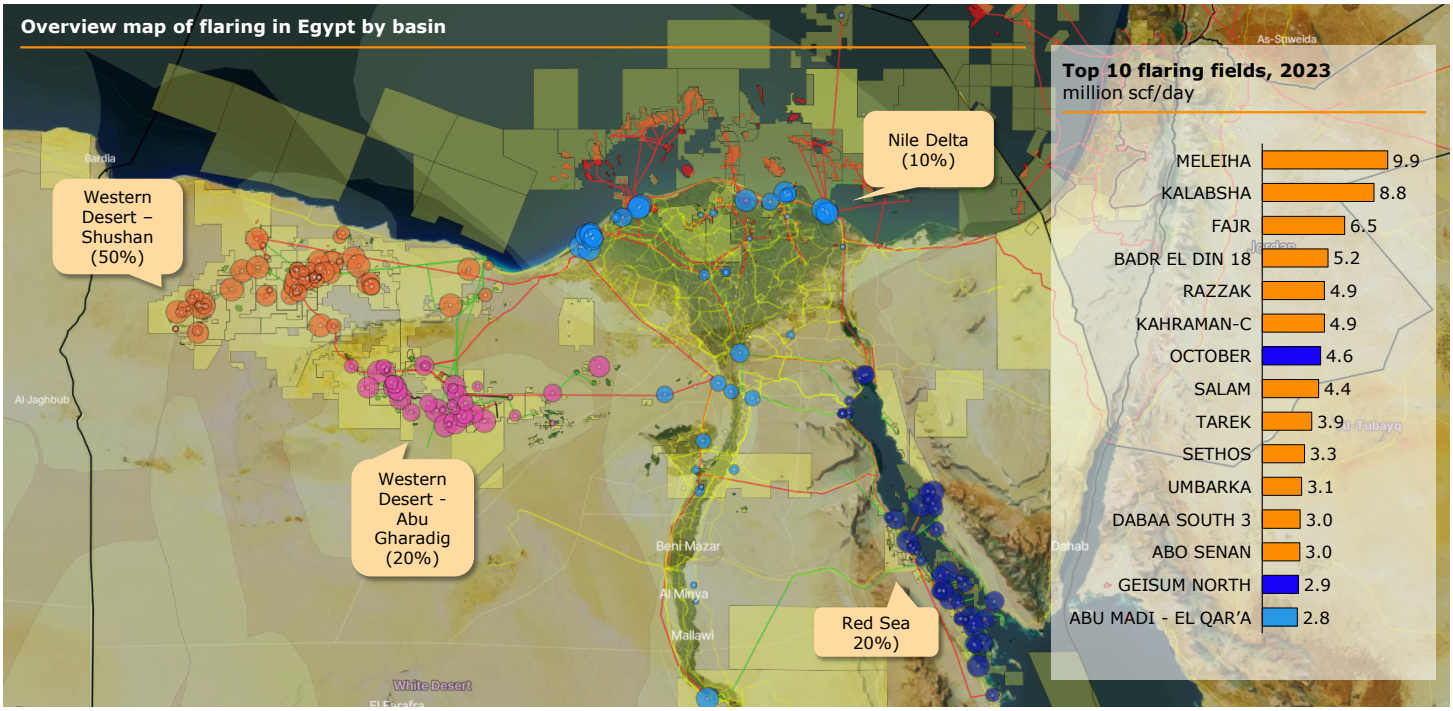
27 Ibid

28 Mark Davis et al., "Leadership on flaring in Egypt: Recent successes and future opportunities in the lead-up to COP27," press release, March 2022, https://flareintel.com/insights/leadership-on-flaring-in-egypt-recent-successes-and-future-opportunities-in-the-lead-up-to-cop27

of an existing pipeline or gas processing facility.[29] While neither analysis reviewed in detail the pipeline spare capacity, these data suggest there may be substantial opportunities to capture and utilize flared gas without prohibitive new infrastructure investments.

Most of Egypt's flares are relatively small (with an average size of around 1.3 million scf/day), and only four fields average flaring rates above 5 million scf/day. The majority of flared volume (some 70%) occurs in the Western Desert region. As shown in Figure 3, the northern area of the Western Desert connects via the Obaiyad east-west pipeline to the LNG export infrastructure, and the southeastern area connects via the Southern Gas Pipeline via from the heartland in the Abu Gharadig basin. While many flares are somewhat isolated between the two pipelines today—plus some are small, suggesting a clustered development may be required—plans have been announced by Agiba (a joint venture between an affiliate of ENI and the state-owned EGPC) to construct a new processing facility with 100 mmscf/d of capacity to become operational in 2026, as well a new gathering network and pipeline to connect the basin to major gas infrastructure.[30] Other options are possible.

Egypt's flaring is dominated by the Western Desert, and most flares are small



Source: Capterio FlareIntel; World Bank. I Pipelines in red (gas) and green (oil); powerlines in yellow.

Figure 3: Overview of flaring in Egypt highlighting the key basins and the top flaring fields. Data from the World Bank and Capterio's FlareIntel platform. Most of the larger fields are in the Western Desert. Here the main oil fields are (currently, at least) somewhat disconnected from the gas pipeline infrastructure that runs east from the Obaiyad field.

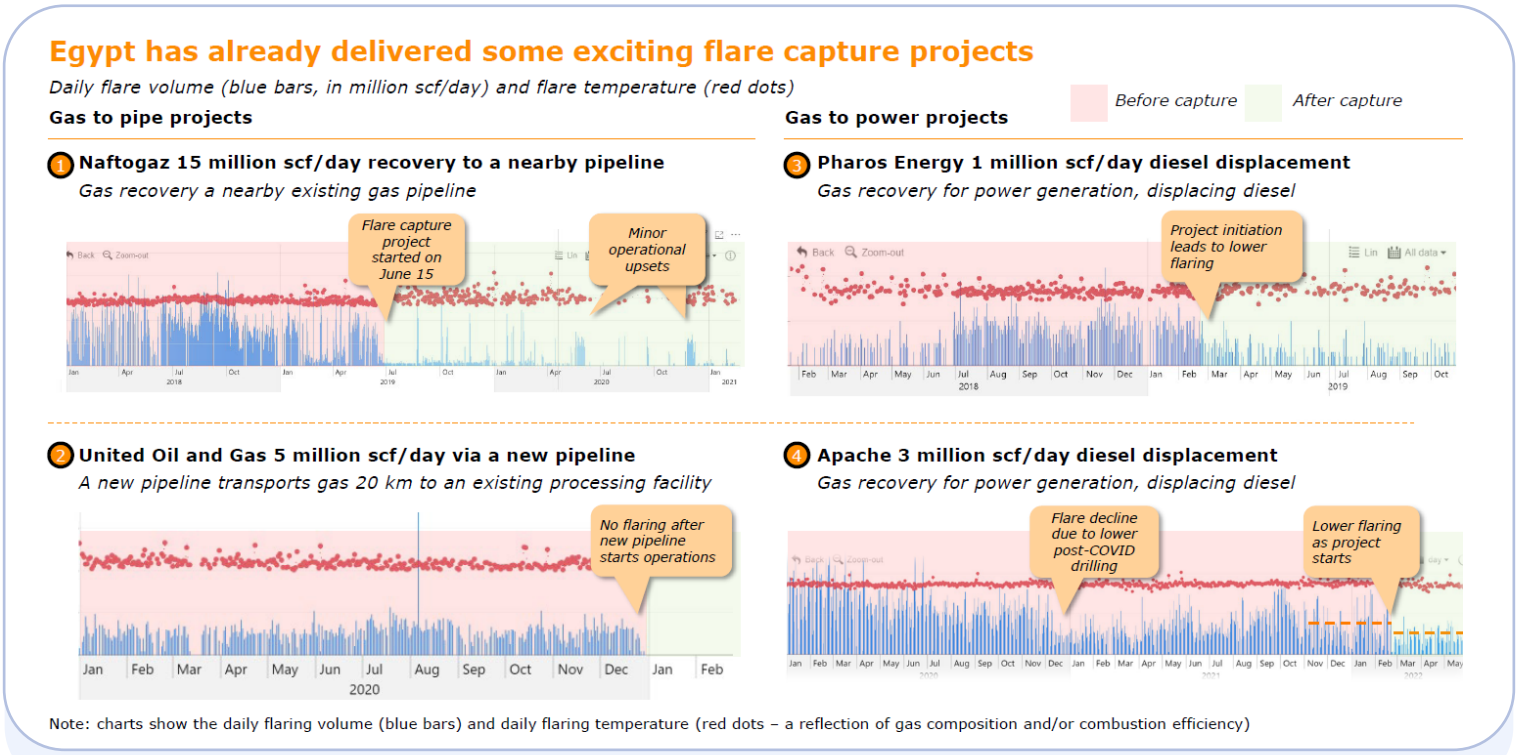
29 Carbon Limits AS, "Associated Petroleum Gas Flaring Study for Egypt, Final Report," Prepared for the European Bank for Reconstruction and Development (Apr. 2016), p. 15.

30 ENI, ENI in Egypt, (Cairo: 2023), https://www.eni.com/content/dam/enicom/documents/eng/actions/global-activities/egypt/mediakit/BROCHURE-EGITTO-2023.pdf.

Recently Delivered Flare Reduction Projects in Egypt

Some of the recent flare reduction in Egypt can be attributed to a number of discrete flare capture projects.[31] Several operators, starting with Shell (before its upstream exit)—made flare capture an integrated element of their decarbonization programs, with electrification of upstream operations a core priority.

Capterio's 2022 study[32] profiled four successful gas capture projects delivered between 2019 and 2022. The projects were of two types: gas to power (sometimes as part of an in-field electrification program), and gas to pipeline—although a range of other solutions have been considered (with EGPC strongly considering options to generate and truck compressed natural gas, CNG[33]). Collectively, these projects captured some 240 MCM per year (about 24 million scf/day) and reduced direct emissions from flaring by approximately 1.3 million CO2-equivalent tonnes per year. The data presented in Figure 4 shows flaring in the "before" and "after" cases and provides independent verification of the success in the flaring reduction.



Source: Capterio FlareIntel.

Figure 4: Profiles of gas flaring at 4 key flare capture projects in Egypt, grouped into gas to pipeline projects (left) and gas to power projects (right). Blue bars represent the flaring volume and red dots are the flare temperature, presented on a daily basis, from Capterio's FlareIntel platform. The pink sectors highlight the data from before the capture projects and the green sector shows the after-capture situation.

The two gas-to-power projects profiled (delivered respectively by joint ventures led by Pharos Energy and Apache, the lead operator of the Khalda JV) were focused on using captured gas to generate power for local oilfield operations. While these projects are relatively small

31 According to Egypt's Second Updated Nationally Determined Contribution (NDC) published in June 2023, some 17 flare reduction projects were recently implemented however, few (if any) of these project were identified and the high resolution daily data from FlareIntel does not seem to suggest major progress aside from the examples cited in this paper.

32 Mark Davis et al., "Leadership on flaring in Egypt: Recent successes and future opportunities in the lead-up to COP27," press release, March 2022, https://flareintel.com/insights/leadership-on-flaring-in-egypt-recent-successes-and-future-opportunities-in-the-lead-up-to-cop27.

33 Sarah Samir, "Madbouly Pushes for Faster Adoption of CNG Across Transportation Sector," *Egypt Oil and Gas* (Nov. 19, 2024), https://egyptoil-gas.com/news/madbouly-pushes-for-faster-adoption-of-cng-across-transportation-sector/.

in scale (on the order of 1 to 3 million scf/day), they not only lowered the emissions from gas flaring but also reduced the emissions from the burning of diesel.[34] In detail:

- Khalda/Apache's project at Kalabsha is reported to consume up to 3 million scf/day to generate 14 MW of power in 18 generation units for operations at the Kalabsha field, as well as at the Bernice, Phiops, Ptar and Buchis fields. Diesel consumption was reportedly lower by 2.4 million liters per month, saving an estimated $1.5 million per month in operating costs.[35] The project was, however, somewhat complex to negotiate and was reportedly delayed by a two-year renegotiation/unitization agreement.
- The Pharos project captured gas from the El Fayum Silah and North Silah Deep oilfields by installing two gas-fired power units with grid power as backup, thereby reducing gas flaring, reportedly, by 30%.

The two pipeline projects were similarly effective. In both cases, recovered gas was transported to existing and underutilized gas processing plants.

- The United Oil and Gas/Kuwait Energy project[36] was particularly interesting as it involved the re-use and redeployment of an existing gas pipeline to the existing gas plant at El Salmiya and was delivered on schedule within 12 months of the first exploration success at the Ash field. During the pipeline construction phase, the company elected to truck produced oil and flare up to 5 million scf/day, but the independent data provided by FlareIntel to the operator and partners confirmed the success of the flare reduction operation (and later, provided rich operational insights into reservoir performance).
- Naftogaz (the Ukrainian national oil and gas company) successfully delivered a similar project, compressing low pressure flared gas from its Alam El Shawish East oilfield into the nearby Abu Sannan – El Amreya pipeline. The data in Figure 4 show the material reductions in flaring, except for two significant (2 week-long) flaring events that are probably related to short-term operational or maintenance programs associated with compression and/or gas treatment stations.

Several other flare reduction projects have been announced in recent years, including a 2022 MOU between Baker Hughes, Bechtel, Enppi, Petrojet, GE, HSBC, and the National Bank of Egypt dedicated to flare reduction.[37] Plans have been suggested for flare reduction at Meleiha (via the new processing facility and pipeline as mentioned above, operated by AGIBA, the JV between EGPC and ENI) and Ras Gharip—although Capterio's daily flaring data suggests that progress to date is limited. Egypt has also announced projects to reduce or eliminate flaring at refineries, non-associated gas fields and LNG facilities,[38] although once again it is difficult to confirm the contributions these projects have made to reducing flaring so far.

At least one of the announced projects involves flaring at a refinery in Alexandria, based on the deployment of Baker Hughes' Flare IQ technology (which dynamically improves a flare's

34 See our extensive discussion on the net impact of diesel substitution projects in our main paper. In brief, while the gas that is recovered from the flare is still ultimately burned, the climate benefits are positive and two-fold. Firstly, gas burns with a higher combustion efficiency in a power unit (thereby releasing lower volumes of highly-potent methane), and secondly, it displaces the more carbon-intense alternative, diesel.

35 Assuming a price, conservatively, of $0.64 per liter.

36 United Oil and Gas has since left Egypt, we understand due to challenges in receiving and repatriating payments.

37 Baker Hughes, "Bechtel-led Coalition to Support Egypt's Decarbonization Strategy," press release (Nov. 11, 2022), https://www.bakerhughes.com/company/news/bechtelled-coalition-support-egypts-decarbonization-strategy.

38 Y Jolly Monsef, Mariam Ahmed & Youstina Mounir, Egypt Oil & Gas Group, "Gas Flaring in Egypt: Opportunities and Challenges," (2023), 18-20, https://egyptoil-gas.com/reports/gas-flaring-in-egypt-opportunities-and-challenges; Baker Hughs, "Egyptian General Petroleum Corporation and Baker Hughs Partner to Reduce Emissions from Flaring Operations," press release, June 29, 2022, https://www.bakerhughes.com/it/node/107601; Ge Vernova "Egyptian LNG Zero Routine Flaring Study awarded to Bechtel-led Coalition for Decarbonization of Existing Facility," press release, https://www.gevernova.com/news/press-releases/egyptian-lng-zero-routine-flaring-study-awarded-to-bechtel-led-coalition-for; https://wintershalldea.com/en/newsroom/pi-23-25.

combustion efficiency).[39] If successful, this initiative will likely substantially lower the refinery's greenhouse gas emissions (noting that methane is a particularly potent greenhouse gas), even though flaring may increase in connection with the methane reduction.

Do Legal and Institutional Barriers Hinder Egypt's Flare Reduction Ambitions?

Egypt's stated policy over many years has been to maximize the capture and utilization of associated gas. Egypt signed the World Bank Zero Routine Flaring by 2030 initiative in 2017, and the UN Global Methane Pledge in 2022. The June 2023 update to Egypt's Nationally Determined Contribution under the Paris Agreement calls for the oil and gas sector to reduce GHG emissions from flaring gas by almost 1.7 million tonnes of CO2 (65%) by 2030 compared to baseline GHG emissions in 2015, noting the completion of 17 flare reduction projects and plans to implement 36 additional projects (although none of the projects is identified, or has been specifically evidenced publicly, other than the projects described earlier in this study).[40] Reducing emissions from flaring is also one of the objectives of Egypt's National Climate Change Strategy for 2050.[41]

In September 2022, the MoPMR published a Petroleum Sector Energy Efficiency Strategy for 2022 to 2035, which includes a program to minimize gas flaring and venting.[42] The most concrete part of the program, to be implemented from 2025 to 2035, is an Associated Petroleum Gas Monetization Project encompassing improved measurement and monitoring of flaring and venting, establishing an independent regulatory entity with enforcement powers, prohibiting routine flaring, venting and methane emissions without permits (which would be issued based on clearly established flaring targets), and establishing a regulatory environment to foster market-driven utilization strategies.

While plans like this are encouraging, the timetable for these initiatives (targeting 2025-2035) is quite long, and some of them may have to give way to the immediate needs of addressing the current problems of the natural gas sector. As an example, despite the announced ambition to update the concession agreements in the Energy Efficiency Strategy, the terms of the concession agreements for the bidding round announced in August 2024 are substantially the same as those of Egypt's traditional concession agreements.[43]

Hence, while Egypt's initiatives for reducing flaring are commendable, there appear to be opportunities to do more. To some extent, leaders are apparently conflicted: one very senior leader said to one of us: "*well, of course, I do want to reduce emissions. But tell me now, how can I increase oil production—I have people to feed.*"

Yet the real opportunity is not to increase oil production "or" to capture associated gas, but to generate revenue to feed people from oil production "and" capture associated gas. Solving flaring is in this sense a true win-win. But the delivery of concrete results will depend on whether Egypt can successfully overcome a number of institutional, contractual and legal barriers.

39 "Flare.IQ Technology for Refineries," *Baker Hughes*, June 29, 2022, https://www.bakerhughes.com/it/node/107601.

40 Arab Republic of Egypt, *Second Updated Nationally Determined Contribution* (June 26, 2023), 14, https://unfccc.int/sites/default/files/NDC/2023-06/Egypts%20Updated%20First%20Nationally%20Determined%20Contribution%202030%20%28Second%20Update%29.pdf.

41 Arab Republic of Egypt, *National Climate Change Strategy 2050*, (May 2022), 13, https://www.eeaa.gov.eg/Uploads/Topics/Files/20221206130720583.pdf.

42 Ministry of Petroleum and Mineral Resources, *Petroleum Sector Energy Efficiency Strategy 2022–2035*, (September 23, 2022), 15, https://www.petroleum.gov.eg/ar-eg/energy-efficiency/PublishingImages/Pages/default/Petroleum%20Sector%20EE%20Strategy%202022%20-%202035.pdf.

43 "Announcement 2024 International Bid Round for Petroleum Exploration and Exploitation," Egyptian Natural Gas Holding Company (EGAS), 2024, https://eug.petroleum.gov.eg/dp/jsp/EGAS.jsp.

Overview of Identified Barriers

The steps outlined in the Associated Petroleum Gas Monetization Project represent significant sector reforms designed to address a number of institutional and legal barriers to flare reduction. Many of the barriers were identified in two EBRD studies that continue to drive policy considerations for flare reduction in Egypt.

The first is the 2016 Carbon Limits study discussed above, which identified several obstacles to flare reduction in Egypt, perhaps most significantly that (at the time), flaring was "not yet high on the policy agenda."[44] The second EBRD study, prepared in November 2017 by Economic Consulting Associates, Environics and Carbon Counts, pointed in quite stark terms to a number of technical, economic and institutional weaknesses and suggested reforms to facilitate the reduction of flaring.[45]

The 2017 study found that the main constraint on flare reduction projects in Egypt was marginal economics caused by low domestic gas prices, the large number of small and scattered flare sites (citing the 2016 study) and high capital expenditures. While being quite explicit about these barriers, the study also pointed to a number of then-recent improvements in the Egyptian gas sector, such as initial reforms implemented in July 2014 that increased domestic gas prices for electricity from $1.25 per MMbtu to what it said was a still low $3.00 per MMbtu (equivalent to a fuel price of $0.02 per kWh for a modern gas generation plant), as well as more attractive pricing (from the perspective of the upstream operator) for the purchase of gas from the then-recently discovered Zohr field (between $4.00 and $5.88 per MMbtu depending on production levels).

The study also described a number of systemic barriers to associated gas utilization in Egypt, including:

- A lack of a transparent and well-defined legal and regulatory framework.
- The absence of transparent monitoring, evaluation and validation processes.
- A closed wholesale market with no access for upstream operators, compounded by an inability of operators to obtain third-party access rights to transmission and distribution infrastructure.
- A gas clause contained in Egypt's concession agreements that essentially requires all gas production to be sold to EGAS (or other state-owned companies) in a single buyer structure, which we discuss further below.
- Unclear and slow administrative procedures for the approval of flare reduction investments.
- A lack of clarity on institutional responsibility among government agencies for the approval and supervision of projects to capture and utilize associated gas.
- The absence of any formalized government policies or penalties on gas flaring.

Both EBRD studies expressed hope that some of the obstacles to reducing flaring might be addressed in what was then a new Gas Activities Law. This law, adopted in August 2017, provides for the liberalization of the transmission, distribution and supply of natural gas in the Egyptian domestic market.[46] Under the Gas Activities Law and related regulations adopted in February 2018,[47] licensed gas suppliers may sell natural gas to

44 Carbon Limits AS, *Associated Petroleum Gas Flaring Study for Egypt: Final Report*, prepared for the European Bank for Reconstruction and Development (April 2016), 2

45 Economic Consulting Associates, Environics and Carbon Counts, "APG Flaring in Egypt: Addressing Regulatory Constraints," Final Options Report (Nov. 2017), https://www.ebrd.com/home/news-and-events/news/2017/egypt-joins-global-initiative-to-end-routine-gas-flaring.html.

46 Arab Republic of Egypt, *Gas Market Activities Regulation Law*, Law No. 196, August 2017, https://www.gasreg.org.eg/law-for-gas-market-activities-regulation/.

47 Arab Republic of Egypt, *Executive Regulations Decree*, No. 239 (February 14, 2018), https://www.gasreg.org.eg/executive-regulations/.

eligible customers at freely negotiated prices, while selling gas to non-eligible customers at regulated prices. The law also provides for suppliers to have access to transmission and distribution networks based on non-discriminatory tariffs and a new network code.

While this law may in time provide opportunities for upstream operators to sell associated gas directly or indirectly to domestic customers at market prices, these opportunities do not exist today, as the implementation of the Gas Activities Law is not complete. In particular, the list of licensed gas suppliers currently includes only the main Egyptian state-owned oil and gas companies (EGPC, EGAS and the transmission company GASCO) and the traditional local distribution companies active in the Egyptian market. The list of eligible customers is to be determined by a resolution of the Egyptian Council of Ministers, but no such resolution has yet been adopted. Accordingly, there are no eligible customers to which gas may be sold at freely negotiated prices, while regulated prices generally remain well below international prices ($3 per MMbtu for electricity, and around $4 per MMbtu for most industrial uses).[48]

Yet even if the Gas Activities Law is fully implemented, it will apply only to the downstream transmission, distribution and sale of natural gas in the domestic market. The Gas Activities Law does not address upstream activities, or the obstacles to flare reduction projects resulting from Egypt's concession agreements, which may make it difficult for upstream operators to take advantage of the liberalization of the domestic gas market from a practical perspective.

Egypt's Concession Agreements[49]

Egypt's upstream oil and gas activities are conducted under concession agreements awarded under a law adopted in 1953 and amended several times since.[50] While the title "concession agreement" has been retained over the years, the economic terms reflect a production sharing structure, with venture partners entitled to a share of oil and gas production to cover costs ("cost oil") and additional production to provide a return ("profit oil").

Many of the concession agreements (or summaries of their terms) are publicly available, and provide for IOCs (referred to as contractors) to explore for oil and gas with a view to making commercially viable discoveries, based on agreed production sharing terms. Once discoveries are made, they are developed under non-public development leases by joint ventures between the contractors and one or more of Egypt's state-owned oil and gas sector companies (NOCs)—Egyptian General Petroleum Company (EGPC), the Egyptian Natural Gas Holding Company (EGAS), and/or the Ganoub El Wadi Petroleum Holding Company (GANOPE).

The concession agreements do not place any limits on flaring or impose any penalties for flaring. According to the 2017 EBRD study, the development leases prohibit flaring of more than 1 mmscf/d, although the 2016 EBRD study suggests that this applies only to gas-condensate fields. Both studies indicate that the NOCs did not monitor flaring in practice (at least at the time the studies were published), and that the limitations in the development leases typically are not enforced.

48 "Natural Gas Pricing," Egypt Gas Regulatory Authority, https://www.gasreg.org.eg/natural-gas-pricing/.

49 This discussion is based on the 2021 Model Concession Agreement, available at https://eug.petroleum.gov.eg/dp/pages/common/Regulations/2021%20EGPC%20Bid%20Round%20English%20Model.pdf. Based on our review of several other concession agreements, while there are some variations from one agreement to the next, the differences are not material to the matters discussed in this case study.

50 Asmaa Badawy and Girgis Abd El-Shahid, "A General Introduction to Oil and Gas Law in Egypt," *Shahid Law Firm*, November 3, 2021, https://www.lexology.com/library/detail.aspx?g=fab99a1c-8468-45a2-addc-56070dbb79bb.

Under the concession agreements, all gas produced (whether associated or non-associated) is allocated in priority to the domestic market. As a practical matter, the contractor is required to sell all of its share of gas to EGAS (or in some cases, another NOC) under a gas sales agreement negotiated after the gas discovery is declared to be commercial.

Theoretically, the contractor can instead elect to sell gas itself in the domestic market, but this requires approval of MoPMR, and would be difficult in practice given that the liberalization of transmission and gas supply under the Gas Activities Law has not yet been completed. The contractor can also sell its share of gas (jointly with the NOC) for export, subject to MoPMR approval, but the contractor does not have access to the transmission network to deliver its share of gas to an LNG facility, and in any event the LNG facility operator would require MoPMR authorization to accept the gas. The contractor also has an economic incentive to sell gas to EGAS (or another NOC), as in such case the contractor's share of royalties and income tax is paid by EGAS (or the NOC), which also provides a "take or pay" undertaking to buy minimum quantities of gas.

In order to build infrastructure to process and transport gas, the contractor requires approval from the NOC, a process found to be cumbersome in the 2017 EBRD study. In such case the LPG extracted from gas production is subject to the same disposal procedures as gas (essentially, mandatory sale to EGAS or another NOC). The contractor is required to build a gas pipeline from the gas field or LPG facility to a connection point on the national gas pipeline network, but it has no rights to build additional infrastructure if network capacity is insufficient or not made available, nor can it reserve capacity on the network where it exists (meaning it cannot be guaranteed long-term access to transport). The concession agreement contemplates that the contractor and NOC can establish a plan to share LNG and pipeline infrastructure with other producers for export projects, but it does not contain any similar provisions for gas or LPG sold in the domestic market.

Egypt Can Overcome Barriers to Flare Reduction with Leadership and Determination

The EBRD-sponsored studies proposed comprehensive reforms to Egypt's gas sector in order to eliminate the barriers to flare reduction discussed above. Many of these reforms are contemplated in the Associated Petroleum Gas Monetization Program, which if implemented would provide a structural long-term solution to many of the barriers facing flare reduction projects in Egypt. We agree these reforms would be useful, although they may be politically difficult to implement, particularly because their success effectively depends on increasing the domestic price of gas and/or electricity. Given the context, the timetable for implementing the reforms is, understandably, quite lengthy.

In the meantime, Egypt needs a program to capture its flared (and vented) gas, as an urgent matter to alleviate domestic gas shortfalls, generate revenue and enhance its energy security by reducing gas imports. The opportunities presented earlier in this case study are compelling. We are optimistic that Egypt's institutional and legal barriers can be overcome to allow projects to go forward the near-term, while Egypt continues to pursue its reform initiatives in the longer term.

The discussion above identifies three main obstacles to flare capture projects. As shown below, each of them has solutions that can be implemented as part of a scheme to prioritize the capture of wasted gas:

1. *EGAS Purchase Requirement and the Need for Subsidies*. The gas clauses place potential associated gas capture and utilization projects substantially under the control of EGAS (or another NOC). Unless a contractor is authorized to sell captured gas for export (or for domestic sale at market prices, once the Gas Activities Law allows this), the contractor's ability to capture and sell flared (or vented) gas effectively depends on the ability and willingness of EGAS (or another NOC) to purchase the gas at a price sufficient to provide a reasonable return on the investment. If the contractor requires a price higher than the regulated domestic gas price to earn an adequate return, the project would be feasible only if EGAS (or an NOC) were to receive a subsidy enabling it to purchase the gas at a higher price than its sales price.

   While this is a significant obstacle to the realization of flare reduction, the burden can be reduced in several ways. First, LPG extracted from captured gas can generate revenues (although LPG is also subject to mandatory sale to EGAS or another NOC). Second, the fiscal terms applicable to captured and processed associated gas could be eased to lower costs for operators, allowing them to realize a return with a lower subsidy – for example, through accelerated cost recovery or the application of a lower NOC production share. We note that several operators (e.g. Apache and Capricorn) have recently renegotiated their fiscal terms to improve their profitability and/or to simplify their portfolios, e.g. through unitization agreements (and Pharos is in negotiation at the time of publication), indicating that there may be capacity to do this for additional projects.[51] Third, some of the captured gas could be exported, with the additional revenues used to finance all or part of the subsidy.

   More generally, given that Egypt is currently a net gas importer, buying gas at prices ranging from $12 to $20 per MMbtu,[52] there is considerable room to ***redirect government funds that are already spent subsidizing gas purchases*** towards raising the effective price paid for recovered associated gas. In effect, it is likely to be far more efficient and less costly to subsidize domestic production of captured associated gas, than to provide subsidies to pay high prices for imported gas purchased on international markets.

2. *Common Infrastructure*. Current concession agreements also make it burdensome to coordinate projects and develop common infrastructure to capture and utilize gas efficiently. While the concession agreements do not prohibit common infrastructure investments covering multiple producers, they also do not contain clauses to facilitate such investments (in contrast to the clause for common infrastructure relating to export projects). Accordingly, any common infrastructure arrangements would have to be negotiated and approved on an ad hoc basis.

   While this is an obstacle, is it a purely administrative one that can be overcome with relative ease if capturing flared gas is made a national priority and is supported by Ministerial-level leadership. In particular, with a national flaring reduction roadmap and a full commitment to implementation, it should be possible to develop concrete plans for joint infrastructure projects that could substantially reduce the cost of flare reduction. Egypt has successfully done this with its LNG projects that use

51 Peter Stevenson, "Egypt: Apache Snags Gas Price Hike," *Middle East Economic Survey (MEES)*, November 15, 2024, https://www.mees.com/2024/11/15/oil-gas/egypt-apache-snags-gas-price-hike-but-receivables-woes-cap-investment/3f053e60-a354-11ef-9dbd-e14398cd8998. Video Statement by Pharos CEO Katherine Roe, *Core Finance*, https://www.youtube.com/watch?v=I5_qIWoagx4.

52 As noted above, the DES East Mediterranean Marker was $14.24 per MMbtu in January 2025.

non-associated gas as feedstock, and it should be able to use this experience as a model for joint investments for capturing, processing and transporting flared gas.

3. *Flaring Penalties and Stabilization Clauses*. Unlike many similar countries, the concession agreements do not include financial penalties for flaring gas. Once Egypt's investment environment is improved by addressing the two issues discussed above, Egypt could provide incentives for flare gas capture through reasonable penalties or flaring fees. Introducing flaring penalties might raise issues under the broad legal and fiscal stabilization clauses in Egypt's concession agreements, which allow contractors to renegotiate terms when new laws or regulations negatively impact their economic position. Arguably, however, flaring penalties should not trigger these clauses so long as flare reduction projects can be structured to provide positive economic returns (as operators could avoid the penalties by implementing these projects). It would also be appropriate for operators, as part of a broad initiative to reduce flaring, to commit not to invoke the stabilization clauses in connection with the imposition of flaring penalties, subject to the establishment of an investable environment.

Accomplishing these objectives will require commitment and determination, with institutions mobilized to implement concrete solutions. We believe the effective realization of Egypt's flare reduction ambitions can be driven by the following initiatives:

- *Creation and empowerment of an associated gas monetization task force*. The Energy Efficiency strategy indicates that the MoPMR has already established a committee to plan for achieving zero routine flaring by 2030. While positive, this committee could be empowered more broadly to act as a comprehensive task force with a mandate to address *all* flaring (not just "routine" flaring), as well as venting and leaking. The committee also needs to be empowered and supported at the highest political levels to ensure that its recommendations are fully implemented in practice. It should work together with IOCs as well as NOCs to drive real project development.

  A key first step for this organisation would be to create an inventory of the current situation, mapping each flare for each asset, using independent data in addition to operator-reported data, providing challenges where required. This inventory exercise should result in a set of opportunities and investment concepts, which may for example include significant new infrastructure development in the Western Desert. This could then drive collaboration between parties, with accelerated delivery of model "quick win" projects to serve as examples for additional investments. We have identified several flare capture projects which will best be delivered if companies share data, business plans and operational parameters (such as pressure, temperature, composition, and spare capacity). To take an example, we believe the BABETCO-operated Obaiyed export infrastructure could be leveraged by the Khalda joint venture in the Western Desert to rapidly reduce flaring, thereby unlocking a commercial opportunity—especially if commercial innovation (such as adjusting incentives, tariffs or fiscal terms) is also deployed. This is likely to happen however, only with Ministerial support and intervention.

- *Clear Gas Purchase Commitment*. EGAS could undertake explicitly to purchase all associated gas that is captured and delivered into the national gas pipeline system, at a price sufficient to generate reasonable returns on investments by upstream operators. Akin to some of the newly-negotiated contracts which grant a higher price for "new" gas, EGAS could offer higher prices—if necessary—

specifically for gas that is recovered from flares, vents or leaks. This would need to be coordinated with a commitment from the Egyptian Government to ensure EGAS has the financial resources to meet this commitment. Despite Egypt's difficult financial situation, agreeing to such purchases would be attractive so long as the price is lower than that paid for gas imports after taking into account regasification costs, with existing subsidies reoriented to achieving flare reduction (likely reducing the total subsidies needed).

- *Export Opportunities*. Alternatively or additionally, MoPMR could authorize delivery of associated gas through the national pipeline network to export facilities, and the sale of gas (after payment of liquefaction costs) by contractors for export. Given Egypt's need for gas, this would require a "swap" arrangement under which gas currently delivered to export facilities (representing the State's share of production) would be reallocated to the domestic market. MoPMR could consider allowing temporary or permanent modifications to the concession agreements, extending the royalty and tax advantages currently applicable only to gas sales to EGAS, so those advantages apply as well to export sales of associated gas under this scheme. MoPMR could agree to accelerated cost recovery for capital expenditures made for the capture, processing and transport of associated gas.

- *Cluster Infrastructure*. The committee in charge of reducing associated gas flaring and venting could work with upstream operators to use credible data (satellite if none other is available) to identify opportunities for the construction of common infrastructure for the processing and transport of associated gas, in order to implement "clusters" to capture gas from scattered flaring sites, reducing overall costs. This mechanism could be structured in a manner similar to what is already contemplated in the concession agreements for export infrastructure. Once developed, it could be integrated into the national flaring reduction roadmap.

Over time, these initiatives can be enhanced as the market reform process develops. For example, the Gas Regulatory Authority could establish a program to give priority to associated gas for access to transmission networks and for the granting of supplier licenses, facilitating the sale of associated gas on a priority basis to eligible customers (or to industrial customers at regulated prices, before the list of eligible customers is established).

The initiatives described above should produce positive economic returns for the State and the Egyptian NOCs, or at worst should be financially neutral. For example, reducing royalties and taxes on captured associated gas would not cost more to the Egyptian treasury than flaring or venting the gas (which by definition produces no royalties or taxes). At the same time, any initiatives to encourage investment (such as accelerated cost recovery or the extension of tax and royalty benefits) might have short-term negative cash flow impacts even if their longer term impact is positive.

For this reason, it is important that international bodies that have traditionally supported global flare reduction initiatives (such as the European Union and various multilateral organizations) be prepared to extend financing at concessional rates to bridge any such negative cash flow impacts, with the perspective of repayment from later positive returns. Moreover, to the extent associated gas is made available for export or frees up other sources of gas for export, programs such as the European Union's "You Collect, We Buy" initiative (or any successor program) should be made available to facilitate the purchase of such gas volumes, possibly at a premium to international market prices in order to recognize the contribution of the associated gas monetization program to global efforts to limit flaring and venting of gas.

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