New data confirms we are off track to eliminate gas flaring

A thought piece by capterio

By Mark Davis and John-Henry Charles

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Executive summary

- **The latest flaring data, published yesterday by the World Bank, shows some positive movement** – a 5.2% drop in gas flaring. However, this is way off-track to deliver the 90% reduction we need (according to the IEA) by 2025.

- **More concerningly, the lower flaring in 2020 is a "blip", due only to lower oil production. In fact, the underlying operational practices that lead to flaring are getting worse. The global gas "flaring intensity" is also off-track, is up – for the third year in a row.** Without concerted action, flaring will likely increase by 6-9% (to a new record high) in 2021 as oil markets recover from their COVID-related demand shock.

- **Where there is a will, there *is* a way:** There is an urgent need to reverse the trend of ever-increasing gas flaring intensity. Whilst there are undoubtedly some "hot spots" of better practice, more concerted top-down focus, political will and investment is urgently needed. The good news is that there are many "low hanging fruits" that can reduce emissions, create value and accelerate the energy transition. The time to act is now.

The latest global flaring data confirms the world is off-track to eliminate gas flaring

Yesterday, the World Bank's Global Gas Flaring Reduction programme published its annual assessment of gas flaring. The headline figure is a 5.2% reduction in flaring (to 142 BCM). Whilst this may seem like positive movement, to deliver the IEA's sustainable development scenario, we need to be seeing 37% reduction per year. The world is materially off-track.

But more concerningly, the data shows that the reduction in flaring (which is a bi-product of oil production) in 2020 is, in fact, just a "blip" due to the COVID-driven lower demand for oil. Arguably therefore, world also needs to focus on a metric that measures underlying operational performance, such as gas "flaring intensity" (flaring per unit of oil production).

Disappointingly, not only did flaring intensity rise in 2020 (by 2.5%), but also, it has risen every year for the last 3 years. This is a clear demonstration that the operational improvements promised by the oil and gas industry are not happening fast enough. Flaring is already a major source of greenhouse gas emissions (of at least 1.2 billion CO2-equivalent tonnes, including so-called "methane slip" at flares see article), combined with other sources of methane emissions (from venting and

leaking facilities), which are linked to operational performance, the continued increase in flaring intensity raises yet more concerns.

There is little evidence that the oil and gas industry is on track to eliminate routine gas flaring by 2030 (an initiative that countries representing 73% of oil production have committed to). And, if oil production rebounds (as the IEA expects) in 2021, the higher flaring intensity may mean that 2021 flaring is at a record high.

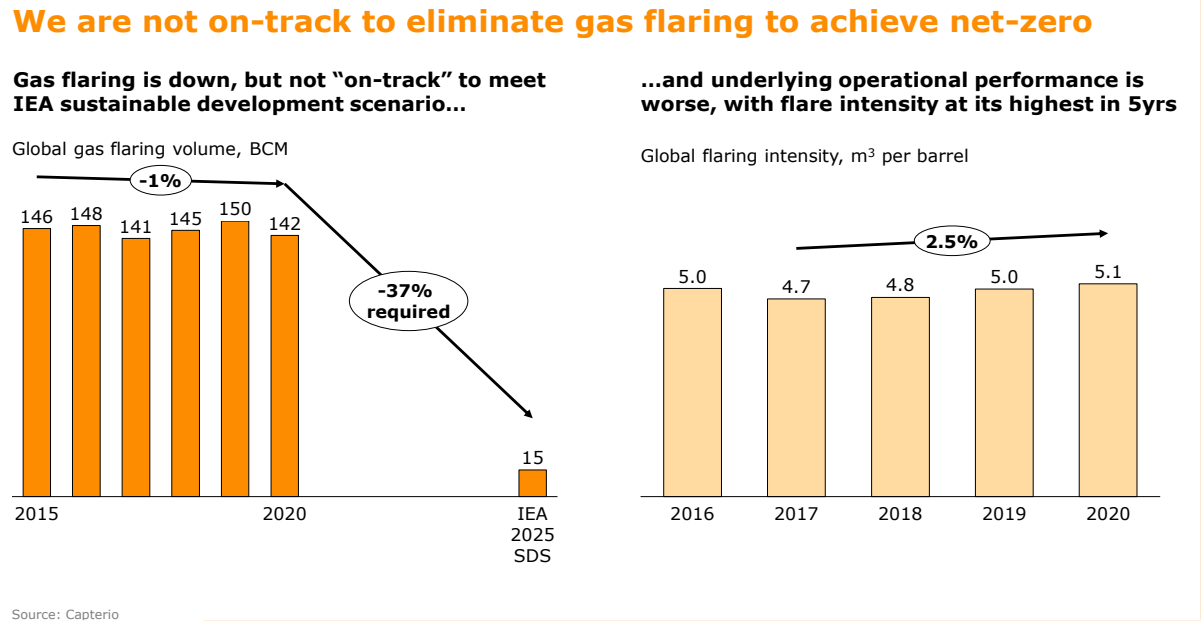

Figure 1: historical timeseries of global gas flaring (left) and gas flaring intensity (right). Whilst the 2020 flaring volumes are lower by 5.2%, this reduction is arguably a "blip" due to lower oil production. The underlying operational performance metric "flaring intensity" has increased by 2.5%, and for the third year in a row.

The new data confirms a wide performance gap between countries

Figure 1 shows the league table by country on both an absolute basis (total volume flared) and a relative basis (flaring intensity). As the World Bank's report highlights, the top flaring countries remain unchanged, and include Russia, Iraq, Iran, US, Algeria and Venezuela (see Figure 2) – although the US retreated down from rank #3 to #4 and Algeria went up from rank #6 to #5. Normalising for oil production, the flaring intensity data continues to show a very wide variation in performance between countries such as Saudi Arabia and Norway, which have very low flaring intensities and those with very high flaring intensities (Venezuela, Algeria, Iran and Iraq).

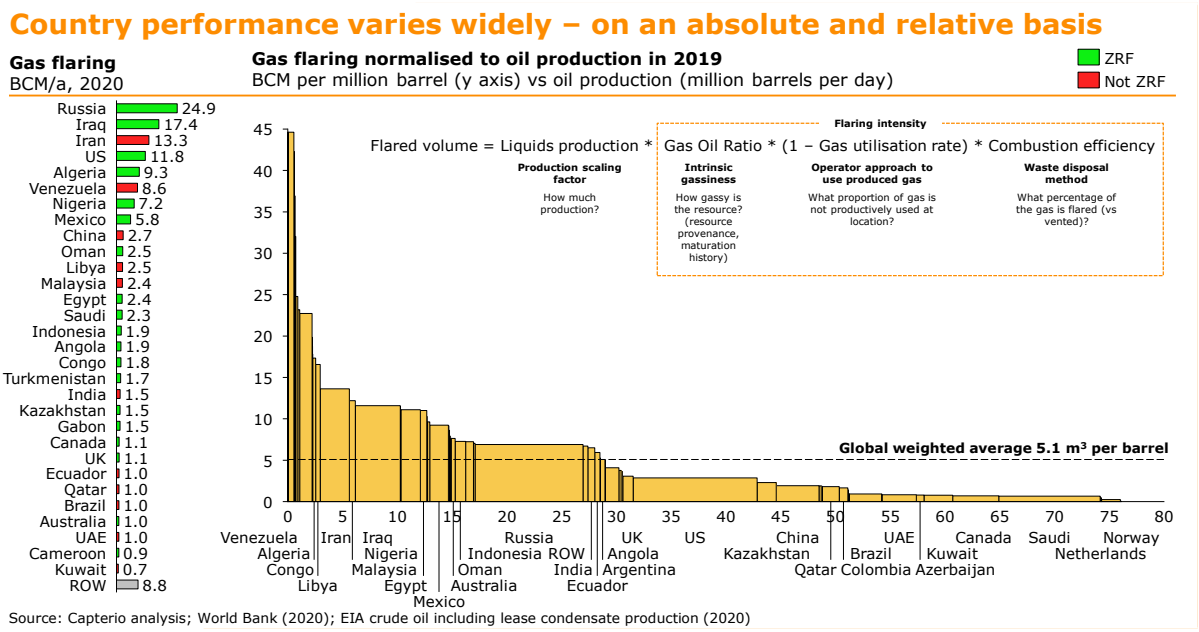

Figure 2: league table of flaring by country, on an absolute (BCM) and relative (BCM per million barrel) basis. There is a very wide span of performance between countries. Countries which have specifically endorsed the World Bank's "Zero Routine Flaring" by 2030 initiative are highlighted in green; in aggregate, these represent 73% of all of global production.

The big difference in flaring performance between countries is notable (Figure 2). Countries with enduring policy, coupled with credible enforcement (e.g. Saudi Arabia and Norway) do particularly well on this metric. Norway, has an implicit carbon price embedded in its anti-flaring policy, and for good reason, as flared gas can be put to productive use that creates real economic value (and reduces emissions). Conversely, countries with very high flaring intensities are not always stable politically and/or often do not adopt strong processes or policies. Nigeria, for example, has a punitive flaring penalty equivalent to $38 per tonne, however, it is rarely enforced.

Most countries have declining underlying performance

We evaluate flaring data in Figure 3 by breaking down the change in flaring to its two component parts, namely the change in production and the change in flaring intensity. The results are stark: of these, *all* of the countries with increased flaring have higher flaring intensities (suggesting lower intrinsic performance), and over half of the countries with lower flaring also have higher flaring intensities.

US, Australia and Qatar have significantly improved flaring intensities. The US improvement is directly a response to lower rates of drilling and completion in the high-cost marginal onshore Permian, Eagleford and Bakken shale basins, supplemented by the development of new pipeline infrastructure. Australia's improvement is driven by material reductions in offshore flaring associated with

Shell's Prelude and Total's Icthys fields (both of which have seen major operational issues in 2019 – see article "*flaring at FPSOs: out of sight but not out of mind*"). Whilst there have been some notable improvements in gas infrastructure the US, it is not yet clear that these will be sufficient to offset the likely increased associated gas production associated with the oil production, should higher oil prices remain for 2021.

Notable increases in flaring intensity in Venezuela, Libya, China, Mexico, Turkmenistan, India and Russia are concerning, and are mostly attributable to an overwhelming and short-term focus on national revenue, at the expense of continued investment in critical infrastructure, plus the development of new fields in remote locations. In Venezuela, for example, an inherent lack of maintenance of critical gas compression equipment leads to continued flaring. Similarly, Libya's flaring (which rebounded from September 2020, after the removal of blockages by the Haftar militia) is now at record high, due in part to sustained underinvestment and (and understandable) lack of focus on flare minimisation.

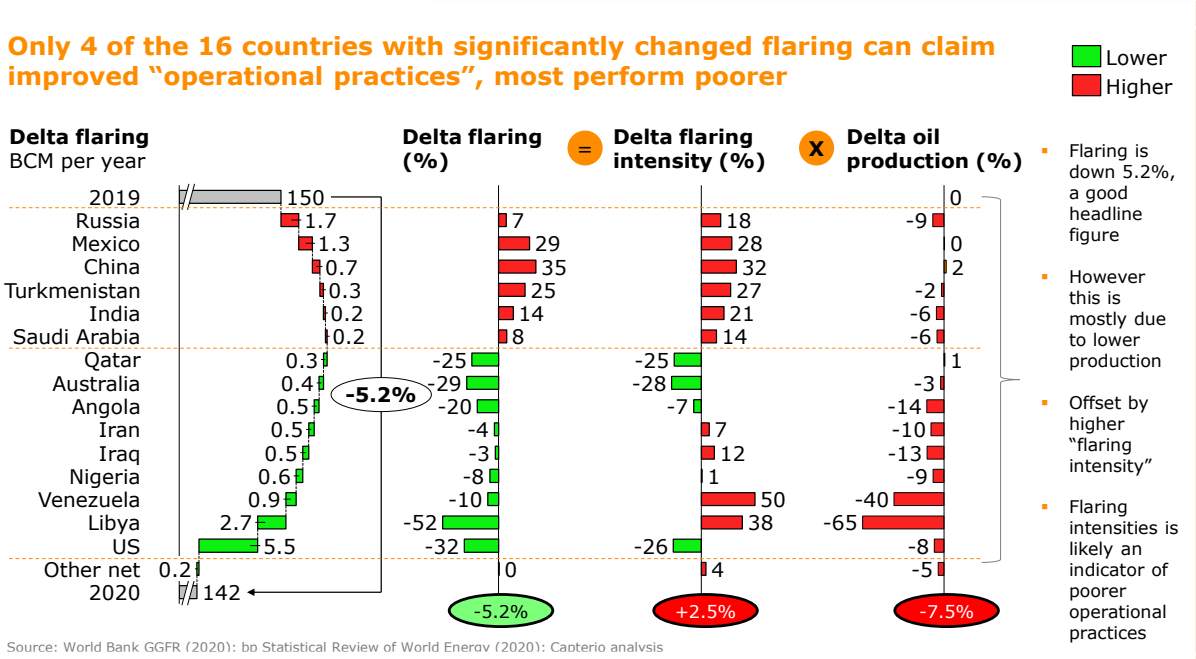

Figure 3: decomposition of changes in flaring to their underlying driver. Change in flaring can be equated to change in flaring intensity and change in oil production. Given that the fall in flaring is lower than the fall in production, the global average flaring intensity has increased. Since flaring intensity is a proxy for operational performance, we can assert with high confidence that 12 of the 16 countries with the largest changes in flaring have degraded their intrinsic performance through 2020. This is part is likely to be driven by systematic underinvestment.

Arguably, the stricter capital discipline (due to depressed prices), coupled with a tendency to redirect capital away from the oil and gas sector has led to less focus on delivering flaring solutions in 2020, and in recent years. We also made this point in

the FT on June 5th 2020. Here we highlighted that "*there is a real risk that not only critical maintenance will be deferred (e.g. leading to increased flaring from flaring equipment), but also that investments in pipeline or power generation capacity to utilise flared gas will stall*", and "*we must not let the oil price crash drive up flaring and must avoid the long-term environmental consequences*". Sadly, it is increasingly apparent that these views may be realised.

Given that the IEA estimates that oil production is expected to increase by 6% in 2021 (driven by a recovery in demand as the COVID pandemic slow in response to the vaccination programmes), depending on the trajectory of global flaring intensity, we can expect gas flaring to rebound by between 6% and 9% (to 150-154 BCM) in 2021, and quite possibly to reach a new record high.

Where there is a will, there *is* a way

The good news is that, according to our analysis, many gas flares can be eliminated with technically proven solutions that also are attractive commercially. Indeed, there are several excellent case studies that prove that commercial-viable solutions for assets with a legacy flaring problem can be found (see our case study article "*celebrating successful flare capture projects with data-driven evidence*". The World Bank publication also cites successful projects in US, Russia and Nigeria.

Gas flaring is, therefore, frequently eminently solvable. Contrary to the perception of some, our data highlights that the majority of flares are not only significant in size, but are also "continuous" in nature (as opposed to being only associated with occasional operational upsets). So, where there is a will, there is probably a way.

What we need is not only clear commitment (of which there is plenty), but we need clear actionable roadmaps that recognise, and mitigate against the barriers that the industry faces today.

According to our extensive research and engagement with IOC and NOC operators, avoidable flaring happens for 3 reasons. Firstly, flaring is not always "on the radar" of operators or regulators (it is often not measured, not reported, often ignored, and sometimes denied). Secondly, there is often a perception that fixing flaring does not make economic sense – but creative application of technology, with the right cost and commercial structures can often unlock this. We have worked on many projects with post-tax IRRs in the range 20-60%, and demonstrate a clear investment case in our article "*why flare capture projects make sound ESG investments*". Thirdly, the industry currently lacks resources to fix the problem: partly this is a capability issue (dealing with "small capital projects" with low pressure gas is not a core discipline of companies that prefer mega capital projects), and partly this is an issue of capital allocation – especially in today's world where capital discipline is very tight, and investment is often diverted to renewable technologies.

New tools provide game-changing transparency

To solve flaring, we need to address these issues. More generally, the industry needs free access to better, and credible flaring data (such as that provided by FlareIntel, see Figure 5). And the industry needs to creatively unlock commercially-viable projects – and seek third-party capital and expertise (where needed) to deliver. In today's investment environment, there is inevitably focus on low carbon technologies. Yet by *selectively* directing capital towards the oil and gas industry's brownfield sites, ESG-conscious investors can have an immediate impact, decarbonise and create commercial value.

Figure 4: Illustration of *FlareIntel*, a new open access and free tool that brings global gas flaring data to life in an intuitive and interactive dashboard. FlareIntel Pro is also available, as a subscription offer, and can be used to screen and develop viable commercial flare gas capture projects that collectively will deliver companies' net zero commitments.

Fundamentally, little will change without more top-down political will – from IOCs, NOCs and their governments. With strong leadership with a bias for action that unlocks red tape, we could reduce flaring, create value, improve the social license to operate and make a material contribution to the energy transition.

After all, delivering a "net-zero" society by 2050 is arguably *the* most important long-term challenge of our lifetimes. With COP26 rapidly approaching, its time to make bolder NDC commitments – and back these up with the capacity to act.