

OGCI PERFORMANCE DATA 2021



OGCI has been collecting aggregate data across all member companies since 2017. We are continually improving methodologies and data collection processes in areas such as flaring and investment and R&D in low carbon technologies, as well as adding new aggregate indicators. This year we started to collect greenhouse gas emissions data on an equity basis to complement operated data and plan to publish this in future. An independent third party collects and reviews OGCI data. In 2022, EY issued a limited assurance statement covering 10 companies, two more than last year (see Statement page 6).

With five years of data now available, we are starting to see some clear trends.

- Absolute upstream methane emissions have fallen 40% since 2017, exceeding our expectations when setting the first methane intensity target in 2018.** This volume of methane emission reduction is on the scale of 800,000 tonnes per year or equivalent to around 2.5 million homes no longer using energy¹. OGCI member companies are now aiming to reach near zero methane emissions by 2030 from their operated oil and gas assets.
- Investment in low carbon technologies has risen steadily over the five years. In 2021 it almost doubled,** reflecting activity both in renewable energies and in developing CCUS facilities designed to decarbonize heavy industry. Cumulative spending on low carbon technologies (from both investment and R&D) from 2017 to 2021 was \$40 billion.
- Progress in reducing carbon dioxide emissions in downstream has been slower.** These have decreased by 11% since 2017, with a 3% drop in 2021². The slower progress largely reflects the lack of relatively straightforward solutions (equivalent to stopping flaring and venting in upstream) to reduce the carbon intensity of refineries and chemical plants – one reason OGCI has struggled to set a near-term downstream intensity target. Concerted efforts to advance low carbon hydrogen, CCUS and electrification are expected to bring results in a few years' time.

ABBREVIATIONS

Mboe/day	Million barrels of oil equivalent per day	MtCO₂e	Million tonnes of carbon dioxide equivalent
kgCO₂e/boe	Kilograms of carbon dioxide equivalent per barrels of oil equivalent	MtCH₄	Million tonnes of methane
		Mm³	Million cubic metres

All reported data is the aggregate for 12 companies unless otherwise stated.

Note: Our member companies are continually improving their own reporting methodologies. As a result, the published data for 2019 and 2020 incorporates some methodological changes and may differ slightly from those previously reported. Read more about OGCI's definitions and methodology in the OGCI Reporting Framework

¹ 800,000 T/CH₄ converted using the EPA, [Greenhouse Gas Equivalencies Calculator](#)

² These percentages are slightly different than a simple calculation of total greenhouse gas emissions minus upstream emissions (page 3) would suggest, since the total also includes some other activities, such as power generation.

PRODUCTION

Aggregate oil and gas production of the 12 OGCI member companies remained stable in 2021 at 43.8 Mboe/day, with oil production falling 2% over the year, while gas production rose 3% on the back of stronger demand and a significant acquisition. Over the

past five years, oil production has fallen 7% and gas production risen 7%. The share of gas has now risen to 37% of aggregate oil and gas production.

OGCI member companies operated 27% of global oil and gas production in 2021.¹

OGCI indicators	Unit	2017	2018	2019	2020	2021
OGCI oil production (operated)	Mboe/day	29.8	29.9	29.7	28.3	27.6
OGCI gas production (operated)	Mboe/day	15.2	15.7	16.1	15.7	16.2
OGCI oil and gas production (operated)	Mboe/day	45.0	45.6	45.8	44.0	43.8
Share of natural gas in OGCI operated portfolio	%	33.8	34.3	35.2	35.7	37.0
OGCI oil and gas production (equity)	Mboe/day	42.5	42.4	42.9	41.6	41.1

Notes:

¹ Provisional estimate of global oil and gas production of 164 Mboe/day in 2021, based on IEA indicators for oil demand of 96.5 Mboe/day and global natural gas production of 67 Mboe/day. IEA will publish oil supply data for 2021 on October 27, 2022. OGCI member companies' share of total oil and gas production is 27% on an operated basis and 25% on an equity basis. OGCI production data is included up until first point of sale, including LNG liquefaction plants if located before the first point of sale.

GREENHOUSE GAS EMISSIONS

Upstream carbon intensity is on track to achieve the 2025 target, falling by 6% in 2021 to 18.9 kg/boe, bringing the total reduction since 2017 to 17%. OGCI's 2025 target is 17 kg/boe. Reductions in absolute greenhouse gas emissions were aligned with the reduction in intensity. Scope 1 upstream greenhouse gas emissions fell by 5% over the year (and a total of 18% since 2017), due to falling oil production levels, flaring reduction and vent recovery projects, and portfolio changes. The decrease in Scope 2 emissions was due to a change in quantification methodology in one company and in perimeter scope for a pipeline in another.

Downstream, which accounts for around half of OGCI member companies' aggregate Scope 1 greenhouse gas emissions, has shown slower progress than upstream, reflecting the complexity and longer timelines of decarbonization efforts in refineries and chemical facilities.

At 618 MtCO₂e, aggregate greenhouse gas emissions across all sectors represent 1.1% of global greenhouse gas emissions, using latest 2019 data from the UNEP's [Emissions Gap Report 2021](#).

OGCI indicators	Unit	2017	2018	2019	2020	2021
Upstream carbon intensity ¹	kgCO ₂ e/boe	22.7	22.1	21.3	20.1	18.9
Operated greenhouse gas emissions – all sectors (Scope 1) ²	MtCO ₂ e	709	687	684	631	618
<i>of which: upstream emissions (Scope 1)³</i>	MtCO ₂ e	362	349	343	310	295
Upstream greenhouse gas emissions (Scope 2) ⁴	MtCO ₂ e	41.4	43.5	43.7	39.4	38.2

Notes:

¹ This is the key performance indicator for OGCI's upstream carbon intensity target. It includes upstream carbon dioxide and methane emissions, both Scope 1 and 2, on an operated basis. It excludes emissions from gas liquefaction and gas-to-liquids. Any other greenhouse gases included are immaterial.

² This figure includes direct (Scope 1) emissions of carbon dioxide, methane and nitrous oxide (for those companies that report it) from all operated activities (upstream as well as downstream, which includes refineries and petrochemicals).

³ Upstream activities comprise all operations from exploration to production and gas processing (up to the first point of sale), including LNG liquefaction plants if located before the first point of sale.

⁴ Scope 2 emissions were not calculated in a homogenous way across companies, with some using a location-based and others a market-based methodology.

METHANE EMISSIONS

OGCI members reported an aggregate upstream methane intensity of 0.17% in 2021, a 17% decrease over the year and a 44% reduction over 2017. With a 2025 target intensity of well below 0.20%, member companies launched a new Aiming for Zero Methane Emissions initiative in 2022, striving to reach near zero methane emissions from their operated assets by 2030, while sharing what they are learning about detection, measurement and reduction across the industry.

Despite the increase in gas production in 2021, absolute upstream methane emissions showed a decrease

of 8% over the year and 40% over five years. These reductions occurred across all the main sources of methane emissions – fugitive leaks, venting, flaring, and pneumatic controls and pumps. The improvements were a result of widescale equipment and system upgrades, improved flaring controls, and continued leak detection and repair. Venting and fugitive leaks accounted for over 60% of aggregate upstream methane emissions. The upstream sector accounted for 92% of OGCI total methane emissions in 2021.

OGCI indicators	Unit	2017	2018	2019	2020	2021
Upstream methane intensity ¹	%	0.30	0.25	0.23	0.20	0.17
Operated methane emissions – upstream	MtCH ₄	2.0	1.7	1.6	1.3	1.2
Operated methane emissions – all sectors ²	MtCH ₄	2.1	1.9	1.7	1.5	1.3

Notes:

¹ This is the key performance indicator for OGCI's 2025 upstream methane target of well below 0.20%. It includes total upstream methane emissions from all operated gas and oil assets. Emissions intensity is calculated as a share of marketed gas.

² This figure includes relevant operated activities (upstream, refineries, petrochemicals, power generation, etc, where these are operated by the company).

FLARING

OGCI member companies continued to reduce flaring volumes and greenhouse gas emissions from flaring in 2021, as part of efforts to end routine flaring and achieve near zero methane emissions by 2030.

Upstream flaring intensity and volumes fell by 3% in 2021, accompanying a 5% drop in emissions from upstream flaring. Routine flaring volumes (for the 11 companies that report it) fell 2% in 2021.

Since 2017, flaring greenhouse gas emissions have fallen 33%. Progress in 2021 was linked to gas recovery and re-use during testing, closure of flares and other flare reduction projects and lower production at ageing assets.

OGCI indicators	Unit	2017	2018	2019	2020	2021
(number of companies)						
Upstream flaring intensity ¹	Mm ³ /Mtoe	10.8	9.5	9.2	7.5	7.3
Natural gas flared – upstream	Mm ³	24,221	21,465	20,998	16,504	15,949
Routine gas flared – upstream	Mm ³	-	5,636 (10)	4,871 (10)	4,250 (11)	4,157 (11)
Flaring greenhouse gas emissions – upstream	MtCO ₂ e	62	57	55	44	42

Notes:

¹ Upstream flaring intensity is calculated on the basis of the volume of gas flared per million tonnes of oil equivalent produced on an operated basis.

INVESTMENT AND R&D IN LOW CARBON TECHNOLOGIES

Aggregate OGCI data on low carbon investment and R&D include only 10 companies in most cases. These companies reported investments totalling US\$12.6 billion on low carbon technologies in 2021, an increase of 91% over 2020. Renewable energies accounted for over half of the investment, comprising the bulk of the acquisition spend. Organic investment in CCUS more than doubled over the year, spread across many companies.

R&D spending on low carbon technologies rebounded in 2021, growing 52% in absolute terms over the year and accounting for 17% of total R&D spend. The total spend on low carbon technologies, taking investments and R&D together, amounted to \$40 billion over the five years from 2017 to 2021.

OGCI indicators	Unit	2017	2018	2019	2020	2021
(number of companies)						
Investment in low carbon technologies ¹	US\$ billion	4.7 (10)	5.5 (10)	5.6 (10)	6.6 (10)	12.6 (10)
<i>of which: acquisitions</i>	US\$ billion	0.3 (5)	1.0 (5)	1.1 (9)	1.6 (9)	7.7 (9)
R&D expenditures on low carbon technologies ²	US\$ billion	0.7 (9)	1.0 (9)	1.0 (9)	0.8 (10)	1.3 (10)
Low-carbon R&D as a share of total R&D spend	%	19 (9)	15 (9)	15 (9)	13 (10)	17 (10)

Notes:

¹ Low carbon energy technologies include but are not limited to wind, solar and other renewable energies, carbon-efficient energy management, CCUS, blue and green hydrogen, biofuels, synfuels, energy storage and sustainable mobility.

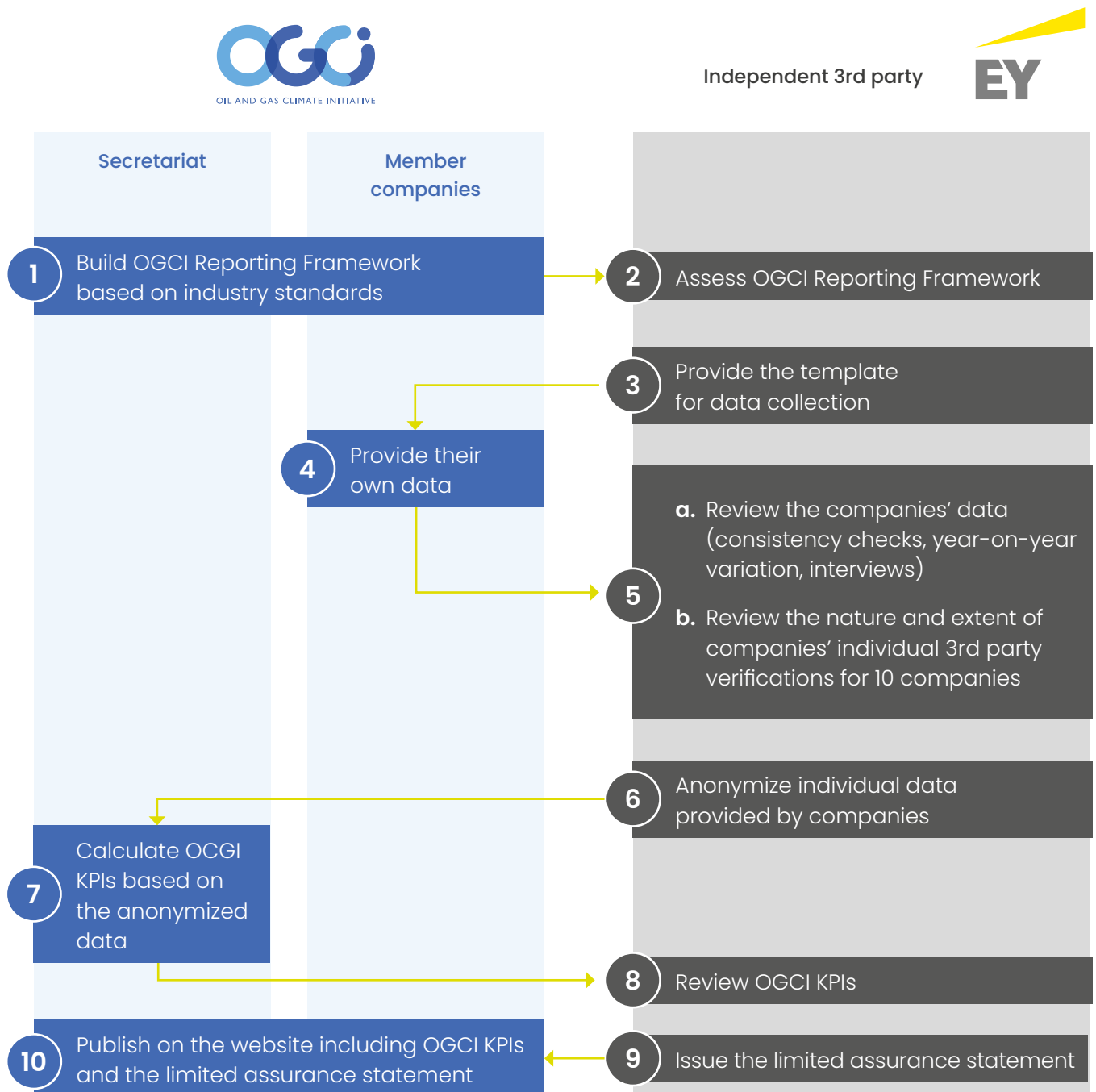
² R&D spending is additional to investment.

OGCI AND EY DATA CONSOLIDATION AND REVIEW PROCESS

Since 2016, OGCI has been working with EY & Associés (EY), as an independent third party, to collect and check data consistency, and guarantee the confidentiality of member companies' data. We developed together with EY an innovative process, applicable to both listed and state-owned national oil companies, to aggregate information about the level of third-party assurance that member companies apply individually into OGCI data reporting. Most OGCI

member companies already ensure that data reported to OGCI are independently verified. This additional step confirms that OGCI data, as well as information about third-party data assurance, are consolidated, reviewed and challenged in order to increase the reliability of the aggregate data we publish. Since 2020, we have worked with EY to develop and implement a verification process for a selection of our aggregate data. EY's statement this year covers ten of OGCI's 12 members.

Our process for data consolidation and review



INDEPENDENT VERIFIER'S REPORT ON A SELECTION OF INDICATORS FOR CALENDAR YEAR ENDED DECEMBER 31, 2021



Further to the OGCI CI request on behalf of OGCI and in our quality as an independent verifier, member of the EY network that is the statutory auditor of OGCI CI, we present our report on a selection of OGCI Indicators for the year ended 31 December 2021 detailed in Appendix 1, that OGCI has selected, prepared and presented in its website.

CONCLUSION

Qualification

For 10 companies among the 12 OGCI member companies (representing 62% of the OGCI indicator "Operated greenhouse gas emissions – Scope 1"), we reviewed the nature and extent of third-party verification conducted at company level on member company data.

Comments

Member companies align their reported data with local methodologies required by local authorities, that may vary depending on geographies.

For methane emissions quantification, companies are using different tiered approaches.

Conclusion

Based on our work, described in the "Nature and scope of work", except for the effect of the matter described above, nothing has come to our attention that causes us to believe that OGCI Indicators are not presented in accordance with the Criteria, in all material respects.

Responsibility of OGCI

As part of this voluntary approach, it is the responsibility of OGCI:

- to disclose the OGCI Reporting Framework dated March 2022 version 3.6 (hereafter referred to as the "Criteria"), available on OGCI website,
- to consolidate the anonymized member companies' data and ensure their consistency,
- to publish the consolidated OGCI Indicators in its website.

Responsibility of OGCI member companies

As part of this voluntary approach, it is the responsibility of OGCI member companies to report their data according to the Criteria to OGCI and to communicate the nature and details of the verification performed on their data at member company level.

Independence and quality control

Our independence is defined by the Code of Ethics of our profession. In addition, we have implemented a quality control system, including documented policies and procedures to ensure compliance with ethical standards, professional standards and applicable laws and regulations.

Responsibility of the independent verifier

It is our responsibility in response to the OGCI request, based on our work, to express a limited assurance conclusion that OGCI Indicators have been established in accordance with the Criteria.

It is not our responsibility to give an opinion on the entire annual report or on the compliance with applicable legal provisions.

Nature and scope of the work

We conducted the work described below in accordance with the international standard ISAE 3000 (International Standard on Assurance Engagements) and with the professional standards applicable in France.

- We assessed the suitability of the Criteria in terms of its relevance, comprehensiveness, reliability, neutrality and understandability by taking into consideration the best practices of the oil and gas industry.
- We conducted the following work related to consistency and arithmetical accuracy of member companies' data reported by the 12 OGCI member companies with the Criteria:
 - Assessment of the appropriate implementation of the Criteria to the member company data,
 - Analysis and investigation of member company data value change in 2021 compared to 2020,
 - Calculation of consistency ratios and investigation to identify potential outliers among member company data,

- We conducted a reconciliation between member company data and publicly available information,
- We assessed the nature and extent of third-party verification conducted at company level on member company data,
- We conducted interviews with the 12 OGCI member companies,
- We reviewed the consolidation performed by OGCI on the anonymized member company data.

We consider that the work we have done by exercising our professional judgment allows us to express a limited assurance conclusion; an assurance of a higher level would have required more extensive verification work.

Paris-La Défense, 26 September 2022

Signed by:



EY & Associés

Partner, Sustainable Development
Christophe Schmeitzky

Percentage of OGCI indicators considered as reviewed by an external third party and covered by EY limited assurance statement

OGCI indicators	Total as a percentage of 2021 data...	
	... considered reviewed ² by an external third-party	... covered by EY limited assurance statement on 10 companies (see the EY statement)
Operated greenhouse gas emissions – all sectors (Scope 1)	85%	62%
Operated greenhouse gas emissions – upstream (Scope 1) ³	87%	69%
Operated greenhouse gas emissions – upstream (Scope 2) ²	95%	44%
Operated methane emissions ⁴ – all sectors		
verified as part of operated greenhouse gas emissions – scope 1	89%	54%
verified as a standalone indicator	22%	22%
Operated methane emissions – upstream ³		
verified as part of total operated GHG emissions – scope 1	88%	54%
verified as a standalone indicator	35%	35%
Natural gas flared – upstream ⁴	84%	84%
Flaring greenhouse gas emissions – upstream ⁴	84%	78%

Notes:

² An indicator is considered as “reviewed” if it was published in a publicly available document and if it was covered by an opinion or conclusion statement provided by an external third party or was reported to a governmental authority and available to public. None of the opinion/conclusion statements consulted contained any qualification. All levels of opinion and conclusion statements have been considered (reasonable assurance, limited assurance and assurance on implementation of processes).

³ The sum of “Operated greenhouse gas emissions – upstream (Scope 1)” and “Operated greenhouse gas emissions – upstream (Scope 2)” indicators correspond to the numerator of the carbon intensity indicator.

⁴ “Operated methane emissions” indicator is considered reviewed if “Operated methane emissions – upstream” are reviewed, as methane emissions mainly occur in upstream activities. “Operated methane emissions” and “Operated methane emissions – upstream” are not anymore automatically considered as reviewed if only the “Greenhouse gas emissions – all sectors” are reviewed (as methane emissions generally represent a minor fraction of total greenhouse gas emissions).

⁴ All indicators are operated. “Operated greenhouse gas emissions – upstream (Scope 1)”, “Operated greenhouse gas emissions – upstream (Scope 2)”, “Natural gas flared – upstream” and “Flaring greenhouse gas emissions – upstream” indicators are considered reviewed if the “Greenhouse gas emissions – all sectors” are reviewed, as they are part of the overall greenhouse gas emissions review.