Carbon Market Watch

Net-zero pipe dreams:

WHY FOSSIL FUELS CANNOT BE CARBON NEUTRAL

Investigation, October 2021

Table of Contents

Executive summary

With fossil fuels being branded “carbon neutral” left and right, this Carbon Market Watch investigative report analyses 18 recent carbon neutrality claims in detail, uncovering that they amount to brazen greenwashing.

These “carbon neutral” fossil fuel claims primarily concern liquefied natural gas (LNG) cargoes, with two relating to oil and condensate shipments. The claims were made by oil and gas majors, such as Shell, BP, Total, Gazprom, Eni, Petronas, PetroChina, CNOOC, Cheniere and Occidental. They also involved major financial groups and traders like Macquarie, Mitsui & Co., Trafigura, Reliance Industries, and Diamond Gas International (a subsidiary of Mitsubishi).

These firms expect the outside world to unquestioningly accept that their continued production and burning of fossil fuels is climate-compatible as long as they stick a “carbon neutral” fig leaf over it.

After analysing these 18 claims against six criteria for transparency and environmental integrity, Carbon Market Watch has definitively found that each claim amounts to greenwashing. Our key findings are as follows:

- No firm respects the most basic requirements to begin to even consider calling a product, let alone a fossil fuel, “carbon neutral”. The firms ignore mitigation measures they must take and instead buy carbon credits to purportedly undo their damage.
- Even the logic of such “compensation” is fatally flawed for ignoring longevity. Burning fossil fuels, which have been buried in the ground for ages and will emit greenhouse gases affecting the atmosphere for centuries, cannot be offset with temporary storage in living ecosystems or with credits not delivering additional GHG reductions.
- The firms never disclose full details about the source of credits, which obstructs third-party review to gauge quality. This lack of transparency is highly problematic as they already erroneously consider that buying credits is sufficient to claim “carbon neutrality”.
- No firm publicly discloses the price paid for their credits, raising concerns these are extremely cheap transactions that are almost certainly at prices well below what is needed for the firm to actually reduce its own value chain emissions.
- No firm publicly discloses, in its claim, an estimate of lifecycle emissions for the specific fossil fuel cargo it is calling “carbon neutral”. One-third of claims do not even factor in Scope 3 emissions (related to the final combustion of the fossil fuels), despite the fact that these represent the vast majority of total lifecycle emissions.

Ultimately, these greenwashing claims may help clean up the image of oil and gas firms at minimal cost but they do nothing to clean up the sector’s climate-wrecking emissions and undermine the ‘polluter pays’ principle.

Summary of recommendations

In order to stop the overt greenwashing exhibited in "carbon neutral" fossil fuel claims and to scale up climate action, Carbon Market Watch recommends two key lines of action to be taken by a range of stakeholders (full recommendations at end of report).

Real climate action, no more greenwashing

Fossil fuel firms must immediately stop making baseless "carbon neutral" fossil fuel claims and instead take real action today to reduce emissions significantly and measurably. This involves stopping exploration and new extraction projects; slashing oil and gas production and setting long-term phase-out plans; setting absolute emission targets for the full value chain without any role for "offsets" to achieve them; ending all indirect activities, like lobbying or ads, intended to slow or halt climate action and carbon pricing.

Policymakers and lawmakers must proactively design and implement regulations and legislation to prevent greenwashing, including through redefining advertising standards, and to ensure companies can no longer legally make erroneous "carbon neutral" fossil fuel claims.

Civil society organisations and the public should continue to apply pressure on polluters and policy-/law-makers, including by scrutinising carbon neutral claims, especially for fossil fuels, and calling out any greenwashing. As this report shows, it is possible to scrutinise such claims by using clear, consistent and accurate criteria for environmental integrity and transparency.

Scale-up climate and conservation finance responsibly

Fossil fuel companies and other buyers of credits must abandon dubious "tonne-for-tonne" offsetting and, instead, directly provide climate finance. When purchasing credits, they should adopt the "contribution" claim model, whereby firms still buy and retire credits but do not claim to have "offset" their emissions in doing so.

Introduction

This investigative report assesses the proliferation of corporate claims of "carbon neutral" fossil fuels, even though these fuels are responsible for the overwhelming majority of human-generated greenhouse gas emissions. These claims are being made largely by oil and gas majors, as well as traders, utilities and other partners. These firms are keen to claim that fossil fuels, and even related infrastructure, are "carbon neutral", to lend them a deceptive climate-friendly veneer and even to sell, at a premium, the same products and services after giving them a green facelift.

This Carbon Market Watch investigation focuses on 18 "carbon neutral" fossil fuel claims made in 2021 (one in 2020) up until 13 September. The claims are most common for liquefied natural gas (LNG) cargoes, but also extend to other fossil fuels – such as oil and condensate – and even mid/downstream infrastructure, such as pipelines and processing facilities.

The number of claims is growing rapidly: we tracked 18 public claims made between 1 January and 13 September 2021, which is up from five in 2020, and three in 2019, when the first claim was made by Shell.[1] If you are asking yourself how it is possible that a fossil fuel, which is packed full of carbon, can be carbon neutral, then you are not alone and you have come to the right place to unpick these claims.

This report breaks down these 18 "carbon neutral" fossil fuel claims and analyses them against six key transparency and environmental integrity criteria, ultimately uncovering numerous ways in which the claims are misleading and amount to greenwashing. It also underscores what should be done by different stakeholders to address this problem and end this greenwashing. Carbon Market Watch analysed the claims on the basis of reviewing associated public statements. This was complemented with research from academics, civil society organisations, journalists, market actors and think tanks, and by directly reaching out to the firms.

The firms making "carbon neutral" fossil fuel claims analysed in this report were contacted for comment and clarification on their claims weeks, sometimes months, before this document went to press. Most did not respond. Some responded that they could not provide answers for confidentiality reasons, or they only provided very limited answers. Only two firms disclosed to us details about the projects from which credits had been sourced (project names, volume of credits). Needless to say, these details are not publicly accessible and they were not included in the original press releases.

There are also many oil and gas majors and partners that may not have yet made such claims, but are still conducting their activities in a business-as-usual fashion with no evident intention of changing. These firms have received closer scrutiny in other analyses,[2] and are not the focus of this report.

Defining carbon neutrality

Not all organisations, firms or countries define carbon neutrality the same way, but it is generally understood to be "[the] condition in which anthropogenic CO_2 emissions associated with a subject are balanced by anthropogenic CO_2 removals."[3] This means that in order for a specific firm to be carbon neutral, its net CO_2 emissions must be zero.[4]

For a firm to claim carbon neutrality, Carbon Market Watch considers that several requirements must be met, as outlined in our "carbon neutrality checklist":

Carbon neutrality checklist: 4-step breakdown

- ☑ 1) The firm must clearly demonstrate why and how its activities - i.e. the products and services it offers - are unavoidable, non-substitutable and essential, and most crucially, aligned with pathways to limit global warming to below 1.5°C.
- ☑ 2) The firm must reduce its full value chain GHG emissions - Scopes 1, 2, 3 - as much as possible. The firm should also explore abatement options through material and energy efficiency, product substitution, waste reduction and circularity along its value chain. Any residual emissions that cannot be further reduced - e.g. by technological means or product substitution - could be considered "unabatable" for the moment, until new technologies or practices emerge and as long as a clear explanation is provided.
- ☑ 3) The firm must explain why residual emissions are "unabatable". For example, it may not be technologically possible yet to reduce emissions from a given product or service further. It is vital to provide a clear explanation, such as why current technologies cannot be utilised, in order to improve transparency and allow for objective third-party review if needed (the burden of proof falls on firms, to be clear). Transparent explanations will result in greater awareness of barriers and opportunities, which may also help better channel financing or scale up R&D that could unlock further change.
- ☑ 4) After completing these first three steps, the firm may then tackle any residual emissions through financing activities that remove atmospheric CO_2 or reduce/avoid the release of GHG emissions, as long as such removals and/or reductions are truly measurable, verifiable, permanent and additional (i.e. over and above what would have happened without this finance). These activities could be financed by buying carbon credits - representing reduced or avoided emissions from an existing or planned activity, or CO_2 that has been permanently removed from the atmosphere. These activities should preferably deliver results-based climate finance and go beyond tonne-for-tonne offsetting (see Box 1).

Only after satisfying these four steps can a firm claim carbon neutrality. A firm cannot skip steps one, two and three, and simply purchase credits to compensate for all emissions to claim carbon neutrality. Moreover, a firm's carbon neutrality status is not permanent, and would need to be re-assessed over time in light of new research and development, namely with regard to what is considered "unabatable". It is not possible to claim carbon neutrality for a firm, service or good, if its emissions are expected to be net-zero in the future, say in 2050 or even 2030, but are not yet net-zero.

Can carbon neutrality be claimed for a service or product?

The firm in question would need to have first done everything possible to reduce the associated emissions of a product or service that is essential, non-substitutable and 1.5°C-aligned. Moreover, the firm would need to have explained why it cannot reduce these emissions further, before purchasing carbon credits to "offset" residual emissions.[5] Theoretically, a product or service could be considered "carbon neutral" before the entire firm is, but virtually no product or service would qualify today on the basis of the above "carbon neutrality checklist".

In by far most cases, the essential first three steps of the "carbon neutrality checklist" have not been satisfied for a product or service claiming carbon neutrality. Some firms non-transparently claim these steps have been satisfied without providing clear supporting evidence. If a firm skips these three steps and relies exclusively on the purchase of a quantity of carbon credits that is supposedly equivalent to the amount of GHGs associated with the product or service, then it would be incorrect to claim carbon neutrality for it. As will be further detailed, this occurs in every "carbon neutral" fossil fuel claim we analysed (see Table 1).

Relying primarily on carbon credits to "offset" a product's/service's emissions – let alone claiming carbon neutrality by doing so – is also problematic due to the flawed logic of "tonne-for-tonne" offsetting, which encourages business-as-usual activities.[6] In addition, numerous issues and opportunities to exploit loopholes are tied to basic crediting requirements and are especially prevalent in nature-based projects, but will not be covered in detail here.[7] Of course, buying carbon credits is not necessarily problematic, but buyers simply should not use these transactions for tonne-for-tonne offsetting, and should instead consider better alternatives like the "contribution" claim (see Box 1).

Box 1. Real world contributions: retiring carbon credits responsibly

The "contribution" claim is a more accurate and transparent way to describe the impact of disbursed climate finance in the context of carbon markets. Carbon Market Watch has long been advocating for the contribution model. The Gold Standard, the second largest issuer of carbon credits on the voluntary carbon market, and the Science Based Targets initiative (SBTi) also endorse this model.[8]

Under the contribution model, nothing substantively changes in carbon credit transactions, except, crucially, the claim. Firms still buy carbon credits, but instead of claiming to have "offset" or reduced emissions in doing so, they instead claim to have supported a project by providing X million euros in financing to scale-up X hectares of no-till agriculture or to deliver X thousand improved cooking stoves. What's measured, and advertised, is the firm's actual financial contribution to support a country's/project's/community's climate efforts.

The contribution model represents not only a more accurate and transparent description of the impact of buying and retiring carbon credits, but it also simplifies carbon accounting by eliminating the risk of double counting: since the buyer retires the carbon credit without claiming the associated emission reduction, it can only be counted once, by the project developer/country responsible for it.

"Practice-based credits" are another alternative under the umbrella of the contribution model. Through a practice-based credit system, a firm would claim to finance positive practices, without claiming that this cancels out their own climate responsibility, or advertising that it permanently absorbs all the CO_2 emissions they have released. This model is especially useful for land-based projects, where permanence is very difficult – and often impossible – to demonstrate or guarantee. By financing practices, it makes it clear that the benefits, e.g. better forest protection, can only be guaranteed as long as the practice continues to be financed.[9]

Can a fossil fuel be "carbon neutral"?

If a carbon neutrality claim for a generic product or service comes with so many caveats, then what about for a fossil fuel? The short answer is that a fossil fuel cannot be claimed as carbon neutral for a few simple reasons.

No fossil fuel firm or its current activities are 1.5°C aligned

First, no fossil fuel firm has credibly demonstrated alignment with pathways to limit global warming to 1.5°C, let alone even 2°C, as set out in the Paris Agreement, and in keeping with the global carbon budget. For instance, eight of the largest integrated oil and gas companies fall far short of aligning with a 1.5°C pathway because they continue to explore for fossil fuels, have not announced 1.5°C-compatible fossil fuel phase-out plans, and have inconsistent coverage of emissions when they have mitigation targets (e.g. only Scope 1 and 2 emissions are covered,[10] or a carbon intensity target instead of absolute reduction).[11]

To even have a 50% chance of staying under 1.5°C, 60% of current oil reserves, 60% of current gas reserves, and 90% of coal reserves must remain in the ground, researchers estimate.[12] The Science Based Targets initiative (SBTi)[13] does not currently validate science-based mitigation targets for companies extracting oil and gas. Their current business models are simply climate-incompatibile.

Keeping in mind that no fossil fuel firm's current activities are compatible with a 1.5°C or 2°C pathway, any "carbon neutral" claim for a fossil fuel product like LNG erroneously pre-supposes that the first three carbon neutrality requirements outlined in our checklist above have already been met. Moreover, even if these first three requirements were met, any claim would then need to ensure that all residual emissions are addressed with measurable, additional, verifiable, and permanent emission reductions or removals, which is not current practice.

Fossil emissions cannot be "offset" with short-term storage or non-additional credits

Whether for "tonne-for-tonne" offsetting or for a carbon neutrality claim, it is untenable to compensate for the combustion of once-secure fossil carbon, which had been safely tucked away in the earth for millions of years, by preserving or increasing sinks of impermanent biogenic carbon (e.g. trees), yet this is what underpins most carbon-neutral fossil fuel claims (see next section). Geological and biological carbon cycles are not equivalent.

Burning fossil fuels means removing carbon from very secure underground locations where it would have otherwise remained undisturbed for countless years and releasing it in the atmosphere where it will trap heat from anywhere between 300 to 1,000 years.[14] Given the long lifespan of CO_2 in our atmosphere, "offsetting" fossil fuel emissions through protecting or planting ecosystems/trees would logically necessitate that the ecosystems/trees representing the same amount of fossil carbon remain standing for 300-1,000 years. No company, project developer or government can realistically assure that outcome. This is especially problematic and risky at a time when the climate crisis is worsening and threatening ecosystems (see Box 2).

It is also problematic to "offset" fossil emissions with credits issued from project types or methodologies that are outdated and pose high risks of non-additionality, such as large-scale grid-connected renewable energy projects located in countries that are not "least developed".[15] The two largest carbon credit certifiers by credit issuance, Verra and Gold Standard, stopped approving such projects in September 2019 and January 2020 respectively.[16] This is because such project types are very unlikely to lead to additional emission reductions and to be financially dependent on credit revenue, a prerequisite for issuing carbon credits.[17] Such project types may have been additional in the past, but even that is contested in many cases.

Box 2. Bad credit: reversal risks and impermanence in nature-based projects

Protecting, regenerating, or planting wetlands, soil, forests and other ecosystems is highly important for many reasons, but in practical carbon accounting terms these are non-permanent storage sites that are vulnerable to "reversals" - fire, drought, insects, disease, flooding, and logging, to list a few. We are already tragically observing that reversal risks are worsening and are bound to be exacerbated in an increasingly hot and unpredictable climate.[18] Nature-based projects are increasingly reported to have experienced significant reversals due to raging forest fires, notably during the summers of 2020 and 2021.[19]

Such growing impermanence risks cast doubt on the effectiveness of nature-based crediting projects' already flawed safeguards, such as insurance buffer pools which are as of yet unproven in the long-term and are inadequate in the face of large-scale reversals. Buyers must re-examine the widespread strategy of purchasing such credits in bulk to "offset" emissions, especially if they are doing so to erroneously claim "carbon neutrality" or justify business-as-usual activities and continued fossil fuel production and combustion.

"Climate action" for cheapskates: when inexpensive credits replace a firm's mitigation measures

Many buyers of credits typically seek out the least expensive, and not necessarily highest quality, credits on the voluntary market. While certain technology-based carbon removal credits, such as direct air capture, go for as much as $400-900 per credit,[20] the majority of carbon credits are purchased at very low rates, below $5 per credit.[21]

Tacking on an additional $1-1.5 million to purchase cheap credits as a shortcut to claim an LNG cargo is carbon neutral is a no-brainer for a fossil fuel firm: the claim delivers commercial and branding benefits to the firm and the price of credits is a drop in the bucket relative to overall costs. For example, shipping a cargo of LNG, which is only one small part of the value chain, can cost above $300,000 a day,[22] with some routes taking 30 days or more.[23]

The price of credits is not necessarily a guarantee of credit quality - market dynamics can cause prices to rise without any associated increase in quality - but transparency around pricing is crucial. In the forestry and land use sectors, for instance, more expensive credits tend to be associated with other sustainable development co-benefits.[24] Buyers should divulge the price they pay for credits, as this can serve as a general proxy for quality and is indicative of the price they are willing to pay for externalised emission reductions/removals.

It is far cheaper for a firm to buy credits and keep the same business model rather than reduce its emissions – especially if it can get away with branding a polluting fossil fuel like LNG as "carbon neutral" simply by buying extremely cheap credits. For comparison, the High Level Commission on Carbon Prices recommends that to remain under 2°C, carbon should be priced at a rate of at least $40–80 per tonne of CO_2 by 2020 and $50–100 per tonne by 2030.[25] In some countries, estimates for the social cost of carbon alone stand at several hundred dollars per tonne today.[26]

One must also keep in mind that globally, the fossil fuel industry receives $11 million every minute in direct and indirect subsidies ($5.9 trillion, or 6.8% of global GDP, in 2020).[27] Letting oil and gas companies dress up their pollution with the fig leaf of cheap offsetting counts as yet another subsidy to the sector since the rest of society will be forced to pick up the true tab.

No stone unturned: investigating "carbon neutral" fossil fuel claims

Nearly all "carbon neutral" fossil fuel claims feature prominently in widely shared press releases.[28] However, full details demonstrating the validity of the claims are not provided. This seemingly universal lack of transparency raises flags about the quality of such assertions.

No carbon neutrality claim, let alone ones for a fossil fuel, should be accepted unquestioningly and uncritically (see Box 3). The eighteen "carbon neutral" fossil fuel claims we've assessed, as well as key details that were not disclosed, reveal beyond any doubt how they are misleading and amount to greenwashing.

Our analysis focuses on 17 claims made in 2021 that Carbon Market Watch was aware of as of 13 September, as well as one claim from 2020, based on public press releases and news articles.[29] The 18 assessed claims are mostly for liquefied natural gas (LNG). Nearly all claims are for "carbon neutrality", except for three which claim to be "carbon offset".

It is worth recalling that LNG is often touted as a clean fuel, but it is not. LNG releases CO_2 when it is combusted, and any leaks prior to that moment result in the release of methane into the atmosphere. Methane is a potent greenhouse gas that is about 84 times more damaging than CO_2 over a 20-year period.[30] Methane leakage is common in the fossil fuel industry. It can occur accidentally due to ageing infrastructure or carelessness, in the form of so-called "fugitive emissions". Methane can also be intentionally leaked, via the practice of "venting". Referring to LNG as "low carbon", "clean", or "carbon neutral" is simply a misleading bid to reinforce the erroneous narrative that so-called "natural gas"[31] should be a main energy source for decades to come.[32] The EU, for instance, must phase out all fossil gas by 2035 at the latest, if it is to meet its climate targets.[33]

Carbon neutrality claims for associated fossil fuel infrastructure, such as pipelines and LNG facilities,[34] were not assessed in detail. However, these claims raise concerns that, left unchecked, greenwashing efforts will expand to encompass every aspect of the fossil fuel industry.

Box 3. Fossil fuels in the dock

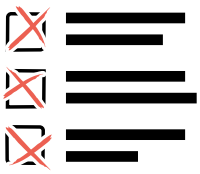
Civil society organisations are increasingly taking bold legal action to challenge fossil fuel firms for their past and continued impact on the planet and for their misleading advertisements. Here are a few recent examples:

- Following a lawsuit brought forward in 2019 by Friends of the Earth (as well as six other bodies and 19,000 Dutch citizens), the Hague District Court ruled, on 26 May 2021, that Shell must cut its emissions by 45% by 2030 (compared to 2019 levels);[35]
- The Australasian Centre for Corporate Responsibility filed, on 26 August 2021, the world's first lawsuit challenging the validity of a corporate net-zero target, made by Santos, Australia's second largest independent gas producer;[36]
- Following a complaint filed by nine law students from the Free University in Amsterdam, the Netherlands' Advertising Code Committee called on Shell, on 2 September 2021, to pull its 'Drive CO_2 Neutral' campaign on the grounds that Shell's purchase of carbon "offsets" to purportedly negate emissions from driving was misleading (customers were presented with the option of paying an extra €0.01 per litre of gasoline at the pump to render it "carbon neutral").[37]

Dubious declarations: synthesis of findings

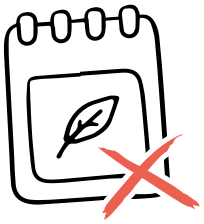
Our analysis reveals that all 18 assessed "carbon neutral" fossil fuel claims fail to fulfill key criteria for transparency and environmental integrity, which undermine their validity. These are delineated claim-by-claim in the next section in summary table 1, as well as in detail for selected claims in the section after.

The key findings are summarised below.



Carbon neutrality checklist not respected: All the claims rely on carbon credits, primarily from nature-based "offset" projects, in order to call fossil fuels "carbon neutral". The claims do not explain how fossil fuels could be considered 1.5°C-aligned, unavoidable, essential and non-substitutable, and how full value chain GHG emissions have been maximally reduced before resorting to carbon credits to compensate for residual emissions.

Absence of estimates and details on emissions: The firms neither use a consistent methodology to measure life-cycle emissions of a cargo, nor transparently report the estimated emissions of a given cargo. Instead, they use an average emission estimate or their own methodology but do not publicly share key methodological details. An average estimate is imperfect and cannot apply to a specific cargo since many variables are unique to any cargo (leakage, efficiency of liquefaction plant, type of vessel and port distances, etc). While it may be complex to calculate emissions from these variables, it is a prerequisite to correctly estimate emissions and buy corresponding credits.



Compensating long-term emissions with short-term storage: It is a fallacy to claim to compensate for releasing fossil CO_2, which was locked in the ground for millions of years and will remain in the atmosphere for 300-1,000 years, by buying short-term storage credits – e.g. from nature-based sinks, which would need to remain healthy and standing for the same duration in order to respect environmental integrity. Even if the crediting project were to remain of very high quality for 100 years, no project developer, firm or government can guarantee permanence for 300-1,000 years.

Lack of transparency on source and price of credits: Details on the source of credits are rarely, or only partially, disclosed: e.g. names or types of projects generating credits, volume of credits. The price of credits is never disclosed. "Carbon neutral" cargoes are also reportedly being sold at a premium, which could mean that, rather than paying for their pollution, oil and gas producers are making higher margins by branding their product green.[38] The lack of transparency on the source and price of credits could be because the credits were purchased at very low prices (below $5), or come from projects of low quality or with old vintages (e.g. credits issued pre-2016), or under methodologies that would no longer be certified today but for which credits still exist (e.g. large grid-connected renewable energy projects in countries that are not "least developed"). Why not be transparent if there's nothing to hide?

Poor emission scope coverage: Many claims – one-third – do not cover the actual combustion of the fossil fuel in their emission estimate and corresponding credit purchases, yet combustion is the source of by far the most pollution: e.g. 70% or more of LNG lifecycle emissions typically occur during combustion (Scope 3 emissions).[39] Certain claims only cover associated emissions from extracting, liquefying, shipping and re-gasifying (Scopes 1 & 2), accounting for about 30% or less of LNG lifecycle emissions. It is disingenuous to presume a fossil fuel can be "carbon neutral" solely by buying carbon credits, let alone if they only amount to a fraction of total emissions.[40]

Claim-by-claim assessment against six key criteria

In the table below, the 18 "carbon neutral" fossil fuel claims are assessed against key transparency and environmental integrity criteria. The table summarises key findings from our analysis, which are further detailed in an additional Annex Table. The claims are assessed on the basis of information the companies have made publicly available. The criteria used are:

Carbon neutrality checklist respected and explained

- The claim passes this criterion if it robustly explains why the product is 1.5°C-aligned, unavoidable, essential and non-substitutable, how all full value chain GHG emissions of the product have been maximally reduced, and why any residual emissions could be considered "unabatable" (steps 1-3 of "carbon neutrality" checklist).
- None of the criteria in this report are weighted, for the sake of simplicity, but in practice this criterion carries great weight as it underpins any credible carbon neutrality claim.

Emission estimate precisely calculated and disclosed

- The claim passes this criterion if it fully discloses the GHG emission estimate for the full lifecycle (Scopes 1, 2 and 3), as well as the underlying methodological details (a link to a publicly accessible methodology would suffice).

Scope 3 emissions factored

- The claim passes this criterion if it factors in Scope 3 emissions (i.e. combustion of the fossil fuel). If the firm claims to have factored in Scope 3 emissions but does not disclose its emission estimate, the claim only partially passes this criterion.

"Appropriate use" of credits

- The claim passes this criterion if it appropriately uses measurable, additional, verifiable, and permanent credits. By definition, this criterion can only be passed if the first criterion – "carbon neutrality" checklist – has been met. What is also assessed is how the credit is used: it is not possible to "offset" fossil emissions by purchasing credits with a high risk of non-permanence (e.g. avoided deforestation), or of non-additionality (e.g. large-scale grid-connected renewables in non-"least developed" countries).

Transparency on source of credits

- The claim passes this criterion if it publicly discloses the source of the credits being used to "offset" emissions: the project name, type and certifier, and the number of credits purchased.

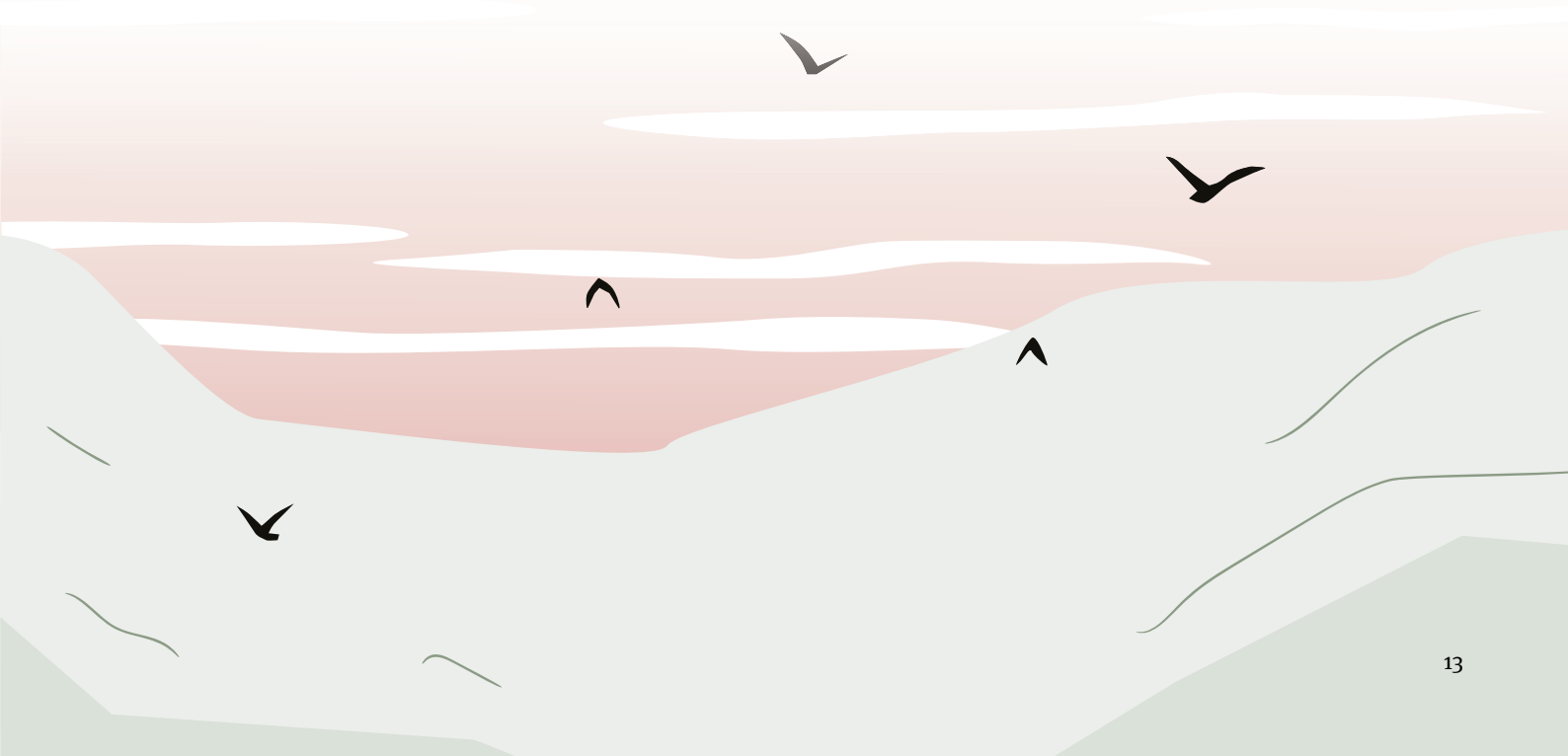
Transparency on price of credits

- The claim passes this criterion if it discloses the average price of the purchased credits (including average price of credits per project, if the claim relies on several projects).
- As detailed earlier, the price of credits is not necessarily a guarantee of credit quality. However, this criterion is an important proxy given the extremely low average price of credits, the lack of pricing transparency on the market, and the fact that it is far cheaper financially, but not environmentally, for firms to "offset" their emissions with inexpensive credits rather than actually reducing them.

Our analysis reveals that the claims do not pass a single one of the six above criteria for transparency and environmental integrity.

In fact, the claims either fail to meet all six criteria across the board (see Woodside/Trafigura, RWE, DGI/Toho Gas, BP/Sempra LNG, Petronas, and BP/Taiwan CPC), or fail to meet all criteria except for one or two that are partially failed nonetheless (see the other 12 claims). Specifically:

- For the criterion, carbon neutrality checklist respected and explained, all 18 claims fail. Even the three "carbon offset" claims fail since they still do not respect the basic principles of a mitigation hierarchy: one must avoid and reduce value chain GHG emissions maximally before considering "compensation/neutralisation" activities.
- For the criterion, emission estimate precisely calculated and disclosed, 16 claims fail. Two claims partially fail: one disclosed an estimate of lifecycle emissions - and the other for Scope 1 and 2 emissions only - for an average LNG cargo but not for the specific cargo in question.
- For the criterion, Scope 3 emissions factored, six claims fail. Eleven claims indicated they factored in Scope 3 emissions, but they did not disclose the initial emission estimate and so they still partially fail (one claim disclosed an emission estimate for an average LNG cargo but did not disclose the share of emissions by Scope). One seemingly factored in Scope 3 emissions - based on our investigation uncovering the crediting project and the number of credits retired - but the emission estimate, the crediting project and the number of credits retired were not actually disclosed.
- For the criterion, 'appropriate use' of credits, all 18 claims fail because they also failed the prerequisite first criterion (carbon neutrality checklist). On top of this: 14 claims rely on nature-based credits to offset fossil emissions (two of these 14 claims also rely on potentially non-additional renewable energy credits); one relies on potentially non-additional renewable energy credits to offset Scopes 1 & 2 alone (Petronas); and three fail to disclose any project/credit information.
- For the criterion, transparency on source of credits, 15 claims fail, either for providing no information or for disclosing highly inadequate information (e.g. "nature-based projects"). Three claims disclosed the project names and project certifiers but did not disclose the volume of credits, and so still partially fail.
- For the criterion, transparency on price of credits, all 18 claims fail. After investigating Occidental's claim for a "carbon neutral" oil cargo, we estimate they paid less than $1.5 per credit (see next section for detailed explanation and analysis).



Each criterion was assessed on a "traffic light" basis, indicated by the colour of the cell, for each claim in the table below:

- the colour red, indicates the criterion was not met, including when inadequate information was publicly disclosed;
- the colour orange, indicates the criterion was partially met (certain key details not disclosed);
- the colour green, indicates the criterion was met (in the end, none of the claims met a single criterion).

For our detailed analysis of selected claims, see the next section.

Table 1. Assessment of "carbon neutral" fossil fuel claims against key transparency and environmental integrity criteria

*Headline claim *Associated firms (press release featuring claim in hyperlink)* *Date of claim* **Claims with asterisk are analysed in detail in next section*	Carbon neutrality checklist respected and explained?	Emission estimate precisely calculated and disclosed?	Scope 3 emissions factored?	"Appropriate use" of credits?	Transparency on source of credits?	Transparency on price of credits?
*"Carbon neutral" LNG cargo *Total + CNOOC* *20 October 2020*	*No*	*No. We ascertained the estimate: 222,934 tCO_2e (see next section)*	*Claimed, but initial emission estimate not disclosed*	*No*	*Project names & certifiers disclosed, but not credit volume*	*No*
*"Carbon neutral" oil cargo *Occidental + Macquarie + Reliance Industries* *28 January 2021*	*No*	*No*	*Claimed, but initial emission estimate not disclosed*	*No (and no project info disclosed)*	*No info except project certifier: Verra Verified Carbon Standard (VCS)*	*No. We estimate <$1.5/credit (see next section)*
"Carbon neutral" LNG cargo *Mitsui + Hokkaido Gas* *26 February 2021*	*No*	*Not publicly disclosed: 210,000 tCO_2e (see Annex Table)*	*Claimed, but initial emission estimate not disclosed*	*No*	*No info except: "international forest conservation project"*	*No*
*"Carbon neutral" LNG cargo *Gazprom + Shell* *08 March 2021*	*No*	*Estimate for avg LNG cargo, 240,000 tCO_2e, but not for this cargo*	*Claimed, but share of emission Scopes not disclosed*	*No*	*No info except: nature-based projects under Verra VCS*	*No*
"Carbon offset" condensate cargo *Woodside + Trafigura + Kansai Electric + Tokyo Gas* *15 March 2021*	*No. "Carbon offset" better than "carbon neutral", but claim fails all criteria.*	*Not publicly disclosed : 18,000 tCO_2e (see Annex Table)*	*No*	*No*	*No info except: "nature-based projects in the Asia-Pacific region"*	*No*
"Carbon neutral" LNG cargo *RWE + POSCO* *29 March 2021*	*No*	*No*	*No*	*No (and no project info disclosed)*	*No info except project certifier: Gold Standard*	*No*
*"Carbon neutral" LNG cargo *Diamond Gas International [Mitsubishi] + Toho Gas*[41] *08 April 2021*	*No*	*No. We ascertained the estimate: 230,000 tCO_2e (see next section)*	*Not disclosed. Likely factored (see next section)*	*No*	*No. (we uncovered which projects - see next section).*	*No*
"Carbon neutral" LNG cargo *[Undisclosed] + Pavilion Energy* *15 April 2021*	*No*	*Scope 1 & 2 estimate for avg LNG cargo, 60,000 tCO_2e, but not for this cargo*	*No*	*No*	*Project names & certifiers disclosed, but not credit volume*	*No*
"Carbon neutral" LNG cargo *Cheniere + Shell* *04 May 2021*	*No*	*No*	*Claimed, but initial emission estimate not disclosed*	*No*	*No info except: "Shell's global portfolio of nature-based projects"*	*No*
"Carbon neutral" LNG cargo *Oman LNG + Shell* *09 June 2021*	*No*	*No*	*Claimed, but initial emission estimate not disclosed*	*No*	*No info except: "nature-based projects"*	*No*

*Headline claim *Associated firms (press release featuring claim in hyperlink)* *Date of claim* *Claims with asterisk are analysed in detail in next section*	Carbon neutrality checklist respected and explained?	Emission estimate precisely calculated and disclosed?	Scope 3 emissions factored?	"Appropriate use" of credits?	Transparency on source of credits?	Transparency on price of credits?
"Carbon neutral" LNG cargo *Shell + Brunei LNG + Osaka Gas* *06 July 2021*	No	Not publicly disclosed: 232,672 tCO_2e (see Annex Table)	Claimed, but initial emission estimate not disclosed	No	No info except: "Shell's global portfolio of nature-based projects"	No
"Carbon neutral" LNG cargo + 5-year deal for Shell to sell more cargoes to PetroChina *Shell + PetroChina* *12 July 2021*	No	No	Claimed, but initial emission estimate not disclosed	No	No info except: "Shell's global portfolio" + "[projects that] enhance forests in China and other parts of the world"	No
"Carbon offset" LNG cargo *BP + Sempra LNG* *15 July 2021*	No. "Carbon offset" better than "carbon neutral", but claim fails all criteria.	Estimated by BP, but no details disclosed	No	No	No info except: "Mexican afforestation project from BP's vetted portfolio of offsets"	No
"Carbon neutral" LNG cargo *Eni + Taiwan CPC* *06 August 2021*	No	Estimated by Eni, but no details disclosed	Claimed, but initial emission estimate not disclosed	No	Project names & certifiers disclosed, but not credit volume	No
*"Carbon neutral" LNG cargo *Petronas + Shikoku Electric* *18 August 2021*	No	No. We ascertained the estimate: 52,198 tCO_2e for Scopes 1 & 2 (see next section)	No	No	No info except "renewable-based credits under [VCS]" (we uncovered the project - see next section)	No
"Carbon neutral" LNG cargo *Inpex + Shizuoka Gas* *1 September 2021*	No	No	Claimed, but initial emission estimate not disclosed	No	No info except "global forest conservation projects [under VCS]"	No
"Carbon offset" LNG cargo *BP + Taiwan CPC* *06 September 2021*	No. "Carbon offset" better than "carbon neutral", but claim fails all criteria.	Estimated by BP, but no details disclosed	No	No (and no project info disclosed)	No	No
"Carbon neutral" LNG cargo *Inpex + Toho Gas* *13 September 2021*	No	No	Claimed, but initial emission estimate not disclosed	No	No info except "global forest conservation projects [under VCS]"	No

Note: *This table summarises key findings from our analysis, which are further detailed in the* Annex Table*. See the next section for an in-depth analysis of the claims preceded with an asterisk in this table. CMW reached out with clarifying questions to all of the firms associated with these 18 "carbon neutral" fossil fuel claims more than a month prior to publication. The nature of the responses of the few firms that replied is reflected in the corresponding endnotes in the full table (*Annex Table*).*

Source: *CMW analysis based on public press releases.*

Devil in the detail: breaking down selected claims

This section contains a detailed analysis of selected claims featured in Table 1.

Shell

Shell has made the most public "carbon neutral" LNG cargo claims to date. As of 12 July 2021, Shell had closed on or claimed 13 such cargoes by its own account, including reportedly the world's first supposedly "carbon neutral" LNG cargo in 2019.[42] In July 2021, Shell also signed a five-year deal for the supply of "carbon neutral" LNG to PetroChina.[43]

Gazprom + Shell

Claim: *On 8 March 2021, Shell purchased a cargo of LNG from Gazprom for use in the UK market. This was reportedly the first-ever carbon neutral LNG cargo delivered in Europe. The cargo is carbon neutral due to the cancellation of nature-based carbon credits to offset 240,000 tonnes of CO_2e, which are the estimated life-cycle emissions (all scopes) of an average LNG cargo of 70,000 tonnes, according to conversion rates of the UK Department for Environment, Food and Rural Affairs (DEFRA).*[44]

Greenwashing tally:
Shell and Gazprom's claim is highly misleading and non-transparent as it relies on tonne-for-tonne offsetting entirely to "compensate" for an approximate emission estimate with credits from projects not disclosed in press releases.

- **Carbon neutrality checklist not respected or explained:** There is no explanation for why the emissions covered by this LNG cargo could be considered residual and unabatable (or 1.5°C aligned). They are simply implied to be, and one is meant to accept this at face-value: "Using nature-based carbon credits to compensate for *emissions that cannot be avoided or reduced* is an important step as we find more ways to reduce emissions across the LNG value chain" (emphasis added).
- **Approximate emission estimate without complementary information:** The estimated emissions of 240,000 tCO_2e are based on "an average 70,000 tonne LNG cargo", but no details are provided on the size of this specific cargo, which must be known to Shell and Gazprom. UK DEFRA's conversion rates provide a benchmark to calculate lifecycle emissions, which depend on assumptions regarding the general value chain. Naturally, these factors vary for each cargo depending on such factors as company practices, leakage rates, efficiency of liquefaction plant, type of shipping vessel and distance between ports. It may be complex to calculate for each factor, but it is a prerequisite to correctly estimate emissions (and buy corresponding credits), which Shell and Gazprom have seemingly not attempted to do.
- **Inappropriate use of credits:** Prerequisite carbon neutrality checklist steps not met. Plus, fossil emissions are "offset" with nature-based credits.
- **Lack of transparency on source and price of credits:** Shell's press release provides no details on the source of credits (e.g. project name and type, certifier) or on the price of the credits. Gazprom's press release says they were sourced from Verra-certified projects (Verified Carbon Standard and Climate, Community and Biodiversity standard), but provides no more details on projects or credits.

Shell + PetroChina

Claim: *On 12 July 2021, PetroChina received its first cargo of carbon neutral LNG from Shell. This will be the first of many cargoes. Shell and PetroChina have reportedly signed the energy industry's first long-term carbon-neutral LNG supply deal: a five-year agreement for Shell to deliver the product to PetroChina. Under this agreement, each LNG cargo delivered will be carbon neutral due to the cancellation of nature-based carbon credits (matching the lifecycle emissions) from Shell's global portfolio of emission reduction projects that protect and enhance forests in China and other parts of the world. PetroChina will use this deal as part of its strategy to realise its carbon neutrality goal.*[45]

Greenwashing tally:
Shell and PetroChina's claim for this first cargo and five-year deal are highly misleading and non-transparent. The first cargo relies on tonne-for-tonne offsetting to "compensate" for an undisclosed average emission estimate with credits from nature-based (NB) projects not disclosed in the press release. The future cargoes will also rely on tonne-for-tonne offsetting for average estimated emissions (not specific to each cargo) from NB projects. Whether the projects will be disclosed seems doubtful, given the poor precedent set by this first deal.

- **Carbon neutrality checklist not respected or explained:** There is no explanation for why the emissions covered by this first LNG cargo, and future cargoes under this five-year deal, could be considered residual and unabatable (or 1.5°C aligned) – one is expected to accept the claim that they are "hard to abate" at face-value.
- **No emission estimate or methodological details disclosed:** No emission estimate was disclosed concerning this first LNG cargo. Emission estimates for future LNG cargoes may understandably still be uncertain as they have not yet occurred, but no concrete methodological details are shared. It is stated that to calculate emissions for this first cargo and future ones, DEFRA conversion factors will be used (i.e. average estimates).
- **Inappropriate use of credits:** Prerequisite carbon neutrality checklist steps not met. Plus, this first cargo and all future cargoes under the five-year deal will be "offset" with nature-based credits.
- **Lack of transparency on source and price of credits:** Shell's press release provides no details on the source of credits (e.g. project name and type, and certifier) or on the price of the credits for this first LNG cargo, or on the expected credit sources for the future LNG cargoes. The credits will be from Shell's "global portfolio of emission reduction projects that protect and enhance forests in China and other parts of the world". This indicates all credits may come from avoided deforestation (e.g. REDD+), reforestation and/or afforestation projects, but the press release does not specify project types or disclose indicative projects, locations, or selection criteria that will be used.

BP

BP's LNG deals with Taiwan CPC and Sempra LNG were not claimed to be "carbon neutral". Instead, they were called "carbon offset", which is more appropriate relative to carbon neutrality claims but still questionable, especially because the GHG mitigation hierarchy is not respected. There are fundamental problems with BP's claims. Here, we look at the deal between BP and Sempra LNG.

BP + Sempra LNG

Claim: *On 15 July 2021, BP and Sempra LNG concluded a contract for the delivery of a cargo of carbon-offset LNG to Mexico. CO_2 and CH_4 emissions associated with the LNG cargo, from wellhead to discharge terminal, were estimated using BP's GHG quantification methodology for LNG, which follows international standards and may be updated from time to time. The emissions will be offset through Sempra retiring a corresponding amount of carbon credits sourced from a Mexican afforestation project from among BP's offset portfolio.*[46]

Greenwashing tally:
BP and Sempra LNG's claim is extremely misleading and non-transparent, since it relies on tonne-for-tonne offsetting to "compensate" for an undisclosed amount of Scope 1 and 2 emissions only, from an undisclosed "Mexican afforestation project".

- **Carbon mitigation hierarchy**[47] **not respected or explained:** BP and Sempra make a vague assertion that "natural gas has a key role to play in getting the world to net zero", without providing supporting evidence and despite fossil gas' high emissions. This calls on the reader to accept, at face-value, the implication that these emissions are unabatable and 1.5°C aligned.
- **No emission estimate or methodological details disclosed:** The estimated emissions are not disclosed. Scope 1 & 2 emissions are said to be calculated using BP's quantification methodology, but no details or links are provided, and Scope 3 emissions are not calculated. After we contacted BP for clarification, BP indicated it had not calculated Scope 3 emissions because it had a higher degree of confidence in calculating Scope 1 and 2 emissions.

This is curious because Scope 3 accounts for most LNG lifecycle emissions and can be calculated by applying a conversion factor, whereas Scope 1 and 2 emissions are much more complex to estimate. Finally, the assertion that the methodology has been developed "following relevant international standards and may be updated from time to time" is vague. Which standards? Were they developed by other fossil fuel firms, by trade associations, by governments, by consultancies?

- **Scope 3 emissions ignored:** The undisclosed emissions estimate only covers emissions associated "from wellhead to discharge terminal" (selected Scope 1 and 2 emissions since exploration is not even factored in). Scope 3 emissions, i.e. from LNG combustion, are not included, yet this accounts for upwards of 70% of total emissions along the LNG value chain.[48] The credits purchased to purportedly "offset" the whole cargo only cover a small share of the cargo's total lifecycle emissions.
- **Inappropriate use of credits:** Prerequisite carbon mitigation hierarchy steps not met. Plus, fossil emissions are "offset" with credits from an afforestation project.
- **Lack of transparency on source and price of credits:** The press releases indicate the credits are sourced from a Mexican afforestation project from BP's portfolio, but no such project is publicly listed on BP's webpage showcasing its vetted offset projects (last checked 23.10.21) and no price of the credits is disclosed. When contacted for clarification, BP indicated the project is from an internal portfolio (from the Trading & Shipping wing), which is, for some reason, not public.

Petronas

Claim: *On 18 August 2021, Petronas delivered its first carbon neutral LNG cargo to Shikoku Electric. Petronas offset the estimated life cycle carbon footprint of the LNG cargo with renewables-based carbon credits (VCS certified) for the emissions generated from upstream gas exploration and production, transportation, liquefaction, and shipping of the cargo. Petronas is also reducing its carbon footprint throughout its LNG and gas value chain, including by powering the Petronas LNG Complex [cargo origin] with 90MW of hydroelectricity, conducting flare recovery as well as carbon capture and storage from offshore gas fields.*[49]

Greenwashing tally:
Petronas's claim is brazenly misleading and non-transparent since it relies on tonne-for-tonne offsetting for an undisclosed amount of Scope 1 and 2 emissions only from an undisclosed crediting project, which we uncovered to be a more than decade-old hydropower project that may be non-additional and for which credits may be very cheap.

- **Carbon neutrality checklist not respected or explained:** Petronas explains it is reducing its carbon footprint across the LNG and gas value chain, including by powering its LNG complex with 90MW of hydroelectricity. However, reducing carbon intensity does not necessarily mean absolute emissions are reduced. No context is also given on the complex's overall sources of electricity generation. Liquefaction covers about 9% of average estimated LNG lifecycle emissions,[50] so even if the facility were fully powered by renewables this does not make the LNG carbon neutral or 1.5°C-compatible. Finally, flare recovery and carbon capture and storage can both be used to prolong or enhance fossil fuel extraction and production, depending on the context - needless to say, this information was not shared.
- **No emission estimate disclosed:** Although Petronas did not share its emission estimates, we have calculated that this cargo's Scope 1 and 2 emissions were estimated to be 52,198 tCO_2e (see final bullet point below).
- **Scope 3 emissions ignored:** The undisclosed emissions estimate only covers emissions associated with "upstream gas exploration and production, transportation, liquefaction, and shipping of the cargo" (Scope 1 and 2 emissions). Scope 3 emissions, i.e. from LNG combustion, are not included, yet this can account for upwards of 70% of total emissions along the LNG value chain.[51] The credits purchased to purportedly "offset" the whole cargo only cover a small share of its total lifecycle emissions.
- **Lack of transparency on source and price of credits:** Petronas indicates that the credits were sourced from a renewable energy project certified under the Verified Carbon Standard, but provides no specifics (we uncovered which project – see next bullet point). No details on the price of credits are shared.

- **Inappropriate use of credits:** Prerequisite carbon neutrality checklist steps not met. Plus, Petronas did not disclose which project generated the credits, but we deduced this by cross-referencing Verra's registry with the sparse details Petronas had shared (renewable project under VCS). On 16 August 2021, Petronas retired 52,198 credits from the "65MW dagushan hydropower project in China", originally registered in 2011.[52] A preliminary analysis of the project reveals it is unlikely to satisfy additionality requirements.[53]

Occidental + Macquarie

Claim: *On 28 January 2021, Occidental delivered the world's first shipment of carbon-neutral oil to Reliance Industries in India. The 2 million barrels of oil were offset, by Macquarie, equivalent to the CO_2e associated with the production, delivery, and refining of the crude oil and use of the resulting product. The offsets were sourced from a variety of projects under the Verified Carbon Standard meeting eligibility criteria for CORSIA. This deal is a bridge to the development of a further differentiated petroleum product, net-zero oil, which Occidental intends to eventually produce through the capture and sequestration of atmospheric CO_2 via industrial-scale direct air capture (DAC) facilities and geological sequestration.*[54]

Greenwashing tally:
Occidental's claim is extremely misleading and non-transparent, as it relies on tonne-for-tonne offsetting to "compensate" for an undisclosed emissions estimate from undisclosed crediting projects, for which we estimate Occidental may have paid even less than $1.5/credit on average.

- **Carbon neutrality checklist not respected or explained:** Occidental sees this offset-bundled transaction as "a first step in the creation of a new market for climate-differentiated crude oil". In other words, Occidental has developed this deal with Macquarie to gauge market interest for cargoes labeled "carbon neutral" and to serve as a "bridge to the development of a further differentiated petroleum product, **net-zero oil**" (original emphasis), through the extraction of crude oil using direct air carbon capture and storage (CCS). CCS is a controversial technology and challenges exist, such as the risk of leakage.[55] Moreover, when CCS is used for enhanced oil recovery, as proposed by Occidental, it is unacceptable (this entails injecting CO_2 underground in order to extract otherwise unreachable oil & gas). CCS for enhanced oil recovery is a business-as-usual approach to extend fossil fuel production and lock in dependence for decades, rather than changing behaviour and business models and scaling up existing alternatives.[56]
- **No emission estimate or methodological details disclosed:** The only information shared is that the shipment consisted of 2 million barrels. By applying a conversion factor, it can be possible to estimate the approximate emissions associated at least with the combustion of these 2 million barrels, but not with any other aspects of the supply chain. According to the United States Environmental Protection Agency (EPA), each barrel of oil releases an average of 0.43 metric tonnes of CO_2 upon consumption, and so 2 million barrels would release about 860,000 metric tonnes of CO_2 to the atmosphere when combusted.[57] This implies that Occidental would have needed to retire about 860,000 credits to "offset" Scope 3 emissions, and that doesn't even account for Scope 1 and 2 emissions. Currently it's not possible to tell how many credits Occidental retired, and what estimate they came up with for Scopes 1, 2, and 3, since they have chosen not to disclose this information.
- **Inappropriate use of credits:** Prerequisite carbon neutrality checklist steps not met. Plus, no project details were disclosed.
- **Lack of transparency on source of credits:** Occidental indicates that the credits were sourced from a variety of projects certified under the Verified Carbon Standard, but provides no specifics on the project names and types or volume of credits.
- **No transparency on price of credits but Occidental may have paid less than $1.5/credit:** No details on the price of credits were disclosed. According to two sources involved in the deal, Occidental paid $1.3 million for all the credits, or about $0.65 per barrel.[58] Taking the provisional estimate we made earlier that about 860,000 credits would need to be retired to account for Scope 3 emissions for this cargo, then Occidental would have paid an extremely low average of $1.5 per credit. Moreover, since Occidental claims they "offset" entire lifecycle emissions (Scopes 1 and 2, in addition to Scope 3), this would mean that they would have had to retire more than the 860,000 credits we estimated for Scope 3, meaning that in reality they would have paid even less than our $1.5/credit estimate.

Total + China National Offshore Oil Corporation (CNOOC)

Claim: *On 29 September 2020, Total delivered its first carbon neutral LNG cargo to CNOOC. The cargo's carbon emissions, throughout the value chain (including production, liquefaction, shipping, regasification, and end-use), have been offset with Verified Carbon Standard emission certificates financing two projects: Hebei Guyuan Wind Power Project, which aims to reduce emissions from coal-based power generation in northern China; Kariba REDD+ Forest Protection Project, which aims to protect Zimbabwe's forests.*[59]

Greenwashing tally:
Total and CNOOC's claim is highly misleading and non-transparent as it relies on tonne-for-tonne offsetting to "compensate" for an undisclosed amount of emissions with avoided deforestation credits and mainly with potentially non-additional and inexpensive credits from a more than decade-old wind power project.[60]

- **Carbon neutrality checklist not respected or explained:** Total simply states that LNG is essential "to meet the growth in global demand for energy" without an underlying rationale for why this demand needs to be met with fossil fuels.
- **No emission estimate disclosed:** Although the estimated emissions are not disclosed, we have been able to indirectly ascertain that Total (and perhaps CNOOC) estimated lifecycle emissions to be 222,934 tCO_2e based on the number of credits retired (see final bullet point below).
- **Inappropriate use of credits:** Prerequisite carbon neutrality steps not met. Plus, we ascertained the fossil emissions were "offset" with 36,376 nature-based credits (volume not disclosed), and primarily with 186,558 credits (84% – volume not disclosed) from a more than decade-old wind power project with a high risk of non-additionality (see bullet point 5 below).
- **Lack of transparency on source and price of credits:** This deal is one of three we analysed that publicly disclosed the specific project names – Hebei Guyuan Wind Power Project in China & Kariba REDD+ Project in Zimbabwe – but it shared neither the total credits purchased (including share of credits per project) nor the price of the credits.
- **Outdated crediting project with high risk of non-additionality:** Total did not disclose how many credits were purchased per project, but we deduced this by checking the credit issuance of the projects on Verra's registry. On 6 November 2020, Total and CNOOC retired 36,376 credits from the Kariba REDD+ Project and 186,558 credits from the Hebei Guyuan Wind Power Project.[61] A short analysis of the Hebei Guyuan Wind Power project reveals it is unlikely to satisfy additionality requirements.[62]

Diamond Gas International (DGI) + Toho Gas

Claim: *On 8 April 2021, Toho Gas received its first carbon neutral LNG cargo from Diamond Gas International. Diamond Gas International supplied the carbon credits, which were certified by an organisation that verifies the CO_2 emission reductions of carbon offset projects globally, and which were paid for by Toho Gas. In a statement, Toho Gas communicated that: "Going forward, we will continue to contribute to the low carbon development of society through the procurement of carbon-neutral LNG, and will also engage in activities with an eye on future decarbonisation."*[63]

Greenwashing tally:
Toho Gas and DGI's claim is highly misleading and non-transparent, since it relies on tonne-for-tonne offsetting to "compensate" for an undisclosed emissions estimate with credits from undisclosed projects, which we uncovered to be an avoided deforestation project (14% of credits) and a more than decade-old hydropower project (86%) that may be non-additional and for which credits may be very inexpensive.

- **Carbon neutrality checklist not respected or explained:** Toho Gas states that "the procurement of carbon-neutral LNG" will "contribute to the low carbon development of society", without any elaboration on why or how this would be the case. The firm vaguely states it "will also engage in activities with an eye on future decarbonisation", without disclosing details, for example, of any corporate climate mitigation targets.

- **No emission estimate disclosed:** Neither estimated emissions nor project details are disclosed. After further investigating, we determined that Toho Gas and DGI likely estimated lifecycle emissions to be 230,000 tCO_2e, based on our discovery of the crediting projects and the number of retired credits (see final bullet point below).
- **Inappropriate use of credits:** Prerequisite carbon neutrality checklist steps not met. Plus, we uncovered the credits are from a nature-based project (31,280 credits) and mainly from a more than decade-old hydro power project (198,720 credits or 86% of total) with a high risk of non-additionality (not disclosed - see final bullet point below).
- **Lack of transparency on source and price of credits:** No details were disclosed about the project (name, type, certifier), the credit volume, or the price of credits.
- **Outdated crediting project with high risk of non-additionality:** Toho Gas did not disclose any information on the crediting projects, but we uncovered which projects the credits were sourced from by scanning the Verra registry. On 7 April 2021, Toho Gas retired 31,280 credits from the Kariba REDD+ project in Zimbabwe and 198,720 credits from the 210 MW Musi Hydro Power Plant, Bengkulu in Indonesia.[64] The Musi Hydro Power Plant project, which was originally registered in 2009 and re-registered in 2018, about a year before Verra stopped approving large-scale grid-connected renewable energy projects, except for those from least developed countries, due to high risks of non-additionality. A preliminary analysis of the project reveals it is unlikely to satisfy additionality requirements.[65]

Conclusion

This investigation clearly reveals that murky claims of "carbon neutral" fossil fuels are anything but neutral, neither in their impact on the climate nor in the motivations behind the claim. They are uniformly misleading, vague and non-transparent.

The companies involved in this latest greenwashing experiment expect the outside world to take their word for it that their business-as-usual activities are completely climate-compatible and that essentially no alternatives exist for their fossil fuels, even though plenty of clean alternatives are available. They also expect us to believe that the magic wand of "offsets" alone can somehow make fossil fuels "carbon neutral" and undo the dire impacts of very real pollution.

No claim publicly discloses an estimate for lifecycle emissions of the specific cargo being called "carbon neutral": only two claims share an emission estimate for an average LNG cargo (one does not even factor in Scope 3 emissions), but even this ignores cargo-specific variables that underpin an accurate estimate.

A third of the "carbon-neutrality" claims we assessed do not, shockingly and unacceptably, account for Scope 3 emissions, despite the fact that the bulk of emissions are released, unsurprisingly, during the actual burning of the fossil fuels.

Most claims erroneously consider that the release of fossil carbon - that had been stored in the earth for millions of years and that will stay in the atmosphere trapping heat for centuries - can be neutralised via short-term storage, such as in trees. Fourteen of eighteen claims purport to "offset" emissions with nature-based credits, three did not disclose any project details, and one claim entirely used potentially non-additional renewable energy credits to "offset" Scopes 1 & 2 only. Nature-based sinks would need to remain healthy for 300-1,000 years to match the duration that formerly secure fossil CO_2 will remain in the atmosphere when combusted. Nobody can guarantee intergenerational permanence on anywhere near this scale.

Moreover, the firms never disclose full details about the source of the credits, thereby obstructing efforts to independently assess their claims and gauge credit quality. Many claims disclose no details or only very limited information (e.g. "nature-based projects"). A few disclose the project type, and only three the actual project name, but never the number of credits. Some claims source credits that are unlikely to be "additional" or are of dubious quality.

Undermining transparency even further, not a single company discloses the price paid for the credits. This raises concerns the credits may have been purchased extremely cheaply, and almost certainly at prices well below what is needed to actually reduce the firm's value chain emissions. Not only are cheap credits often of low quality, but they also encourage polluters to continue polluting with impunity while leaving the rest of society to pick up the true tab.

The growing proliferation of these claims is extremely troubling for several reasons.

The claims do not respect basic principles of environmental integrity and carbon accounting, but may be perceived as credible by consumers unaware of the assumptions they make and the corners they cut. The explosion of these claims can create a false perception of validity by virtue of their growing volume.

If a fossil fuel firm, or a fuel, is incorrectly perceived to be carbon neutral, it succeeds in greenwashing its image, leading to lock-in of false narratives and business-as-usual activities. The firm hence benefits from perverse incentives and also gets away with selling, sometimes at a premium, the same product with a new label.

The end consumer in some cases will end up paying, or be duped into paying, for such a purported environmental premium, like with Shell's 'Drive CO_2 Neutral' campaign, which was ruled to be misleading to customers (see Box 3).

The claims are also vague and adhere to no standard rules or definitions, meaning that there is essentially no systematic third-party oversight or review. In the absence of a proper framework, the claims must be assessed on an ad-hoc individual basis, as we've done in this report, which cannot be extended to all claims at scale.

The prevalence of baseless carbon neutrality claims for fossil fuels also risks diluting or raising doubt about meaningful climate action and responsible use of credits undertaken by other firms (i.e. not the firms cited in this report, but rather those taking actual action).

Ultimately, these dubious claims amount to greenwashing and are motivated by a desire to inject the oil and gas sector with a much-needed green facelift to lock in business-as-usual at minimal additional cost. Moreover, rebranding highly polluting fossil fuels as "carbon neutral" stalls and hinders the transition to truly clean and green energy sources, while even enabling the corporations involved to charge a premium for their climate-trashing products. This leads to a paradoxical situation in which polluters profit from, instead of paying for, their pollution.

Recommendations

To tackle the issues raised by the problematic "carbon neutral" fossil fuel claims exposed in this report, we recommend the following measures to be taken by a range of stakeholders.

Real climate action, no more greenwashing

Fossil fuel firms

They must take significant and measurable action today, instead of making baseless "carbon neutral" fossil fuel claims. Current climate targets of oil & gas majors, including those making "carbon neutral" fossil fuel claims, are critically inadequate.[66] In line with Oil Change International's recommendations[67] and with the reality that most current fossil fuel reserves must remain untapped,[68] fossil fuel firms must immediately:

- stop exploring for fossil fuels and stop approving new extraction projects;
- significantly cut oil and gas production and set a long-term fossil fuel phase-out plan consistent with the 1.5°C target, entailing a fundamental change in business models;
- set absolute emission targets for the full value chain (i.e. Scopes 1, 2, and 3), without any role for "offsets" in achieving them;
- end all indirect activities (e.g. lobbying, advertisements)[69] intended to slow or halt climate action and carbon pricing.

If purchasing carbon credits, fossil fuel firms:

- must not count credits towards reaching their climate mitigation target or to claiming that any product or service is "carbon neutral";
- must be transparent about any credits they purchase and must disclose full information regarding the name/type/certifier of the crediting project, the number of credits purchased, and ideally the price paid for these credits;
- must go beyond the mentality of "tonne-for-tonne" offsetting by adopting the contribution model (see recommendation on climate finance).

Policymakers and lawmakers

They must proactively design and implement regulations and legislation to prevent greenwashing, including through redefining advertisement standards, and to ensure companies can no longer legally make erroneous "carbon neutral" fossil fuel claims.

Two recent lawsuits in the Netherlands brought against Shell resulted in the firm being legally ordered to cut emissions much faster and to pull a "carbon neutrality" campaign deemed to be greenwashing (see Box 3). While effective, such lawsuits are reactive in nature, can take years to lead to a decision, and can be appealed, which makes the process drag on even longer.

However, these lawsuits and subsequent rulings can serve as a model for policymakers and lawmakers to pass proactive regulations that would ban such erroneous "carbon neutral" fossil fuel claims from being made in the first place, and hence eliminate the need for such lawsuits.

The European Commission for example is proposing consumer protection legislation to prevent greenwashing,[70] and while the focus appears to be generally on household products, this initiative, or a parallel one, could be extended in scope to cover carbon neutrality claims.

Civil society organisations and the public

They can continue to apply pressure on polluters and policy-/law-makers, including by scrutinising carbon neutral claims, especially for fossil fuels, and calling out any greenwashing.

As our analysis shows, these claims can be scrutinised relatively easily by cross referencing information disclosed in press releases against simple criteria for environmental integrity and transparency. As previously detailed, some CSOs are even bringing forward lawsuits (see Box 3).

Scale-up climate and conservation finance responsibly

Our analysis is by no means ignorant of the fact that climate and conservation finance levels are too low and must be ramped up. Our critique is that by solely purchasing carbon credits to erroneously claim their products are carbon neutral, fossil fuel firms are doing a disservice to climate action and conservation efforts.

Climate and conservation finance must indeed be urgently scaled-up, but: i) nature-based credits, or credits of questionable additionality, simply cannot be used to erroneously "offset" fossil emissions, and ii) there are more effective ways of disbursing climate and conservation finance than by purchasing carbon credits.

Fossil fuel firms and other corporate buyers of carbon credits

They must adopt alternatives to "tonne-for-tonne" offsetting, since no company (especially no fossil fuel firm) is anywhere near satisfying Carbon Market Watch's "carbon neutrality checklist". Instead of "tonne-for-tonne" offsetting, they must directly provide climate and conservation finance and adopt the "contribution" claim model when retiring credits:

- when purchasing carbon credits, use the "contribution" claim model (see Box 1) to demonstrate the sum of finance disbursed to projects, rather than purporting to have offset/reduced/neutralised the firm's emissions. When concerning avoided deforestation/degradation, financial contributions should be directed towards jurisdictional programmes rather than stand-alone projects.[71]
- scale-up investment in R&D to unlock, or reduce the cost of, new emission reduction solutions and technologies;
- directly finance climate adaptation and disaster risk reduction efforts, which are greatly needed in many parts of the world;
- directly provide conservation finance through traditional finance vehicles without claiming emission reductions. This approach can provide long-term and reliable sources of finance, relative to carbon markets where revenue is less reliable (subject to market dynamics), and where certain crediting projects may be more likely to lead to other problems: e.g. human rights abuses (land grabbing, displacement of peoples), leakage (deforestation shifted elsewhere), decline in biodiversity (monoculture afforestation).

In closing, this report has shone light on how and why the assessed claims of "carbon neutral" fossil fuels are misleading and vague greenwashing attempts. However, there will certainly be more claims in 2021, and far more in the coming years unless the recommendations we've presented are taken up quickly. Otherwise, what we're seeing is just the tip of the iceberg.

Annex Table

Full assessment of "carbon neutral" fossil fuel claims against key transparency and environmental integrity criteria

*Headline claim *Associated firms (press release featuring claim in hyperlink)* *Date of claim* *Claims preceded with asterisk are analysed in detail in earlier section	Carbon neutrality checklist respected and explained?	Emission estimate precisely calculated and disclosed?	Scope 3 emissions factored?	"Appropriate use" of credits?	Transparency on source of credits?	Transparency on price of credits?
*"Carbon neutral" LNG cargo *Total + CNOOC* *20 October 2020*	*No*	*No. We ascertained their estimate: 222,934 tCO_2e (see earlier detailed section)*	*Said to be, but initial emission estimate not disclosed*	*No, 1st criterion failed. Plus, nature-based credits used to offset "fossil" emissions (renewable energy credits that risk non-additionality are also used).*	*Project names & certifiers disclosed: Kariba (REDD+); Hebei (Wind), which has non-additionality risk (see earlier detailed section) No info disclosed on credit volume.*	*No*
*"Carbon neutral" oil cargo *Occidental + Macquarie + Reliance Industries* *28 January 2021*	*No. Deal portrayed as gauging interest in "carbon neutral" cargoes - i.e. as a first step to ultimately scaling up CCS w/ EOR to claim and sell "net-zero" oil in future (see earlier detailed section)*	*No*	*Said to be, but initial emission estimate not disclosed*	*No, 1st criterion failed. Plus, no project info disclosed.*	*No info except project certifier: Verra VCS*	*No. We estimate <$1.5/ credit (see earlier detailed section)*
"Carbon neutral" LNG cargo *Mitsui + Hokkaido Gas*[72] *26 February 2021*	*No*	*Not disclosed in press release: 210,000 tCO_2e (see endnote in 1st column of row)*	*Said to be, but initial emission estimate not disclosed*	*No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions.*	*No info except: "international forest conservation project"*	*No*
*"Carbon neutral" LNG cargo *Gazprom + Shell*[73] *08 March 2021*	*No*	*Estimate for avg LNG cargo, 240,000 tCO_2e, but not for this cargo*	*Yes, but share of Scope 3 emissions out of total not directly disclosed*	*No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions.*	*No info except: nature-based projects under Verra VCS (see endnote in 1st column of row)*	*No*
"Carbon offset" condensate cargo *Woodside + Trafigura + Kansai Electric + Tokyo Gas*[74] *15 March 2021*	*No. "Carbon offset" is a more appropriate claim than "carbon neutral", but many issues remain with this specific claim (it fails all criteria).*	*No. Estimated by Woodside & Trafigura, but no details disclosed in press release: 18,000 tCO_2e (see endnote in 1st column of row)*	*No*	*No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions.*	*No info except: "nature-based projects in the Asia-Pacific region"*	*No*
"Carbon neutral" LNG cargo *RWE + POSCO* *29 March 2021*	*No*	*No. Estimated using Wood Mackenzie LNG emissions tool, but no details disclosed.*	*No*	*No, 1st criterion failed. Plus, no project info disclosed.*	*No info except project certifier: Gold Standard*	*No*
*"Carbon neutral" LNG cargo *Diamond Gas International [Mitsubishi] + Toho Gas*[75] *08 April 2021*	*No*	*No. We ascertained the estimate: 230,000 tCO_2e (see earlier detailed section)*	*Not disclosed. We ascertained they retired 230,000 credits (i.e. they likely factored Scope 3), but they did not disclose any estimate and declined to comment when contacted.*	*No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions (renewable energy credits that risk non-additionality are also used)*	*No. We uncovered which projects: Kariba (REDD+); Musi (hydro), which has non-additionality risk (see earlier detailed section)*	*No*

*Headline claim *Associated firms (press release featuring claim in hyperlink)* *Date of claim* *Claims preceded with asterisk are analysed in detail in earlier section	Carbon neutrality checklist respected and explained?	Emission estimate precisely calculated and disclosed?	Scope 3 emissions factored?	"Appropriate use" of credits?	Transparency on source of credits?	Transparency on price of credits?
"Carbon neutral" LNG cargo *[Undisclosed] + Pavilion Energy* *15 April 2021*	No	Scope 1 & 2 estimate for avg LNG cargo, 60,000 tCO_2e, but not for this cargo	No	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	Project names and certifiers disclosed: Evio Kuinaji Ese'Eja Cuana (REDD+); Liangdu (Afforestation). No info disclosed on credit volume.	No
"Carbon neutral" LNG cargo *Cheniere + Shell*[76] *04 May 2021*	No	No	Said to be, but initial emission estimate not disclosed	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info except: "Shell's global portfolio of nature-based projects" (hyperlink included in press release)	No
"Carbon neutral" LNG cargo *Oman LNG + Shell* *09 June 2021*	No	No	Said to be, but initial emission estimate not disclosed	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info except: "nature-based projects"	No
"Carbon neutral" LNG cargo *Shell + Brunei LNG + Osaka Gas*[77] *06 July 2021*	No	Not disclosed in press releases: 232,672 tCO_2e (see endnote in 1st column of row)	Said to be, but initial emission estimate not disclosed	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info except: "Shell's global portfolio of nature-based projects" (see endnote in 1st column of row, project is Katingan Peatland Restoration & Conservation)	No
"Carbon neutral" LNG cargo + 5-year deal for Shell to sell more cargoes to PetroChina *Shell + PetroChina*[78] *12 July 2021*	No	No	Said to be, but initial emission estimate not disclosed	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info except: "Shell's global portfolio" + "[projects that] enhance forests in China and other parts of the world"	No
"Carbon offset" LNG cargo *BP + Sempra LNG*[79] *15 July 2021*	No. "Carbon offset" is a more appropriate claim than "carbon neutral", but many issues remain with this specific claim (it fails all criteria)	No. Estimated by BP, but no details or methodology disclosed	No	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info except: "Mexican afforestation project from BP's vetted portfolio of offsets". No such project on bp's webpage of projects (see endnote in 1st column of row)	No
"Carbon neutral" LNG cargo *Eni + Taiwan CPC* *06 August 2021*	No	No. Estimated by Eni, but no details or methodology disclosed	Said to be, but initial emission estimate not disclosed	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info on credit volume. Project names & certifiers disclosed: Luangwa (REDD+); Kulera (REDD+)	No
*"Carbon neutral" LNG cargo *Petronas + Shikoku Electric* *18 August 2021*	No. Flare recovery, CCS, and providing liquefaction plant with hydroelectricity cited, but key nuances regarding these not shared (see earlier detailed section)	No. We ascertained their estimate: 52,198 tCO_2e for Scopes 1 & 2 (see earlier detailed section)	No	No, 1st criterion failed. Plus, the renewable energy credits used to "offset" fossil emissions may not be additional	No info except: "Renewable-based credits under Verified Carbon Standard" We uncovered which project: dagushan (hydro), which has non-additionality risk (see earlier detailed section)	No
"Carbon neutral" LNG cargo *Inpex + Shizuoka Gas* *1 September 2021*	No	No. Approximately a 70,000 tonne cargo of LNG, but no emission estimate disclosed.	Said to be, but initial emission estimate not disclosed	No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions	No info except "global forest conservation projects" under Verra VCS	No

*Headline claim *Associated firms (press release featuring claim in hyperlink)* *Date of claim* *Claims preceded with asterisk are analysed in detail in earlier section*	Carbon neutrality checklist respected and explained?	Emission estimate precisely calculated and disclosed?	Scope 3 emissions factored?	"Appropriate use" of credits?	Transparency on source of credits?	Transparency on price of credits?
"Carbon offset" LNG cargo *BP + Taiwan CPC*[80] *06 September 2021*	*No.* *"Carbon offset" is a more appropriate claim than "carbon neutral", but many issues remain with this specific claim (it fails all criteria)*	*No.* *Estimated by BP, but no details or methodology disclosed*	*No*	*No, 1st criterion failed. Plus, no project info disclosed*	*No*	*No*
"Carbon neutral" LNG cargo *Inpex + Toho Gas*[81] *13 September 2021*	*No*	*No*	*Said to be, but initial emission estimate not disclosed*	*No, 1st criterion failed. Plus, nature-based credits used to "offset" fossil emissions*	*No info except "global forest conservation projects" under Verra VCS*	*No*

Note: *CMW reached out with clarifying questions to all of the firms associated with these 18 "carbon neutral" fossil fuel claims more than a month prior to publication. The nature of the responses of the few firms that replied is reflected in the corresponding endnotes in the table.*

Source: *CMW analysis based on public press releases (press releases available by clicking hyperlink for corresponding company).*

References

1 *Bloomberg Green (09.09.21), "'Carbon Neutral' LNG Demand Soars in Asia Despite Criticism". For info on reportedly the first publicly claimed "carbon neutral" LNG cargo, see Shell's 18.06.19 press release (last accessed 30.08.21).*

2 *For an overview assessing the credibility of major fossil fuel companies' climate targets and the veracity of several advertising campaigns, see respectively: Oil Change International (2020), "Discussion Paper: Big Oil Reality Check — Assessing Oil And Gas Climate Plans"; Client Earth (n.d.), "The greenwashing files"*

3 IPCC (2021), AR6 Climate Change 2021: The Physical Science Basis – Annex VII Glossary, https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Annex_VII.pdf

4 *Carbon neutrality concerns carbon dioxide (CO_2). Carbon neutrality does not directly cover other greenhouse gases (GHG). For example, methane (CH_4) is a powerful GHG that is approximately 84 times more effective in trapping heat than CO_2 over a 20-year period (IPCC, 2013: p.713). It's common practice in greenhouse gas accounting to convert other GHGs like CH_4 into their carbon dioxide equivalent (CO_2e), based on their "global warming potential" (Annex I parties to the UNFCCC – developed countries essentially – must calculate CO_2e when reporting their national emissions). In this way, carbon neutrality indirectly covers other GHGs when they've been converted to CO_2e.*

5 *Accurately accounting for emissions associated with a product or service can be complex enough to begin with, but as a further complication, in many instances the firm claiming carbon neutrality of a good or service either does not disclose the accounting methodology or relies on a rough approximation.*

6 *For an in-depth discussion of the flawed logic of tonne-for-tonne carbon offsetting and its associated challenges, as well as alternatives to this model, see: Carbon Market Watch (2020), "Above and Beyond Carbon Offsetting – Alternatives to Compensation for Climate Action and Sustainable Development"*

7 *See, for instance: Carbon Market Watch's 2021 report which found that two large-scale REDD+ (avoided deforestation) projects in Colombia set artificially high baselines to generate an estimated 21 million extra carbon credits; Bloomberg Green (17.12.20), "The real trees delivering fake climate progress for corporate America"*

8 *CMW (2021), "Alternative to offsetting are no longer fringe"; Gold Standard (2021), "Climate impact claims to crowd in private sector finance"; SBTi (2020), "Foundations for science-based net-zero target setting in the corporate sector" Version 1.0, September 2020.*

9 *For a full discussion of contribution claims, see: CMW (2021), "Above and Beyond Carbon Offsetting"*

10 *In carbon accounting terms, greenhouse gas emissions are grouped into Scopes 1, 2, and 3. At the level of a firm, this entails the following: Scope 1 refers to direct emissions from owned or controlled sources; Scope 2 refers to indirect emissions from the generation of purchased electricity, heating, cooling and steam; Scope 3 refers to all other indirect emissions in the value chain, both downstream and upstream (e.g. burning fossil fuels).*

11 *For an assessment detailing how eight of the largest integrated oil and gas companies fall far short of aligning with a 1.5°C pathway, see: Oil Change International (2020), "Discussion Paper: Big Oil Reality Check"*

See also: LSE (21.08.21), "Rhetoric v Reality: oil and gas sector "far from" on track to meet Paris goals - LSE analysis in Science"

12 *Nature (2021), "Unextractable fossil fuels in a 1.5°C world"*

13 *The SBTi is an NGO-led programme aiming to define high-quality standards for corporate climate targets. Nearly 2,000 companies have either set, or committed, to a science based target. For info on SBTi-aligned corporate climate action criteria, see: SBTi (2021),* SBTi Criteria and Recommendations Version 4.2 April 2021

14 *Buis (2019), "The Atmosphere: Getting a Handle on Carbon Dioxide".*

15 *The United Nations classifies 46 countries as "least developed" (LDCs for short), which are defined as "low-income countries confronting severe structural impediments to sustainable development."*

16 *Verra (2019), "VCS Standard Version 4.0" (updated 22 April 2021: v4.1); Gold Standard (2020), "Renewable Energy Activity Requirements"*

17 *For an in-depth overview of the non-additionality risks posed by many Clean Development Mechanism projects and methodologies under the Kyoto Protocol -- many still exist on the voluntary carbon market today – see: Oeko Institut et al. (2016),* How additional is the Clean Development Mechanism?

18 *Carbonplan (2020), "Risks to forest carbon in a changing climate"; National Geographic (20.08.21), "Siberia's massive wildfires are unlocking extreme carbon pollution"*

19 *CMW (2020), "Up in smoke – California fires once again highlight dangers of forest offsets"; Carbonplan (2020), "Carbon offsets burning"; Financial Times (03.08.21), "US forest fires threaten carbon offsets as company-linked trees burn"; The Barents Observer (06.07.21), "Russia says its forests neutralize billions of tons of greenhouse gases. Scientists have their doubts"*

20 *Carbon Pulse (10.02.21), "Carbon removal developers widen sales efforts amid soaring demand for high-end units"; Carbon Pulse (25.08.21), "Swiss Re strikes $10 mln deal for DAC removal units".*

21 *In 2019, European buyers paid $3.32 on average per credit, North American buyers paid $3.29, and all other buyers paid $4.78. Source: Ecosystem Marketplace (2021), "Buyers of Voluntary Carbon Offsets: a Regional Analysis"*

22 *Carbon Pulse (30.09.21), "Analysis: Surge in 'carbon neutral' LNG prompts moves for clearer emissions counting"*

23 *Total (n.d.), "Yamal LNG: the northern sea route cuts journey time in half"*

24 *Ecosystems Marketplace (2021), "State of Forest Carbon Finance 2021"*

25 Carbon Pricing Leadership Council (2017), Report of the High-Level Commission on Carbon Prices

26 Nature (2020), "A near-term to net-zero alternative to the social cost of carbon for setting carbon prices"

27 Parry, I., Black, S. and N. Vernon (2021), "Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies", IMF Working Paper No. 2021/236.

28 There are instances of offset-bundled LNG cargoes not being publicly claimed to be carbon neutral, raising the question of how many cargoes have been privately transacted (even if not publicly claimed, such transactions might be reported by the firm as an internal emissions reduction, depending on country context and reporting requirements). For example, Total and OMV have not seemingly publicly claimed a "carbon neutral" LNG cargo deal from 21 May 2021, but it is reported to have taken place and to have been branded, at least internally, as "carbon neutral": Offshore Energy (30.06.21), "Gate terminal welcomes its first carbon-neutral cargo"; Wood Mackenzie (n.d.), "LNG Emissions Tool - Carbon Neutral LNG".

29 For instance, three "carbon neutral" LNG shipments made in 2019, and four others from 2020 (we assessed 1 of 5 from 2020) were not covered in our analysis. For selected reading on carbon neutral fossil fuel claims, see: Wood Mackenzie's "LNG Carbon Emissions Tool", for an overview of certain deals that have taken place; Bloomberg Green's "The fictitious world of 'carbon neutral' fossil fuel" (10.08.21), for an investigation of the major flaws in Total and CNOOC's claim from 2020 which we have also analysed.

30 IPCC (2013), "Chapter 8: Anthropogenic and Natural Radiative Forcing", Table 8.7, p.713, in Climate Change 2013: The Physical Science Basis.

31 The name "natural gas" helps give the potent GHG a positive image, as detailed in Lacroix et al. (2020), and as capitalised on by the fossil fuel industry for years. To counteract this and to be more accurate, many actors now call it "**fossil gas**".

32 For further information on why fossil gas must be phased-out as soon as possible, see: Climate Action Network (May, 2021), "CAN International Position: Fossil Gas".

33 Climate Action Network Europe (2019), "CAN Europe Position: On the use of gas in the future energy system"

34 Equitrans Midstream issued a press release on 12 July 2021 detailing plans to "offset" the "carbon impacts" of its 303-mile long pipeline by purchasing mine methane abatement "offsets" to make its Scope 1 and 2 emissions "carbon neutral" for the first 10 years of service. Similarly, several firms recently announced a proposal to construct a "net zero" LNG export facility in British Columbia under which each cargo produced would be considered "net zero", on the basis of a low carbon intensity score and bundled "offsets" (see full proposal here and reporting in Carbon Pulse (19.07.21), "BC First Nation, LNG companies offer net zero LNG export facility").

35 BBC (26.05.21), "Shell: Netherlands court orders oil giant to cut emissions"

36 For further information on this lawsuit, see: Reuters (26.08.21), "Australian environmental group sues Santos over clean energy claims"; Carbon Pulse (26.08.21), "Oil & gas firm Santos taken to court over net zero target"

37 Euractiv (02.09.21), "Shell's carbon offsetting ad is greenwashing, rules Dutch watchdog"

38 Reuters (16.04.21), "Clean crude? Oil firms use offsets to claim green barrels"

39 Bloomberg Green (10.08.2021), "The fictitious world of 'carbon neutral' fossil fuel"

40 The Science Based Targets initiative (SBTi), for instance, states that any company selling or distributing fossil fuels must set a Scope 3 target, and that no carbon "offsets" or avoided emissions can count as an emission reduction towards the progress of corporate climate targets. See: SBTi (2021), SBTi Criteria and Recommendations Version 4.2 April 2021. As detailed earlier, the SBTi does not currently validate SBTs for companies extracting oil and gas.

41 Toho Gas and DGI's carbon neutral LNG deal was reported in several media outlets featuring excerpts from a Toho Gas statement, but a press release does not appear to have been made public, at least in English. For details on the claim, see: Argus Media (13.04.21), "Japan's Toho Gas receives first carbon-neutral LNG"; Carbon Pulse (08.04.21), "Japan's Toho Gas joining 'carbon neutral' LNG rush".

42 Shell's full press release (last accessed 30.08.21)

43 Shell's full press release (last accessed 30.08.21)

44 Paraphrased from Shell's full press release and Gazprom's full press release (both last accessed 30.08.21)

45 Paraphrased from Shell's full press release (last accessed 30.08.21)

46 Paraphrased from bp's full press release and Sempra LNG's full press release (both last accessed 30.08.21)

47 "Carbon mitigation hierarchy" is used here in lieu of "carbon neutrality checklist" since BP and Sempra have claimed the cargo to be "carbon offset" rather than "carbon neutral". A carbon mitigation hierarchy in line with the Paris Agreement operates in essentially the same way as the previously described carbon neutrality checklist, requiring firms to first mitigate full value chain GHG emissions before resorting to purchase of credits.

48 Bloomberg Green (10.08.2021), "The fictitious world of 'carbon neutral' fossil fuel"

49 Paraphrased from Petronas' full press release (last accessed 30.08.21)

50 Bloomberg Green (10.08.21), "The fictitious world of 'carbon neutral' fossil fuel"

51 Bloomberg Green (10.08.2021), "The fictitious world of 'carbon neutral' fossil fuel"

52 To find this info, go to the Verra registry project page (65MW dagushan hydropower project in China), click on "View Issuance Records" on the page (or click here), download as an excel file, find "PETRONAS" in Column N 'Retirement Beneficiary' aligned with the corresponding row with the entry "LNG cargo delivered by PETRONAS LNG Ltd. (PLL) to Japan for offsetting life cycle carbon footprint from cradle to gate including shipping".

53 *This project was originally registered under the Clean Development Mechanism (CDM), and was later registered to the VCS (the project appears to still be registered under the CDM, while also being registered under the VCS, but no double issuance of credits has occurred). The original project design document (PDD) indicates that revenue from the sale of carbon credits was estimated to increase the project's internal rate of return from 5.28% to 8.27% at a price of 100RMB (approx $15.5 or €11,13 in 2011), bringing it just above the standard Chinese government benchmark of 8% used in about a third of Chinese CDM hydropower projects (Oeko et al., 2016). Analysis conducted by Oeko et al. of the financial additionality of CDM projects found that the sale of carbon credits (at €12) would only increase the internal rate of return of an average hydropower project by 3 percentage points, thus having a negligible impact on its carbon credit revenue dependence (i.e. likely non-additional). This 3 percentage point IRR difference matches with the projections made in this PDD (2.9 percentage point difference). Oeko et al. also question the 8% benchmark prevalent in the majority of Chinese CDM projects, speculating that many of them may not have been financially additional (not dependent on credit revenue). Further, the price of CDM credits certified emission reductions (CERs) crashed significantly over the last decade -- still as low as $0.15-0.24 in 2019 (World Bank, 2020) -- reinforcing doubt that projects such as this one that have recently issued credits and are still running today, despite such a price crash, depend on carbon credit revenue to operate.*

The PDD is accessible at this link, or by clicking the document entitled "Dagushan PDD" on the project page on Verra's registry.

54 *Paraphrased from Occidental's full press release (last accessed 30.08.21)*

55 *CAN (2021), "CAN Position: Carbon Capture, Storage and Utilisation"*

56 *Controversially, Australia has recently become the first country to approve a carbon offset method for CCS specifically with the intent to increase the country's LNG production for years to come: Carbon Pulse (01.10.21), "Australia approves carbon offset method for CCS"*

57 *United States EPA (n.d.), "Greenhouse Gases Equivalencies Calculator - Calculations and References"*

58 *Reuters (16.04.21), "Clean crude? Oil firms use offsets to claim green barrels"*

59 *Paraphrased from Total's full press release (last accessed 30.08.21)*

60 *Total and CNOOC's carbon neutrality LNG claim, from October 2020, was recently investigated by journalists who found many problems: Bloomberg Green (10.08.21), "The fictitious world of 'carbon neutral' fossil fuel"*

61 *To find this info, go to the Verra registry project page (Kariba REDD+ project & Hebei Guyuan Wind Power Project), click on "View Issuance Records" on the page (or click here for Kariba and here for Hebei Guyuan), download as an excel file, find "CNOOC offset contract" in Column P 'Retirement Details', aligned with the corresponding rows with the entry either "TOTAL GAS & POWER LIMITED" or "CNOOC Gas and Power Trading & Marketing Limited" in Column N 'Retirement Beneficiary'.*

62 *The Hebei Guyuan project was registered in 2011 as a Clean Development Mechanism project with a CDM crediting period from 15.09.2011-14.09.2018, and then re-registered in 2012 with an additional retroactive VCS crediting period from 25.05.2010-14.09.2011 (no double issuance of credits has occurred). The updated project design document (PDD) indicates that revenue from the sale of carbon credits was estimated to increase the project's internal rate of return from 6.43% to 9.26% (at an assumed price of €12.5), bringing it above the standard Chinese government 8% benchmark used in nearly all Chinese CDM wind power projects (Oeko et al., 2016). Analysis conducted by Oeko et al. (2016) of the financial additionality of CDM projects found that the sale of carbon credits (at €12) would only increase the internal rate of return of an average wind power project by 2.5-3 percentage points, thus having a negligible impact on its carbon credit revenue dependence (i.e. likely non-additional). This 2.5-3 percentage point IRR difference matches with the projections made in this PDD (2.83 percentage point difference). Oeko et al. also question the 8% benchmark prevalent in 99% of Chinese CDM wind power projects, speculating that many projects may not be financially additional. Further, the price of CDM certified emission reductions (CERs) crashed significantly over the last decade -- still as low as $0.15-0.24 in 2019 (World Bank, 2020) -- reinforcing doubt that projects such as this one that have recently issued credits and are still running today, despite such a price crash, depend on carbon credit revenue to operate.*

The PDD is accessible at this link, or by clicking the document entitled "PROJ_DESC_903_24JUL2012.pdf" on the project page on Verra's registry.

63 *Toho Gas and DGI's carbon neutral LNG deal was reported in several media outlets featuring excerpts from a Toho Gas statement, but a press release does not appear to have been made public, at least in English. For details on the claim, see: Argus Media (13.04.21), "Japan's Toho Gas receives first carbon-neutral LNG"; Carbon Pulse (08.04.21), "Japan's Toho Gas joining 'carbon neutral' LNG rush".*

64 *To find this info, go to the Verra registry project page (Kariba REDD+ project & 210 MW Musi Hydro Power Plant, Bengkulu), click on "View Issuance Records" on the page (or click here for Kariba and here for Musi), download as an excel file, find "Toho Gas" in Column N 'Retirement Beneficiary', aligned with the corresponding rows with the entry "On behalf of Toho Gas Co., Ltd. For the LNG cargo delivered by DGI" in Column N 'Retirement Beneficiary'.*

65 *The 210 MW Musi Hydro Power Plant, Bengkulu project was registered to the VCS in 2009, with a crediting period from 1 August 2006 to 31 July 2016 (see original PDD). The internal rate of return of the project without carbon crediting revenue is estimated to be 5.77%, relative to a selected benchmark rate of return of 12.75%, and the PDD states "Thus, VERs are going to be important to alleviate the infeasible IRR and help the project to become more attractive" (p.20 of original PDD). However, the PDD does not appear to concretely state by how much the carbon crediting revenue is estimated to increase the internal rate of return. It does not appear to be realistic that carbon crediting revenue was expected to essentially double the internal rate of return in order to bridge a 7 percentage point difference and reach the 12.75% selected benchmark. The project was re-registered in 2018 with a second crediting period of 1 August 2016 to 31 July 2026 (see updated PDD). Upon re-registration, the project was not required to re-demonstrate how it satisfied full additionality requirements: "According to the section 3.8.5 of VCS Standard version 3.7, a full reassessment of additionality is not required when renewing the project crediting period." (p.18 of updated PDD). The project proponents were required to re-assess regulatory additionality, which is briefly detailed in the PDD (i.e. it states that no law or regulation requires the hydro power plant to be built). However, there was no reassessment of financial additionality.*

The original PDD is accessible at this link, or by clicking the document entitled "PROJ_DESC_487_09NOV2009.pdf" on the project page on Verra's registry. The updated PDD is accessible at this link, or by clicking the document entitled "180228_Musi_VCS PD v3.0_lsa.pdf" on the project page on Verra's registry.

66 Oil Change International (2020), "Discussion Paper: Big Oil Reality Check — Assessing Oil and Gas Climate Plans"; LSE (21.08.21), "Rhetoric v Reality: oil and gas sector "far from" on track to meet Paris goals - LSE analysis in Science"

67 Oil Change International (2020), "Discussion Paper: Big Oil Reality Check — Assessing Oil and Gas Climate Plans"

68 Nature (2021), "Unextractable fossil fuels in a 1.5°C world"69 See, for instance: Influence Map (July 2020), "Oil/gas, automotive, coal and aviation sectors pushing for a fossil fuel friendly recovery globally"; Influence Map (August 2021), "Climate Change and Digital Advertising: The Oil and Gas Industry's Digital Advertising Strategy"; Channel 4 (30.06.21), "Revealed: ExxonMobil's lobbying war on climate change legislation"

70 European Commission (n.d.), "Published initiative: Consumer policy – strengthening the role of consumers in the green transition"

71 For more on the contribution claim and on forestry crediting, see: CMW (2020), "Above and Beyond Carbon Offsetting"; CMW (2021), "Recommendations on forests in voluntary carbon markets"

72 After we followed up by e-mail, Mitsui disclosed an emission estimate of 210,000 tCO_2e (methodological details not disclosed), which they gave us permission to cite. However, Mitsui declined to comment on the crediting projects or retired credits, citing a confidentiality agreement with Hokkaido Gas.

73 After we followed up by e-mail, Shell disclosed the crediting project names and the share of credits by project, which they gave us permission to cite: Cordillera Azul National Park REDD Project (90%) and Reforestation of Degraded Forest Reserves in Ghana (10%), both certified by Verra VCS. Needless to say, this information was not included in the press release and is not publicly available (direct request required).

74 After we followed up by e-mail, Woodside and Trafigura disclosed limited project details and Scope 1 and 2 estimated emissions, which they gave us permission to cite: 15,000 tCO_2e (up to vessel loading), Woodside's emissions, "offset" with credits from its own portfolio; 3,000 tCO_2e (vessel loading to final discharge), Trafigura's emissions, "offset" with credits from "nature-based Indonesian projects", certified either by the Gold Standard or Verra VCS. They indicated Scope 3 emissions are not under their direct control. Needless to say, none of this information was in the press release or is publicly available (direct request required).

75 Toho Gas and DGI's carbon neutral LNG deal was reported in several media outlets featuring excerpts from a Toho Gas statement, but a press release does not appear to have been made public, at least in English. For details on the claim, see: Argus Media (13.04.21), "Japan's Toho Gas receives first carbon-neutral LNG"; Carbon Pulse (08.04.21), "Japan's Toho Gas joining 'carbon neutral' LNG rush". After we followed up by e-mail, Toho Gas declined to comment (on emission estimate, project details, credit volume and price), citing confidentiality reasons.

76 After we followed up by e-mail, Shell declined to disclose the emission estimate, crediting projects, or retired credits, citing the deal as a "private retirement".

77 After we followed up by e-mail, Shell disclosed the crediting project, which they gave us permission to cite: Katingan Peatland Restoration and Conservation Project, certified by Verra VCS. Osaka Gas disclosed the crediting project as well, in addition to the emission estimate, which they gave us permission to cite: 232,672 tCO_2e. Needless to say, this information was not in the press releases and is not publicly available (direct request required).

78 After we followed up by e-mail, Shell disclosed the crediting project names and the share of credits by project, which they gave us permission to cite: Katingan Peatland Restoration and Conservation Project (35%), Cordillera Azul National Park REDD Project (35%) and Xiguan Afforestation Project in Guizhou Province (30%), all certified by Verra VCS. Needless to say, this information was not included in the press release and is not publicly available (direct request required).

79 After we followed up by e-mail, BP and Sempra LNG declined to comment (on emission estimate, project details, credit volume and price), citing confidentiality reasons. The press release indicated the crediting project was a "Mexican afforestation project" but there is no such project on BP's webpage of vetted projects – when contacted for clarification, BP indicated the project was from an internal portfolio (from the Trading & Shipping wing), which is not public.

80 After we followed up by e-mail, BP declined to comment (on emission estimate, project details, credit volume and price), citing confidentiality reasons.

81 After we followed up by e-mail, Toho Gas declined to comment (on emission estimate, project details, credit volume and price), citing confidentiality reasons.

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