GIIGNL MRV and GHG Neutral LNG Framework

Executive Summary

Version 1.0

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Contents

GIIGNL

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Executive Summary

OBJECTIVES

Long-term decarbonisation is core to the international ambition to secure global net zero GHG emissions by mid-century and keep a 1.5 degree Celsius temperature rise above pre-industrial levels within reach. In this context and recognising the importance of reducing GHG emissions associated with all stages of the LNG life cycle, GIIGNL has developed this MRV (Monitoring, Reporting, and Verification) and GHG Neutral Framework (the Framework).

The Framework has been designed to:

- Provide a common source of best practice principles in the monitoring, reporting, reduction, offsetting and verification, of GHG emissions associated with a delivered cargo of LNG
- Promote the commitment to, and disclosure of, verified emissions based on consistent GHG accounting criteria and definitions from all relevant stages included in the reporting boundary, thereby facilitating the calculation of an LNG Cargo GHG Footprint that genuinely reflects its climate impact
- Promote a consistent approach to declarations related to emission reduction actions and carbon offsets that are associated with an LNG cargo
- Position emission reduction action as the primary focus of a claim of 'neutrality', with the use of offsets to compensate for residual emissions that cannot be reduced
- Promote full accounting for methane emissions as well as carbon dioxide and other applicable GHGs

DEVELOPMENT OF THE FRAMEWORK

The Framework has been developed as a collaborative exercise with a technical Task Force of more than 50 experts representing 20 GIIGNL member companies, supported by consultants Environmental Resources Management Ltd (ERM). We are very grateful for the time and effort provided by the Task Force participants, who represented the following organisations:

bp	Eni	MOL	Sempra
Cheniere	Exelon	Naturgy	Shell
CNOOC	Gate Terminal	Novatek	Tokyo Gas
Enagás	Gazprom	Pavilion Energy	TotalEnergies
ENGIE	JERA	RWE	Uniper

The Framework does not replace established methodologies and standards for GHG quantification, carbon footprint accounting and carbon neutrality. The intent is to apply these standards to the LNG production and use life cycle with a consistent basis for both quantifying the GHG emissions associated with an LNG Cargo and making claims associated with GHG offsetting and neutrality.

PRINCIPLES

In line with the established GHG product accounting standards, the Framework is based on the core principles of **relevance**, **completeness**, **consistency**, **accuracy**, **transparency** and **coherence**.

SCOPE

The Framework covers all sources of GHG emission, all GHGs and all stages in the LNG value chain, from well to end use. A simplified overview is shown in **Figure 1** below.

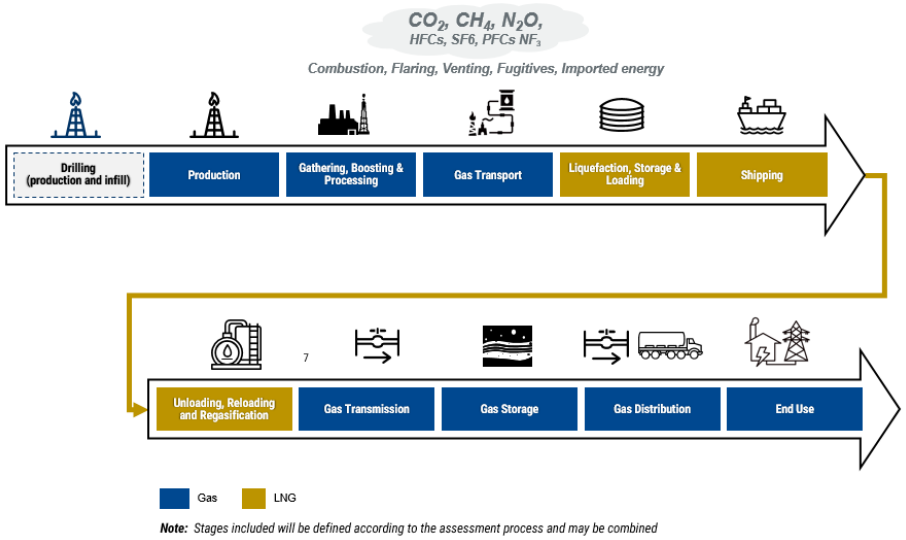

Figure 1: LNG Life-cycle stages

DECLARATION PATHWAYS

To promote adoption and meet the needs of different levels of readiness and commercial expectations, the Framework allows for five different Declaration Pathways as shown in **Figure 2** below.

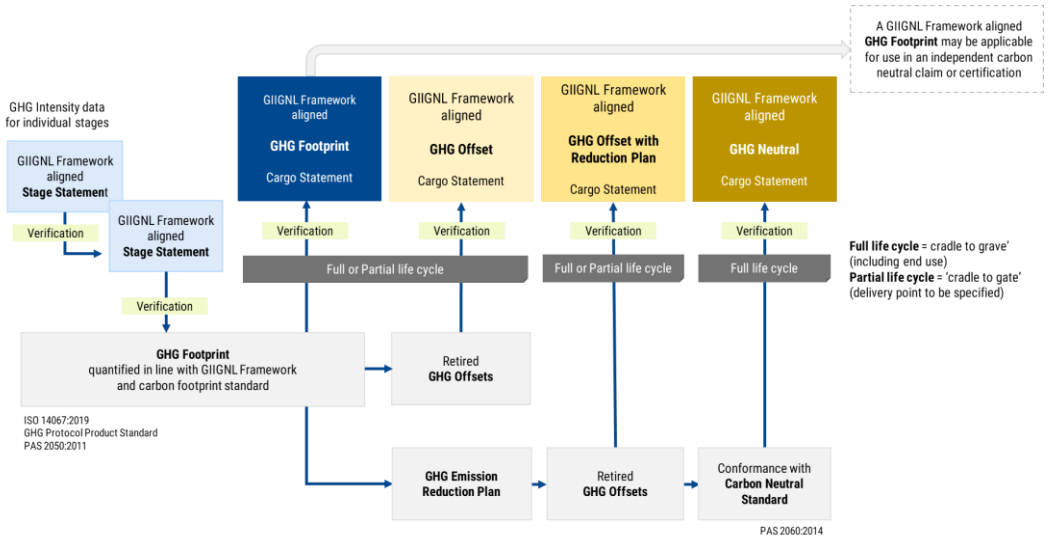

Figure 2: Declaration Pathways provided for under the Framework

Reporters will use the Framework to quantify the emissions associated with the delivered Cargo in a 'GHG Footprint' statement. They then have the option to make a claim of 'GHG Offset', 'GHG Offset with Reduction Plan' or 'GHG Neutral' Cargo. For stages that are not under the Reporter's control, the use of 'Stage Statements' based on primary data is encouraged.

Reporters are strongly encouraged to implement a GHG emission reduction plan, and to use offsetting only to compensate for residual emissions. GIIGNL sees the pathway of 'GHG Offset LNG' as a transition option in the journey towards GHG neutrality.

DEFINITION OF GHG NEUTRAL LNG CARGO

The decision has been taken that a claim of 'GHG Neutral' under this Framework should represent a high bar of achievement, including a commitment to long term decarbonisation and alignment with an internationally accepted standard for carbon neutrality (currently provided by PAS 2060:2014[1]).

A declaration of a GHG Neutral LNG Cargo under the GIIGNL Framework is a verified full life cycle GHG Footprint across the entire cargo value chain, including end use, supported by a long-term decarbonisation commitment, an emission reduction plan and fully netted with offsets that meet best practice principles

STAGE STATEMENTS

The Framework prioritises primary, site-specific data. Fully integrated Reporters may have access to primary, data from wellhead to delivery terminal. However, many users may have limited access to primary data for the GHG Footprint calculation. Provision is therefore also made for verified 'Stage Statements' that present GHG intensity data from processes that are attributable to the LNG Cargo within a specific life-cycle stage. These data can be used to build a GHG Footprint that is as closely aligned as possible to the actual value chain, reducing reliance on secondary default data.

Use of Stage Statements is not a requirement for use of the Framework. Over time, it is expected that use of Stage Statements will increase, enhancing both accuracy and comparability of the GHG Footprint.

LOW GHG FEATURES

All users are asked to document 'low GHG features' associated with the GHG footprint. The purpose of this is to raise the profile of technological or operational advantages associated with the Cargo Footprint that are not directly related to the Reporter's GHG reduction plan.

VERIFICATION

To maintain credibility, all statements under this Framework must be independently verified. This not only provides confidence in the data provided, but is also an important driver for high quality data and improvements in reporting over time.

GIIGNL strongly encourages the use of the Framework, which is openly available as a reference for use by participants across the LNG value chain. The initiative is intended to improve consistency, quality and transparency of GHG data and GHG neutral claims and to encourage all participants in the LNG industry to take steps to understand the emissions profile of LNG cargoes and to take steps towards long-term emission reduction and decarbonisation.

WHAT NEXT?

GIIGNL is very interested to learn from the experience of those implementing this Framework and asks that participants share a copy of the verified Cargo Statement with central-office@giignl.org. Any commercially sensitive or confidential information in the Cargo Statement may be redacted in the version shared with GIIGNL. This will help the industry understand how emission reduction initiatives and LNG Cargo GHG intensities are evolving.

GIIGNL undertakes to review the Framework on a periodic basis to reflect emerging practices and obligations for GHG accounting, offsetting and GHG neutrality claims.

[1] A new international standard for determining carbon neutrality, *ISO/WD 14068 Greenhouse Gas Management and Related Activities – Carbon Neutrality*, is under development by the International Organization for Standardization (ISO). This is expected to be published in 2023.

FRAMEWORK CRITERIA

The key criteria set out in the Framework are summarised below.

Subject	Framework Criteria
Product	LNG Cargo
GHG Footprint	
Reported GHG data	Absolute emissions: CO_2e, CH_4 (t) Intensity: CO_2e/mmBtu and CH_4/mmBtu or equivalent unit of energy
GHG quantification standards and methodologies	Established industry GHG reporting standards and methodologies such as GHG Protocol, API compendium, ISO14064-1:2018
GHG Footprint standard	ISO 14067:2018 GHG Protocol Product Accounting and Reporting Standard, PAS 2050:2011
Life-cycle stages included	• Drilling (production and infill, if significant) • Production • Gathering, boosting and Processing • Gas Transport • Liquefaction, Storage and Loading • Shipping (including transshipments, transfers and inward ballast leg) • Unloading, reloading and regasification • Gas transmission • Gas storage • Gas Distribution • End use
Greenhouse Gases	CO_2, CH_4, N_2O, SF_6, PFCs, HFCs, NF_3 (GHGs other than CO_2, CH_4 and N_2O are likely to be insignificant for the LNG product)
Global Warming Potential (GWP)	The most up-to-date GWP values based on a 100-year timeline as set out in the latest IPCC Assessment Report
Emission sources	• Combustion (stationary and mobile) • Flaring • Venting • Fugitives • Imported energy
Common unit of analysis for allocation	Energy (mmBtu or equivalent) on HHV basis (mass basis as preference for products with no energy content)
Time period for GHG emissions assessment	Maximum of 12 months assessment period, fixed or rolling basis

Subject	Framework Criteria
GHG Emission Reduction Plan (for 'GHG Offset with Reduction plan' or 'GHG Neutral' declarations)	
GHG Reduction Plan	Commitment to long term decarbonisation (GHG Neutral declarations) Development and implementation of an emission reduction plan Emission reductions tracked against a baseline
GHG Offsets (for 'GHG Offset', 'GHG Offset with Reduction plan' or 'GHG Neutral' declarations)	
Offset strategy	Transparent strategy that defines approach to sourcing GHG offsets
Offset principles	• Real • Measurable • Permanent • Additional, • Avoid leakage • Independently verified • Unique
Disclosure	Full disclosure of quantity of offsets retired from each emission reduction or removal project used
Retirement	Evidence of offset retirement in third-party registry
GHG Neutrality	
GHG Neutral standard	PAS 2060:2014[2]
Commitment	Long term decarbonisation and maintenance of neutrality
Conformity Assessment	
Verification standard	ISO14064-3:2019
Frequency	At least annually Single or multiple Cargo Statements can be included in the verification process
Verifier	Accreditation under ISO14065:2020

[2] A new international standard for determining carbon neutrality, *ISO/WD 14068 Greenhouse Gas Management and Related Activities – Carbon Neutrality*, is under development by the International Organization for Standardization (ISO). This is expected to be published in 2023.