1. Purpose of this document:

The purpose of this crosswalk document is to outline and explain the changes made to the GLEC Framework between different **versions**. It serves as a guide to help users of the Framework understand how the new version differs from the previous one, ensuring a smooth transition to the updated guidelines.

2. Objectives:

- **Mapping Changes:** The document will provide a comparison between the two versions, identifying specific sections that have been updated, removed, or added. This allows users to quickly identify what has changed without needing to review the entire framework.
- **Clarifying Updates:** For each change, the crosswalk document will offer explanations or justifications for why these updates were made, e.g. due to technological advancements, regulatory shifts, or user feedback.
- **Ensuring Compliance:** Stakeholders who rely on the GLEC Framework for environmental reporting can use the crosswalk document to ensure they remain compliant with the latest standards.

3. Key

1	Updated content
2	Expanded content
3	Reduced content
4	New content
5	Removed content

4. Crosswalk between GLEC FW v3.3 (October 2026) and v3.2 (October 2025)

Paragraph	Headline	Key	Summary of change
Through the whole document			
		1	Updated terms in alignment with ISO 14083. Eg. Logistics hub, emission intensity value, GHG emission factor....etc. Updated SFC website URL and hyperlink Correct some spellings to be in American English, as instructed by the SFC brand guide.
Introduction			
	Acknowledgements	2	New paragraph to acknowledge contributors to GLEC FW v3.3
	Structure of the document	1	Updated page indication, copyright, suggested citation , and the SFC internal document control ID

Paragraph	Headline	Key	Summary of change
	Why Companies use the GLEC Framework	1	Updates on the intro text for the problem statement
	Why Companies use the GLEC Framework	2	New paragraph on "The Framework supports regulatory compliance"
Section 1: Calculating			
Chapter 1. Foundations of the GLEC Framework	3. Coverage of emissions from all forms of fuel and energy sources	1	Updated text regarding the considerations of electricity emission factors in alignment with ISO 14083 and the CLEVER methodology
Chapter 1. Foundations of the GLEC Framework	Specific considerations for alternative energy sources - Electricity	2	Expanded text on the upcoming CLEVER Electricity emission factors for Europe.
Chapter 1. Foundations of the GLEC Framework	Table 1. Overview of emissions accounting and reporting methods which are harmonized in the GLEC Framework	1	Updated names of Science Based Targets Initiative (SBTi), Handbook of Emission Factors (HBEFA), Clean Cargo Carbon Emissions Accounting Methodology.
References		1	Updated a few links to access the literature.
Section 2: Using emission results			
Chapter 1. Reporting emissions	1. An overview of the basic principles	5	A paragraph regarding SFC's "End-to-End GHG Reporting of Logistics Operations" guidance was deleted.
Chapter 1. Reporting emissions	Figure 1. Scope 1, 2 and 3 according to the GHG Protocol	1	Text correction
Chapter 2. Beyond reporting	Leverage sales and procurement - Procurement	1	Updated reference guidance to the SFC Procurement Playbook and added the relevant description.
Chapter 3. Outlook & the path towards global uptake	Data exchange	1	Updated text in this paragraph following the evolving work in the iLEAP Project.
Chapter 3. Outlook & the path towards global uptake	Further alignment of emission tools and approaches	1	Tiny updates on the text to make precise descriptions.
Chapter 3. Outlook & the path towards global uptake	Sustainability Initiative	1	Tiny updates on the text to make the descriptions precise and up to date.
Chapter 3. Outlook & the path towards global uptake	Market-based Measure	2	Expanded paragraph to inform the readers about the current MBM FW revision work, and how the evolving GHGP and SBTi standards open the space for recognition of market-based measures.
References		1	Updated a few links to access the literature. Added new references.

Paragraph	Headline	Key	Summary of change
Section 3; Data			
Module 1. GHG Emission Factors	**GHG Emission Factors**		
Module 1. GHG Emission Factors	How we source the emission factors	2	Provided reasonable explanations on the problem statement for the need for a harmonized methodology for GHG emission calculation and that the CLEVER methodology can support to resolve this issue. Expanded explanation on how we provide the default GHG emission factors in the GLEC FW and suggestion on how users should use them. Updated reference of the GREET source.
	Methane slip	2	Provided further explanation regarding the GWP100 potential of Methane
	National, regional and international values	1	The paragraph has been rewritten to provide the most up-to-date guidance
	Emission factors table: North America, China and India sources	1	The values are updated for GHG emission factor tables following the updated data source. Besides Electricity, all of the fuel emission factors for the North America table are updated, reflecting the revised sourcing data provided by GREET 2025. All of the GHG emission factors for the China table are updated, reflecting the revised data provided by multiple sources. The Indian electricity emission factor is changed, reflecting the revised data provided by multiple sources. European GHG emission factors remain unchanged from the previous version. Their review and potential revision have been planned for the future GLEC Framework update to ensure alignment with the harmonized methodology being developed through the CLEVER Project. This approach is intended to support greater consistency, transparency, and comparability of emission factors across energy carriers, lifecycle stages, and regulatory frameworks, while avoiding interim updates that may later be superseded by the forthcoming methodology.
	GHG Emissions from Electricity	2	Expanded the content here to provide the most up-to-date guidance. Updated the electricity section in line with ISO 14083. Added guidance on calculating import mixes, unknown charging locations and market-based dual reporting.

Paragraph	Headline	Key	Summary of change
	Biofuel blends	1	Values in this table were updated following the changes in the GHG emission factors from North American source.
	Scaling emission factors: GLEC Version 3.2 to GLEC Version 3.3	2	The scaling factor table was updated following the changes in emission factors of North America and China. A new table for the India source was added.
Module 2	**Default fuel efficiency and GHG emission intensity values**		
	Air transport	2	The air transport emission intensity values were updated with the latest data source The table is also expanded to provide emission intensity values for both scenarios of inclusion and exclusion of +95km DAF. A new table of Indian domestic air transport emission intensity values was provided together with explanatory text.
	Logistics hubs	1	Updated emission intensity table and text following the latest results of the GILA project.
	Rail transport	1	Updated number and information on the Indian average rail emission intensity values.
	Road transport	2	The North American Road emission intensity values were updated based on the SmartWay truck data 2025. The Europe Road emission intensity values on the electric vehicles were updated to reflect the latest HBEFA data. Updated number and information for the Indian road emission intensity values, reflecting the latest sourced data. New table and text added for the Indian road emission intensity values for electric trucks.
	Sea transport emission intensities	1	A few number corrections in the "Sea transport emission intensity values – Non-container vessels" table. Updated emission intensity table for container-vessel following the latest Clean Cargo trade lane GHG emission factors (reporting year 2025). Included a short description of the Clean Cargo methodology update.
	Sea transport emission intensities	4	New section created for sea Ro-Ro transport. A new table created for the Sea transport emission intensity values for Ro-Ro, sourced from the latest data from the Global Ro-Ro Community (reporting year 2025). Separate paragraph on Deep Sea and Short Sea Ro-Ro added for the explanation and guidance for the Ro-Ro emission intensity values.

Paragraph	Headline	Key	Summary of change
Module 4	**Examples of emission calculations – step-by-step**		
Module 4 Examples of emission calculations – step-by-step		1	The figures used in the calculation example throughout this module have been updated due to the changes in the default value in this revision.
Module 4 Examples of emission calculations – step-by-step		2	Added guidance on charging locations, including how to select the electricity mix when the charging location is unknown. Updated the method for deriving EV emission factors across multiple charging locations, including a new worked example.
Section 3. References		2	The reference page was updated with new sources used in this revision. The hyperlinks of the old sources were also reviewed and given new access dates.
Section 4 Annexes			
Module 5. Calculating GHG transport and logistics emissions for the European Chemical Industry		2	Updated content following the latest revision by Cefic. Minor changes related to expanded content on temperature-controlled transport, cleaning and heating operations, and warehousing. The emission intensity values and calculation examples provided in this module were also updated following the changes in the default value in this revision.
Module 6. Air Pollutants Methodology for the Logistics Sector		1	Small correction on the equations provided
Module 7. Application of ISO 14083:2023 and the GLEC Framework for the Post and Parcel and E-commerce Sector		4	A new module introducing the Post and Parcel and E-commerce sectoral guidance published by SFC in April 2026.
Version History	Version History	1	Update version history table to summarize the GLEC Framework updates in this revision.

5. Crosswalk between GLEC FW v3.2 (October 2025) and v3.1 (February 2025)

Paragraph	Headline	Key	Summary of change
Introduction			
	Cover	1	Updated SFC logo to the latest version
	Foreword	1	Small text edition on how the GLEC FW support the compliance with ISO 14083 standard
	Acknowledgements	1	Updated the number of companies committed to implement the GLEC Framework from 150+ to 200+
	Structure of the document	1	Updated page indication Updated copyright Updated suggested citation SFC internal document control ID added
Chapter 4. Information and requirements for the individual transport modes and hubs	Air	1	Typo correction in ”The sector’s strategy towards net zero” infographic. Typo correction in the text paragraph of examples for TOCs. Complementary explanation on the requirements for air transport calculation on Distance and Default factors.
Chapter 4. Information and requirements for the individual transport modes and hubs	Rail	3	A paragraph regarding the rail freight market, energy price and the progress of shifting freight to rail was deleted. As time changes, this statement is getting outdated and became irrelevant.
Section 1. References		1	The reference page was updated with new sources used in this revision.
Section 2: Using emission results			
Chapter 1. Reporting emissions		1	Typo correction in Figure 1. Scope 1, 2, and 3 according to the GHG protocol.
Chapter 1. Reporting emissions	Additional reporting requirements by other standards	1	Correction on the full name of CDP (formerly Carbon Disclosure Project).
Chapter 2. Beyond reporting		1	Typo correction in Figure 2. Areas and approaches for reducing emissions in freight transport.
Chapter 3. Outlook & the path towards global uptake	Data exchange	1	Updated text in this paragraph following the evolving work in the iLEAP Project.
Chapter 3. Outlook & the path towards global uptake	Assurance	2	Updated and expanded content to describe the SFC Conformity Assessment Scheme.
Chapter 3. Outlook & the path towards global uptake	Market-based Measure	4	Added a short paragraph to describe the topic of Market-based Measures and SFC’s work in this area.

Paragraph	Headline	Key	Summary of change
Section 3: Data			
Module 1. Emission factors	**Emission factors**		
Module 1. Emission factors	How we source the emission factors	2	Updated reference on data source of EcotransIT and GREET. A short sentence was added to explain the creation of biogenic GHG emission factors.
Module 1. Emission factors	Emission factors table: European, North America and China sources	1	Update the values in these emission factors tables following the updated data source. The emission factors for LNG, CNG, and Electricity have been updated for Europe, reflecting the revised sourcing data provided by EcoTransIT World 2025. The data for LNG (Otto duel fuel ship) was moved into the table of Marine Fuel Emission Factor. The emission factors for Ethanol, Biodiesel, HVO, Electricity, and CNG have been updated for North America, reflecting the revised sourcing data provided by GREET 2024. The emission factor for electricity for China has been updated and provided with two factors based on different data sources, the detailed explanation was provided to help readers make their choice.
Module 1. Emission factors	Emission factors: India sources	4	New content and emission factor table incorporated from the India Default GHG Emission Values report v1.0 (SFC, 2025).
Module 1. Emission factors	GHG Emissions from Electricity	1	Updated the reference of emission factor sources in table 1. A comparison of selected emission factor sources. Added a disclaimer on the updates of electricity emission values in future revision.
Module 1. Emission factors	Marine Fuel Emission Factor	1	Restructured the categorization of energy carrier in this table for clearer presentation. The emission factors for LPG (Butane), Ammonia, Methanol Bio-methanol and Bio-ethanol have been updated, reflecting the revised sourcing data from EcoTransIT, IMO MEPC and Fuel EU Maritime.
Module 1. Emission factors	Biofuel blends	1	Values in this table were updated following the changes in the Emission Factors from Europe and North American sources.
Module 1. Emission factors	Scaling emission factors: GLEC Version 3.1 to GLEC Version 3.2	2	The scaling factor table was updated following the changes in emission factors of Europe and North America. A new table for China source was added.
Module 1. Emission factors	Scaling emission factors: GLEC Version 3.1 to GLEC Version 3.2	5	The bullet points below the scaling factor tables were removed, because they are self-explanatory by reading the table.

Paragraph	Headline	Key	Summary of change
Module 2	**Default fuel efficiency and GHG emission intensity values**		
Module 2. Default fuel efficiency and GHG emission intensity values	Logistics hubs	1	Updated emission intensity table and text following the latest results of the GILA project outline in the Guidance for Greenhouse Gas Emissions Accounting at Logistics hubs.
Module 2. Default fuel efficiency and GHG emission intensity values	Rail transport	2	Additional information on the Indian average rail emission intensity values. Values in table 5 (European rail electric traction emission intensity values) were revised following the updated value of electricity emission factor for Europe.
Module 2. Default fuel efficiency and GHG emission intensity values	Road transport	2	The Europe Road emission intensity values were updated following the new value of fuel emission factors (CNG, LNG). Next year we will update these tables to reflect the latest HBEFA 5.1. The North American Road emission intensity values was updated based on the SmartWay truck data 2024. A new table and explanatory text were added for India road emission intensity value sourced from the India Default GHG Emission Values report v1.0 (SFC, 2025). Additional explanatory text for the China road emission intensity values.
Module 2. Default fuel efficiency and GHG emission intensity values	Sea transport emission intensities	1	Updated emission intensity table for container-vessel following the 2024 Global Ocean Container Greenhouse Gas Emission Intensities report (SFC, 2025).
Module 4	**Examples of emission calculations – step-by-step**		
Module 4 Examples of emission calculations – step-by-step		1	The figures used in the calculation example through this module have been updated due to the changes in the default value in this revision.
Section 3. References		2	The reference page was updated with new sources used in this revision. The hyperlinks of the old sources were also reviewed and given new access date.
Section 4 Annexes			
Module 6. Air Pollutants Methodology for the Logistics Sector		4	A new module introducing the updated calculation methodology for black carbon and air pollutants.
List of abbreviations & Glossary		2	Expanded content due to the new module 6.
Version History	Version History	1	Update version history table to summarize the GLEC Framework updates.

6. Crosswalk between GLEC FW v3.1 (February 2025) and v3.1 (October 2024)

Headline	Key	Summary of change
Minor corrections to table values	1	CNG and MDO fuel emission intensity values (pages 100-108) Electricity emission values (pages 81-82) Fuel blends emission factors for North American values (page 89) Emission intensity value for Road transportation on Chemical (page 156)

7. Crosswalk between GLEC FW v3.1 (October 2024) and v3.0

Paragraph	Headline	Key	Summary of change
Introduction			
	Foreword	1	Updated figures on the percentage of global GHG emissions freight transport contribution and the expected freight transport demand by 2050. Updated author's job title Updated text on third party assurance
	Acknowledgements	1	Updated disclaimer to give more clarity. Updated the organization of contributors Updated Smart Freight Centre introduction according to our latest boiler plate
	Structure of the document	1	Updated page indication Updated copyright and reference permission Updated suggested citation SFC internal document control ID added
	Introduction to Logistics Emission Accounting - Freight transport's Climate Impact	1	Updated figures for transport demand prediction, and the prediction of logistics emission contributed per transport mode in 2050 (big infographic). The update is based on International Transport Forum Outlook 2023 report
	How to use the GLEC Framework	2	Added to refer the readers to the last page of change overview table for the summary of v3.1 updates
	Scopes of Accounting	1	Update the description of Scope 3 emissions to be more accurate
Section 1: Calculating			
Chapter 1	Foundations of the GLEC Framework	1	Updates on table 1. Overview of emissions accounting and reporting methods which are harmonized in the GLEC Framework. As we are using updated standards for Hubs and Rail.
Chapter 3	Steps for establishing the emission intensity of a TOC or a HOC	1	Typo correction in the infographic

References		1	The reference page was updated with new sources used in this revision. The hyperlinks of the old sources are also reviewed and give new access date.

Paragraph	Headline	Key	Summary of change
Section 2: Using emission results			
Section 2 Chapter 1	Reporting emissions	2	Correction on the definition of scope 3 category 8 & 13 in the info box: additional reporting requirements by other standards
Section 2 Chapter 3	Outlook & the path towards global uptake	2	Updated text in the paragraph for Data Exchange and Assurance, following the evolving work in SFC projects and the SFC Conformity Assessment Scheme (CAS).
Section 2 References		1	The hyperlinks of the sources have been reviewed and given new access date.
Section 3; Data			
Module 1	**Emission factors**		
	Biogenic GHG emissions factor	4	We included the biogenic GHG emissions operational values for the bio-based fuels (in multiple tables) as required for complete Scope 3 reporting under the GHG Protocol.
	Emission factors table: European & North America sources	1	Update the values in these emission factors table following the updated data source: GREET 2023 & EcoTransIT methodology 2024
	Emission factors: China sources	4	New content and emission factor table incorporated from the China Default GHG Emission Values report V1.0 (SFC,2024)
	GHG Emissions from Electricity	4	New content incorporated from Measuring and Reporting the Carbon Footprint of Electric Freight Vehicle Operations: Whitepaper (SFC, 2024)
	Marine Fuel Emission Factor	2	New content and emission factors table source from IMO MEPC 81, Infras & Fraunhofer, EcoTransIT World: Environmental Methodology and Data (2024), Fuel.EU Maritime amended & RED II
	Air Fuel Emission Factor	2	The air fuel emission factor was originally provided separately in the European and North American table. With this update, we are separating it as an individual table and section by recognizing the need to realign emission factors across the GLEC Framework and the IATA recommended practices. With this update, we wish to provide a single set of emission factors for use irrespective of geographic difference
	Notes about the main sources	4	Additional paragraph to introduce the new data source of IMO MEPC 81
	Biofuel blends	2	Expanded the number of tables from 1 to 6, to cover the blending options for gasoline/ethanol, diesel/ethanol, diesel/HVO in both Europe and North America
	Scaling emission factors: GLEC Version 3 to GLEC Version 3.1	2	The scaling factor table was updated and divided into 2 tables to give separate indication for European and North American value.

Paragraph	Headline	Key	Summary of change
Module 2	**Default fuel efficiency and GHG emission intensity values**		
	Distance uplift factor	4	An uplift to the relevant emission intensity values has been included in the GLEC Framework v3.1 to account 'Out of route trips and deviations' equating to the Distance Adjustment Factor (DAF) between the SFD and GCD (for air) and the actual distance. These apply to Air, Road and Sea.
	Air transport	1	Updated emission intensity table
	Inland Waterway transport	1	Updated emission intensity table
	Logistics hubs	1	Updated emission intensity table
	Rail transport	2	Updated emission intensity table We have changed the electricity emission factor source from IEA global electricity factors (2022) to the latest EcoTransIT technical update and used the railway-specific values, to get closer to the full life-cycle approach recommended by ISO 14083. We added a new sentence to give directions on the uplift for temperature-controlled Rail Freight.
	Road transport	2	Updated the emission intensity table for both North America and Europe Added a new table for China road emission intensity value sourced from the China Default GHG Emission Values report V1.0 (SFC,2024) Deleted the reference of boarder scope specific data set on request to SFC
	Sea transport emission intensities	1	Updated emission intensity table for both non-container vessel and container vessel.
Module 3	Refrigerant emission factors	1	Typo correction on the GWP100 value in the Refrigerant emission factor table
Module 4	Examples of emission calculations – step-by-step	1	The figures used in the calculation example through this module have been updated due to the changes in the default value in this revision.
	1.2 EV operations emission intensity TOC	4	New section added following the inclusion of EV content in this revision, the content here was sourced from the Measuring and Reporting the Carbon Footprint of Electric Freight Vehicle Operations: Whitepaper (SFC, 2024)
References		2	The reference page was updated with new sources used in this revision. The hyperlinks of the old sources are also reviewed and given new access date.
Section 4 Annexes			
Module 5	Calculating GHG transport and logistics emissions for the European Chemical Industry	1	The default emission intensity provided in this module are updated in relation to Module 2. The values used in the calculation example through this Module are updated due to the changes in the default values in this revision.
Version History	Version History	4	A version history table was added to summarize the GLEC Framework updates.

8. Version history:

1	22/10/2024	First edition: Crosswalk between GLEC FW v3.1 and v3.0
2	26/03/2025	Second edition: Inclusion of changes made in March 2025 for GLEC FW v3.1
3	21/10/2025	Third edition: Added new section for the crosswalk between GLEC FW v3.2 and v3.1
4	26/10/2026	Fourth edition: Added new section for the crosswalk between GLEC FW v3.3 and v3.2