A strong contribution by the global freight and logistics sector to the Paris Climate Agreement goals is critical. Pressure from customers, governments and investors on business to take action will continue to grow. Businesses are looking to optimize operational efficiency and minimize their carbon footprint at the same time.

The GLEC Framework allows businesses to calculate and report their logistics emissions consistently across their multi-modal supply chain. Results can be used to inform stakeholders and improve business decisions and actions. Challenge cases support businesses to implement the GLEC Framework through five steps:

1. **ADOPT GLEC FRAMEWORK**
2. **INTEGRATE INTO BUSINESS PROCESSES**
3. **CALCULATE EMISSIONS**
4. **OBTAIN ASSURANCE AND REPORT**
5. **USE RESULTS FOR BETTER DECISIONS AND ACTIONS**
6. **OPTIMIZE SUPPLY CHAIN EFFICIENCY, MINIMIZE CARBON FOOTPRINT**

**About LEARN and the GLEC Framework**

The project Logistics Emissions Accounting and Reduction Network (LEARN) mobilizes businesses to reduce their carbon footprint across the global logistics supply chains through improved emissions calculation and reporting. LEARN partners work closely with related organizations, initiatives and already existing networks. This includes the Global Logistics Emissions Council (GLEC), a voluntary partnership that was established by Smart Freight Centre together with companies, industry associations, programs and experts. The LEARN project builds on and seeks to improve the ‘GLEC Framework for Logistics Emissions Methodologies’ based on existing methodologies. The GLEC Framework makes carbon accounting work for industry. For the first time, emissions can be calculated consistently at the global level across all transport modes and logistics sites. The LEARN consortium is led by Smart Freight Centre and includes the following partners:

For more information: www.learnproject.net or info@smartfreightcentre.org
CHALLENGE

The ultimate goal of emissions accounting and reporting is to improve performance and bring benefits to the company: less costs, less time, lower emissions. Companies can use calculated data to identify ‘hot spots’ for efficiency improvement and identify opportunities to collaborate with other companies that make use of the same logistics network. Carbon pricing is increasingly likely to hit the freight sector, and companies that know their footprint can help them prepare to financially account for logistics emissions. The challenge of several companies was therefore: how can I use results from calculations using the GLEC Framework to take actions and decisions that minimize emissions and also reduce costs by optimizing my supply chain?

ANSWER

How results can be used depends largely on the type of input data that calculations are based on; these can be classified as:

- Default data are used as a last resort when modelled or good quality actual data are not available. In the GLEC Framework defaults are provided as fuel and / or emission intensity values, expressed per tonne kilometre of transport activity within each mode and then split by different cargo, vehicle and service types.
- Actual data can include:
  - fuel data provided by transport operator (covers both own fleet data and carrier data)
  - transport activity (tonne km) combining best information from customer and transport operator
  - green freight programs can act as an intermediary collecting carrier data for specific modes or geographies according to a specified format in a neutral environment.
- Detailed modelling is useful when some, but not all, of the required information for a calculation is available from the carrier and / or shipper
  - Companies can use whatever information they can access about goods types, consignment sizes, journey origin, destination and intermediate handling locations, and any information about the vehicles used, typical load factors etc., to build a model of how fuel and transport activity are related. The robustness of the outputs will depend on the level of detail that is available about the transport operation (the more assumptions made, the lower the reliability of the output), as well as the model's algorithms.
Results can be used for the following:

- Reporting, setting targets, and tracking of emissions performance by both carriers and shippers. This can cover total emissions and emissions intensity.
- Carriers can use results to determine the emission impacts of measures they can take
  - Operational performance through measures such as driver training, routing, load consolidation and vehicle size
  - The use of telematics (which can catalyze a virtual circle of improvement)
  - Fuel switch
  - Vehicle purchase
- Shippers can use results to determine emissions impacts of measures that they have most influence on
  - Optimize the combinational modes to minimize emissions
  - Restructure the supply chain
  - Make logistics purchasing decisions
  - Identify opportunities for horizontal collaboration with shippers that share the supply chain
- Third parties, such as government and development banks, can use results to inform infrastructure developments and track the effects of government policy.

A GLEC Decision Making and Validation Matrix was created to help companies understand what type of input data is preferred, useful or not appropriate for the different uses of results by different stakeholders.
Several companies were able to use calculation results to inform reporting and decisions.

VRTO, a terminal operators’ association of one of the major ports in Europe, wants to make more informed decisions on how to handle the increasing amount of container more efficiently. A switch from fossil fuels to electricity was decided upon leading to a decrease in emissions per container handled. By applying the GLEC Framework they were able to track the impact of their decisions over time, providing confirmation that they were achieving the expected impact and confidence for further investment. Company A was also able to set more accurate and realistic sustainability targets.

An LSP specialized in air freight, has developed an in-house tool that permits its clients choose modes and services with lower GHG emissions. The company desires access to primary data from its subcontractors to achieve accurate calculations and assist clients to make better informed decisions and choices. To-date this information has not been forthcoming, so limiting the accuracy with which such advice can be given to clients.

A large retailer covering food, specialized retail products, shopping centers and other sectors, requested subcontracted trucking companies to submit data so that they can compute logistics emissions on a leg by leg basis. The real aim is to work together with trucking companies to identify and implement measures to improve operational efficiency and reduce costs and emissions along the way. Initial tests have proved positive, although further work is needed to improve the quality of the data provided by their subcontractors.

A global multimodal freight forwarder in Asia, wants to make more environmentally friendly choices by calculating and comparing emissions both between different modes and between routes within a single mode. After collecting data from in house operations and subcontracted air and sea carriers the company successfully applied the GLEC Framework and used the calculation outputs to evaluate (and select) the routes with the lowest emissions.
**EXAMPLE: VRTO**

| **About** | VRTO, a terminal operator’s association of one of the major ports in Europe provides its members with council and support, cooperates with other associations of entrepreneurs, communicates the views of its members to organizations or individuals and represents them in committees dealing with issues affecting the interests of the port. |
| **Current situation** | During the period from 2008 until 2014, the total containers handled by the port grew by 43%. VRTO wants to start measuring emissions in order to be able to handle the increasing amount of containers with higher efficiency. |
| **What was done** | In 2014 VRTO started used to GLEC Framework to calculate emissions in order to: |
|  | - Backtrack and measure if the business decisions made in the past were successful |
|  | - Set a greenhouse gas (GHG) emissions baseline for the coming years |
|  | - Base future decision making on actual GHG emissions data |
| **Results** | Although the number of handled containers by the port has been increasing GHG emissions per container have dropped by 17.85% (in 2014). VRTO members moved from using fossil fuels to electric powered operations, which explains the decrease of emissions per container. Through measuring VRTO was able to prove that the the switch from fossil fuels to electricity was a success. |
| **Conclusions** | By using the calculated GHG emissions VRTO managed to set more accurate and realistic sustainability targets and make better informed business decisions on emissions- and cost reductions. |
This company is a large air cargo specialist that devotes a lot of attention to the sustainability of its transport operations. The company developed its own carbon footprint calculation tool to help its clients choose the most environmentally friendly carrier and transport option.

- The company prepares accurate CO\textsubscript{2} emission reports for its clients.

The company wants to collect real world data on fuel consumption for the long-haul air shipments use them to accurate calculate GHG emissions and then compare the environmental performance of different carriers, different options (e.g. belly freight and dedicated freighter), different routings (e.g. direct flights, flights via Middle Eastern hubs) and the use of different equipment (e.g. B747, B787, A380, etc).

Efforts were made to collect primary air data from its subcontractors, apply the GLEC Framework and perform GHG calculations for outbound freight from Amsterdam to Asia and the Americas.

The company was not able to collect the primary data and perform calculations.

Actual data can be used to perform detailed and accurate GHG emissions calculations. LSPs and shippers can use results to restructure their supply chains and make more environmentally friendly choices of modes and carriers.

It is, however, crucial to have good contracts with the subcontractors that allow for obtaining primary data of the executed shipments, without which the above mentioned calculations and optimization cannot be performed.