



Smart Freight Forum China

Logistics Emission Calculation Tools and Practice

Summary Report

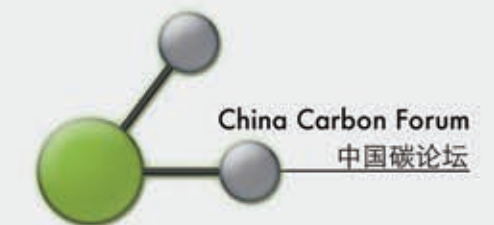


About Smart Freight Forum China

Smart Freight Forum China seeks to gather executives and professionals dedicated to a more sustainable and efficient freight sector. The Forum is organized by Smart Freight Centre China to join hands with other key partners leading China's freight sector development to

- Facilitate information sharing and collaboration among key partners on green freight and logistics development
- Present and showcase progress made on sustainable and green freight from business leaders, i.e. green shippers, LSPs and carriers
- Brief participants on policy and regulatory trends, discussing industry development pathways, and introducing fuel efficient technologies, measures and sustainable freight solutions.

Forum Partners



Disclaimer

The findings, interpretations, and conclusions expressed in this report are based on information gathered by report writers and partners through reliable channels. Smart Freight Centre China does not guarantee the accuracy of the data included in this publication and does not accept responsibility for consequence of their use.



Smart Freight Forum China Logistics Emission Calculation Tools and Practice Summary Report

On March 27, 2019, Smart Freight Forum: Logistics Emission Calculation Tools and Practice was successfully held at the Beijing Wangfujing Park Plaza Hotel. The forum was guided by the China Expert Council of Smart Freight Centre China, jointly organized by the Smart Freight China, GIZ and the Planning and Research Institute of the Ministry of Transport. The Energy Foundation China, IKEA China and Scania China provided sponsorship support.

Representatives of large-scale cargo owners such as IKEA China, transport companies such as Sinotrans, Smart Freight Centre China expert council and China Road Transport Association, China Classification Society, Planning and Research Institute of Ministry of Transport, Beijing Transport Institute and other industry associations and research institutes also participated in the forum. (Please find details in attached workshop background and agenda)

Forum Background:

With the fast-paced development of the Chinese logistics sector and freight industry, the calculation, assessment and reporting of carbon emissions from the transportation and logistics sector have taken on new urgency for understanding the impact this industry brings to the society and environment. Therefore, the development of sound, comprehensive and accurate calculation tools and practices will greatly contribute to meeting China's commitment to the Paris Agreement of reducing carbon emissions and reaching the Sustainable Development Goals to achieve a better and more sustainable future.

This forum shed light on the current situation of China's logistics industry emissions, introduced the best practices of data collection and methodologies, calculation and evaluation of logistics in China and abroad, and brought together relevant domestic policy and research departments, industry associations and shipping companies to exchange on the next steps of how to further develop the reporting and application of emissions from China's logistics sector.



Based on the discussions and knowledge exchange of this forum, the following recommendations are suggested to government, cargo owners, and logistics companies:

Recommendations to the Government:

First, it is recommended to accelerate the formulation of top-level design for the logistics in China and develop medium- and long-term roadmaps for low-carbon green development in the sector. While the Chinese government has paid great attention to the low-carbon and green development of the transportation sector including through the "13th Five-Year Development Plan for Transportation, Energy Conservation and Environmental Protection" (2014) and the "Suggestions of the Ministry of Transport on Comprehensively Promoting Green Transportation Development" (2017) and other comprehensive documents, there is still no top-level planning and development path for low-carbon and green development of the logistics field.

At present, the documents for low-carbon and green development in China's logistics sector are still relatively scattered, mainly including the "Notice on Further Encouraging Multimodal Transport Work by 18 Departments of the Ministry of Transport" (2017) and the "Three-Year Plan for Advancing Transport Structure Adjustment Plan (2018-2020)" (2018) etc. Yet, China's logistics energy consumption and emissions account for more than 80% of China's total operational energy consumption and emissions. With China's 2025 manufacturing power and other development strategies, the logistics industry still has huge room for development. Efficient, clean and green development is a necessary pathway to the realization of a powerful transportation nation with a high-quality transportation industry and to build a beautiful China while meeting the government's international commitment to address climate change. Therefore, the government needs to take the lead in formulating clear low-carbon development goals and roadmaps.

Second, the promotion of green freight operations needs to be further strengthened. In 2011, the China Road Transportation Association, together with the US Energy Foundation, GIZ, Clean Air Asia, and other domestic and foreign research institutions, logistics companies, and cargo owners, launched the China Green Freight Initiative (CGFI). The Ministry of Transport is one of the members of the Steering Committee, and advocates "green management, green technology, and green driving". The concepts of green technology and green driving aim to improve transportation efficiency, reduce transportation costs, save energy, reduce emissions, and transform and improve the industry. In 2014, the "Measures for the Implementation of the Declaration and Certification of Green Freight Enterprises and Green Freight Vehicles in China" (currently being implemented) was formulated, and the "Green Freight Enterprise Standards" and "Green Freight Vehicle Standards" were issued. However, green cargo operations have not yet risen to the government level and green freight enterprises and vehicle certification have not been received promotion and recognition across the industry. It is therefore recommended that the government strengthens and improves the influence and coverage of the CGFI, and introduces preferential policies to certified green enterprises and vehicles, such as toll relief and road rights concessions, etc.

Third, the formulation of emission calculation method standards in China's logistics sector and multi-source data fusion should be promoted. At present, the published logistics calculation methods

in the field of transportation do not cover all areas and do not include shipping companies, ports, and other enterprises. Additionally, they also need to be adapted to match the actual industry needs. Carbon trading pilot provinces and cities (Beijing, Shanghai, etc.), large freight companies (Sinotrans, etc.), research institutions (SFC, WRI, etc.) have developed calculation methods for greenhouse gas emissions in the field of logistics. Unfortunately, the calculation range, data sources, and accuracy are not consistent, and therefore comparison between these methods cannot be carried out. China's transportation authorities should take the lead in formulating a set of emission calculation standards for logistics to ensure the consistency, completeness, comparability, and accuracy of industry emissions calculations.

Drawing on the experience of Beijing's transportation sector energy-saving emission reduction statistics and monitoring platform, multi-source traffic data (vehicle operation data, vehicle static data, vehicle emission monitoring data, comprehensive traffic survey data, etc.) needs to be collected to build China's logistics field emission database for enterprises. Moreover, basic accounting data and average reference value data should be provided to decrease the threshold for enterprises to carry out carbon accounting work. Data interconnection in the field of logistics and cross-departmental and cross-industry cooperation should be promoted and links to data such as vehicles, warehousing, ports, road networks, goods, and energy consumption should be opened up to improve the efficiency and service level of the entire logistics industry.

Fourth, it is recommended to strengthen the assessment of energy conservation and emission reduction in the logistics industry. At present, the National Development and Reform Commission has set targets for controlling greenhouse gas emissions in various provinces and cities. A few provinces and cities, such as Beijing, have allocated greenhouse gas emission control targets into the transportation industry. The Ministry of Transport put forward the carbon emission reduction targets for roads, waterways, and ports in the "13th Five-Year Development Plan for Energy Conservation and Environmental Protection of Transportation", but they are not mandatory targets.

Currently, the mandatory carbon emission assessment requirements for transportation enterprises are only included in the pilot cities of the carbon trading market, such as Beijing and Shanghai. Therefore, it is recommended that the traffic management department strengthen the supervision and assessment of energy conservation and emission reduction of the logistics industry and key enterprises and set mandatory emission reduction targets for key energy-using logistics enterprises. They should also be required to carry out statistics and accounting of energy consumption and emission data.

The final recommendation to government is to strengthen the capacity of emissions calculation in the logistics sector. Emissions calculation in the logistics field involves multiple modes of transportation and multiple links. The accounting method is complex and there are numerous data sources. Therefore, the requirements for employees are high. At the same time, the employed people in the logistics industry have insufficient understanding of the importance and necessity of the emission accounting work. It is necessary for the competent transportation department to strengthen the capacity building of related work, carry out training sessions for the employees, and emphasize the necessity of emission calculation in the logistics field. Furthermore, they should also encourage enterprises to pay more attention to their carbon footprint and participate in market mechanisms such as green finance and carbon trading.



Recommendations to Cargo Owners:

First, it is necessary to actively establish a carbon emission reporting system that reflects social responsibility. In order to calculate the full supply chain carbon emissions of each mode of transport (road, rail, water) using the life cycle approach and to develop two-way reports for consumers and the public as well as governments, one needs to refer to the use of the Logistics Emissions Accounting Methodology Framework (GLEC). The main contents of the report include total carbon emissions, unit carbon emissions, and carbon emission balance points for different modes of transportation.

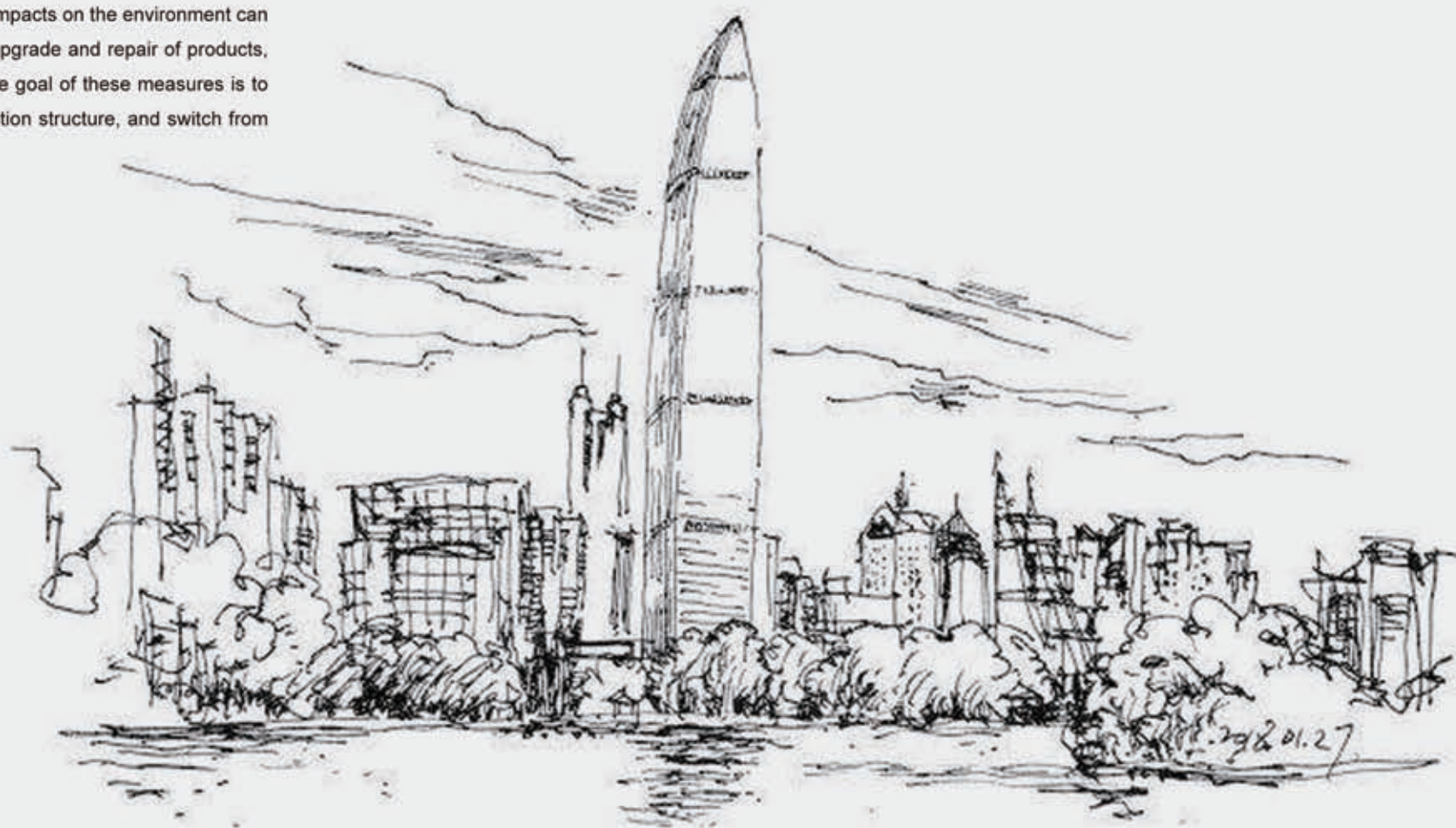
Second, a carbon emission reduction action plan has to be formulated as well as implementing a carbon emission reduction action plan. Furthermore, cargo owners should be encouraged to develop emission reduction plans in the logistics sector, and their own logistics departments or logistics providers should be required to provide comprehensive emission reduction plans and measures, which can include five aspects:

1. To reduce the demand for freight transportation, the supply chain may need to be restructured, reorganizing the relationships between upstream manufacturers, downstream retailers, and enterprises included in the supply chain, and adding or reducing enterprises or even starting new ventures. The goal of this is to reduce the volume of goods transported.
2. By adopting the standard modular production process, the product development and manufacturing cycle can be shortened and the product selection can be diversified. In addition, the response time to market changes can be accelerated and adverse impacts on the environment can also be reduced or even completely eliminated. By facilitating the upgrade and repair of products, the transportation of defective goods can thus also be reduced. The goal of these measures is to optimize the mode of transportation of goods, adjust the transportation structure, and switch from

high-energy and high-emission road transportation to low-energy and low-emission railway transportation or water transportation. Moreover, this should also actively promote advanced transportation organization modes such as multimodal transportation to improve transportation efficiency.

3. Improve asset utilization and reduce idle resources mainly by adapting to the current demand and sharing resources to improve asset utilization.
4. Improve the fuel economy of cargo transportation vehicles using clean and high-efficiency engine technology, changing driving habits, using equipment with high fuel economies, adjusting driving and shipping speeds to improve the fuel economy of cargo transportation vehicles reducing the total emissions of transportation vehicles.
5. Reduce the energy carbon content of cargo transportation vehicles by using clean energy and low-carbon energy such as natural gas, electricity and biofuel with a special focus on the electrification of transportation vehicles.

Third, it is recommended that the entire supply chain could join efforts for take emission reduction actions, industry-wide emission reduction can be advocated. Other recommendations include encouraging large-scale cargo owners to play a leading role, considering the low-carbon development capability of logistics providers in purchasing decisions and incorporating carbon emission accounting into procurement evaluation indicators. At the same time, market-based mechanisms can be used to encourage cargo owners to actively participate in green finance and carbon trading, and to realize the positive external benefits of energy conservation and emission reduction.



Recommendations to Logistics Companies:

First, the relevant industry policy requirements have to be determined. It is necessary to track requirements of policies as they evolve. At present, the national level, the Ministry of Transport, and governments at all levels have put forward higher requirements for energy conservation and emission reduction in the freight industry, such as transportation structure adjustment, diesel emission control, and carbon trading into corporate carbon emission report verification. In particular, it is necessary to track the specific implementation policies and implementation plans of the government departments where the enterprises are located and to strengthen communication with local government departments.

Second, the management of carbon emissions in companies must be improved. At present, carbon management has become one of the core indicators for high-end cargo owners to select suppliers. The establishment of a complete carbon emission data collection, management, accounting, and analysis system can become one of the core competitive advantages of logistics providers in the future. With carbon emission management and the daily operation and management of enterprises, and through the calculation of carbon emissions, we can streamline internal organizational processes and improve transportation efficiency. For example, IKEA pays close attention to the energy-saving and emission-reduction management of the entire supply chain of their products. Starting from the product design, product procurement, logistics management to the final product sales in the supply chain, measures such as procurement control, inventory management, and logistics provider cleanliness have been adopted to reduce emissions during the whole life cycle. In order to achieve carbon emission reduction goals, logistics providers have to provide carbon emissions data.

Third, the quality of carbon emissions accounting needs to be gradually improved. Carbon emission accounting of companies has to be promoted step-by-step by starting out with the less complex data such as that of a fixed source like warehousing or vehicles on fixed transportation routes, etc. After having accumulated enough experience, the next step is then to carry out carbon emission accounting work across the whole supply chain.

Last, the development of low-carbon enterprises has to be accelerated. Advanced transportation organization modes such as transportation and multimodal transportation have to be actively promoted. Furthermore, clean energy and new energy transportation equipment such as natural gas, electric power, and biofuel have to be actively utilized to promote low-carbon development and achieve low-carbon green development goals. For example, before the end of 2018, SF Express utilized nearly 10,000 pure electric logistics vehicles, mainly used to replace fuel trucks transported in more than 30 cities in the country to achieve clean transportation. JD.com also promised to replace all logistics vehicles with electric vehicles within five years, realizing the electrification of tens of thousands of logistics vehicles, and implementing an important corporate social responsibility initiative.



Annex: Workshop Background and Agenda

Smart Freight Forum

Logistics Emission Calculation Tools and Practice

This workshop:

With the development of the Chinese economy and the fast expansion of the Chinese freight industry, the calculation, assessment and reporting of carbon footprints for logistics services has become crucial for understanding the impact of the logistics industry on society and the environment, particularly on China's ability to meet its Paris Agreement commitments to reduce carbon dioxide and other greenhouse gas emissions and maintain sustainable development.

The workshop will review the status of emission calculation in the Chinese logistics industry and introduce and discuss emission calculation and reporting best practices in Europe and China. Participants from government agencies, research institutes, shippers, LSPs and their supply chain carriers will engage in dialogue and work together to suggest next steps to advance the state of the art in calculating, assessing and reporting on Chinese logistics sector emissions.

Participants:

Government Agencies

- Ministry of Transport (MOT)
- Ministry of Ecology and Environment (MEE)
- National Center for Climate Change Strategy and International Cooperation (NCSC)
- Transport Planning Research Institute of MOT (TPRI)
- China Academy of Transportation Sciences (CATS)
- China Classification Society (CSC)
- Beijing Transport Institute (BTI)

Shippers

- IKEA
- Walmart
- Lenovo
- NIKE
- H&M
- Dow Chemical

LSP and Carriers

- CML-Sinotrans
- Shenhua Group
- Shanghai Shendong Shipping Co. Ltd
- Shanghai Transwin Supply Chain Management Co., Ltd
- Shanghai New Brother Supply Chain Management Co. Ltd
- Dongguan Gangwan Chuangxin Supply Chain Co. Ltd
- COSCO Shipping
- DB Schenker
- Bergstrom

Industry Association/Development Agencies

- China Road Transport Association (CRTA)
- China Federation of Logistics and Purchasing (CFLP)
- Energy Foundation China (EFC)
- GIZ
- CDP
- Clean Air Asia (CAA)
- China Carbon Forum (CCF)
- Rocky Mountain Institute (RMI)
- International Council on Clean Transportation (ICCT)
- World Resource Institute (WRI)
- Natural Resources Defense Council (NRDC)
- Innovation Center for Energy and Transportation (ICET)
- innovative Green Development Program (iGDP)

Smart Freight Centre China Expert Council

- China Federation of Logistics and Purchase: Director, Mr. Zhou Zhicheng
- Sinotrans (North China): CEO, Mr. Liu Liang
- Scania China Strategic Center: ED Mats Harborn
- COSCO Technology: Senior Consultant Mr. Huang Dalei
- Tsinghua University: Dr. Zhao Lei
- SFCC Expert Council: Chair, Ms. Peng Yan

Logistics Emission Calculation Tools and Practice Agenda

Time: 27th March 2019 Venue: Park Plaza Wangfujing (No.97, Jinbao street, Wangwujing, Beijing)

9:30-9:45	Welcome / Introductions Moderator: Wang Boyong Director, Smart Freight Centre China
9:45-10:00	Introduction to GIZ Sebastian Ibold, Sino-German Cooperation on Low Carbon Transport (CLCT) Project Director GIZ
10:00-10:10	Opening Remarks Department of Transportation Services, Ministry of Transport
10:10-10:25	Practice and consideration of transport emission footprint in the Netherlands Anne te Velde, Counsellor for Infrastructure and Environment in China, Embassy of the Kingdom of the Netherlands in China
10:25-10:50	Status and trends of carbon emission accounting in China's transportation industry Dr. Xu Honglei, Director, Transport Planning and Research Institute
10:50-11:15	Beijing transportation carbon emission monitoring system and prospects for carbon emission reduction in the freight industry Dr. Yu Liu, Deputy Director, Department of Energy Saving and Emission Reduction, Beijing Transport Research Institute
11:15-11:35	Tea break and group photo
11:35-12:15	1. Introduction to the Global Logistics Emission Council <ul style="list-style-type: none"> • History & context • Core foundations of GLEC Framework • Relation to other initiatives 2. Com Implementation of the GLEC Framework <ul style="list-style-type: none"> • Step by step guide to calculation, reporting and emission reduction 3. Current status & future Steps <ul style="list-style-type: none"> • ISO • Getting and using better data 4. Questions from audience Alan Lewis, Technical Development Director, Smart Freight Centre
12:15-13:30	Lunch
13:30-13:50	Logistics enterprise carbon footprint calculation method Li Jingzhu, Project Director, GIZ
13:50-14:10	IKEA and supply chain sustainability and carbon foot printing Andy Yang, Sustainability Manager IKEA
14:10-14:30	Business case for managing supply chain carbon emissions and environmental information disclosure Wanyu Sung, Supply Chain Account Manager CDP
14:30-14:50	Sinotrans Sustainability and carbon foot printing Dawan Yu, Project Manager, Sinotrans
14:50-15:10	Tea break
15:10-15:40	Ship fuel consumption data collection and verification mechanism Chen Jiejun, Deputy Division Director, Operational Classification Business Division, China Classification Society
15:40- 16:00	Consideration and planning for calculating carbon emission in China's sustainable logistics sector development Xin Yan, Transport Program Manager, Energy Foundation China
16:00-16:50	Open discussion with audience, in small groups if necessary, topics to include: <ul style="list-style-type: none"> • How to collect data and calculate emissions including GHG and pollution emission in building a green supply chain? What are the main drivers? What role should the logistic industry play? • How to monitor and calculate logistic emission in cities • Prospect and follow up steps for Chinese transport sector emission calculation and disclosure • Prospect and current status of transport participating in carbon trading.
16:50-17:00	Summarise discussions Closing remarks and next steps



An aerial photograph of a highway interchange with multiple lanes and overpasses. The image is partially obscured by two vertical green bars. A large, semi-transparent watermark logo is visible in the background.

Smart Freight Forum China

Contact: Wang Boyong

Tel: 18612228406

Email: boyong.wang@smartfreightcentre.org