Reduction CO\textsuperscript{2} Emissions in Logistics

**CO\textsuperscript{2} Emissions Reduction Conditions in Global Transport**

(Basic Unit of CO\textsuperscript{2} Emissions per Cargo Weight: kg-CO\textsuperscript{2}/ton)

In 2011, Komatsu began improving its assessment of CO\textsuperscript{2} emissions from logistics operations for its 10 major international business locations. Combined with the improvements that were started in domestic locations from 2006, we have now implemented improvements in logistics operations on a globally consolidated basis at all 25 business locations.

"Domestically, we are continuing improvements with emphasis on decreasing transportation distance through efficient use of the Kanazawa and Hitachi Naka Ports which are located adjacent to manufacturing plants, as well as the improvement of long distance transport by expanding the use of coastal shipping and railways (modal shift).

As a result, in FY2016 we achieved an improvement of 4.7% in CO\textsuperscript{2} emissions per cargo weight."

Results for overseas operations showed a deterioration of +6.5% compared to the previous year because of the recovery in load amount and the increase in transport distance due to change in delivery point in the Asia district (especially in China which has a poor basic unit).

Global Shipment CO\textsuperscript{2} Emissions Volume and Basic Unit

![Graph showing CO\textsuperscript{2} emissions volume and basic unit](image)

* A basic unit index is an index relative to the CO\textsuperscript{2} emissions per cargo weight in a reference year (2006 for Japan, 2011 for Overseas) as 100.

**CO\textsuperscript{2} Improvement for Domestic Transport (Increasing Usage of Nearby Ports)**

Increasing Usage of Hitachi Naka Port

The use of Hitachi Naka Port has been increased mainly for the vehicles exports from Ibaraki plant. In FY2016, Hitachi Naka Port was used for 98% of the vehicle exports from Ibaraki plant. In 2016, for further expansion in usage, we conducted a trial to see if it was possible to ship Tokyo Port export containers from the Oyama plant.

- **Trial content and results (Conducted in September & October of 2016)**
  1. Is it possible to make 2 round trips in 1 day, including a container check, to Hitachi Naka Port?
     ⇒ Possible to do 2 round trips with some leeway.
  2. Are there any problems in the connection from Hitachi Naka Port’s domestic feeder ship to Tokyo Port’s container ship?
     ⇒ The domestic feeder ship was delayed by half a day but connection was achieved without problem.
Based on the trial results, usage was started from November. From January 2017, the use of Hitachi Naka Port started for Ibaraki plant’s import containers for overseas procurement (including partner companies).
Results of Above Improvement

1. Transport distance is the same but possible to transport double the amount. (cost improvement -22%)

2. Large improvement in CO₂ emissions for the import containers
   - Domestic land transport distance: 130km⇒4km (shipment for Ibaraki plant)
   - Reduction in total CO₂ emissions 33ton/year (shipment for Ibaraki plant; calculated 10 TEU/month)

Tasks Hereafter

- Moving ahead with consolidating at Hitachi Naka Port and the resulting increase in the number of feeder ships and container ships.
- Establishing a container round use system based on cooperation of numerous cargo owners and shipping companies.

CO₂ Improvement for Overseas Transport (Use of Nearby Ports)

Improvement of export logistics/commercial distribution for Komatsu (Changzhou) Construction Machinery Corp. (KCCM); Bangkok Komatsu Corp. (BKC)

KCCM (Changzhou, China), an overseas Komatsu group company, provides large parts to North America and Asia districts. By changing the parts for BKC (Thailand) to KCCM direct sales (Former: Via KSC; Komatsu (Changzhou) Construction Machinery Corp.) and at the same time changing the loading port from Tsingtao to Shanghai, the domestic transport distance has been greatly reduced.

Results of This Improvement

1. Shipping port Tsingtao ⇒ Shanghai Distance of truck transport 703km reduction
2. Reduction in CO₂ 44.8ton/year