

Fujitsu Group's Green Logistics

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The Fujitsu Group Environmental Action Plan (Stage VIII) has been in operation since FY2016, and one of its thematic objectives is to mitigate greenhouse gas emissions across the value chain. In the logistics division, we aim to achieve a 2% reduction in CO₂ emissions per sales amount from transport. Working with our suppliers and clients, we proactively pursue a variety of activities to reduce environmental burden in the group-wide transport practices (domestic, overseas intraregional, and international transport), which we call green logistics. The Fujitsu Group started various green logistics initiatives in April 2006, even before the Amendment to the Act on the Rational Use of Energy (known as the Amended Energy Conservation Act) was implemented. The amended act required not only freight forwarders, but also shippers to join in efforts for energy conservation. While the act is effective only within Japan, the Fujitsu Group extends the scope of these initiatives to its global value chain. This paper describes these activities of green logistics pursued at the Fujitsu Group.

1. Introduction

Green logistics refers to environmentally friendly logistics and logistics causing reduced environmental impact. In Japan, the transport sector accounts for about 20% of the total CO₂ emissions and green logistics is attracting attention among measures against global warming. It is promoted by many companies because an improvement in fuel efficiency and energy utilization efficiency leads to a reduction in environmental impact such as a reduction in emissions of CO₂ and air pollutants and, at the same time, improved efficiency of transport/delivery reduces costs.

In April 2006, the amendment to the "Act on the Rational Use of Energy" (commonly known as the Amended Energy Conservation Act) was enforced, requiring not only freight forwarders, but also shippers, to join in efforts for energy conservation. Fujitsu Japan (hereafter, Fujitsu), which has been certified to be a specified consigner that handles freight transport of more than a certain volume (30 million ton-km a year), not only reports on the actual CO₂ emissions from transport and energy-saving plans every year but also promotes green logistics activities as a measure for energy conservation.

Specific green logistics initiatives include modal shifts to a means of transport causing less environmental impact, and improvement of loading efficiency to reduce the number of vehicles by loading one truck with as much freight as possible such as cooperative transport/delivery. They also include use of low-pollution vehicles such as hybrid and compressed natural gas (CNG) vehicles, introduction of digital tachographs to record the drivers' driving data, optimization of transport routes and locations of logistics centers, and use of ecological packaging.

This paper describes the Fujitsu Group's green logistics activities while presenting specific case examples of the initiatives mentioned above.

2. Fujitsu Group's Environmental Action Plan

Based on the corporate value "In all our actions, we protect the environment and contribute to society" given in the FUJITSU Way¹⁾, the Fujitsu Group's philosophy and guiding principle, we position environmental conservation as one of the highest priority issues of management so that the beautiful environment of the planet will be passed on to the next generation.

Under this concept, we are promoting environmentally conscious logistics with green logistics activities. We are actively working on mitigating CO₂ emissions from transport throughout our supply chain from component procurement to product delivery while cooperating with related divisions such as the development/design, purchasing, manufacturing, and sales divisions.

The Fujitsu Group has also established the "Fujitsu Group Environmental Policy"²⁾ to drive environmental management based on the guiding principle above and, to pursue specific targets for putting it into practice, formulated the "Fujitsu Group Environmental Action Plan." Concerning logistics, we set a target of "achieving an annual average reduction of at least 2% in CO₂ emissions from transport per sales amount" in the Environmental Action Plan (Stage VIII), which started in FY2016. The CO₂ emissions reduction we are moving ahead with is aimed at all transport of the entire Fujitsu Group including domestic (intra-regional) and international transport of Fujitsu and the group companies in Japan and overseas.

The CO₂ emissions from transport of the Fujitsu Group in FY2015 was 102,000 tons in domestic and overseas total (Figure 1), and this included 22,000 tons of CO₂ emissions due to domestic transport and 80,000 tons due to international and overseas intra-regional transport. The CO₂ emissions per sales amount were 21.4 tons/billion yen and reducing this by an annual average of at least 2% is a target set in the Environmental Action Plan (Stage VIII).

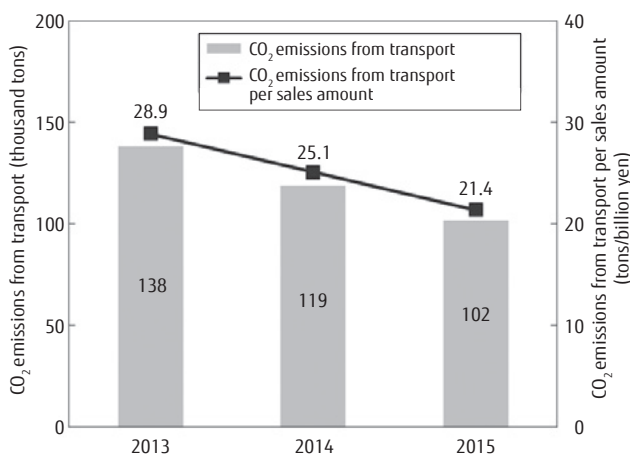


Figure 1
Fujitsu Group's CO₂ emissions from transport.

3. Cooperation with logistics companies

As Fujitsu's activities, we are working on green logistics in cooperation with logistics subcontractors and, in 2007, we launched a green logistics working group (WG) jointly with the subcontractors. The first thing we embarked on as its activity was to calculate and aggregate not only the CO₂ emissions and amount of their reduction but also data related to CO₂ emissions from transport such as vehicle loading efficiency and modal shift percentage.

These data are based on information gathered from subcontractors and their cooperation is essential. The data calculated and aggregated can also be used as fundamental information for discovering issues and studying and formulating measures. Sites with problems are identified from these data, and then direct visits to them can be made to analyze the hindering factors and discuss ways to improve vehicle allocation with the people from the logistics subcontractor who are assigned to the respective sites. Every year, a target for CO₂ emissions reduction is set with the subcontractors to discuss and implement reduction measures for achieving the target. The progress of these activities is confirmed at a WG meeting with the participation of both parties every month to implement activities with a constant awareness of the target.

In this way, Fujitsu is working on activities in cooperation with contractors and has so far implemented various initiatives for reducing CO₂ emissions from transport. The following sections present the specific measures.

4. Specific measures

4.1 Modal shifts

A modal shift refers to use of a means of transport causing less environmental impact and the Fujitsu Group is actively adopting it as a measure for reducing CO₂ emissions from transport. We are promoting shifts to a means of transport causing less CO₂ emissions: from aircraft to trucks and from trucks to railways for domestic transport, and from aircraft to marine vessels for international transport. While modal shifts, which involve longer lead-times, may lower the service level, we promote this activity while seeking solutions to any issues that arise in cooperation with the sales division and logistics companies.

We select a means of transport according to delivery times desired by customers. For example, we use trucks for urgent freight (with short delivery times) and railway transport for less urgent freight (with longer delivery times). As a result, we have acquired the certification of "Eco Rail Mark" established by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Railway Freight Association, which indicates "products and businesses that use environmentally friendly railway freight transport and are taking active measures for global environmental issues." Railway transport is also effective as a measure to deal with an insufficient number of drivers and trucks, which is becoming increasingly serious in the current logistics industry of Japan.

As described above, we are shifting from air services to marine (ship) services for international transport. Marine services, which reduce costs as well as environmental impact, are a means of transport combining economy and environmental friendliness. We have now visualized the state of use of air and marine services to constantly gain an understanding of it. In addition, we attempt to reduce use of air services by taking measures including making stricter conditions for their use. Of marine services, use of ferries, which allows shorter lead times of transport than container ships, is increasing.

4.2 Reduction of vehicles by improving loading efficiency

Vehicle loading efficiency can be improved by loading one truck with as much freight as possible to reduce the number of vehicles. The Fujitsu Group constantly analyzes causes of lower efficiency to study the solutions. One example is reducing the number of orders with specified delivery times. Any order with a specified delivery time hinders delivery of more than one order with one truck, causing lower efficiency in vehicle allocation. For that reason, we ask the sales division to try to avoid specifying delivery times unless necessary. We also adjust delivery times with customers, and thereby work on reducing the number of vehicles. For example, if four companies located apart from each other request deliveries at the same time, four trucks are required to comply with all of them. However, if the delivery times can be distributed by making an adjustment with the customers, one truck

may be sufficient.

With the cooperation of logistic subcontractors, we also positively use cooperative transport. First, cooperative transport with the Fujitsu Group companies, which has been promoted for some time, has been expanded while coordinating the transport and carry-in conditions of the respective companies. Since 2015, we have been expanding the scope of cooperative transport to include shippers other than the Fujitsu Group, and they are customers of subcontractors. In 2016, to further expand cooperative transport, we started considering building a transport network for the entire Fujitsu Group in a newly launched project.

To improve loading efficiency, we are also re-considering the forms of packaging of our products. Through cooperation with internal divisions, we are exercising ingenuity to load trucks with as many products as possible by making products and packages smaller (downsizing) and increasing the package strength to allow more layers to be stacked.

4.3 Eco-friendly driving

One measure to mitigate CO₂ emissions from transport by improving fuel efficiency is eco-friendly driving. Specific examples include use of hybrid and other low-pollution vehicles, employment of fuel-efficient tires, avoidance of idling and unnecessary revving of the engine while stopped, prevention of sudden starts and sudden braking and frequent use of engine braking. Eco-friendly driving essentially requires the cooperation of land transport companies and we are collaborating with subcontractors to approach land transport companies.

In addition, we replaced the conventional trucks used exclusively for Fujitsu (owned by logistics subcontractors) for delivery to customers in the Tokyo metropolitan area with hybrid vehicles, starting in November 2010. Furthermore, those vehicles have been equipped with fuel-efficient tires and Fujitsu's on-board devices (digital tachographs) so as to improve fuel efficiency. With the cooperation of the subcontractors, the vehicles exclusively for Fujitsu bear the Fujitsu logo and an environmental activity comment ("The Fujitsu Group contributes to CO₂ reduction with eco-friendly transport").

5. Global application of green logistics

The Fujitsu Group's green logistics activities were launched with domestic transport of the principal Fujitsu by forming the Green Logistics Committee in FY2005 in order to meet the requirements of the Amended Energy Conservation Act, which was to be enforced in April 2006. The scope of the green logistics activities at that time was within Fujitsu's domestic transport as prescribed in the Fujitsu Group Environmental Action Plan (Stage V) started in FY2007 for reasons including the fact that the Amended Energy Conservation Act was intended for domestic transport. In the Environmental Action Plan (Stage VI) started in FY2010, however, it was applied to domestic transport of Fujitsu and domestic group companies and, in the Environmental Action Plan (Stage VII) started in FY2013, the scope was expanded globally to include domestic (intraregional) and international transport of Fujitsu and domestic and overseas group companies. To include the entire domestic and overseas group companies in the scope, there were two major challenges.

First, it was necessary to measure CO₂ emissions from transport of the entire Fujitsu Group including overseas companies. While there are measurement criteria for CO₂ emissions from domestic transport in place according to the Amended Energy Conservation Act, for overseas group companies, there were no standard measurement criteria and formulation of the Fujitsu Group's own measurement method was required. Accordingly, we decided to adopt measurement methods considered the most appropriate for the respective countries and ranges of transport (international or domestic). For example, we adopted measurement methods provided for by the Amended Energy Conservation Act for domestic transport in Japan, by the Greenhouse Gas (GHG) Protocol (established jointly by the World Business Council for Sustainable Development and the World Resources Institute) for international transport and by the UK's Department for Environment, Food & Rural Affairs (Defra) and other methods for intraregional transport in Europe. For these measurement criteria, we held many briefing sessions until they became permeated in domestic and overseas group companies and CO₂ emissions from transport are now measured in nearly the entire Fujitsu Group.

The second challenge was activities for reducing

CO₂ emissions from transport in the entire Fujitsu Group including overseas companies. Logistics meetings were held in both domestic and overseas group companies, where the purposes and targets of green logistics activities, the policies and details of initiatives, and case examples in other regions were presented and shared for providing motivation for the activities. In 2016, the "Case Studies of Transportation CO₂ Reductions," a collection of various measures implemented by the Fujitsu Group, was spread out over domestic and overseas group companies to be utilized for formulating measures.

6. Fujitsu Group Green Logistics Procurement Direction

The Fujitsu Group has established the "Fujitsu Group Green Logistics Procurement Direction"³⁾, which describes the basic concept of green logistics and requests for partners (subcontractors). The content covers as many as 13 items:

- 1) Acquisition of external certifications including ISO 14001 and green management certifications
- 2) Provision of data
- 3) Reconsideration of transport routes
- 4) Improvement of loading efficiency
- 5) Reduction of traveling with an empty load
- 6) Promotion of modal shifts
- 7) Reduction of air transport
- 8) Promotion of eco-driving
- 9) Recommendation of use of fuel-efficient tires
- 10) Priority employment of low-pollution/high-fuel-efficiency vehicles
- 11) Ensuring of vehicle servicing
- 12) Encouragement of reduction and abolition of packaging materials
- 13) Approach to biodiversity conservation

By presenting these criteria, we intend to have the policies of the Fujitsu Group's activities for environment thoroughly understood to coordinate the direction with our partners. In this way, we are committed to reducing environmental impact due to logistics in the entire value chain by strengthening partnerships.

7. Conclusion

This paper presented the Fujitsu Group's green logistics initiatives.

More than 10 years have passed since the Fujitsu

Group started green logistics activities and individual group companies have implemented measures for reducing CO₂ emissions from transport. In these 10 years, measures have been carried out including modal shifts and improvement of loading efficiency and reduction in the number of vehicles through cooperative transport and improvement of packaging as described above. Now, we have prepared the "Case Studies of Measures for Reducing CO₂ Emissions from Transport (Japanese/English)" to share the past activity experiences and know-how across the Group. This collection of case examples provides various insights into activities implemented by Fujitsu Group companies. This is offered to domestic and overseas group companies so as to uncover measures. We intend to continue updating this collection of case examples to gather together the know-how of the entire Group so that it can be utilized as a tool and lead to further improvement activities.

The Fujitsu Group develops and sells various Internet of Things (IoT) products including on-board devices. We will consider using these in-house products and strengthening cooperation with the sales and development divisions more than ever to promote green logistics activities.

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