

Embodied Freight Transportation in US Goods and Services, 2007-2012

Topic:

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Demand for freight transportation is accelerating with the globalization of increasingly fragmented production processes. In the meantime, the energy usage and environmental emissions of freight grow rapidly. As the awareness of environmental issues grows, it is necessary to transport goods and services in a more efficient and green way. However, when shippers choose freight transportation, they value time and cost rather than its related energy usage and environmental impacts.

This paper brings the analysis of estimating the share of embodied freight transportation for each industry in the U.S. from 2007 to 2012. I use U.S. Bureau of Economic Analysis Input-Output tables, and Commodity Flow Survey Data from U.S. Bureau of Transportation Statistics. In the analysis, identifying the shippers of these freights can be challenging. Allocating the freight transportation to the industry level enables the analysis to perform such task. Moreover, freight movements are embodied in upstream supply chains. I track both direct and indirect transportation needs of each industry using input-output analysis.

This research extends the resulting analysis of Nealer et al.'s (2011) by including more recent data. Thereby, I can perform the trend analysis of freight transportation at industry level. I also estimate energy usage and environmental emissions of freight to inform policies for reducing the environmental impacts of freight. Since freight transportation is induced demand, analyzing modal freight transportation demand of different industries can inform mitigation strategies tailored to industries.