



World Conference on Transport Research - WCTR 2016 Shanghai. 10-15 July 2016

## Port and hinterland network: a case study of the Crescent Corridor intermodal freight program in the US

Junko Sugawara\*

*\*Tokyo Institute of Technology, Tokyo, Japan, 2-12-1-14-12 O-okayama Meruro-ku, Tokyo 152-8550, Japan*

---

### Abstract

Continued rapid growth of globalization and international trade is increasing the importance of global freight transport and logistics management around the world. In particular, intermodal transport using two or more different modes of transport is extremely important to implement efficient logistics networks from ports to the hinterland. The Crescent Corridor Intermodal Freight Program is part of the American Recovery and Reinvestment Act (ARRA). The U.S. Department of Transportation (USDOT) launched the Transportation Investment Generating Economic Recovery (TIGER) discretionary grant program on June 17, 2009 and solicited applications for innovative, multi-modal and multi-jurisdictional transportation projects intended to provide significant economic and environmental benefits. Norfolk Southern's Crescent Corridor Program was awarded a TIGER grant in the amount of \$105 million, split evenly towards the construction of two regional intermodal facilities in Tennessee and Alabama, on February 17, 2010. The program is essentially a public-private partnership with the U.S. Dept. of Transportation and will be completed in 2030. This empirical and qualitative study is based on analysis of published U.S. government documents, state and regional legislative documents, freight railroad company documents and the PIERS data. This study focuses on the Crescent Corridor Intermodal Freight Program from the Gulf Coast to the Northeast as an example intermodal project in the U.S., describes the individual projects and evaluates the effectiveness of the various projects to obtain strategic insights for application to other regions.

© 2017 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of WORLD CONFERENCE ON TRANSPORT RESEARCH SOCIETY.

*Keywords:* Intermodal; Port and Hinterland network; Intermodal Corridor; Intermodal freight program;

---

### 1. Introduction

Continued rapid growth of globalization and international trade is increasing the importance of global freight transport and logistics management around the world. The growth of international trade will cause significant increases in both international and domestic transportation demand. In particular, intermodal transport using two or more different modes of transport is extremely important to implement efficient logistics networks from ports to the hinterland, which are essential not only for industrial efficiency but also for national economic growth and competitiveness. Therefore, every country or region must establish efficient, sustainable, and safe freight transport systems. However, the continued increase of trade volume will cause various social issues such as traffic accidents, congestion, fuel consumption, and polluting emissions. Consequently, the

---

\* Corresponding author. Tel.: +81-3-5734-3468; fax: +81-3-5734-3468.

*E-mail address:* [sugawara.j.aa@m.titech.ac.jp](mailto:sugawara.j.aa@m.titech.ac.jp)

establishment of efficient as well as safe and environmentally sound intermodal freight transport systems is not easy for states or regions, either developed or developing. The United States is a largest international trading nation in the world and has developed a nation-wide intermodal transport system from ports to the hinterland. Even so, the continued increase in trading volume has caused capacity issues in some intensively used freight corridors.

The present study focuses on the Crescent Corridor Intermodal Freight Program from the Gulf Coast to the Northeast as an example of an intermodal corridor project in the U.S., analyses the current situation of the U.S. ports and development of intermodal freight policy and intermodal corridors, and describes and evaluates the effectiveness of various individual projects to obtain strategic insights for application to other regions.

## 2. Literature Review & Methodology

The port and hinterland transportation network is vital for the US economy and public interest to facilitate international trade, but establishing efficient intermodal corridors involves multiple judicial domains and complex systems. US ports face global competition from the Panama Canal expansion, Port of Prince Rupert expansion, and the Suez Canal. In this context, studying the intermodal corridor approach from the port to the hinterland will provide useful information for both developed and developing regions. The Crescent Corridor is an ongoing intermodal corridor project to improve current infrastructure capacity and tackle future social issues such as energy consumption and air pollution.

Intermodal freight transport research began in the late 1990's, so is a relatively new research field in Transportation Research. The OECD (2001) examined institutional aspects to compare and assess the impact of different organizational structures on transport planning and intermodal policy development within 14 countries and regions, Austria, Canada, the Czech Republic, Finland, Germany, Hungary, Italy, Japan, Mexico, the Netherlands, Norway, Switzerland, the United Kingdom, the United States, and the European Union. The study found that existing infrastructure and policy making varied between countries, and that intermodal policy development requires close cooperation between the government and the private sector. However, the intermodal corridor concept or specific cases were not discussed.

The U.S. Maritime Administration (2009) suggested that the importance of the port system will only grow as globalization continues and the U.S. economy becomes more integrated into the world economy. Landside transportation chokepoints within the port and the hinterland network decrease the efficiency of the marine transportation system. No matter how efficient or effective port operations may be "inside the gate," that efficiency is lost if cargo is delayed due to road or rail congestion "outside the gate." Therefore, identification of such chokepoints throughout the network and designation of priority intermodal corridors are essential to improve efficiency and establish smooth and efficient intermodal transport operations from ports to the hinterland.

Various studies have examined intermodal transport operations. Bontekoning et.al conducted intermodal freight transportation review research based on intermodal rail-truck freight transport literature by reviewing 92 publications and discussed aspects by assessing current knowledge base, drayage, rail haul, transshipment, standardisation, multi-actor chain management and control, mode choice and pricing strategies, intermodal transportation policy and planning, miscellaneous aspects, and applied methods and technique. Some operational research has approached intermodal terminal or route choice and optimization, but intermodal transport research requires the multi-disciplinary approach. Mathisen and Hanssen (2014) investigated journals of intermodal transport based on Scopus, the world's largest abstract and citation database of peer-reviewed literature from 1985-2013 for 11 journals and measured publishing and citation frequency. Monios et.al (2013) investigated the Heartland Intermodal Corridor from an institutional point of view and identified a new mechanism for channelling Federal funds to private operators, representing a new direction for the FHA. However, the Crescent Corridor has not been the subject of specific research.

The present study investigated the Crescent Corridor using empirical and qualitative data obtained from US government documents, state and regional legislative documents, freight railroad company documents, and PIERS data, although access to some documents was limited, and a number of interviews and site visits conducted in the United States.

## 3. U.S. Ports and Intermodal freight (shipping)

### 3.1 U.S. Ports and Waterborne Container Trade

The linkage of U.S. ports to surface transport, either truck or rail, is critical to the US economy. Approximately 75 percent of freight tons in U.S. foreign trade moved by water in 2012. (USDOT, Federal Highway Administration, Freight Analysis Framework 2013) The US freight system is required to move 40 tons of freight per person annually (National Rail Plan USDOT Federal Railroad Administration 2010), so the increasing U.S. population will result in a 22 percent increase in the total amount of tonnage between 2010 and 2035. With an estimated 420 million people in the U.S. by 2050, the increase is projected to be 35 percent (Freight Railroad Administration, [www.fra.dot.gov/Page/P0528](http://www.fra.dot.gov/Page/P0528)).

Tables 1 and 2 show the top 10 U.S. ports for waterborne container trade by TEU's and metric tons from 2007 to 2012. These tables show the waterborne container trade has increased despite the economic recession at all 10 container ports from 2007 to 2010. Every year, these 10 ports handle more than 80% of waterborne container trade by both metric tons and TEUs, and all

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات