

# GPRA 2015

## Global Port Research Alliance Conference on “Port and Logistics Connectivity”

### Academic Session C1: Environmental Performance Evaluation

- ❖ **Date: 22 May 2015**
- ❖ **Time: 9:00am – 10:30am**
- ❖ **Venue: R1109, R Core (Shirley Chan Building), PolyU**

In order to lower adverse environmental impact, different measures are in need in the shipping and port sectors. This session consists of four studies to investigate environmental performance evaluation:

- The first study aims to empirically validate a research model with the variables of institutional pressures, internal green practices and external green collaborations on green performance. With the empirical data collected from 129 container shipping companies in Taiwan, the tool of structural equation model (SEM) is employed to test the research hypotheses. The findings of this study provide theoretical contributions and managerial implications on improvement of green performance.
- With the purpose to evaluate the efficiency of dry ports with carbon emission, the second study uses a Green-DEA model to simultaneously evaluate both undesirable and desirable outputs of dry port service production. This research reveals the significance of environmental aspects in efficiency evaluations.
- The third study introduces a life cycle assessment method and develops an evaluation model to examine GHG emission. The method is also applied to evaluate potential GHG emissions reduction in main Chinese ports. The research findings quantify the GHG emission and provide a reference to make appropriate decision to reduce GNG emission in Chinese ports.
- The objective of the fourth study is to improve energy benchmarking and monitoring in ports. Based on primary time series data on energy consumption pattern in container terminals and semi-structured interviews, a set of energy efficient indicators are developed to measure and compare energy efficiency across the industry.

**Session Chair: Prof. Hong Yan, The Hong Kong Polytechnic University**

<b>Title</b>	<b>Author(s)</b>
An analysis of institutional container shipping green supply chain management	Chung-Shan Yang (Chang Jung Christian University)
Performance Evaluation of Dry Ports with Carbon Emission	Gang Hao (City University of Hong Kong), Girish Gujar, and Hong Yan (The Hong Kong Polytechnic University)
Impacts analysis of greenhouse gas emissions reduction for projects of “Oil to Electricity” driven gantry cranes in Chinese ports	Yihui Tian (Dalian Maritime University), Qinghua Zhu (Shanghai Jiao Tong University), and Hong Yan (The Hong Kong Polytechnic University)
Energy Efficiency Indicators for Container Terminals	Gordon Wilmsmeier (ECLAC)

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## Global Port Research Alliance Conference on “Port and Logistics Connectivity”

### Academic Session C2: Management in Port and Logistics Network

- ❖ **Date:** 22 May 2015
- ❖ **Time:** 9:00am – 10:30am
- ❖ **Venue:** R1205, R Core (Shirley Chan Building), PolyU

Management in port and logistics network involves such issues as ICT system, brand management, transport network and security of maritime commons. This session aims to investigate various issues in managing port and logistics network:

- The first study aims to define the concept of port centric ICT systems and examines its role within the port and logistics connectivity. This paper serves as an exploratory study by analysing recent developments of port centric ICT systems in various ports. Through case studies, the authors compare traditional information port system and port centric ICT system. The authors also further examine the process, relational and technological configurations of a port centric ICT system.
- The second study aims to identify the crucial factors influencing the development of brand for container port operator. The authors collected empirical data from the port related industries to identify five crucial branding factors, i.e., ports’ diversification strategy, ports’ infrastructure, ports’ logistics capability, ports’ image, and ports’ marketing mix. The authors also conducted multiple regression analysis to examine the impacts of ports’ branding factors on brand equity.
- The third study aims to build a cascading failure model of interdependent network for analysing the delay time of logistics business caused by the node’s failure in a single network or interdependent network. This model takes into account the node importance and the connection strength of edges. The results advance the knowledge of the dynamical process of cascading failure in logistics network, and the proposed model provides theoretical support for logistics emergency management.
- To examine the responsibilities of the strong nations (e.g., China, India and the United States) of securing the maritime commons, the authors of the fourth study conduct in depth interviews with numerous stakeholders. The results suggest that it becomes pragmatic for all the three countries to share the responsibilities, and it should be the top priority to draw a roadmap for developing a tri-lateral mutually beneficial relationship to all. This study also highlights areas of cooperation and those of conflict, and suggests means to enhance the former while degrading the latter.

**Session Chair: Prof. Jin Chun, Dalian University of Technology**

<b>Title</b>	<b>Author(s)</b>
The concept of port centric ICT systems	Tsz Leung Yip (The Hong Kong Polytechnic University), Yingli Wang, and Jane Jing Haider (Cardiff University)
An evaluation of Brand Management for Container Port Operator in Taiwan	Ching-Chiao Yang and Yu-Shao Yeh (National Kaohsiung Marine University)
Cascading failure model on an interdependent network of service-infrastructure based on multimodal transport network	Yingyi Huang, and Jin Chun (Dalian University of Technology)
Securing the Maritime Commons	Girish Gujar, Hong Yan (The Hong Kong Polytechnic University), and Zhongyi Liu (The Shanghai Institutes of International Studies)

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## Global Port Research Alliance Conference on “Port and Logistics Connectivity”

### Academic Session C3: Shipping Route and Shipping Network

- ❖ **Date: 22 May 2015**
- ❖ **Time: 9:00am – 10:30am**
- ❖ **Venue: R1206, R Core (Shirley Chan Building), PolyU**

This session aims to examine shipping network and scheduling issues. The first study proposes the multiplier attachment for spatial network. The next two studies examine the Marine Silk Road and the Arctic shipping respectively. The fourth study proposes the Waterway Ship Scheduling Problem (WSSP):

- The objective of the first study is to propose the multiplier attachment to analyse the effect of hub allocation and volume consolidation in order to minimise transport cost across the network. The authors also test the multiplier attachment on cargo shipping networks. The results suggest that the multiplier attachment allows for the emergence of the hub-and-spoke network for the logistics chain.
- The second study focuses on the construction of the Marine Silk Road with three core parts: (1) the analysis of the impetus to the construction of the Marine Silk Road, (2) the construction of the game model for cooperation and competition between homogeneous and heterogeneous ports along the Marine Silk Road, and (3) the study on the methods of conversion of how ports along the way are embedded into the Marine Silk Road mega-channel platform.
- The third study deals with Arctic shipping. The authors conduct a comprehensive survey on important aspects of the state-of-the-art regarding Arctic shipping as well as approaches towards the solution. The authors also illustrate and analyse the problems to assess the perspectives of the Arctic trade shipping industry and its vital determinants.
- To efficiently schedule the traffic through different waterways in order to avoid bottlenecks at the accessing area of the terminal, the fourth study proposes the Waterway Ship Scheduling Problem (WSSP). The WSSP aims at scheduling incoming and outgoing ships through different waterways for accessing or leaving a container terminal in such a way that the ships' waiting time is minimised. A real scenario from Yangtze Estuary (Shanghai) is tackled for assessing the performance of the heuristic and the improvement upon real-world terminal operations.

**Session Chair: Prof. Stefan Voß, University of Hamburg**

<b>Paper Title</b>	<b>Author</b>
The Multiplier Attachment: A shipping network architecture	Simone Caschili, and Francesca Romana Medda (University College London)
Construction of the Marine Silk Road and Embedded Cooperation and Competition Game of Ports Covered	Xue-hua Sun, Xue-jian Chu, Yong-zhang Gong (Shanghai University), and Zhong-dai Wu (China Shipping Information System Co., Ltd.)
Perspectives of the Arctic Merchant Shipping Industry and its Impact on European Ports	Stefan Voß, and Robert Stahlbock (University of Hamburg)
The Waterway Ship Scheduling Problem - An Application of the Yangtze Estuary	Stefan Voß (University of Hamburg), Eduardo Lalla (University of La Laguna), and Xiaoning Shi (University of Hamburg)