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Environmental impact of maritime container inventory imbalance; a burning global issue

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Introduction

Waste is the sworn enemy of the supply chain. One particularly vexing source of waste for transportation carriers today is empty containers (Partridge, 2007). This problem is fundamentally cause by the imbalance of exports and imports volume of a country. Commercial traffic never seems to be in balance (YUR & Esmer, 2011). Shipping, in economic terms, being a derived demand container fleet of carriers usually experience imbalances in many locations. The growing global trade imbalance has resulted a proportionate increase in empty container reposition (ECR). Owing to an imbalance of trade, the shipping line accumulates many empty containers at some ports, while other ports are often faced with a shortage of empty containers (Leung, et al., 2004). Within the whole world container traffic, the largest share of containers is in the status of repositioning (Karmalic, et al., 2012). For the last eleven years (2004- 2014), the average empty container movement has been as high as 38.28% as against the laden container movements according to container statistics in Sri Lanka (CASA Per. Review, 2004-2014).
The growing imbalance of containers globally creates a substantial additional expense as well as environmental issues. International Maritime Organization (IMO) predicts that the maritime CO_2 emissions are projected to increase significantly in the coming decades. Depending on future economic and energy developments, it forecasts an increase by 50% to 250% in the period to 2050 (IMO, 2017). However, shipping is indispensable as more than 90% of world trade is transported by sea. Therefore, it is rather impossible eliminate 100% the environmental impact of shipping but taking measures reduce the empty container movements is critical. This paper proposes new method that could reduce ECR by approximately 20% thus help save environment from the maritime transportation in a considerable way.

Maritime Container Inventory Imbalance

Containerization has made a significant change globally in the system of freight transport responsible for the acceleration of the globalization of the world economy since the 1960s (Bernhofen, et al., 2013).By adopting containerization the industry opened the flooodgates for global commerce (Stopford, 2009). Cargo travelling in sealed containers was far less susceptible to the perennial risk of pilferage; less likely to be damaged at sea (Cudahy, 2006). The system, led to greatly reduced transport costs, and supported a vast increase in international trade.