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# Strategic responses to institutional forces pressuring sustainability practice adoption: Case-based evidence from inland port operations

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## ABSTRACT

This article investigates strategic responses of inland ports to institutional forces pressuring their adoption of sustainability practices. We postulate that even though inland port operators strive for economic viability, there are growing pressures from various stakeholders for continuous enhancement of their environmental and social sustainability practices. We apply institutional theory to classify the effects of these forces based on five institutional antecedents – *cause*, *constituents*, *content*, *control*, and *context* – and further expand our theoretical framework with resource dependence tenets to discuss the spectrum of strategic responses available to inland ports to deal with institutional forces. We examine our theoretical arguments with empirical evidence collected from four inland ports using a case study-based approach. We conclude that while inland ports have a strong disposition towards social sustainability, economic considerations are still most emphasized, and environmental issues are mostly regarded in compliance with the legally mandated minimum. The most important sources of institutional pressure are identified as *cause*, *constituents*, and *control*. In a further step, we present evidence of the inland ports' potential strategic responses. The study also provides insights for managers and policy makers on strategic options as appropriate organizational responses to proliferating institutional pressures for sustainability practices adoption.

## 1. Introduction

The transportation of cargo is instrumental in promoting worldwide economic development and growth. However, transportation of goods and people causes damage to society and the environment (Ahi and Searcy, 2013). This includes emissions, noise, congestion, accidents, habitat loss, pollution, and deterioration of infrastructure (Santos et al., 2010a). There is growing attention from academia and practitioners to find new solutions in hope of balancing transportation-caused damage with its economic viability for a more sustainable transportation development (Demir et al., 2015; Lee et al., 2016).

In this context, sustainability can be understood as a holistic concept comprising three unique aspects, namely economic, environmental, and social sustainability (Elkington, 1998). While economic sustainability concerns itself with the profitability of an enterprise and is usually intrinsic to the strategy of any for-profit firm, environmental sustainability aims to lessen the damage caused by a firm's operations to the environment, for example by reducing emissions, cutting waste, or recycling (Carter and Easton, 2011; Janic, 2006). Social sustainability focuses on balanced and sustained relations with all of a firm's stakeholders, be it customers, suppliers, employees or local communities (Steurer et al., 2005). For sustainable development, a firm needs to exhibit a minimum

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performance in these three dimensions (Seuring and Müller, 2008). However, win-win situations are rare, and compromises are often necessary as investments into one dimension of sustainability can offset performance in the other two dimensions (Dyllick and Hockerts, 2002).

Researchers have tried to find ways to make road freight (Fürst et al., 2013; Santos et al., 2010b), maritime transportation (Adland et al., 2017; Cariou, 2011; Lam and Lim, 2016; Psaraftis and Kontovas, 2010), rail cargo (Bauer et al., 2010) and air transportation (Akerman, 2005) more sustainable in their operations. Authors have also explored sustainability concepts in transshipment operations in major hubs like airports or seaports (Acciaro et al., 2014; Chang and Wang, 2012; Lam et al., 2013; Upham et al., 2003). However, only little research is available on the sustainability efforts and strategies of inland ports. Inland ports are significant nodes in international transportation networks and often fill an important role for transshipment and handling of cargo flows (Rodrigue et al., 2010). Thus, inland ports contribute significantly to the efficiency of hinterland connections of seaports and other major transportation nodes (Van Den Berg and De Langen, 2015). They are, though, by no means “smaller seaports further inland”, and need to deal with a unique set of challenges and issues (Witte et al., 2014), particularly when it comes to sustainability efforts (Dooms et al., 2013; Haezendonck et al., 2006).

In contrast to current research on seaports, there are few insights offered on how inland ports deal with sustainability issues. Lättilä et al. (2013) investigate the impact of dry port usage on the CO<sup>2</sup> emissions of seaports, and conclude that an increase in inland port usage could help to lower the environmental damage caused by transportation. Iannone (2012) discusses social cost in hinterland container transportation, but does not explicitly focus on inland port operations. Similarly, Roso (2013) and Bergqvist et al. (2015) investigate the importance of inland ports for sustainable intermodal transportation, yet without focusing on inland port operations. So far, there is currently no publication that discusses sustainability in inland port operations from a holistic perspective. This research void leads us to examine the awareness of inland ports on sustainability and its development with empirical evidence. In lack of prior research, our first research question is

**RQ 1:** What is the current status quo of sustainability development in inland port operations?

After assessing sustainability development in inland port operations, we aim to investigate the drivers of sustainability practice adoption. Inland ports are subject to diverse institutional forces of varying strength in their adoption of sustainability practices – they have to follow regulations to avoid penalties, cater to customers’ requests to attract and retain business, and fulfil operational and sustainability requirements of transportation and logistics partners. Following the tenets of institutional theory, we analyse the pressures exerted by governmental institutions, customers, and local stakeholders on the ports to assess their effect on inland port sustainability efforts. Thus, we aim to answer the question

**RQ 2:** What institutional forces influence the adoption of sustainability practices in inland ports?

Subsequently, we explore the potential strategic responses of inland ports to institutional forces on a spectrum from passive acceptance to active resistance. Based on a resource-dependence theory perspective, we examine inland ports’ agency and acknowledge their ability to actively shape their business environment through strategic actions in response to institutional processes, thus seeking to answer the following question.

**RQ 3:** What strategies do inland ports elect in response to institutional forces calling for increased sustainability practices adoption?

## 2. Literature review

### 2.1. Inland port operations

Inland or dry ports are defined by the United Nations Conference on Trade and Development (UNCTAD) as “a common user facility with public authority status, equipped with fixed installations and offering services for handling and temporary storage of any kind of goods (including containers) (...)” (UNCTAD, 1991, p. 2). Inland ports are important nodes in the hinterland of seaports and contribute to their competitiveness by facilitating cargo flows and alleviating congestions (Roso et al., 2008). They fulfil four primary functions: transfer of cargo, assembly of cargo in preparation for transfer, storage of cargo, and logistical control of cargo flows (Roso and Lumsden, 2010; Slack, 1999). In this role, they are also the main facilitators of multimodal transports, as they conduct the modal shift between truck, rail and barge (Notteboom and Rodrigue, 2005). As a result, inland ports are strong economic drivers for their respective regions (Cullinane et al., 2012); however, they need to attract sufficient volume to establish economies of scale, and manage to achieve transportation costs low enough to compete with alternative modes of transportation (Rahimi and Harrison, 2008).

Inland ports can be connected via road, rail, and inland waterway transportation, and offer transshipment of container and/or bulk cargo, customs and security checks, storage, communication, and documentation of cargo. Basic inland port infrastructure includes (container) handling equipment, customs control and clearance, temporary storage areas, security facilities, offices for shipping agents and operators, and communication facilities (UNCTAD, 1991). However, inland ports usually offer a varying degree of value-added services, including (but not limited to) labelling, container repair, commissioning of goods, repackaging, long-term storage (including goods with special requirements, e.g. hazardous goods, cold goods), and even assembly (Jaržemskis and Vasiliauskas,

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