Chapter 2
A Life Cycle Framework for Governance of Intermodal Terminals: Planning, Operations, and Strategic Management

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ABSTRACT
This chapter establishes a framework for the governance of intermodal terminals throughout their life cycle, based on the product life cycle. The framework covers the initial planning by the public sector, the public/private split in funding and ownership, the selection of an operator, ensuring fair access to all users, and finally reconcessioning the terminal to a new operator, managing the handover and maintaining the terminal throughout its life cycle. This last point is especially important as industry conditions change and the terminal’s role in the transport network comes under threat, either by a lack of demand or by increased demand requiring expansion, redesign and reinvestment. Each stage of the life cycle framework is operationalised based on empirical examples drawn from research by the authors on intermodal terminal planning and funding, the tender process and concession and operation contracts. In future the framework can be applied in additional international contexts to form a basis for transport cost analysis, logistics planning and government policy.

INTRODUCTION
A significant amount of research on intermodal transport has focused on the development of terminals, particularly the role of the public sector in supporting such developments through the funding or planning system. This public sector support is based on expected benefits such as emissions and congestion reduction due to modal shift, increased employment or increased competiveness arising from improved
access to major trade links. These expectations are based on ideal scenarios of significant traffic flows, but such scenarios are only likely if the terminals can offer a high quality handling service at low prices to the service operators, who in turn can then offer regular reliable services to shippers and forwarders at prices competitive with road haulage. The relationship between public sector planners and funders and private sector operators is thus of the utmost importance in establishing economically competitive intermodal terminals and services.

Public actors find it difficult to tie funding support for intermodal terminal development to conditions for the operational model of the terminal. This situation raises the risk that the terminal may not be operated on a viable economic model capable of supporting a service of sufficient quality to be attractive to shippers and forwarders and thus achieve the desired modal shift. The result can be that the terminal ceases operation or requires ongoing public subsidy. Research is, therefore, required into the link between the initial funding (both public and private), the business model of the terminal and the ongoing economic viability of the terminal over the course of its life, which may be decades.

Government funders want to achieve modal shift by removing barriers such as upfront costs, sunk costs and availability of suitable terminal locations, transport authorities want to provide sufficient capacity and quality of infrastructure for freight operators, regulators want to ensure fair competition and open access to infrastructure and terminals. Questions to be considered relate to how the practical aspects of the intermodal transport sector constrain or enable these goals, and how public actors can incentivise private operators to work together through investment and planning to further support these goals. Without a clear understanding of the key stakeholders, their motivations and interactions, effective transport policy is constrained.

A successful business model for a freight facility must, therefore, encompass public goals on the one side and practical realities on the other, which raises several questions relevant to transport policy and planning. How “hands-on” does the public actor need to be to ensure private terminal operators invest in terminals? How can public infrastructure owners ensure that terminal operators provide open access to competitors? How can private terminal operators provide attractive prices to service operators if public actors have demanded overly stringent requirements from them that make investment unattractive or complicated? How can aspects such as equipment management or infrastructure maintenance be specified in contracts given the uncertainties of future business? What is the best way to share responsibilities in a public-private partnership?

One reason such questions have been difficult to answer is because of a lack of a life cycle framework in which to situate the analysis of different aspects of intermodal terminals as they pass through stages of conception, planning, funding, building, concessioning, operation and maintenance. Research on intermodal operations and policy goals of modal shift from road to rail necessitate certain assumptions, but these assumptions only hold in certain contexts, contexts that are changing throughout the life cycle of the terminal. Moreover, the accuracy of these assumptions depends on the interdependent relations between the classes of key stakeholders in the intermodal sector, for example the business model of the terminal, the KPIs and fees agreed in the terminal concession, the relationship between terminal operator and rail companies using the terminal, operational issues of wagon and locomotive management, etc. Without a clear understanding and appreciation of these relations, the questions above cannot be answered.

The aim of this chapter is to establish a life cycle framework for situating analysis of intermodal terminals. An amended version of the product life cycle theory is used as a basis for the framework, in which to situate each stage of the terminal’s life, from the initial planning by the public sector, to the public/private split in funding and ownership, selecting an operator, specifying KPIs to the operator, set-
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