In the context of increasing pressure from both governments and community stakeholders, port cluster stakeholders such as port managing bodies are considered to be at least co-responsible for the externalities produced by the economic activities taking place in the cluster. Because port clusters are not stand-alone fortresses, but embedded in complex supply chains characterized by contested industries such as transportation and manufacturing, there is a need for a paradigm shift towards increased collaboration for sustainable development within and across port clusters. As the information and knowledge on sustainability performance remains scattered throughout the port stakeholder landscape, modern technology increasingly offers the potential for efficient information exchange between stakeholders, and advancements to a more sustainable port industry could be expected. However, research demonstrates that port stakeholders continue to refrain from collaboration when interorganizational interests are unaligned with their individual organizational or cluster interests.

This Ph.D. dissertation focuses on the collaboration challenges for port sustainability. The first part focuses on collaboration challenges in the supply chain (also termed “vertical collaboration” or “coordination”). The supply chain perspective is divided over three distinct chapters. The first chapter focuses on the aspect of port integration strategies as a strategic response to build, expand or sustain a competitive advantage. Through the consultation of 59 C-suite level executives representing port users, sources for competitive advantage for the Antwerp seaport are identified through linear regression and factor analysis. We observe that port hinterland extension, as a form of port collaboration, or a scale or scope extending strategy does not automatically or immediately lead to an increased port competitiveness potential. The next chapter subsequently develops a general and actionable conceptual framework for port managing bodies to implement modal shift measures to achieve superior environmental performance for container hinterland traffic. This framework was developed through a case study methodology supported by triangulation (literature review, desk research, interviews with experts and a focus group) and adapts Contract Theory principles to influence port user behavior towards modal shift ambitions. Port managing bodies can use this framework to determine which modal shift measures are considered more attractive and feasible to implement by their users. Case studies on the three main container ports of the Hamburg-Le Havre range further support the crucial role of strategic information management for a successful modal shift strategy. The final chapter of the supply chain perspective adopts an inverse vantage point, i.e. that of the hinterland node in supply chain development for sustainability. A socio-economic weighing rule is developed for the inland Port of Brussels, based on a combination of qualitative (in-depth interviews) and quantitative research.
(calculations based on annual reports and reports of the National Bank of Belgium). A weighing rule allows to observe the absolute and relative socio-economic impacts of a port’s traffic categories. In the past, weighing rules were developed for seaports, and this paper adapts the methodology for inland ports, as well as for potential future traffics and co-located logistics platforms, the latter being an inherent characteristic of inland ports. Both the developed weighing rule and a benchmark analysis with five other inland ports demonstrate that the development of high added value traffics necessitates specific attention to the inclusion of negative externality reducing mechanisms in concessions, and coordination with other supply chain stakeholders through increased information exchange.

Part two of the dissertation focuses on the development of collaboration for sustainability on the level of the broader industry (“horizomal collaboration” or “co-opetition”). A literature review of 74 scientific papers demonstrates that although a performance management revolution has taken place since the 80’s, port performance management scientific articles predominantly focused on financial and operational indicators up until 2013. In industry-academia collaborative projects, the trends towards Triple Bottom Line management is observed. This is the starting point for building a conceptual model in the next chapter. An action research methodology is applied through the consolidation of insights from a four year research project that focuses on the development of an interorganizational network for sustainability in the European ports industry. Textual analysis on 96 meeting reports supports the results. This research demonstrates that there is a need for a crucial ‘net broker’ role for a separate neutral organization, given that the European seaport industry is characterized by high complexity and stakeholder distrust. In order to further develop collaboration for sustainability, the net broker needs to initiate the network with a ‘coalition of the willing’, as the demonstration of the shared value concept of the network remains unclear if the diverse set of stakeholders is included.

The dissertation concludes that there are four main collaboration challenges for sustainability in the ports industry: industry complexity, stakeholder pressure and hostility, the need for a cultural shift within the industry towards collaborative performance management and trade-offs between individuality versus synergies in totality. In order to overcome these challenges, strategic information management is vital as it enhances the shared value concept and can lower transaction costs. Port managing bodies are well positioned to integrate information sharing obligations in port user agreements and contracts. For the industry perspective, the cultural shift towards collaboration for sustainability should be initiated by an organization that takes on the role of the ‘net broker’, so that it can guarantee data confidentiality, consensus based decision making and systems thinking, safeguard against destabilizing events such as overrepresentation of single (types of) stakeholders or behavioral risks (opportunism), lower transaction costs and generate and build trust in the network. Through the fulfillment of these conditions, the port industry can develop as an interorganizational self-regulating ‘autopoietic’ network for sustainability.