

30 **1 Introduction**

31 Sustainability, a prerequisite for the well-being of humankind, depends heavily on the practice of
32 global industries (Future Earth 2013). International shipping, for example, is facing the challenge to
33 reduce the carbon emission by at least half by 2050* (Dessens et al. 2014). Actually, this industry can
34 play a major role in global sustainability not only for the Greenhouse Gases (Smith et al. 2015; Fayiga
35 et al. 2018), but also the air quality problem of the global port cities, which are mostly populated coastal
36 areas (Pike et al. 2011; Wan et al. 2016). Concurrently, as the world economy globalizes, logistic services
37 integrate, and information technology advances, international shipping, the enabler of international trade,
38 is expanding its service from its core maritime transportation to “door-to-door”, namely the supplier to
39 consumer, embracing combined transport (Mukherjee and Brownrigg 2013; Branch 2014). This enhances
40 logistic efficiency, reduces overall transport costs, and improves service continuity (Rodriguez and
41 Youssef 2017). Door-to-door shipping in international trade usually involves different jurisdictions, uses
42 both land and sea transportation, as well as ports, each may have their own way to improve sustainability,
43 but these are fragmented for the integrated international shipping network (USDOT 2007; ATAP
44 Guidelines Steering Committee 2016).

45 Sustainability is the ability to provide the service with minimal impacts on natural resources and the
46 environment (Oxford Dictionaries 2017). Strategic planning, a systematic approach to produce strategies
47 with long-term thinking (Grünig and Kühn 2010; Ioppolo et al. 2016), has proven to be an indispensable
48 tool to generate effective decisions (Bryson 2011), particularly in the horizontally and vertically
49 fragmented freight transport industry (Youssef et al. 2017; Frankel 1989). Although it has been suggested
50 for the strategic planners to build and strengthen the capacity to develop sustainable strategies for freight
51 transport (Youssef et al. 2017), the literature rarely concerned strategic planning issues in shipping (Wu
52 and Zhang 2016; SteadieSeifi et al. 2014). For instance, as one of the pioneers, Kumar (1976) highlighted
53 the urgent need for a comprehensive and long-term plan for shipping in most developing countries. Later
54 on, Koufopoulos et al. (2005) and Fagerholt et al. (2010) pointed out that few studies have examined
55 strategic planning for shipping. However, most of the planning work in the literature are at tactical or
56 operational level, such as ship routing and scheduling (Kelareva et al. 2014), fleet planning (Fagerholt et
57 al. 2009), stowage planning (Kroer et al. 2016), container reposition and allocation planning (Myung and

*<https://www.independent.co.uk/environment/ships-emissions-carbon-dioxide-pollution-shipping-imo-climate-change-a8303161.html>

58 Moon 2014), transport network planning (Dong et al. 2015); or on specific issue, such as environmental
59 planning (Roberts 2007), financial planning (Min et al. 2009). Hence, the research question is whether
60 the existing strategic planning in shipping can ensure the sustainability in international shipping.

61 As an emerging field, maritime logistics has been commonly assumed to provide door-to-door
62 services (Nam and Song 2011; Wu and Zhang 2017). Panayides (2006) first introduced the core of
63 maritime logistics and its research agenda. Subsequently, this emerging field attracted much attention in
64 research and practices (Panayides and Song 2013; Heilig and Voß 2017; Lee and Song 2010). Yet its
65 concept is still vague, and the scope and role are yet to be established (Song and Panayides 2015).
66 Consequently, this paper also seeks to answer the following questions. What is maritime logistics? Is
67 there any strategic planning in maritime logistics that can contribute to improving sustainability in door-
68 to-door services?

69 To answer these questions, this study reviews and analyzes the existing literature in the field of
70 strategic planning in international shipping and maritime logistics. The review for maritime logistics is
71 based on published academic papers. That for strategic planning in shipping is grounded both in
72 published articles and existing documents from official websites because many organizations have
73 implemented strategic planning processes for their forward-oriented thoughts and actions. The
74 international shipping issues have often been considered as private rather than a public matter, but the
75 fact is that the government intervention is needed to support it towards sustainability for its powerful
76 influence (Youssef et al. 2017; OECD Publishing 2002; Pallemarts 2003). To confine the research scope,
77 an attention of this study is limited to strategic planning for public and nonprofit organizations embracing
78 government ministries, departments and agencies, and intergovernmental bodies which interface with
79 international shipping (Mukherjee and Brownrigg 2013).

80 Next, the research method is explained first, followed by the initial results and refinements. Then
81 the literature review results and summary are presented. The findings, research gaps, and future research
82 directions will be discussed to conclude this study.

83 **2 Research methodology**

84 Literature review is a key tool to manage the knowledge for a specific academic inquiry, which aims
85 to map and assess the existing body of literature, and identify research questions in order to develop and
86 extend the body of knowledge further (Tranfield et al. 2003). A structured literature review has been

87 recognized as a replicable, scientific and rigorous approach for knowledge exploration than traditional
88 literature reviews (Massaro et al. 2016). It is now a popular evidence-based approach for knowledge
89 management (Feng et al. 2017; Seuring and Gold 2012). Given that the existing reviews of strategic
90 planning in shipping are unstructured (Fagerholt et al. 2010; Koufopoulos et al. 2005), a structured
91 review in strategic shipping planning and maritime logistics is carried out in this study. Therefore, four
92 steps of data collection, initial search results, refinements, and data analysis (Feng et al. 2017) are
93 employed to identify and analyze the related literature, find research gaps, and provide a basis for future
94 researches.

95 This study also uses word-to-word content analysis, which is useful for generating reliable and valid
96 findings (Ahi and Searcy 2013; Seuring and Gold 2012). We followed a replicable process to collect data,
97 used the “discursive alignment of interpretation” approach (Seuring and Gold 2012) to solve the
98 ambiguous contents, and applied a stable and replicable “feature-based categorization” (Cohen 1982) for
99 methodology summary.

100 **3 Data and initial analysis**

101 **3.1 Data collection**

102 This study collects relevant publications from the Scopus database, as it has a broad coverage of
103 peer-reviewed literature. In addition, official websites of public and non-profit organizations related to
104 shipping are selected for the review on practical strategic planning. Such public organizations include
105 the United Nations Conference on Trade and Development (UNCTAD); Organization for Economic Co-
106 operation and Development (OECD); International Maritime Organization (IMO); World Trade
107 Organization; European Commission; United States Federal Maritime Commission (USFMC); United
108 States Department of Transportation (USDOT); Transport Canada; United Kingdom’s Department for
109 Transport; Ministry of Infrastructure and Water Management of the Netherlands; German Federal
110 Ministry of Transport, Building and Urban Development (BMVBS); Spanish Ministry of Public Works
111 and Transport; Dutch Government; Greek Ministry for Economy, Infrastructure, Shipping and Tourism;
112 Ministry of Transport (MOT) of the People’s Republic of China; Hong Kong Government; Institute of
113 Transportation (MOTC) of the Republic of China; Ministry of Transportation and Communications of
114 the Republic of China; Maritime and Port Authority of Singapore (MPA); Ministry of Land,
115 Infrastructure, Transport, and Tourism (MLITT) of Japan; Transport and Infrastructure Council of

116 Australia, etc. (Mukherjee and Brownrigg 2013). Non-profit organizations include World Association
117 for Waterborne Transport Infrastructure (PIANC), Forum for the Future, and World Wildlife Fund.

118 Through experts' consultation, it is recommended to use two keywords "strategic planning AND
119 shipping" and "maritime logistics". However, due to the vagueness in the definition of strategic planning
120 for shipping (Wu and Zhang 2016), "shipping planning" is considered a better keyword. Therefore,
121 "shipping planning" and "maritime logistics" are used as the keywords in data collection. In this study,
122 the "title, abstract, keywords" search is used to collect literature published in English and Chinese
123 language from the Scopus database. The time range was set from "All Years" to "Present", and all of the
124 document type and access type are chosen. For practical strategic planning, the selected official sites
125 search of "shipping planning" by using the "Google's web search" engine is employed. It should be noted
126 that even if the authors did their best to collect all available data and extensive literature is reviewed, it
127 is never exhaustive.

128 **3.2 Initial search results**

129 As of March 26th, 2018, for the two categories—shipping planning and maritime logistics, the
130 Scopus search identified a total of 1906 and 197 papers in each category. Then, a series of steps are taken
131 to remove the unwanted papers. Firstly, the subject areas irrelevant to shipping in the Scopus database
132 are excluded. These areas are (1) Pharmacology, Toxicology, and Pharmaceutics, (2) Dentistry, (3)
133 Nursing, (4) Neuroscience, (5) Health Professions, (6) Veterinary, (7) Psychology (8) Chemistry, (9)
134 Biochemistry, Genetics and Molecular Biology, (10) Physics and Astronomy, (11) Materials Science, (12)
135 Chemical Engineering, (13) Arts and Humanities, (14) Medicine, (15) Agricultural and Biological
136 Sciences, and (16) Earth and Planetary Science. Secondly, some document types, such as short survey,
137 book chapter, business article, note, abstract report, erratum, and editorial, are excluded. Thirdly, trade
138 publications and book series were also excluded. This resulted in 1188 publications between 1946 and
139 2018, and 144 publications between 2004 and 2018 for the two categories. Finally, after deleting
140 duplications and publications without author name and journal names a total of 1109 and 135 publications
141 remained in the two categories. In addition, 54 documents for shipping planning from selected official
142 sites were collected. These are exported to Endnote bibliography software for further refinement.

143 **3.3 Refinements of the search results**

144 The first refinement is to remove the publications based on their abstracts. If the content cannot be

145 grouped into the shipping planning and maritime logistics, such as special planning for the port, ship,
146 and channel; planning for a company and private shipping organizations; planning for other industries
147 like manufacturing, and planning without consideration of maritime industry, the publications are
148 removed. Consequently, 383 and 61 publications in the two categories are retained for analysis.

149 Secondly, it is important to differentiate publications addressing the planning issues at different
150 levels. Planning includes three levels: strategic, tactical, and operational (Benowitz 2001). These three
151 levels are explained below:

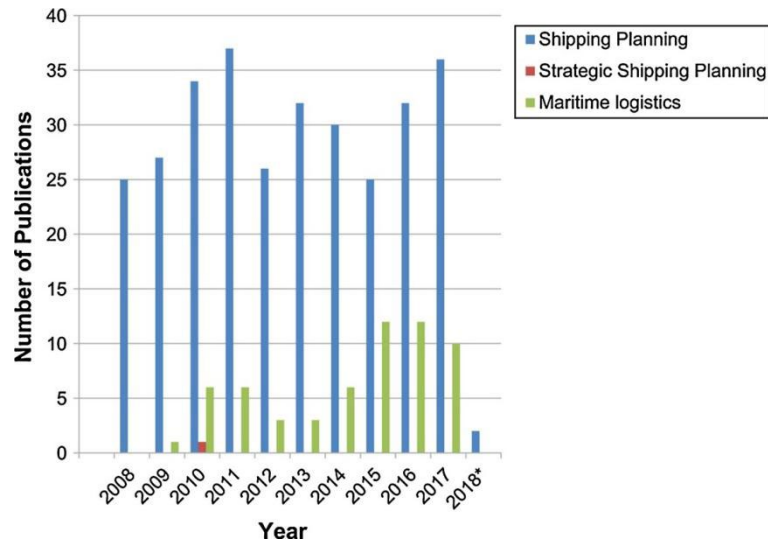
- 152 • “A strategic plan is an outline of steps designed with the goals of the entire organization as a
153 whole in mind, rather than with the goals of specific divisions or departments”,
- 154 • “A tactical plan is concerned with what the lower level units within each division must do, how
155 they must do it, and who is in charge at each level”, and,
- 156 • “An operational plan is one that a manager uses to accomplish his or her job responsibilities, the
157 goals of which are precise and measurable” (Benowitz 2001).

158 It should be noted that a strategic plan can also target at the industrial level (McMillan 2012). As strategic
159 planning should have a long-term planning horizon (Ewing 1972; Grünig and Kühn 2010; Bryson 2011),
160 and generate strategies instead of tactics and specific measures, this study only focuses on strategic
161 planning to pursue the long-term goal of sustainability (WCED 1987; Engelman 2013). An exhaustive
162 discussion on tactical or operational planning is beyond the scope of this paper. Then, most publications
163 from the Scopus database and 30 documents from selected official websites are excluded based on their
164 full papers in accordance with the long-term planning horizon and strategies outputs.

165 **3.4 Initial data analysis**

166 After the refinements, 4 publications from the Scopus database and 24 documents from selected
167 official sites were identified for strategic planning in shipping, but no publication of strategic planning
168 for maritime logistics. Fig. 1 shows the number of publications on shipping planning, strategic planning
169 in shipping, and maritime logistics over the last ten years. It can be seen that the strategic planning in
170 shipping appeared in 2010, and maritime logistics has gained increasing attention.

171



172

173 **Figure 1** Distribution of the publications reviewed. *Note: Data for the year 2018 include publications

174

published up to March 26

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176 **4 Results**

177 **4.1 Strategic planning in shipping**

178 **4.1.1 Review on strategic planning in shipping**

179 Only four papers remained in the strategic planning in shipping. Among them, Kumar (1976)
 180 identified the paradox and problems of the shipping industry to shed light on the need for a
 181 comprehensive and long-term plan for most developing countries. Frankel (1989) proposed a process of
 182 strategic planning for the shipping industry. Koufopoulos et al. (2005) investigated and described the
 183 strategic planning practices in the Greek shipping industry to provide a benchmark for the measurement.
 184 Fagerholt et al. (2010) provided a step-by-step conceptual model to support decision-making for strategic
 185 planning in shipping. On the other hand, there are 24 documents regarding the strategic planning for
 186 shipping from official websites which showed in Table 1.

Table 1 Strategic planning for shipping from selected official websites

Organizations	Strategic planning	Horizon	Scope	What planning does	Outputs	Source
IMO	Strategic Plan for the Organization (for the six-year period 2012 to 2017)	6 years	Maritime transportation	Outlining broad directions and strategic objectives	Strategic directions and performance indicators	(IMO 2014)
European Commission	Future of Transport	Long-term	European transport	Defining a sustainable future for transport	Vision, and views to translate the vision into concrete actions	(European Commission 2009a)
	Maritime Transport Strategy 2018	About 20 years	European maritime transport system	Presenting main strategic goals for the maritime transport system	Strategic goals and recommendations	(European Commission 2009b)
USFMC	Strategic plan for the Federal Maritime Commission	2-6 fiscal years	International ocean transportation system	Setting goals and objectives for the international ocean transportation system	Strategic goals, objectives, and performance measures	(USFMC 1999, 2000, 2003, 2008, 2011, 2013)

Table 1 (Continued)

Organizations	Strategic planning	Horizon	Scope	What planning does	Outputs	Source
USDOT	USDOT's Strategic Plan	5-6 fiscal years	United States transportation system	Developing a framework to improve transportation system	Strategic goals, performance goals, and indicators	(USDOT 2014, 2006)
	The Maritime Administration and the U.S. Marine Transportation System: A Vision for the 21st Century	Long-term	Marine transportation network for door-to-door	Setting a vision for the marine transportation system	A vision	(USDOT 2007)
	Leading the Future: 2008-2013 Strategic Plan	6 fiscal years	United States marine transportation system	Planning and implementing a better future for the marine transportation system	Strategic goals, performance indicators, and measures	(USDOT 2008)
Transport and Infrastructure Council of Australia	Australian Transport Assessment and Planning Guidelines	1-5 years and 10-15 years	Overall transportation system	Providing a transport planning and decision-support framework	Strategies	(ATAP Guidelines Steering Committee 2016)

191 **Table 1 (Continued)**

Organizations	Strategic planning	Horizon	Scope	What planning does	Outputs	Source
MOT of the People's Republic of China	Thirteenth Five-year Development Planning for Modern Comprehensive Transportation System	5 years	Comprehensive transportation system	Building a modern comprehensive transportation system	Strategic goals, objectives, and programs	(MOT 2017)
MOTC of the Republic of China	Thirteenth Five-year Development Planning for Waterway Transportation	5 years	Waterway Transportation	Planning for waterway transportation development	Strategic objectives, main tasks, and safeguards	(MOT 2016)
MOTC of the Republic of China	The Forth Stage of Overall Transportation System Planning in Taiwan	4 years	Overall transportation system	Planning of overall transportation system towards sustainability	Indicators and tactics	(MOTC 2010)
MPA	Maritime Singapore 2030	Long-term	Maritime industry	Developing a future of Singapore maritime	Strategic directions	(MPA 2013)
MLITT of Japan	Basic Plan on Transport Policy	7 years	Transportation	Planning for Japanese transportation followed the Basic Policy	Basic directions, targets, and measures	(MLITT 2014)

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193

Table 1 (Continued)

Organizations	Strategic planning	Horizon	Scope	What planning does	Outputs	Source
German BMVBS	Maritime Development Plan	Long-term	Maritime issues	Forming a framework for maritime strategies in the long term	Strategic targets and action	(BMVBS 2011)
Maritime UK	Shipping strategic partnership plan	Long-term	Shipping, ports and maritime business services	Planning a strategic partnership for the United Kingdom maritime	Tasks	(Maritime UK 2013)
Dutch government	The Dutch Maritime Strategy 2015-2025	11 years	Maritime issues	Developing a Dutch maritime strategy	Objectives, strategies, and measures	(Dutch Governm ent 2015)
PIANC	Sustainable Maritime Navigation	Long-term	Maritime navigation	Developing an overall picture for sustainable maritime navigation	Strategies	(PIANC 2013)
Forum for the Future	Sustainable Shipping Initiative	Long-term	Ship transportation	Establishing a new and sustainable approach as the norm	Vision, future innovation, and wider action	(Kimmins et al. 2011)

197 **4.1.2 Efforts on strategic planning for sustainability in shipping**

198 In the literature of strategic planning in shipping, numerous efforts exist in green or sustainable
199 shipping, which encourages the improvement in environment and sustainability. They are summarized
200 below.

201 At the international level:

- 202 • IMO proposed the strategic plan integrating environmentally sound and sustainable shipping into
203 its mission, and the strategic directions of developing and maintaining a comprehensive
204 framework for environmentally sound shipping and enhancing the environmental conscience
205 (IMO 2014).
- 206 • European Union developed policy objectives and policies including infrastructure, funding,
207 technology, legislative framework, behavior, governance and external dimension for sustainable
208 transport (European Commission 2009a), and built strategic maritime transport options based on
209 the core values of sustainable development that is “economic growth and open markets in fair
210 competition and high environmental and social standards” (European Commission 2009b).

211 At the national level:

- 212 • In the United States, the strategic plan of USDOT for years 2006-2011 described how to reduce
213 pollution and other adverse effects for environmental protection (USDOT 2006), and the marine
214 transportation system was constructed with the consideration of environmental sustainability in
215 2007 (USDOT 2007). Later on, the Maritime Administration of USDOT developed the strategic
216 goal to increase the capacity and operations of the environmentally sustainable transportation
217 system (USDOT 2008). The United States Federal Maritime Commission gave high consideration
218 to sustainability and environmental benefits when evaluating the net impact of shipping on
219 competition, transportation cost, and transportation service (USFMC 2011, 2013). Recently,
220 environmental sustainability has been adopted as a strategic goal in USDOT’s Strategic Plan
221 2014-2018 (USDOT 2014).
- 222 • In China, the demand model of transportation has been built for Taiwan overall transportation
223 system development planning towards sustainability in 2010 (MOTC 2010). The strategic
224 objective of green development and tasks including energy-saving and efficient use, and the
225 intensive and economic use of shoreline resources have been proposed for the five-year planning
226 of waterway transportation (MOT 2016). The strategic goal of greening level improvement and

227 strategic objectives including Energy-saving and low-carbon, ecological protection and pollution
228 prevention, and resources intensive and economical utilization have been provided by the
229 comprehensive transportation system's five-year planning (MOT 2017).

230 • In Singapore, green programs and green technologies have been initiated to boost the shipping
231 industry (MPA 2013).

232 • Australian transportation system has put environmental sustainability as one of the societal
233 objectives (ATAP Guidelines Steering Committee 2016).

234 • Germany developed a “Maritime Development Plan” based on the “National Strategy for the
235 Sustainable Use and Protection of the Seas” in 2011 (BMVBS 2011).

236 • The Maritime UK in the United Kingdom delivered an ambition of sustainable shipping through
237 strategic shipping partnership (Maritime UK 2013).

238 • Japan's Basic Plan for Transportation in 2014 initiated a plan to build a sustainable transportation
239 network for the future (MLITT 2014).

240 • The Dutch government supported the pursuit of “zero-emission vessels” by removing obstacles
241 in related legislation and regulations (Dutch Government 2015).

242 Moreover, the PIANC published “Sustainable Maritime Navigation” to identify, assess and evaluate
243 the maritime navigation in a sustainability criterion (PIANC 2013). Sustainable Shipping Initiative brings
244 together leading companies, Forum for the Future, and World Wildlife Fund in 2013 to set up a four-step
245 planning—The Case for Action, Vision 2040, Future Innovation, and Wider Action for a sustainable
246 future (Kimmins et al. 2011).

247 **4.1.3 Summary of approaches and methods of strategic planning in shipping**

248 The approaches and methods for strategic planning are summarized next. Kumar (1976) and
249 Fagerholt et al. (2010) examined the strategic planning through analyzing problems in the shipping
250 industry. Frankel (1989) offered a step-by-step process for strategic planning including factor
251 identification using a database, threat or opportunity analysis, strategy identification, strategy selection,
252 implementation of plans, review, evaluation, and objectives updating. Koufopoulos et al. (2005)
253 investigated the planning practices from six dimensions.

254 The approaches of practical strategic planning in shipping are listed below:

255 • **Strategic Plan for the Organization (for the six-year period 2012 to 2017)** (IMO 2014): Stating
256 mission, analyzing trends and developments, setting strategic directions, and identifying

- 257 performance indicators.
- 258 • **Future of Transport** (European Commission 2009a): Collecting existing results, draft scenarios,
259 and time plans; qualitative analysis; quantitative analysis; policy synthesis, and; validation.
- 260 • **Maritime Transport Strategy 2018** (European Commission 2009b): Setting strategic goals, and
261 identifying key areas for action while enhancing its environmental performance.
- 262 • **USDOT's Strategic Plan** (USDOT 2014, 2006): Analyzing outcomes or challenges, developing
263 strategies, making performance measures, and identifying external factors.
- 264 • **The Maritime Administration and the U.S. Marine Transportation System: A Vision for the**
265 **21st Century** (USDOT 2007): Setting a vision based on situation analysis.
- 266 • **Leading the Future: 2008-2013 Strategic Plan** (USDOT 2008): Stating mission and vision,
267 developing strategic goals and outcome, identifying performance indicators, and evaluating the
268 program.
- 269 • **Strategic plan for the Federal Maritime Commission** (USFMC 2011, 2013): Setting strategic
270 goals and objectives, analyzing the factors, and evaluating the program.
- 271 • **The Forth Stage of Overall Transportation System Planning in Taiwan** (MOTC 2010):
272 Analyzing demand, selecting indicators, and analyzing tactics.
- 273 • **Thirteenth Five-year Development Planning for Modern Comprehensive Transportation**
274 **System, and Thirteenth Five-year Development Planning for Waterway Transportation**
275 (MOT 2017, 2016): Developing strategic goals based on background or situation analysis.
- 276 • **Maritime Singapore 2030** (MPA 2013): Developing strategies by analyzing key trends and
277 directions.
- 278 • **Australian Transport Assessment and Planning Guidelines** (ATAP Guidelines Steering
279 Committee 2016): A top-down strategic focus-with bottom-up information approach which
280 includes goals; objectives, transport targets, and key performance indicators; problems
281 identification, assessment, and priority; options generation and assessment; business cases for
282 proposed initiatives; prioritization of initiatives and program development; delivery, and; post-
283 completion review.
- 284 • **Maritime Development Plan** (BMVBS 2011): Analyzing challenges, outlining strategic targets,
285 and driving integrated maritime action.
- 286 • **Shipping strategic partnership plan** (Maritime UK 2013): Setting out an overview, and

287 classifying tasking for shipping strategic partnership.

288 • **Basic Plan on Transport Policy** (MLITT 2014): Analyzing basic directions, and developing

289 targets and measures.

290 • **The Dutch Maritime Strategy 2015-2025** (Dutch Government 2015): Describing the objectives

291 and ambitions, and developing the measures.

292 • **Sustainable Maritime Navigation** (PIANC 2013): Setting the scene, drives, and instruments;

293 analyzing ship and port-based sustainability issues, and; proposing continued support.

294 • **Sustainable Shipping Initiative** (Kimmins et al. 2011): Developing the Case for Action, Vision

295 2040, Future Innovation, and Wider Action.

296 Additionally, methods of strategic planning in shipping can be summarized into four categories, in

297 line with their features: data analysis, predictive analysis, decision-support, and decision-making (see

298 Table 2).

300 **Table 2** Methods for strategic planning in shipping

Types	Methods
Data	Statistical analysis (Frankel 1989); Empirical Analysis (Koufopoulos et al. 2005); Trend
Analysis	Analysis (Kimmins et al. 2011); Problem Analysis (Fagerholt et al. 2010; PIANC 2013; Kumar 1976)
Predictive Analysis	Scenario Analysis (Frankel 1989; USFMC 1999, 2000, 2003; European Commission 2009a)
Decision-Support	Cross-impact Analysis (Frankel 1989); SWOT analysis (Frankel 1989); Economic Analysis (European Commission 2009a); Risk Assessment (Frankel 1989); Environmental Impact Assessment (European Commission 2009a; PIANC 2013); Strategic Environmental Assessment (European Commission 2009a); Environmental Management System (PIANC 2013); Social impact assessment (ATAP Guidelines Steering Committee 2016); Equity and Distributional Impact Assessment (ATAP Guidelines Steering Committee 2016); Regional and Employment Impact Assessment (ATAP Guidelines Steering Committee 2016)
Decision-Making	Expert Judgment (European Commission 2009a, 2009b; USFMC 1999, 2000, 2003, 2008, 2011; Kimmins et al. 2011; PIANC 2013; USFMC 2013; ATAP Guidelines Steering

Committee 2016; MOT 2016, 2017; MOTC 2010; MPA 2013; MLITT 2014; BMVBS 2011; IMO 2014; USDOT 2008, 2014, 2006); Stakeholder Participation (USFMC 1999, 2000, 2003, 2008, 2011, 2013; European Commission 2009b; Kimmins et al. 2011; ATAP Guidelines Steering Committee 2016; Maritime UK 2013; Dutch Government 2015); Public Engagement (USDOT 2007; Frankel 1989; USFMC 1999, 2000, 2003, 2008, 2011; European Commission 2009a; PIANC 2013); Multi-Criteria Decision Making (European Commission 2009a); Analytical Hierarchical Process (Frankel 1989); Modeling (European Commission 2009a; Fagerholt et al. 2010); Analogy Analysis (USFMC 2008, 2011)

301

302 To sum up, the existing approaches in strategic shipping planning are either data-driven, or
303 vision/goal oriented. The only exception is the Australian transport planning, which uses the top-down
304 strategic focus-with bottom-up information approach (ATAP Guidelines Steering Committee 2016). In
305 general, the data-driven approach includes data and scenario analysis, decision-making, implementation,
306 evaluation, and monitoring. The vision/goal-oriented approach comprises a mission and vision statement,
307 or goals and objectives setting, data analysis or scenario analysis, planning decision-making,
308 implementation, evaluation, and monitoring. Most of the strategic planning in shipping uses qualitative
309 or subjective methods.

310 **4.2 Maritime logistics**

311 As shown in section 3.4, nothing remains in the category of maritime logistics after the screen for
312 strategic planning. To evaluate the potential of applying the knowledge of maritime logistics in strategic
313 planning for sustainability in international shipping, we provide a review of the concepts and research
314 on sustainability issues in this emerging field.

315 **4.2.1 Concepts of maritime logistics**

316 The concept of Maritime Logistics is first appeared at the 2005 annual conference of the
317 International Association of Maritime Economists, to describe the door-to-door services with sea leg
318 (Panayides 2006). In this conference paper, Panayides (2006) initiated the concept based on the scope
319 and characteristics of the maritime transport, logistics and supply chain management, and their
320 integration, but the lack of a well-illustrated definition. Later on, most scholars tried to define the concept
321 on a basis of the integration of maritime transportation and logistics. Representatively, Lee and Song

322 (2010) defined maritime logistics as “the process of planning, implementing and managing the movement
323 of goods and information which is involved in the ocean carriage”. From this definition, maritime
324 logistics is still about the sea leg, not door-to-door. It differentiates with maritime transportation in that
325 it is focused on “an effective logistics flow as a systematic entity of the logistics integration system” (Lee
326 and Song 2010). However, having the difference in mind, Nam and Song (2011) proposed that maritime
327 logistics is “a process of planning, implementing and managing the movement of goods and information
328 with ocean carriage being involved”. This definition is much broader, as it only requires the logistics that
329 have sea leg. Therefore, this is much closer to the door-to-door logistics services.

330 Recently, Panayides and Song (2013) clarified the integration as the management of physical
331 maritime transport flows, information flows, and interfaces between the participators. Caliskan and
332 Ozturkoglu (2016) expanded the concept with a broader philosophy which is comprised of “integration,
333 coordination, value-added customer services, lower costs, higher flexibility, reduced response time, and
334 higher quality”.

335 **4.2.2 Research on maritime logistics and sustainability**

336 Some proactive efforts, such as green or sustainability initiatives, have emerged to improve the
337 sustainability in maritime logistics. For instance, Lindstad et al. (2012) described the reason for and the
338 importance of green maritime logistics and sustainability topics, offered a framework and a model to
339 measure the greenhouse gas emission, and compared the results. Davarzani et al. (2016) reviewed the
340 evolution of green maritime logistics, provided the number of publications, and identified the primary
341 research clusters. Psaraftis (2016) proposed a working definition of green transportation logistics, i.e.
342 “an attempt to attain an acceptable environmental performance in the transportation supply chain, while
343 at the same time respecting traditional economic performance criteria”, and tried to explore “win-win”
344 solutions for both environment and economic performance (Psaraftis 2016).

345 **5 Discussion**

346 **5.1 Strategic planning in shipping**

347 From our review, most of the papers in shipping planning are focused on the tactical or operational
348 levels, only 4 out of 383 publications are in the strategic level. Tactical and operational plans, although
349 a key role in shorter time horizon, cannot ensure the long-term goal of sustainability in international
350 shipping. More practical strategic shipping planning works from the public and non-profit organizations

351 than publications from Scopus database are observed to chart shipping's strategy and development.
352 Nevertheless, it appeared that almost all of the strategic shipping planning papers and most of the
353 practical strategic shipping planning works are designed to lay down strategic directions from the angle
354 of "port-to-port", only very few proposed to integrate shipping, as the mode for sea transport, into the
355 transportation system. This cannot meet the needs of improving the sustainability of international
356 shipping door-to-door. The Maritime Administration of USDOT have recognized this trend and provided
357 a vision for the entire shipment process (USDOT 2007), but no appropriate approaches or methods are
358 applied to generate strategies.

359 Both the data-driven approach and vision/goal-oriented approach, two commonly used methods for
360 strategic shipping planning, have limitations because they rely on either limited data or the subjective
361 judgment of the strategic planners. A better "top-down strategic focus-with bottom-up information
362 approach" is proposed in the Australian transport planning guideline. However, it also has a limitation—
363 it is based on "port-to-port" operations in international shipping (ATAP Guidelines Steering Committee
364 2016). As a result, the strategic shipping planning still cannot satisfy the need for door-to-door services,
365 nor do the corresponding methods exist because of their subjectiveness and vagueness.

366 In addition, the existing efforts in "green" or "sustainable" shipping, similar to the strategic planning
367 for sustainability, are all motivated by the environmental consideration. They are fragmented, ambiguous
368 and confusing. Due to a precise concept is critical to the subsequent approach and methodology to
369 achieve the goal (Psaraftis 2016), it is necessary to clarify these concepts.

370 **5.2 Maritime logistics**

371 Maritime logistics, an emerging discipline, is an active research area. It has a widely accepted
372 essence, i.e. the integration of maritime transportation and logistics, and a potential to be integrated into
373 the door-to-door services for international shipping. It can initiate the evolution of the marine
374 transportation industry even though the definition is still under discussion, and several studies have
375 tended to address specific environmental issues within the recent years, such as emissions and energy
376 efficiency (Davarzani et al. 2016). Yet key gaps in current studies include the lack of strategic planning
377 for maritime logistics and the fragmented efforts for green or sustainable maritime logistics. In addition,
378 lacking a precise definition, appropriate approaches, and methods would also be the major obstacles to
379 the strategic planning for sustainability in maritime logistics. To provide a reference, the above-

380 mentioned “top-down strategic focus-with bottom-up information approach” could be used for the future
381 strategic planning for maritime logistics.

382 **5.3 Barriers, matters and challenges**

383 The barriers to the strategic planning for sustainability in international shipping may include (1)
384 Cross-region: The activities of international shipping happen across local to global scales. It is very
385 difficult to build a stable multi-jurisdictional or multi-stakeholders’ collaboration and partnerships. (2)
386 Trans-disciplinary: Many different mixes of transport modes like road transport, sea transport, and rail
387 transport, and logistics in international shipping bring about great difficulties for knowledge sharing and
388 collaboration (Klinsrisuk et al. 2013). (3) Insufficient understanding of the terms of sustainability, green
389 and sustainable: Most of strategic planners or academics confuse about the essence of sustainability, and
390 the distinction between “green” and “sustainable”, which matter to the subsequent approach and
391 methodology. (4) Passiveness and lack of support: Many of the efforts towards sustainability are reactive,
392 and act as a command and control logic (Walmsley 2012). The governments and intergovernmental
393 platforms ignored their adequate supports for the public sustainability issues (OECD Publishing 2002).
394 (5) Data limitation: The freight transport-related data is not available, and limited in scope or outdated
395 (Youssef et al. 2017), which is unable to support the effective and meaningful analysis.

396 Strategic planning is not insurance to the future success. It is designed to develop strategies for
397 achieving the long-term goals. Without strategic planning for sustainability, the international shipping
398 would be fragmented because of the multi-jurisdictional and trans-disciplinary nature. This increased
399 jurisdictional and multi-stakeholder complexity will affect the efficiency and effectiveness of strategy
400 formulation and implementation. Besides, shorter range planning cannot direct the international shipping
401 towards a long-term goal of sustainability for its narrow view, and data limitation may also be a difficulty.
402 Moreover, strategic planning is proactive, which seeks to change before problems arise, rather than
403 responding to situations (Kaufman 1992). It has been considered as a necessity to bring sustainability
404 into the policy process for international aviation (McManners 2016).

405 It is noted that maritime logistics has been regarded as an emerging discipline to serve the
406 international shipping, but lack of strategic planning, even far from that for sustainability. The challenges
407 to strategic planning for sustainability in international shipping include (1) the definitions for
408 sustainability, “green”, and “sustainable”; (2) a reliable and effective strategic planning approach for

409 sustainability; (3) a collaborative research-practice network for the process of strategic planning and
410 application.

411 **6 Summary and conclusion**

412 Strategic planning in international shipping is facing challenges due to the door-to-door services
413 and the requirements of sustainability. In this study, a structured literature review in conjunction with
414 content analysis was provided to identify if the existing strategic planning enables to direct the
415 international shipping to meet the challenges and if maritime logistics as an emerging discipline in
416 international shipping contributes to sustainability. We found only 4 publications from the Scopus
417 database and 24 documents from selected official sites of public and non-profit organizations on strategic
418 planning in shipping, but none from the field of maritime logistics. The research on strategic planning in
419 international shipping and maritime logistics are still scarce or in the early growth.

420 Nevertheless, the challenges drive the academics and practitioners to develop strategic planning for
421 sustainability in international shipping. They are proactive, coherent, and collaborative works, instead of
422 passive, fragmented and disruptive responses to current states. Insights from our in-depth literature
423 analysis indicate that the most recent strategic planning in shipping cannot meet the needs of door-to-
424 door services, due to the current “port-to-port” concerns. Few strategic planning concerned the door-to-
425 door services, but lack an appropriate approach and methods. It is also noticeable that strategic planning
426 for sustainability in international shipping is just fragmented efforts in “green” or “sustainable” shipping.
427 The differences in the concepts of sustainability, “green”, and “sustainable” are vague and confusing. For
428 the active emerging discipline to enable the door-to-door services for international shipping, maritime
429 logistics still lags behind the strategic planning. Although a range of barriers has emerged, strategic
430 planning for sustainability is necessary to overcome the difficulties in the multi-jurisdictional and trans-
431 disciplinary international shipping networks.

432 The study provides an illustration of broad trends and helps readers to better understand the gaps in
433 strategic planning for sustainability in international shipping, but limitations do exist: (1) Keywords were
434 selected through experts’ consultation to ensure a reliable and effective literature search, but it may
435 influence by the expert experiences. (2) Although several measures were used to enhance the reliability
436 and validity of the word-to-word content analysis, different researchers may classify the planning levels
437 differently.

438 For future perspectives, the differences in the concepts of “sustainability”, “sustainable”, and
439 “green” are required to be identified. In addition, the strategic planning for sustainability in international
440 shipping urgently needs an appropriate approach, methods, and a collaborative international research-
441 practice network. The IMO and global multimodal shipping companies, such as Maersk, may help to
442 integrate the international shipping network and plan a sustainable future, and the United Nations
443 Sustainable Development Goals launched in 2015 may have an advantage in being able to deliver the
444 integration response to operationalizing sustainability especially in the context of longer term strategic
445 planning. Furthermore, a case study can be conducted to examine the strategic planning of major global
446 shipping companies on their short-term, mid-term and long-term strategies, to review the nature of
447 sustainability of international shipping.

448

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455 **References**

456 Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable
457 supply chain management. *Journal of Cleaner Production*, 52, 329-341,
458 doi:10.1016/j.jclepro.2013.02.018.

459 ATAP (Australian Transport Assessment and Planning) Guidelines Steering Committee (2016).
460 Australian Transport Assessment and Planning Guidelines. <https://atap.gov.au/>. Accessed 31
461 July 2018.

462 Benowitz, E. (2001). *Cliffsquickreview Principles of Management*. Boston, USA: Houghton Mifflin
463 Harcourt.

464 BMVBS (Federal Ministry of Transport, Building, and Urban Development) (2011). Maritime
465 Development Plan. <http://www.unesco-ioc->

466 marinesp.be/uploads/documentenbank/1eda85727c6bbfe4cea301fa0edaa680.pdf. Accessed 31
467 July 2018.

468 Branch, A. E. (2014). *Branch's elements of shipping* (Ninth ed.). Abingdon, Oxon: Routledge.

469 Bryson, J. M. (2011). *Strategic planning for public and nonprofit organizations: A guide to strengthening
470 and sustaining organizational achievement*. San Francisco, USA: John Wiley & Sons.

471 Caliskan, A., & Ozturkoglu, Y. (2016). Maritime logistics. In A. Ochoa-Zezzatti, J. Sánchez, M. G.
472 Cedillo-Campos, & M. d. Lourdes (Eds.), *Handbook of Research on Military, Aeronautical, and
473 Maritime Logistics and Operations* (pp. 361-384). Pennsylvania, USA: IGI Global.

474 Cohen, J. B. (1982). The role of affect in categorization: Toward a reconsideration of the concept of
475 attitude. In A. Mitchell, & A. Abor (Eds.), *Advances in Consumer Research* (Vol. 09, pp. 94-
476 100). MI, USA: Association for Consumer Research.

477 Davarzani, H., Fahimnia, B., Bell, M., & Sarkis, J. (2016). Greening ports and maritime logistics: A
478 review. *Transportation Research Part D: Transport and Environment*, 48, 473-487,
479 doi:10.1016/j.trd.2015.07.007.

480 Dessens, O., Anger, A., Barker, T., & Pyle, J. (2014). Effects of decarbonising international shipping and
481 aviation on climate mitigation and air pollution. *Environmental Science & Policy*, 44, 1-10, doi:
482 10.1016/j.envsci.2014.07.007.

483 Dong, J. X., Lee, C. Y., & Song, D. P. (2015). Joint service capacity planning and dynamic container
484 routing in shipping network with uncertain demands. *Transportation Research Part B:
485 Methodological*, 78, 404-421, doi:10.1016/j.trb.2015.05.005.

486 Dutch Government (2015). The Dutch Maritime Strategy 2015-2025.
487 [https://www.government.nl/topics/water-management/documents/reports/2015/07/07/the-](https://www.government.nl/topics/water-management/documents/reports/2015/07/07/the-dutch-maritime-strategy-2015-2025)
488 [dutch-maritime-strategy-2015-2025](https://www.government.nl/topics/water-management/documents/reports/2015/07/07/the-dutch-maritime-strategy-2015-2025). Accessed 31 July 2018.

489 Engelman, R. (2013). Beyond Sustainababble. In L. Starke (Ed.), *State of the World 2013: Is
490 Sustainability Still Possible?*. Washington, Covelo, and London: Island Press.

491 European Commission (2009a). Future of Transport.
492 http://ec.europa.eu/transport/themes/strategies/2009_future_of_transport_en.htm. Accessed 31
493 July 2018.

494 European Commission (2009b). Maritime Transport Strategy 2018.
495 http://ec.europa.eu/transport/themes/strategies/2018_maritime_transport_strategy_en.htm.

496 Accessed 31 July 2018.

497 Ewing, D. W. (1972). *Long-range planning for management*. New York, Evanston, and London: Harper
498 & Row.

499 Fagerholt, K., Christiansen, M., Magnus Hvattum, L., Johnsen, T. A. V., & Vabø, T. J. (2010). A decision
500 support methodology for strategic planning in maritime transportation. *Omega*, *38*(6), 465-474,
501 doi:10.1016/j.omega.2009.12.003.

502 Fagerholt, K., Johnsen, T. A. V., & Lindstad, H. (2009). Fleet deployment in liner shipping: A case study.
503 *Maritime Policy and Management*, *36*(5), 397-409, doi:10.1080/03088830903187143.

504 Fayiga, A. O., Ipinmoroti, M. O., & Chirenje, T. (2018). Environmental pollution in Africa. *Environment*,
505 *Development and Sustainability*, *20*(1), 41-73, doi:10.1007/s10668-016-9894-4.

506 Feng, Y. T., Zhu, Q. H., & Lai, K. H. (2017). Corporate social responsibility for supply chain management:
507 A literature review and bibliometric analysis. *Journal of Cleaner Production*, *158*, 296-307,
508 doi:10.1016/j.jclepro.2017.05.018.

509 Frankel, E. G. (1989). Strategic planning applied to shipping and ports. *Maritime Policy and*
510 *Management*, *16*(2), 123-132, doi:10.1080/03088838900000037.

511 Future Earth (2013). Future Earth Initial Design: Report of the Transition Team.
512 http://futureearth.org/sites/default/files/Future-Earth-Design-Report_web.pdf. Accessed 30
513 July 2018.

514 Grünig, R., & Kühn, R. (2010). *Process-based Strategic Planning* (Sixth ed.). Dordrecht, London, and
515 New York: Springer-Verlag Berlin Heidelberg.

516 Heilig, L., & Voß, S. (2017). Status quo and innovative approaches for maritime logistics in the age of
517 digitalization: a guest editors' introduction. *Information Technology and Management*, *18*(3),
518 175-177, doi:10.1007/s10799-017-0282-z.

519 IMO (International Maritime Organization) (2014). Strategic Plan for the Organization (for the six-year
520 period 2012 to 2017). <http://www.imo.org/en/About/strategy/Documents/1060.pdf>. Accessed
521 31 July 2018.

522 Ioppolo, G., Cucurachi, S., Salomone, R., Saija, G., & Shi, L. (2016). Sustainable local development and
523 environmental governance: A strategic planning experience. *Sustainability*, *8*(2), 180.

524 Kaufman, R. (1992). *Strategic planning plus: An organizational guide*. Thousand Oaks, California, USA:
525 Sage Publications, Inc.

526 Kelareva, E., Tierney, K., & Kilby, P. (2014). CP methods for scheduling and routing with time-
527 dependent task costs. *EURO Journal on Computational Optimization*, 2(3), 147-194,
528 doi:10.1007/s13675-014-0022-7.

529 Kimmins, S., Fausset, R., & Draper, S. (2011). Sustainable Shipping Initiative: the case for action.
530 <https://www.forumforthefuture.org/project/sustainable-shipping-initiative/overview>. Accessed
531 26 July 2018.

532 Klinsrisuk, R., Nitivattananon, V., & Wongsurawat, W. (2013). Effective coordination and integration of
533 energy and transport policies for CO₂ mitigation in Thailand. *Environment, Development and*
534 *Sustainability*, 15(5), 1227-1244, doi:10.1007/s10668-013-9435-3.

535 Koufopoulos, D. N., Lagoudis, I. N., & Pastra, A. (2005). Planning practices in the Greek ocean shipping
536 industry. *European Business Review*, 17(2), 151-176, doi:10.1108/09555340510588020.

537 Kroer, C., Svendsen, M. K., Jensen, R. M., Kiniry, J., & Leknes, E. (2016). Symbolic configuration for
538 interactive container ship stowage planning. *Computational Intelligence*, 32(2), 259-283,
539 doi:10.1111/coin.12051.

540 Kumar, S. (1976). Long-term planning for Indian shipping. *Long Range Planning*, 9(6), 63-68, doi:
541 10.1016/0024-6301(76)90013-3.

542 Lee, E. S., & Song, D. W. (2010). Knowledge management for maritime logistics value: discussing
543 conceptual issues. *Marit. Pol. Mgmt.*, 37(6), 563-583, doi:10.1080/03088839.2010.514959.

544 Lindstad, H., Asbjørnslett, B. E., & Pedersen, J. T. (2012). Green maritime logistics and sustainability.
545 In D.-W. Song, & P. M. Panayides (Eds.), *Maritime Logistics: Contemporary Issues* (pp. 227-
546 261). Bingley, England: Emerald Group Publishing Limited.

547 Maritime UK (2013). Shipping Strategic Partnership.
548 [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237319/sspp-](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237319/sspp-booklet.pdf)
549 [booklet.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237319/sspp-booklet.pdf). Accessed 31 July 2018.

550 Massaro, M., Dumay, J., & Guthrie, J. (2016). On the shoulders of giants: undertaking a structured
551 literature review in accounting. *Accounting, Auditing & Accountability Journal*, 29(5), 767-801,
552 doi:10.1108/AAAJ-01-2015-1939.

553 McManners, P. J. (2016). Developing policy integrating sustainability: A case study into aviation.
554 *Environmental Science & Policy*, 57, 86-92, doi:10.1016/j.envsci.2015.11.016.

555 McMillan, C. J. (2012). The Japanese industrial system. Berlin and New York: Walter de Gruyter.

556 Min, D., Wang, F., & Zhan, S. Impact analysis of the global financial crisis on global container fleet. In
557 *Proceedings of the 2009 6th International Conference on Service Systems and Service*
558 *Management, ICSSSM'09, 2009* (pp. 161-166). doi:10.1109/ICSSSM.2009.5174875.

559 MLITT (Ministry of Land, Infrastructure, Transport, and Tourism) (2014). Basic Plan on Transport
560 Policy. <http://www.mlit.go.jp/common/001069503.pdf>. Accessed 31 July 2018.

561 MOT (Ministry of Transport) (2016). Thirteen Five-year Development Planning for Waterway
562 Transportation.
563 [http://www.mot.gov.cn/zhuanti/shisanwujitysfzgh/guihuawenjian/201703/t20170306_2172341.](http://www.mot.gov.cn/zhuanti/shisanwujitysfzgh/guihuawenjian/201703/t20170306_2172341.html)
564 [html](http://www.mot.gov.cn/zhuanti/shisanwujitysfzgh/guihuawenjian/201703/t20170306_2172341.html). Accessed 31 July 2018.

565 MOT (2017). Thirteen Five-year Development Planning for Modern Comprehensive Transportation
566 System. http://zizhan.mot.gov.cn/zfxxgk/bnssj/zghgs/201703/t20170301_2170481.html.
567 Accessed 31 July 2018.

568 MOTC (Institute of Transportation) (2010). The Forth Stage of Overall Transportation System Planning
569 in Taiwan. <https://www.iot.gov.tw/catalog?node=dcdbf567-f9cc-4d3b-b01d-480205482af9>.
570 Accessed 31 July 2018.

571 MPA (Maritime and Port Authority of Singapore) (2013). Maritime Singapore 2030.
572 <http://www.mpa.gov.sg/sites/pdf/sn25/feature25.pdf>. Accessed 31 July 2018.

573 Mukherjee, P. K., & Brownrigg, M. (2013). *Farthing on International Shipping*. New York, Dordrecht,
574 and London: Springer-Verlag Berlin Heidelberg.

575 Myung, Y. S., & Moon, I. (2014). A network flow model for the optimal allocation of both foldable and
576 standard containers. *Operations Research Letters*, 42(6), 484-488,
577 doi:10.1016/j.orl.2014.08.004.

578 Nam, H.-S., & Song, D.-W. (2011). Defining maritime logistics hub and its implication for container port.
579 *Maritime Policy & Management*, 38(3), 269-292, doi: 10.1080/03088839.2011.572705.

580 OECD (Organisation for Economic Co-operation and Development) Publishing (2002). Transport
581 logistics: shared solutions to common challenges. Paris, France: Organisation for Economic Co-
582 operation and Development.

583 Oxford Dictionaries (2017). Sustainability. <https://en.oxforddictionaries.com/definition/sustainability>.
584 Accessed 28 July 2018.

585 Pallemmaerts, M. (2003). Is Multilateralism the Future? Sustainable Development or Globalisation as 'A

586 Comprehensive Vision of the Future of Humanity'. *Environment, Development and*
587 *Sustainability*, 5(1), 275-295, doi:10.1023/a:1025313206838.

588 Panayides, P. M. (2006). Maritime logistics and global supply chains: Towards a research agenda.
589 *Maritime Economics & Logistics*, 8(1), 3-18, doi: 10.1057/palgrave.mel.9100147.

590 Panayides, P. M., & Song, D.-W. (2013). Maritime logistics as an emerging discipline. *Maritime Policy*
591 *& Management*, 40(3), 295-308, doi: 10.1080/03088839.2013.782942.

592 PIANC (Permanent International Association of Navigation Congresses) (2013). Sustainable Maritime
593 Navigation.
594 [http://www.imo.org/en/OurWork/Environment/LCLP/recentevents/Documents/PIANC%20rep](http://www.imo.org/en/OurWork/Environment/LCLP/recentevents/Documents/PIANC%20report%20for%20SG37.pdf)
595 [ort%20for%20SG37.pdf](http://www.imo.org/en/OurWork/Environment/LCLP/recentevents/Documents/PIANC%20report%20for%20SG37.pdf). Accessed 31 July 2018.

596 Pike, K., Butt, N., Johnson, D., & Walmsley, S. (2011). Global sustainable shipping initiatives: Audit and
597 overview http://awsassets.panda.org/downloads/sustainable_shipping_initiatives_report_1.pdf.
598 Accessed 31 July 2018.

599 Psaraftis, H. N. (2016). *Green transportation logistics: The quest for win-win solutions*. Basel,
600 Switzerland: Springer International Publishing Switzerland.

601 Roberts, J. (2007). Proactive environmental planning for emerging shipping routes in Arctic waters.
602 *WMU Journal of Maritime Affairs*, 6(2), 207-215, doi:10.1007/BF03195115.

603 Rodriguez, L., & Youssef, F. (2017). Rethinking maritime cabotage for improved connectivity. New York
604 and Geneva: United Nations Conference on Trade and Development.

605 Seuring, S., & Gold, S. (2012). Conducting content-analysis based literature reviews in supply chain
606 management. *Supply Chain Management*, 17(5), 544-555, doi: 10.1108/13598541211258609.

607 Smith, T. W. P., Jalkanen, J. P., Anderson, B. A., Corbett, J. J., Faber, J., Hanayama, S., et al. (2015).
608 Third IMO GHG Study 2014: Executive Summary and Final Report. London: International
609 Maritime Organization.

610 Song, D. W., & Panayides, P. (2015). *Maritime logistics: A guide to contemporary shipping and port*
611 *management* (Second ed.). London, Philadelphia and New Delhi: Kogan Page.

612 SteadieSeifi, M., Dellaert, N. P., Nuijten, W., Van Woensel, T., & Raoufi, R. (2014). Multimodal freight
613 transportation planning: A literature review. *European Journal of Operational Research*, 233(1),
614 1-15, doi: 10.1016/j.ejor.2013.06.055.

615 Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed

616 management knowledge by means of systematic review. *British journal of management*, 14(3),
617 207-222, doi: 10.1111/1467-8551.00375.

618 USDOT (United States Department of Transportation) (2006). Strategic Plan for Fiscal Years 2006-2011.
619 https://www.transportation.gov/sites/dot.dev/files/docs/DOT_Strategic_Plan_2006_2011.pdf.
620 Accessed 31 July 2018.

621 USDOT (2007). The Maritime Administration and the U.S. Marine Transportation System: A Vision for
622 the 21st Century. [http://www.marad.dot.gov/wp-](http://www.marad.dot.gov/wp-content/uploads/pdf/Vision_of_the_21st_Century_10-29.pdf)
623 [content/uploads/pdf/Vision_of_the_21st_Century_10-29.pdf](http://www.marad.dot.gov/wp-content/uploads/pdf/Vision_of_the_21st_Century_10-29.pdf). Accessed 26 July 2018.

624 USDOT (2008). Leading the Future: 2008-2013 Strategic Plan. [http://www.marad.dot.gov/wp-](http://www.marad.dot.gov/wp-content/uploads/pdf/Strategic_Plan_Text_Cover-R2_SP.pdf)
625 [content/uploads/pdf/Strategic_Plan_Text_Cover-R2_SP.pdf](http://www.marad.dot.gov/wp-content/uploads/pdf/Strategic_Plan_Text_Cover-R2_SP.pdf). Accessed 31 July 2018.

626 USDOT (2014). Strategic Plan for Fiscal Years 2014-2018
627 https://www.transportation.gov/sites/dot.gov/files/docs/2014-2018-strategic-plan_0.pdf.
628 Accessed 31 July 2018.

629 USFMC (United States Federal Maritime Commission) (1999). FMC Strategic Plan for Fiscal Years
630 1999-2000. http://www.fmc.gov/about/fmc_strategic_plan_for_fiscal_years_19992000.aspx.
631 Accessed 31 July 2018.

632 USFMC (2000). FMC Strategic Plan for Fiscal Years 2000-2005.
633 http://www.fmc.gov/about/fmc_strategic_plan_for_fiscal_years_2000_2005.aspx. Accessed 31
634 July 2018.

635 USFMC (2003). FMC Strategic Plan for Fiscal Years 2003-2008.
636 http://www.fmc.gov/about/fmc_strategic_plan_for_fiscal_years_2003_2008.aspx. Accessed 31
637 July 2018.

638 USFMC (2008). FMC Strategic Plan for Fiscal Years 2010-2015.
639 http://www.fmc.gov/assets/1/Page/FMC_Strategic_Plan_2010-2015_Final.pdf. Accessed 31
640 July 2018.

641 USFMC (2011). FMC Strategic Plan for Fiscal Years 2010-2015.
642 http://www.fmc.gov/assets/1/Page/2010-2015-FMC-Strategic_Plan.pdf. Accessed 31 July 2018.

643 USFMC (2013). FMC Strategic Plan for Fiscal Years 2014-2018.
644 <http://www.fmc.gov/assets/1/Page/StrategicPlan2014-2018.pdf>. Accessed 31 July 2018.

645 Walmsley, S. (2012). Shipping and sustainability.

646 <http://www.wwf.at/de/view/files/download/showDownload/?tool=12&feld=download&sprach>
647 [_connect=2395](#). Accessed 26 July 2018.

648 Wan, Z., Zhu, M., Chen, S., & Sperling, D. (2016). Three steps to a green shipping industry. *Nature*,
649 *530*(7590), 275-277.

650 WCED (World Commission on Environment and Development) (1987). Report of the World
651 Commission on Environment and Development: Our Common Future. Geneva, Switzerland:
652 United Nations. <http://www.un-documents.net/wced-ocf.htm>. Accessed 26 July 2018.

653 Wu, X., & Zhang, L. (2016). Progress in the research on green shipping and green shipping planning.
654 *Journal of Dalian Maritime University (Social Science Edition)*(04), 1-10.

655 Wu, X., & Zhang, L. (2017). The practice of green shipping in China. *Journal of Dalian Maritime*
656 *University (Social Science Edition)*(01), 6-11.

657 Youssef, F., Benamara, H., & Weller, M. (2017). UNCTAD Framework for Sustainable Freight Transport.
658 Geneva, Switzerland: United Nations Conference on Trade and Development. [https://sft-](https://sft-framework.org/UNCTAD-SFT-Framework.pdf)
659 [framework.org/UNCTAD-SFT-Framework.pdf](https://sft-framework.org/UNCTAD-SFT-Framework.pdf). (Accessed 19 July 2018).

660