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**Factors driving shippers' compliance with a voluntary sustainable freight programme in
France**

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Factors driving shippers' compliance with a voluntary sustainable freight programme in France

Abstract

This paper explores the responses of French transport services' buyers to environmental initiatives, thereby contributing to understanding the impact of governmental sustainable freight policies, including the FRET21 programme launched in 2015 by the French government. Using a multiple case study design involving 10 pilot companies, the heterogeneous data collection (semi-structured interviews, access to internal documents, direct observations, programme participants brainstorming) has been carried out with the assistance of French transportation services purchasing managers from Carrefour, Coca-Cola, Saint-Gobain, Renault, Fleury Michon, Air Products, Henaff, Ferrero and Orrion. **Our study reveals the voluntary participation of the companies to reduce their CO₂ emissions related to their freight operations, regardless of company size or their sector of activity. Furthermore, the environmental sensitivity of the shippers stems more from an internal dynamic, be it supportive employees or top management, rather than the obligation to calculate their CO₂ emissions. Although the FRET21 charter enhances substantially intra- and inter-organisational collaboration, especially between carriers, ADEME - the French Environmental Protection Agency - and shippers, environmental issues do not yet constitute a decisive criterion in carrier selection by shippers. This paper is original in its research area since very few studies in the existing literature explore the application of a sustainable freight transportation programme, scrutinizing the successes and failures encountered in its application. Our study contributes to the green freight transportation field in two ways: by providing appropriate recommendations to help spread the sustainable freight programme to other shippers in France, but also by providing public and private entities worldwide with managerial insights and relevant guidance to influence shippers' responsiveness in the direction of sustainable freight. The study also stresses the need of having transparent tools and a standard method to measure freight CO₂ emissions, thereby supporting shippers in their sustainable freight endeavours.**

Keywords: Sustainable freight procurement; transportation; CO₂ reduction

37

38 1. Introduction

39

40 Worldwide transport CO₂ emissions grew by 38% between 2000 and 2018 (from 5.8 to 8 Gt)
41 (International Energy Agency, 2019). Within Europe, 72% of the greenhouse gas (GHG)
42 emissions related to transportation are caused by the road-freight sector. A recent study
43 highlights that road-freight transport still accounts for 25% of the world's energy
44 consumption, with conventional diesel still being the predominant fuel used for heavy-duty
45 trucks (Teixeira et al., 2021). Additionally, Miller and Facanha (2014), who examined
46 national and international regulations to reduce energy use, highlight that trucks represent the
47 largest source of GHG from freight, accounting for over half of all transport-related carbon
48 emissions.

49 The 25th Conference of the Parties (COP25), which took place in Madrid in 2019, highlighted
50 the impact of the transport sector on climate change. Nearly all countries have now ratified
51 the Kyoto Protocol and are undertaking initiatives to decrease pollution generated by transport.
52 Developing countries are an integral part of this process. In this perspective, Kumar (2021)
53 underlines a lack of coordination between the freight logistics organisations and public
54 entities in India, which would improve the environmental sustainability of the freight
55 distribution process, especially the last mile delivery. Apart from the use of enforcement
56 legislation, a study conducted in Brazil points out the difficulties of involving shippers in
57 sustainable freight projects, above all when it concerns extensive geographical areas (Froio et
58 al., 2021).

59 In other countries, both mandatory and voluntary programmes have emerged, such as in the
60 USA through the SmartWay programme (Bynum et al., 2018), in China (Liu et al., 2019;
61 Zhang et al., 2020), and in the Netherland (Pieters et al., 2017) in order to increase the
62 awareness in companies regarding their CO₂ transport emissions. These public or private
63 programmes encourage technology providers, transporters (carriers) and client firms (shippers)
64 to collaborate in order to reduce CO₂ emissions from freight transport. However, as was
65 underlined by Nyabusore (2015), research to understand the motivation that leads shippers
66 and carriers to collaborate and adopt environmental-friendly transportation practices is limited.
67 In this regard, the following main research question is addressed in this study: How has the
68 voluntary sustainable freight programme "Freight21 charter" been adopted and deployed by
69 the 10 proactive programme-participating shippers in France?

70 This study seeks to fill a research gap by carrying out an investigation of shipper
71 companies that have voluntarily committed to a sustainable freight transport model. The
72 objective of this research is not to examine a governmental sustainable freight programme;
73 rather, it is to investigate the behaviour of the proactive shipping companies that signed-up to
74 a voluntary programme, namely the FRET21 charter.

75 The French Government, assisted by the French Environmental Protection Agency
76 (ADEME), has launched various sustainable freight programmes directed at shippers, who are
77 "the owners of the goods" and at "carriers" to whom the transport of the goods is entrusted. In
78 this regard, carriers, are required by legislation (decree n°2011-1336) to calculate and convey
79 to each customer data on the CO₂ emissions they generate, but most of them do not do so as
80 there is no penalty applicable in respect of non-compliance. However, those carriers who have
81 voluntarily signed-up to the charter of sustainable freight commitment called *Charte*
82 *Volontaire CO₂*, are required by the charter to implement the legislation. In addition, another
83 voluntary charter, called FRET21, has been undertaken by 10 proactive shippers since May
84 2015 in order to road test the effectiveness of the programme. This paper explores the
85 transportation purchasing process among these 10 proactive shippers, in order to identify how
86 they aim to integrate sustainability into their freight transport practices.

87 As highlighted by Touboulic and Walker (2015, p. 19), "in the case studies and survey
88 articles (conducted in sustainable supply chain management), authors present their empirical
89 conclusions and results with no or little attempt to explore concepts, relationships and make
90 further predictions for theory building purposes". In this regard, our study, inspired by the
91 International Marketing and Purchasing (IMP) approach, more specifically the interaction
92 model (Håkansson, 1982, p. 23; Ford and Håkansson, 2005), explores interconnections,
93 innovations, and freight services purchasing practices among environmentally proactive
94 shippers. It contributes to the existing literature in two ways. Firstly, it examines the features
95 of transportation services purchasing practices, highlighting the decision-making process as
96 well as potential intra- and inter-organisational influences. Secondly, it highlights incentive
97 levers that will assist the French Government, and especially ADEME to gradually and
98 permanently spread the FRET21 charter to many additional shippers in France. In sum, this
99 research aims to address the lack of knowledge regarding the reasons that prompt some
100 shippers to join a voluntary sustainable freight programme, exploring their whole transport
101 services purchasing process. A proper understanding of their motivation as well as their intra-
102 and inter-organisational capabilities will give clear guidance to the environmental science
103 community, other interested shippers and public freight policy authorities.

104 The paper is organised as follows. Section 2 presents some of the green freight
105 services programmes set-up worldwide with a special focus on the FRET21 initiative. Section
106 3 provides a literature review on sustainable freight services procurement. Section 4 outlines
107 the research design and the methodology used to conduct the case study analysis based on
108 semi-structured interviews and the collection of data from other sources. The main findings of
109 this investigation are presented in section 5 and section 6 outlines the conclusions of the paper.

110

111 **2. Green Freight programmes are being initiated to tackle the challenge of climate** 112 **change**

113

114 *2.1 An overview of green freight programmes set-up worldwide*

115

116 Various sustainable freight initiatives have been initiated in many countries to reduce CO₂
117 emissions related to transportation. While some regulations, especially freight trucks
118 standards regulations are mandatory, complementary policy instruments have emerged to
119 encourage sustainable freight practices. Implemented on a voluntary basis, these programmes
120 have the objective of raising environmental awareness among businesses and the general
121 public (Goetz et al., 2019). In North America, the SmartWay programme launched in 2004 by
122 the Environmental Protection Agency (EPA) was conceived to support freight companies to
123 integrate sustainability throughout the supply chains (Bynum et al., 2018; Goetz et al., 2019).
124 By measuring and benchmarking freight transport efficiency and atmospheric emissions, the
125 SmartWay programme encourages collaboration between shippers, carriers and technology
126 providers. Technically, collaborative platforms allow them to calculate, communicate and
127 decrease the CO₂ emissions coming from freight operations. All the companies that take part
128 in the SmartWay programme receive recognition of their participation, which is then recorded
129 in a promotional magazine. As is underlined in their 2019 report, since 2004 Smartway has
130 helped subscribers to the programme to save 312 million barrels of oil that corresponds to the
131 annual electricity usage in over 20 million homes¹. These estimates provide a useful overview
132 of SmartWay's effectiveness.

133 In Asia, mention can be made of the China Green Freight Initiative (CGFI), which has
134 replicated many key elements from the SmartWay partnership model. Launched in 2012, this
135 public-private partnership aims to enhance carriers' fleet operational performance through
136 better loading practices (Liu et al., 2019). The CGFI is based on an action plan divided into 3

¹ Accessed on January 12th 2021: SmartWay Saves Money and Contributes to American Prosperity:
<https://www.epa.gov/smartway/smartway-program-successes>

137 main parts: 1) improving fleet standards as well as their management through better loading
138 practices, 2) promoting the adoption of green technologies and 3) establishing eco-driving
139 practices (Bynum et al., 2018). Furthermore, two standards known as “the Green Freight
140 Enterprise Standard” and the “Green Freight Vehicle Standard” have been developed to
141 reinforce companies’ behaviour through recognition of their achievements. Besides this
142 Chinese programme, the Green Freight Asia (GFA) network, which is a nonprofit
143 organisation, commits member companies to decreasing their fuel consumption and their road
144 freight journeys across the Asia-Pacific Region. Initiated by DHL and UPS in March 2015,
145 this programme aims to encourage shippers into making conscious, ‘green’ sourcing decisions
146 when selecting a carrier based on its GFA Label rankings. Other studies, conducted shortly
147 after the Second United Nations Global Sustainable Transport Conference in Beijing, (5-7
148 May 2020), have highlighted the role of public private partnership (PPP) investment in
149 helping to restore ecological balance through sustainable transportation infrastructures
150 (Anwar et al., 2021).

151 In Europe, several voluntary policies encourage behaviour change as well as shippers
152 and carriers’ interaction in order to improve freight transportation’ environmental
153 performance. The Lean and Green programme for instance, offers significant opportunities to
154 cut down freight CO₂ emissions (Kaledinova et al., 2015). Currently involving more than 300
155 companies across Europe, this programme had initially just 10 participants in 2008 when it
156 was launched. After having identified three sources that are mainly responsible for
157 transportation CO₂ emissions (i.e., international transit, delivery and small vans, and work
158 vehicles) they encourage signing-up companies to come up with an emissions reduction
159 action plan. Subscribers can work on strategies in respect of route optimisation, empty
160 vehicles miles reduction, rail and barge utilisation as well as the use of alternative fuels.
161 Furthermore, companies are eligible for Lean and Green Award certification if they reduce
162 their transportation CO₂ emissions by 20 percent within a period of five years.

163 Other independent collaborative programmes such as the Logistics Emissions
164 Reduction Scheme (LERS) or the Carbon Trust Organisation, both set up in the United
165 Kingdom, assist companies as well as public entities to identify, measure and manage
166 emission hotspots. It provides them with the tools to achieve year-on-year reductions as well
167 as an independent certification system. Besides the various private initiatives, some European
168 freight regulations have been applied locally in the last decade to regulate freight CO₂
169 emissions, in particular through “Low Emissions Zones” designations, where access by
170 polluting vehicles is restricted (Zhai et al., 2021). However, in light of the climate change

171 emergency, one may question why governments do not strive to implement collaborative
172 programmes on a national scale.

173 In the Eurozone however, France has initiated a series of voluntary and mandatory
174 measures in order to decrease pollution generated by freight transportation. On the one hand,
175 the “*Objectif CO₂*” introduced in 2008 and developed by the French Ministry of Ecology with
176 ADEME and other freight transport professional organisations, was aimed at all carriers that
177 voluntarily agreed to reduce their CO₂ emissions. Complying companies have to undertake
178 specific actions in accordance with issued guidelines and measure their actions in four areas: i)
179 vehicle standards; ii) fuel consumption; iii) driver behaviour; and iv) logistical efficiency. An
180 independent audit report which tests whether a given level of CO₂ emissions reductions has
181 been achieved for three consecutive years, enables participating companies to be certified as
182 being “*Objectif CO₂*” compliant. In parallel, the already mentioned French legislation (decree
183 n°2011-1336) applicable since October 2013, obliges all carriers to calculate their CO₂ impact
184 according to four possible levels of accuracy, from level 1 based on estimations, to level 4
185 involving accurate data collection in respect of each journey’s exact operating conditions.
186 These two voluntary and mandatory French schemes concern essentially carriers and reveal
187 information asymmetries as pointed out by Touratier-Muller et al. (2019). Furthermore,
188 scrutinising their impact on SMEs, the authors highlight the lack of requisite human resources
189 dedicated to monitoring transport-related CO₂ emissions.

190 The French Ministry of Environment decided that further steps needed to be
191 undertaken to increase awareness by shippers regarding CO₂ emissions generated by their
192 freight operations. This gave rise to the FRET21 project.

193


194 ***2.2 The FRET21 initiative***

195 The early French freight programmes focused exclusively on carriers, without addressing
196 shippers’ environmental contributions. To address this issue, the French Shippers Council
197 launched a programme called “FRET21”, a specific “shipper programme” that aims to
198 support shippers in reducing their freight transport’s impact on the environment. With this
199 perspective in mind, ADEME with the support of the Ministry of Ecology launched this
200 project with just 10 participating companies to road-test the programme before rolling it out to
201 other shipper companies. By the beginning of 2021, 54 companies signed up to the
202 programme. The signatory companies have the option of implementing four different types of
203 action lines, divided into four axes

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Table 1: FRET 21 charter main strategic thrusts

	Action line	Features
	Loading ratio	Optimisation of palletised loads, delivery conditions, reduction in empty runs, pooled supply management.
	Distance	Optimisation of distance travelled between the production/distribution site and the customers.
	Means of transport	Selection and optimisation of road vehicles, use of alternative routes.
	The purchasing services	Considering overall environmental performance as well as CO ₂ data when selecting a carrier.

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Although these four axes include all aspects of the FRET21 project, no concrete tools have been proposed to develop the “purchasing services” function. Therefore, there is a need to scrutinise the shippers’ actual transportation services purchasing process. **Essentially, the better one understands the behaviour of companies including their motivation in developing internally and externally sustainable transportation systems, the more likely one is able to facilitate the expansion of sustainable freight programmes.**

3. Sustainable freight procurement: literature review

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3.1 Motivating factors in implementing sustainable freight practices

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A growing amount of academic research reveals that sustainable purchasing policies can generate significant financial benefits (Thornton et al., 2013; Li et al., 2016), the acquisition of competitive advantages (Lash and Wellington, 2007), and better control of the company’s image (Worthington, 2009). However, the levers that encourage shippers to consider environmental sustainability when choosing a carrier have scarcely been explored in the literature. As underlined by Bask and Rajahonka (2017), limited knowledge about the reasoning behind the choice of intermodal transport as a sustainable mode, or about the transport mode selection criteria in tenders and transport contracts, represents a significant gap in better understanding the freight transportation services procurement process. Wolmarans et al. (2014) analysed some leading companies that strongly integrate transportation sustainability principles into their overall corporate missions. Taking the example of Wal-Mart, they highlight the benefit of shippers’ top management being active in

233 integrating sustainability in their organisation. Additional research clearly states that top
234 management responsiveness towards environmental concerns (Björklund, 2011) as well as
235 employees' values (Gelderman and Van Weele, 2002), have a genuine impact on the purchase
236 of greener transportation services. **None of these studies however, precisely researched**
237 **shippers' commitment towards a specific voluntary sustainable freight programme. While**
238 **Kumar (2021) points out the importance of having a transportation programme that could**
239 **assess shippers' sustainability practices, the study does not explore how the shippers could be**
240 **motivated into adopting such a scheme.** In addition, governmental legislation (Jazairi et al.,
241 2020; Walker et al., 2008; Lin and Ho., 2008), isomorphism (Sholtens and Kleinsmann, 2011)
242 and final customers' requirements (Touratier-Muller et al., 2019; Walker et al., 2008), seem to
243 exert a strong influence on green freight services procurement. For instance, a previous study
244 conducted among small- and medium-sized enterprises (SMEs) in France by Touratier-Muller
245 et al. (2019) explored the consequences of the previously mentioned decree 2011-1336, which
246 required all carriers to calculate and convey their CO₂ imprint to their customers. The study
247 reveals that freight companies initiate green transportation activities when the process is
248 promoted by customer requests.

249 Different actors can encourage carriers to integrate transportation sustainability thanks
250 to the cascade effect (Wolmarans et al., 2014). However, it seems that sustainable freight
251 proactivity may be undertaken by all types of shippers, irrespective of their size or sector. As
252 such, companies in the steel and mining industry in Sweden demonstrate a high level of
253 environmental responsibility in the way they conduct their business (Jazairi et al., 2020).
254 Whereas cultural patterns seem to shape actions in the logistics sector (Walker et al., 2008),
255 sustainability cultures seem to have a positive impact on sustainable entrepreneurial practices,
256 as is highlighted by Thornton et al. (2013). Their study pointed out that developed countries
257 are more inclined to encourage and reward socially responsible supplier selection.

258 Additional studies conducted by Rogerson (2016) and Bask et al. (2018) underline that
259 well- known, globally-operating shippers are the most inclined to be environmentally
260 sensitive for two main reasons: i) external pressures; and, ii) an obvious interest in acquiring a
261 competitive advantage. **However, fieldwork practices have not demonstrated that signing-up**
262 **to a sustainable freight programme will turn out to be an advantage over competitors.** Further
263 research demonstrates that a better transportation management system may lower costs over
264 time reducing cascade subcontracting and the multiplication of distribution networks, which
265 generate increased pollution and unnecessary costs (Plambeck, 2012). Substantial research
266 work remains to be undertaken however, to better understand the levers that drive some

267 companies to set up voluntary green freight programmes. Accordingly, while as already stated
268 the main research question we address in this paper is “how is the voluntary sustainable
269 freight programme ‘Freight 21 charter’ adopted and deployed by some proactive shippers in
270 France?”, the first sub-research question to be considered is:

271 **SRQ1:** *What motivates proactive shippers to join the French sustainable freight*
272 *transportation charter (FRET21)?*

273

274 ***3.2 The key role of shippers in making freight decisions and establishing selection criteria*** 275 ***for carriers***

276

277 As is underlined by Bynum et al. (2018, p. 4), “to influence behaviour in the freight sector,
278 one needs to understand the roles of each participant, [...], the gaps and challenges that
279 confound decision-making and implementation”. Since shippers make major freight decisions
280 covering which carrier to contract, the timeliness of delivery and pickup, transport modes as
281 well as the packaging of products, it is crucial to get a better grasp on carrier services
282 procurement operations. From this perspective, it would be particularly relevant to scrutinise
283 the decision-making process in order to observe which department makes what decisions
284 regarding transport procurement, including decisions regarding incorporating sustainable
285 values. From a theoretical point of view, the Webster and Wind’s model (1972), of industrial
286 purchasing behaviour suggests that the decision-making process for industrial purchases
287 derives from a large set of individual characteristics, inter-professional relations between
288 members (users, advisors, decision makers and buyers), organisational characteristics and
289 environmental factors (economic, legal, technological). This paper follows this approach
290 since the purchase of freight services within a company is at the intersection of various
291 expectations and objectives. Within the shipper companies, the paper helps understanding
292 which department plays the key role concerning the transport services purchasing decision,
293 prioritising accordingly interests, methods and means when choosing the carriers.

294 Research conducted by Small and Winston (1999) and Rogerson et al. (2014) finds
295 that managers working for the purchasing department are often the decision-makers, whereas
296 other studies reveal that the supply chain department exerts a stronger influence (Meinberg
297 and Muller, 1995, Fahimnia et al., 2015). However, the lack of diversity in the authorship as
298 well as in the locations where these studies were conducted gives rise to several limitations.

299 Additional research underlines that transport decisions are often shared between several
300 departments (Gentry and Farris, 1992; Drewes et al., 2003). This may include various people
301 working in inventory management, purchasing, or supply-chain departments. Regardless, it is

302 essential to understand how the selection criteria in respect of carriers are determined. Various
303 research findings, involving field surveys of various companies in different countries
304 highlight that service quality and cost are the two most important criteria when selecting
305 carriers (Van Laarhoven et al., 2000; Marasco, 2008; Lammgard et al., 2012; Rogerson,
306 2017). Other studies conclude that service quality, on-time delivery reliability (Van
307 Laarhoven et al., 2000), supplier responsiveness and the amount of paper work requiring
308 completion (Axelsson and Wynstra, 2002) are determinants. However, a carrier's
309 environmental performance is frequently mentioned as an influencing factor in decision-
310 making while not yet constituting a selection criterion (Large et al., 2013; Touratier-Muller et
311 al., 2019), except in the findings of Theißen and Spinler (2014). Comparative research
312 conducted in France and Sweden by Touratier-Muller et al., (2020) point out however that the
313 Swedish shippers put more emphasis on carrier ISO certification, in comparison to French
314 shippers.

315 Several questions need answering to understand how some companies that voluntarily
316 adhere to a sustainable freight programme organise their transportation services procurement
317 process. **Accordingly, the second sub-research question may be formulated as follows:**

318 **SRQ2:** *Which department inside shipper companies committed to sustainable freight chooses*
319 *the carrier, and how are the selection criteria coordinated?*

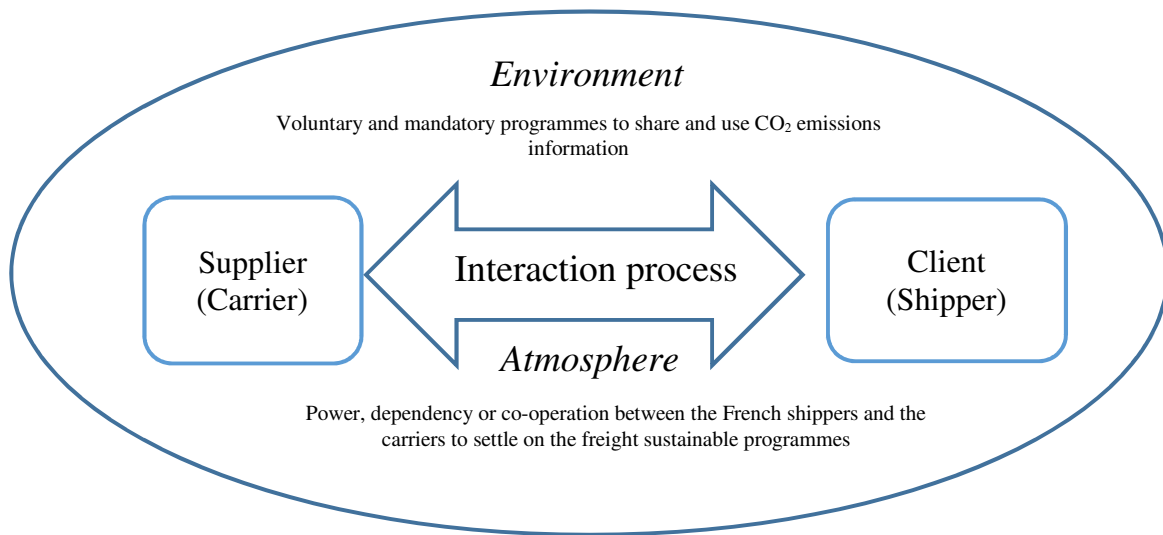
320 321 **3.3 Impact of sustainable freight practices on the participating companies intra- and inter-** 322 **organisational networks**

323
324 Commitments and actions towards sustainable practices can naturally transform relationships
325 and working methods inside and outside the company. In order to spread green freight
326 programmes on a larger scale, it is important to identify different changes that may occur
327 when a company chooses to commit itself to such a project. Research studies inspired by the
328 International Marketing and Purchasing (IMP) approach concerning inter-organisational
329 networks underline that trade is not limited to simple transactions, but consists of established
330 relationships as well as visible characteristics between the organisations (Ford and
331 Håkansson, 2005). The interaction model followed by this study is shown in Figure 1, as it
332 seems appropriate to scrutinise the impact of the FRET21 programme on the shippers'
333 networks. This model is based on four key elements:

- 334 • The participants: the carrier and the shipper. It is important to describe their status and
335 their relationships of influence in their respective organisations.

- The interaction process, which reflects the content of the exchanges as well as their evolution over time.
- The atmosphere of the relationship, which refers to the power or dependency of the actors, the cooperation or the expectations generated by the interaction. In our case, it could include the CO₂ information expected by the shippers.
- The environment of the interaction that refers to the market structure, as well as social, political, economic or cultural contexts. Concerning our specific topic, this dimension could allude to voluntary and mandatory sustainable freight initiatives set-up by the French government.

Figure 1: Interaction model applied



Note: This model has been adapted from that proposed by the International Marketing and Purchasing.

Now that these four elements are defined as key to the study topic, one may discern that each element can have an impact on the interaction process. Each company, both shipper and carrier, has its own organisational, human and technological specificities that will influence the eventual consideration of the adoption of sustainable development, and that will also transform its dyadic networks as a result. Accordingly, the 10 shipper companies that are committed to the FRET21 charter may have developed specific organisational capacities in sustainable transport, driving change in their relationships with their carriers. The *atmosphere* (accurate CO₂ emissions information expectations by shippers, for example) as well as the environment (decree 2011-1336 applicable to all carriers in France) could also influence the interaction of both agents. Ryan et al. (2012), who applied the IMP perspective to explore environmental sustainability, underline that policymakers and politicians have the opportunity

372 to collaborate with business leaders, commercial and social network members in order to
373 install an ecological sustainability orientation within the whole market system.

374 From a sustainable transport perspective, intra-organisational collaboration (Lin and
375 Ho, 2008; Kayikci and Stix, 2014), as well as inter-organisational collaboration (Guajardo,
376 2018; Kayikci and Zsifkovits, 2012; Kumar, 2021) emerge as being key environmental
377 benefits for both carriers and shippers. From an intra-organisational perspective, Kayikci and
378 Stix (2014) underline that collaboration between freight transport employees and their
379 departments can significantly contribute to maximising truck-loading capacities, reducing
380 costs and the environmental impact while improving flexibility. In the same vein, in order to
381 reduce CO₂ emissions and save fuel, United Parcel Service (UPS) clearly strengthened intra-
382 organisational collaboration by providing all their departments and branches with the same
383 software. This initiative greatly facilitated and optimised their logistics process (Lin and Ho,
384 2008). Other studies exploring inter-organisational collaboration, underline that having
385 collaborative tools and mechanisms with external actors encourages greener transport
386 management systems by facilitating the exchange of data between shippers and carriers
387 (Kayikci and Stix, 2014). **Following this approach, the results of research by Kumar (2021)**
388 **point out that collaborative partnership between freight transport companies would improve**
389 **vehicle loading and reduce fuel consumption. However, the results of these studies often only**
390 **apply to a single country (India in this particular case), with only a limited number of freight**
391 **transport companies being studied.** In addition, several case studies, which have been
392 conducted by Guajardo (2018), reveal the benefits of collaborative freight transport practices,
393 by reducing CO₂ emissions by up to 54%. Such collaboration enables reductions in
394 transportation costs as well as carbon footprint. Therefore, the shipper obtains much better
395 service levels and the benefit of receiving standardized data. To complement these studies,
396 McClelland and McKinnon (2004) as well as Léonardi et al., (2004) advocate the use of
397 telematics to decrease transportation CO₂ emissions by gathering accurate information.
398 **Although these collaborative tools make it possible to assess transport efficiency, resources**
399 **and costs (Léonardi et al., 2004), this type of transparency is possible only if the level of trust**
400 **between collaborators is high. It is furthermore more time-consuming to put these tools into**
401 **practice.** Arising from these findings, the question arises if a green freight programme would
402 affect intra- and inter-organisational networks. **Accordingly, the third sub-research question is**
403 **formulated as follows:**
404 **SRQ3: How does a voluntary sustainable freight program such as the Freight21 charter**
405 **influence intra- and inter-organisational networks?**

406
407

4. Methodology

408 Exploratory research design (McCutcheon et al., 1993; Yin, 2009) based on the study of a
409 limited number of carefully selected cases seemed appropriate to observe the extent to which
410 environmental factors were considered and used in the transportation tender process.
411 According to Yin (2009), case studies are especially relevant for answering 'how' or 'why'
412 questions and when an in-depth description is needed. In addition, Miles et al. (1994) assert
413 that the use of multiple cases allows researchers to obtain a deeper grasp of phenomenon,
414 gathering illustrations that are more sophisticated and which provide definitive clarifications
415 (Miles et al., (1994). **Therefore, the whole methodological approach is used in this study.**

4.1 Case selection

416
417 The FRET21 charter, which has been enacted since May 2015 is relevant in exploring the
418 purchasing process of shippers who are committed to sustainable freight as well as the impact
419 that such a commitment has on intra- and inter-organisational networks. The 10 companies
420 that signed-up to this pilot project provide an authentic field study group. Their geographical
421 locations, as well as their size and industrial sector are very diverse (see Table 2).
422 Furthermore, as emphasized by Symon and Cassell (1998), case diversity is a crucial criterion
423 when conducting this type of qualitative research. Each of these companies yields a different
424 insight depending on its strengths and weaknesses. The richness of the case study arises
425 largely from this multi-faceted perspective.

426 **Table 2:** Signatory companies under the FRET21 charter

Company	Industrial sector	Size	Country of origin	Person interviewed
Air products	Petrochemicals	Large	U.S.A	Supply Chain Manager
Carrefour	Mass distribution	Large	France	Sustainable Supply Chain and Transportation Manager
Coca-Cola	Food industry	Large	U.S.A	Sustainable Supply Chain Manager
Ferrero	Food industry	Large	France	Transportation Purchasing Manager
Fleury Michon	Food industry	Large	France	Transportation Purchasing Manager
Hénaff	Food industry	Medium-size	France	Transportation Purchasing Manager
Orrion Chemicals Orgaform	Chemicals	Small	France	Transportation Purchasing Manager
SCA Hygiene Products	Hygiene sector	Large	Sweden	Supply Chain Director (SCA Incontinence Care, South Division)
Saing-Gobain (Placoplatre)	Building materials	Large	France	Supply Chain Director, and 2 Transportation Buyers
Renault	Automotive	Large	France	Environment Supply Chain Director

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4.2. Data collection from multiple sources

429
430 This qualitative exploration in the form of multiple case studies is based on diverse data
431 collection approaches. Diversified sources of evidence are chosen as is recommended by
432 McCutcheon et al. (1993) and Yin (2009) to ensure reliability and validity. Face-to-face
433 interviews were first carried out in the premises of the ten companies, accessing their internal
434 procedures and gathering direct observations. As is highlighted by Patton (2002, p. 21) “To
435 understand fully the complexities of many situations, direct participation in and observation
436 of the phenomenon of interest may be the best research method”. Various documents,
437 organisation charts, internal purchasing procedures were also collected. Once the data were
438 analyzed for each company, face-to-face brainstorming sessions with the 10 participants were
439 carried out in the Association of Users and Freight Transport’s (AUTF) premises, which
440 helped, enrich our understanding of the outcome and provided external validity to this
441 research (Symon & Cassel, 1998).

442 In respect of the individual interviews, the brainstorming interview guide was drawn
443 up based on the literature review and the specific features of French freight programmes (see
444 Appendix 1). The final interview guide contained 28 questions covering four main themes:

445 Theme 1: Motivation, resources, and difficulties related to the signing-up to the FRET21
446 charter

447 Theme 2: Transport purchasing process and awareness of environmental criteria

448 Theme 3: Use of the CO₂ transport information and the identification of future needs in order
449 to better develop the FRET21 programme

450 Theme 4: Impact of signing-up to environmental standards (FRET21 charter included)
451 regarding partner collaboration (inter-organisational dimensions)

452 In-depth interviews were conducted in order to “get the person being interviewed to
453 talk about experiences, feelings, opinions and knowledge” (Patton, 2002, p. 354). The
454 interviewed person was selected according to three criteria: i) length of ongoing dealing with
455 the carriers over time; ii) participation in the transportation services purchasing process; and,
456 iii) degree of expertise on the environmental strategy of the company. The face-to-face
457 interviews with the 10 companies were undertaken all over France and each interview (lasting
458 for about two hours) has been fully recorded, transcribed and coded, meticulously following
459 the recommendations advocated by Dumez (2012). This method of “typing and organising
460 handwritten notes offers another opportunity to immerse in the data in the transition between
461 fieldwork and full analysis, a chance to get a feel for the cumulative data a whole” (Patton,
462 2002, p. 441). Furthermore, this technique enables verbatim transcriptions.

4.3. Data analysis and validation

As is underlined by McCutcheon et al., (2013; p.239) “relevant details must be sorted from the mass of observations, comments, reports and interviews.” After having selected internal data and field notes “that the observer believes to be worth noting” (Patton, 2002, p. 302), a coding process was used, based on reading, analysing and underlining key answers and keywords, question by question, so that the responses from these 10 companies to the same question were grouped together. This cross-case analysis provides a way of combining answers from different respondents to common questions (Patton, 2002, p. 438). A coding frame appears progressively, highlighting the main theme and sub-theme elements. **An example of this coding structure can be observed in Appendix 2.**

Finally, in describing the results and synthesising this cross-case analysis, the challenge was to “retain the uniqueness and holism of accounts” (Noblit and Hare, 1988), identifying and extrapolating lessons learned from these 10 cases.

5. Results and discussion

5.1 Motivating factors in implementing the FRET21 charter

Table 3 summarises the main reasons that led the companies to sign-up to the FRET21 voluntary freight transportation programme. As can be seen, the existence of a global environmental policy approach communicated by the top management as well as employee environmental values, have significant influence on purchasing greener transportation services decision-making. This observation can be associated with the C3 and C8 explanations: “This project is part of the company's values, in line with the CSR approach implemented over the past 2-3 years (C3)”; “Our company is very proactive on voluntary environmental initiatives (C8).

This outcome justifies the commitment to and the signing-up to the FRET21 charter. Deepening the work of Gelderman and Van Weele (2002), the results show that employees working in the supply chain department are a strong driving force, willing to undertake pioneering work in their respective duties. This argument is for instance developed by C8 “Our marketing department calculates the CO₂ emissions of the product without including the emissions generated by the transport. It is then important that the supply chain department initiates such procedures.”

The global shippers’ primary motivation is naturally to obtain a competitive edge over other shippers and to acquire financial advantages as well, as was perceived by previous research (Thornton et al., 2013; Li et al., 2016). Four of the respondents also mentioned that

497 signing-up to the FRET21 charter represented a real environmental challenge as well as
 498 promoting a team spirit: “This is a theme that brings teams together, especially young
 499 employees (C1)”, “it’s a way to reboot the involvement of our team (C10)”.

500 In line with the findings of Worthington (2009), the 10 interviewed French shippers also wish
 501 to enhance the company’s image, thereby taking public opinion into account.

502 The results also reveal that external pressures such as government legislation,
 503 normative isomorphism as well as final customers’ values did not play any role in the
 504 FRET21 deployment project. However, half of the companies looked for assistance from
 505 ADEME in the provision of calculation tools, as well as in their managerial procedures, as
 506 exemplified by C6: “This personalized accompaniment helps us use the tools correctly. This
 507 learning pathway allows us to acquire new practices”.

508 Some of the respondents see in this environmental commitment an opportunity to
 509 share best practices and learn from other shippers’ latest experiences as C5 explained: “It is an
 510 opportunity to exchange ideas with other shippers. Their CO₂ emission reduction practices
 511 may be relevant and inspiring for our own company”. Referring to the interaction IMP model,
 512 our results reveal a remarkable shared willingness to strengthen horizontal collaboration.
 513 Therefore, our research context goes beyond the IMP vertical interaction process between a
 514 carrier and a shipper as it allows shippers between themselves to look at improving their
 515 environmental actions. Some of them even ponder how to pool their road transport operations
 516 with other shippers or even competitors. Sustainable transport is then initiated, motivated and
 517 deployed thanks to this horizontal inter-organisational collaboration.

518 **Table 3:** Internal and external incentives motivating companies to join the FRET21 charter

Motivations for joining the FRET21 charter		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Internal incentives	Strengthening the company’s values	●		●	●	●		●	●	●	
	Communicating a good image	●			●		●		●		
	Generating team spirit	●			●					●	●
	Reducing costs	●		●		●	●				
	Launching environmental actions in the field of logistics			●			●		●		
	Working with carriers in the environmental programmes initiated		●							●	
	Formalising and valourising environmental work that had previously been undertaken	●									
External incentives	Assisting with understanding the measurement and data collection tools			●	●	●	●	●			
	Sharing best practices with other companies	●		●		●		●			
	Communicating these practices with external partners (distributors, consumers)		●						●	●	

519 Note: The companies' names have not been disclosed for confidentiality reasons

520 In another vein, our results underline that company size and industry sector do not
521 influence the motivation of shippers to sign-up to this voluntary freight programme. Large
522 firms and SMEs in the sample voluntarily comply with the FRET21 charter, incorporating
523 sustainability into their transportation services purchasing process. One firm with only 40
524 employees for instance, showed great proactivity and a strong desire to improve its
525 sustainable transport purchasing system. Whereas the findings of Rogerson (2016) and Bask
526 et al. (2018) underline that larger shippers are more disposed to implementing sustainable
527 transport practices than smaller enterprises, our results indicate that SMEs can also be highly
528 involved in the process. Finally, although the shippers' countries of origin varied, in each case
529 the parent company comes from a developed country. Therefore, one may strongly conclude
530 that socially responsible supplier selection is more encouraged and rewarded in developed
531 countries, as was stated by Thornton et al. (2013). From a theoretical standpoint, these
532 cultural characteristics can constitute the "Environment", within the IMP interaction model.
533 In this way, companies coming from developed countries seem to engage in more
534 environmentally conscious behaviour, mainly due to the influence of different cultural
535 motives.

536
537 ***5.2 The key role of the supply chain department in deciding to join the FRET21 charter as***
538 ***well as the decision-making criteria when choosing a carrier***

539 The main findings of our research suggest that the supply chain department has a strong
540 influence on top management in shipper companies, thereby encouraging different
541 departments' participation in the FRET21 charter. These results are reflected through the
542 following verbatim conversation: « Our supply chain department has the leading role on this
543 subject (C3) », « The supply chain management did a presentation to headquarters expressing
544 its wish to sign-up to the FRET21 charter; this has been accepted by the top management
545 (C7) ». Companies deciding to sign-up to a voluntary freight programme with concrete goals
546 to decrease their transport CO₂ emissions do so for various reasons. Primarily, they wish to
547 positively respond to the mandatory (decree 2011-1336) and voluntary (Charter CO₂)
548 measures applicable to French carriers. Secondly, it comes from a strong desire to
549 demonstrate appreciation for the supply chain department in respect of their initiatives. Most
550 of the respondents (namely supply chain managers) felt excluded when the company initiated
551 global environmental actions.

552 In addition, our study underlines that the supply chain department participates more in
553 the choice of the carrier than the purchasing department. However, the decision-making often

554 involves both departments together. Various comments attest to these collaborative
555 purchasing operations by both departments such as “The purchasing department and the
556 supply chain department are the only ones, and we always work in tandem (C7)” or “The
557 supply chain department defines its requirements to the purchasers (C4)”. However, the final
558 decision mainly comes from the supply chain headquarters, as outlined by the following
559 verbatim: “In any case, the purchasing department and the supply chain department have the
560 same boss, and that is the supply chain manager (C2)”, “The drafting of the contract is up to
561 the purchasing department; however the final decision comes from the supply chain
562 department (C1)”. Our results confirm the findings of previous research (Meinberg and
563 Muller, 1995; Fahimnia et al., 2015), which stated that the supply chain department is more
564 involved in the transportation organisation and decision-making processes. Although these
565 findings should be interpreted with some caution since the purchasing department personnel
566 account for half of the interviewees, they support the studies by Gentry and Farris (1992) and
567 Drewes et al. (2003). From a theoretical perspective, our results confirm Webster and Wind’s
568 model (1972) in the sense that inter-professional relations between the supply chain manager
569 and the purchasing manager, combined with the company’s organisational characteristics and
570 the adoption of the new FRET21 voluntary charter (environmental factors) influence the
571 whole purchasing decision process.

572 Scrutinising the criteria that are sequentially prioritised when selecting a carrier, our
573 findings indicate that cost is the primary selection criterion for most shippers in carrier choice.
574 For other shippers, service quality (punctuality, reactivity, truck availability) or safety
575 (especially for transportation of dangerous materials) remain the primary selection criteria.
576 The environment is an “incentive criteria” for half of the interviewed companies,
577 demonstrated in particular by shippers favouring carriers equipped with a Euro 5/Euro 6 fleet.
578 As far as carrier selection is regarded, most of the interviewed shippers had not yet made
579 transportation services purchasing decisions based on environmental criteria (six companies
580 from ten). The four proactive companies which have integrated carriers’ environmental
581 performance award points to their carriers regarding their fleet-average emission standards,
582 fuel consumption, truck standards, truck consumption, or their engagement in signing-up to
583 the carriers’ voluntary charter, Charte Volontaire CO₂. They also value sustainable freight
584 services proposals from carriers that use lighter trucks and those which set up benefit sharing,
585 as well as front hauling/backhauling practices. However, these factors do not constitute
586 decisive criteria in selecting a carrier, although a service “at the same price, but less polluting”
587 will be favoured. Therefore, contrary to Theißen and Spinler’s work (2014), our study shows

588 that environmental concerns such as CO₂ transport emissions are not yet integrated into
589 carriers' selection criteria. Finally, for six out of the ten surveyed companies, the duration of
590 their contract with their carriers is not specified or lasts for one year only. This result is,
591 however, paradoxical given that the shippers state their desire to have durable, stable and
592 strong relationships with carriers. This outcome differs for instance from the environmentally
593 proactive shippers, who were interviewed in Sweden and who had signed transportation
594 contracts with carriers for durations of at least 2 to 3 years (Touratier-Muller et al., 2020).

595 *5.3 CO₂ transport emissions information and identification of future needs to develop*

596 *FRET21*

597 *Examining in detail the transport services purchasing process among these 10 companies, an*
598 *analysis of their CO₂ emissions information generated by their freight operations was*
599 *developed.* Accordingly, Table 4 summarises how the interviewed companies conduct the
600 work of calculating CO₂ emissions. As can be seen in Table 4, half of them have decided to
601 integrate an automatic calculation facility, thanks to their enterprise resource planning (ERP),
602 which centralises all their transport flows into a common system, as C3 noted: “We
603 consolidate all our transport flows on our own ERP system”. Furthermore, six out of the ten
604 companies state that their calculation of CO₂ emissions is modelled on the methodologies
605 communicated by ADEME, as highlighted by C4: “We use the ADEME methodology. *It is*
606 *thanks to this methodology that the CO₂ emissions efficacy of the carriers was assessed (C4)*”.
607 This result underlines that official standard calculation methods, communicated by the
608 government, are more deployed by shippers than in-house specific calculation models.
609 However, undertaking this task requires allocating specific human and material resources.
610 Consequently, these proactive companies have to acquire new software or set up their own
611 ERP, entrusting the task of monitoring the CO₂ emissions to a specific person (a trainee in
612 some cases). When discussing future prospects in respect of CO₂ emissions data collection
613 and the difficulties encountered to-date in undertaking this task, the respondents were dubious
614 about the effectiveness of decree 2011-1336. Not only did they emphasise the difficulty in
615 gathering CO₂ information from different levels, but also they raised doubts on the reliability
616 of the data provided: “I do not look at the CO₂ information provided by the carriers. Today we
617 consolidate this data internally, via our ERP and we have a level of accuracy that carriers do
618 not have (C2)”. Consequently, there was real indifference as to whether or not the carriers
619 complied with decree 2011-1336. According to the IMP interaction model, this decree
620 representing “the environment” does not play a key role in strengthening shipper/carrier
621 interaction towards achieving better sustainable freight performance. The shippers would

622 prefer to work on having reliable and automated methods of data acquisition, by having
623 access to carrier telematics. It is in line with the findings of McClelland and McKinnon
624 (2004) and Léonardi et al. (2004) which highlight the use of telematics to gather accurate data
625 on the measurement of road transport efficiency. Some shippers already deploy these
626 practices, such as C1: “We have access to carrier telematics. For example, we know that a few
627 years ago we used to consume 33 liters per 100 kilometers and that we now consume 29 liters
628 per 100 kilometers”. However, this example does not represent the experience of the majority
629 of the companies surveyed. From a theoretical perspective, this element incorporating “the
630 atmosphere” in the IMP interaction model remains as an unmet expectation.

631

632 **Table 4:** Current organisational capacities of the FRET21 charter signatory companies

Transport-related CO ₂ emissions' management		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Means of transmission	Automatic calculations via the ERP of the shipper	●	●	●				●	●		
CO ₂ calculation methods	Using calculation method recommended by ADEME	●		●	●	●		●		●	
Dedicated resources and means	Person dedicated		●		●		●				●
	Training received				●	●			●	●	
	Investment in data collection tools				●			●		●	
	Internal tools parameterisation	●	●								●
Feedback in respect of French programmes agreed for carriers & shippers	Shippers highlighting a lack of coordination between the FRET21 charter and decree 2011-1336	●		●	●	●	●	●	●		●
	Expected CO ₂ information from the decree (level 1,2,3,4)	-	1	3	3	4	3	4	4	3	4
Difficulties encountered	Consolidating CO ₂ information from different levels (when coming from the carriers)		●	●	●						
	Inability to use rail transport	●		●				●			
	Lack of time					●			●		

633 Note: The companies' names has not been disclosed for confidentiality reasons

634

635 *5.4 The FRET21 programme as a reinforcing mechanism of intra- as well as inter-* 636 *organisational networks*

637 Our results underscore that shippers who have signed-up to the FRET21 charter stimulate and
638 reinforce their intra- and inter-organisational networks. From an intra-organisational
639 perspective, the majority of the shippers involved in the FRET21 programme organise
640 meetings about this subject from once a week to once a month with different departments, as
641 highlighted by C8: “We succeeded in federating all the employees working in the supply
642 chain department and employees from different departments around this FRET21 project. We
643 meet once or twice a month”. This approach allows the setting-up of action plans and the

644 coalescing of all the employees from various fields around a same goal. It also promotes the
645 transfer of knowledge. With reference to the IMP theoretical concept, and especially the work
646 conducted by Ford (2001), **it is understandable** how individuals within a company have
647 different motivations, attitudes and expectations, which alter their actions. When Håkansson
648 and Snehota (1995: p. 192) state: “It is individuals who endow business networks with life”,
649 this quotation recognises that the interactions between companies are first affected by the
650 employees’ intentions. In our specific context, the commitment to the FRET21 programme
651 allows employees working in the supply chain department to communicate and raise
652 sustainable transport awareness with other departments. Therefore, our results converge with
653 the findings of Kayikci and Stix (2012).

654 From an inter-organisational perspective, carriers are the primary stakeholders
655 mentioned who value the environmental implications of the ten shipper companies’ actions.
656 This is shown by these verbatim comments: “With the FRET21 charter, our carriers became
657 strategic partners” (C4), “this reinforces the collaboration with carrier X (C3)”; “this really
658 empowers collaboration with our carriers” (C1). This voluntary programme unites various
659 businesses around resolving the same problem, thereby reinforcing their organisational
660 practices. This finding is in line with Kayikci and Stix (2014), who suggested that inter-
661 organisational collaboration around a voluntary environmental programme is reinforced,
662 representing a real asset. However, the absence of common tools to measure and
663 communicate automatically the environmental impact of distances travelled is still lacking.

664 Furthermore, in line with other research focused on the IMP perspective, our results
665 establish visible characteristics of the relationships due to the positive influence of the
666 FRET21 charter. As pointed out by Ryan et al. (2012), specific organisational capabilities
667 such as the signing-up to this programme help shippers to consider carriers as real partners,
668 thereby strengthening collaboration. Finally, another inter-organisational network has been
669 established between these 10 shippers and ADEME, which provides them with methods of
670 calculating CO₂ emissions as well as new management practices to reduce and optimise
671 freight transport demand.

672 **6. Conclusions**

674 Conducting multiple case studies among the pilot companies that signed-up to FRET21 in
675 France facilitates understanding the main motivation as well as the transport services’ buyers’
676 attitude towards environmental initiatives. Our study reveals a proactive and voluntary
677 involvement to reduce CO₂ emissions related to their freight operations, irrespective of

678 company size or sector activity. Our results also underline that the environmental sensitivity
679 of the shippers stems more from an internal dynamic, be it supportive employees or top
680 management. The willingness to sign-up to the FRET21 charter to be in line with their values,
681 communicates a good company image and unites teams around a solid environmental project.
682 Furthermore, our results stand out by revealing the leading role of the logistics department in
683 transportation services purchase decision-making. Not only do the logistics departments instill
684 a responsible transport strategy in the 10 companies surveyed, but they are also the
685 departments most likely to make the final decision in terms of transport services purchases.
686 Concerning carrier selection, although the environmental protection concern has an
687 influencing influence during the tender process, our findings highlight that it does not yet
688 constitute a decisive criterion in carrier selection.

689 From a theoretical perspective, this study's findings provide a significant contribution
690 to the existing literature. Using the lens of the IMP interaction perspective, rich data about
691 shippers' intra- and inter-organisational networks were collected. On the one hand, the
692 FRET21 charter enhances intra-organisational collaboration, coalescing several departments
693 around the same environmental project, thereby enhancing internal communications. On the
694 other hand, the FRET21 project boosts interaction and targeted inter-organisational
695 collaboration with several partners: i) carriers; ii) ADEME; and, iii) other shippers. Carriers in
696 the sense that they value environmental-enhancing proposals and encourage initiatives to
697 decrease CO₂ emissions, by scrutinising their fleet of vehicles, their vehicle standards or by
698 engaging to sign-up to the voluntary sustainable freight charter. The interaction with ADEME
699 is based on trust and transparency since these shippers wish to obtain accurate CO₂
700 calculation methods as well as acquiring management practices to optimise freight transport
701 flows. Other shippers in the sense that these 10 shippers wish to share best practices and
702 experiences with each other. Finally, calling for more horizontal interactions between
703 companies from the same sector is quite innovative from an academic point of view. Some
704 respondents wish to pool road transport operations with other external stakeholders (other
705 sector shippers or competitors). However, these strategies are difficult to implement and are
706 not yet on the agenda, except in some specific industries, such as oil distribution. Finally, the
707 "atmosphere" which is defined as the expectation generated by the interaction according to
708 the IMP interaction model, points out that a more transparent technological measurement tool
709 is expected by shippers. The lack of reliable and transparent tools and a standard method to
710 measure freight CO₂ emissions impedes shippers and carriers from sharing the real benefits of
711 such environmental-enhancing efforts. At another level, the "environment" described in the

712 interaction model as the social or political context, underlines that decree 2011-1336 does not
713 seem to be a lever enhancing interaction between shippers and carriers. However, both agreed
714 voluntary measures for shippers and carriers seem to have a positive impact. Therefore, inter-
715 organisational collaboration is more organised around environmental proactivity rather than
716 the obligation to calculate the CO₂ emissions.

717 Currently, from a managerial perspective, the results highlight a lack of coordination
718 between the voluntary programme FRET21 charter and the mandatory programme (decree
719 2011- 1336). Furthermore, the respondents wish to work with a reliable and automated
720 method in order to be able to compare the CO₂ emissions released by the carriers. Practical
721 applications stemming from this work can be used to support businesses, the French Ministry
722 of the Environment and various organisations such as the AUTF (French Freight Transport
723 Association). The most suitable action would consist of enforcing governmental sustainable
724 freight legislation requiring all carriers to comply with mandatory environmental standards.
725 An accurate measuring tool integrated into the trucks' telematics system would help more
726 accurately measure and compare carriers' environmental performance. This information could
727 be communicated automatically with transparency to the shippers.

728 This paper is not free from limitations. First, due to the small number of shippers in
729 the FRET21 pilot project, the generalisation of the findings is obviously not possible without
730 due caution. Secondly, the shippers were not chosen randomly but were a unique group of
731 shippers all imbued with the common desire to voluntarily commit to a sustainable freight
732 programme. For this reason, again, the results generated by this study should not be
733 generalised thoughtlessly. Thirdly, all companies visited and the supply chain directors met
734 during the interviews are based in France, which is to some extent a specific country in
735 institutional terms.

736 Additional future research would aim at helping to spread this freight programme to greater
737 number of shippers in France. Currently, the FRET21 charter is based on four main strategic
738 thrusts: i) loading ratio; ii) distance optimisation; iii) alternative transport modes; and, iv) the
739 transportation purchasing service. Although ADEME has provided tools to work on the first
740 three strategic thrusts, the procurement axis still needs to be supported. Additional future
741 research expansion in this direction would help supply chain managers to set-up and follow
742 concrete key performance indicators with the carriers.

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935

936 **Appendix 1: Interview guide**
937 *(Comments in italics just allow the interviewer to relaunch the conversation if needed)*
938

939 **Introduction**

940 **Name of the company:**

941 **Person interviewed** (Name, surname, function and department)

942 **Date:**

943 **Company's identity:**

944 - Activity sector

945 - Intermediate or final consumption goods

946 - Size of the company

947 - Product value (average value registered)

948 - Percentage of turnover accorded to transport modes

949 - Mode

950 - Regional/National/International

951 - Type: Full or low Truck load

952 - Quantities transported (Tons per year)

953 - Average number of carriers

954 - Number of strategic shippers

955 - Localisation

956

957 **Theme 1: Motivation, resources, and difficulties related to the signature of the FRET21**
958 **charter**

959

- 960
- 961 • Who in your company took the initiative to adhere to the FRET21 charter?
 - 962 • Why did your company decide to sign this charter?
 - 963 • What do you expect from the FRET21 charter?
 - 964 • What are the means and resources that you dedicate toward this engagement? *(tools, employee training, people dedicated to special tasks, working hours)*
 - 965 • Which departments/functions are the most impacted by the new charter?
 - 966 • Did you have any difficulties in having this new charter accepted inside your company?
- 967

968 **Theme 2: Transport purchasing process and awareness towards environmental criteria**

969

- 970
- 971 • Where does the transport tender take place? At the headquarters of the production/distribution site?
 - 972 • Which departments contribute to selecting the carrier?
 - 973 • Who takes the final decision and formalises the contract?
 - 974 • What is the «transport decider» profile (purchaser or logistician)?
 - 975 • Are they open to sustainable transportation?
 - 976 ○ If yes, in what form?
 - 977 ○ If not, what could be done to ensure greater environmental awareness?
 - 978 • What is the usual contract period?
 - 979 • What are the main criteria you select when choosing a carrier?
 - 980 • Are they identical for regional, national or international carriers? *(same question if there are full or low truck loads)*
 - 981 • Is there a policy regarding environmental criteria in carrier selection? *(environmental criteria written in the technical specifications)*
 - 982 ○ If yes, how do you do it?
 - 983 ○ If not, why not?
- 984
- 985
- 986
- 987

988 **Theme 3: Use of the CO₂ transport information and future needs identification in order**
989 **to better develop the FRET21 programme**

- 990
- 991 • Where does the CO₂ transport information come from?
 - 992 • Method of calculation used? (*ADEME methodology, European standards, internal*
993 *calculation*)
 - 994 • Regarding decree 2011-1336, what level do you expect?
 - 995 ○ Level 1: default values provided for each mode of transport per type of activity or
 - 996 means of transport.
 - 997 ○ Level 2: average data measured by the carrier for all of its journeys.
 - 998 ○ Level 3: average data measured by the carrier according to a breakdown of its activity.
 - 999 ○ Level 4: accurate data collection from the journey's exact operating conditions (load,
 - 1000 energy consumption, occupancy).
 - 1001 • How do you follow the CO₂ information and the environmental performance communicated
 - 1002 by the carriers? (*Who does this task in the company, which tools are used, frequency, KPIs?*)
 - 1003 • Who diffuses the CO₂ information internally?
 - 1004 • Is this information communicated to your customers?
 - 1005 • Do you organise audits with your carriers to control the CO₂ information communicated?
 - 1006 • Is the CO₂ information that you receive from your carriers CO₂ relevant and adequate?
 - 1007 ○ If yes, why?
 - 1008 ○ If not, why not? (*identify the areas needing improvement*)
 - 1009 • What is the added value of the CO₂ information? (*What will they do with it?*)
 - 1010 • How do you think you can encourage your carriers to decrease their CO₂ transport emissions?
- 1011

1012 **Theme 4: Impact of signing-up to environmental standards (FRET21 charter included)**
1013 **regarding partner collaboration (inter-organisational dimensions)**

- 1014
- 1015 • How did your partners react regarding your commitment towards the FRET21 charter? (*New*
1016 *collaboration opportunity or new obstacle regarding emissions calculation, indifference, etc.*)
 - 1017 • Is there a working group with your main carriers?
 - 1018 • Before the FRET21 project, did you participate with them in other environmental projects (in
1019 particular to reduce CO₂ emissions)?
- 1020
- 1021
- 1022
- 1023

1024 **Appendix 2:** Sample of the coding structure highlighting the main theme and sub-theme
 1025 elements.

Main theme	Sub-theme elements appearing progressively	Number of times quoted
Reasons for FRET21 membership	image	3
	cost concerns, economic issues	3
	Unit the teams	4
	support carriers since they had started to sign the CO ₂ charter (designed exclusively for carriers)	2
	company's core values	7
	undertake environmental action as a Small and Medium Size enterprise	1
	launch a strategic environmental action in the supply chain field	3
	adapt to future new constraints, new regulations	1
	formalize a number of initiatives that had been undertaken by a working group	2

1026
 1027

Main theme	Sub-theme elements appearing progressively	Number of times quoted
Expectations from the FRET21 charter	Exchange ideas and initiatives with other shippers regarding their best practices	4
	Enhance our image through actions taken to reduce CO ₂ emissions	3
	Communicate with employees, distributors, consumers (3)	3
	Be accompanied to understand the measurement and data collection tools	5
	Economic benefits	2
	Support our leadership in relation to our commitments	1

1028