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Book review of *Sustainable Freight Transport. Theory, Models, and Case Studies*, edited by Vasileios Zeimpekis, Emel Aktas, Michael Bourlakis, Ioannis Minis. Operations Research / Computer Science Interface Series, Vol. 63. Cham: Springer International, 2018 v+178 ISBN 978-3-319-62916-2

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The global freight market, according to Statista, represented about 161 billion Euros in 2020, and is expected to increase to 207 billion Euros by 2025 [1]. Although there was a dip around Covid-19 lock-downs and restrictions during 2020 and 2021, with severe repercussions for some global supply chains (such as automotive and electronics, connected also to disruptions in productions of micro-chips) from this and before that major global or regional financial crises, there is generally an uptrend again. This will probably continue, bar some disaster including notably Russia's invasion of the Ukraine which has curtailed that country's use of its principal maritime export infrastructure. There, as in some other world regional / country cases (e.g. Syria, Myanmar), international sanctions also create intended trade barriers. The United Kingdom (UK) for instance has found no credible policy and implementation stance to solving its self-created problem of trade and logistics with Northern Ireland, resulting from the largely absurd and mis-sold Brexit promises and logic.

The other major dimension and focus on considering, evaluation and working towards 'sustainable' logistics, freight, and transport [2] of course is an environmental one, including notably with regard to greenhouse gases (e.g., CO2) emissions and also in urban population centres air pollution and noise pollution, which affect public health. Both on land and at sea fuel spills (and deliberate hazardous waste dumping) and major accidents (e.g., road traffic collisions) have an environmental impact. According to the International Energy Agency [3] transport accounted for about 24% of CO2 (or 'carbon') emission – now revised down a bit by the World Economic Forum in 2021 to 21%. Of that 29.4% in 2018 was from road-based freight, 11.6% from aviation and 10.6% from shipping (largely maritime, with some of that on major inland rivers also). So, clearly, there is a significant way to go in terms of achieving major decarbonisation efforts – as well as other improvements in freight transport if it can make a full contribution to meeting the Paris Agreement and the Conference of Parties (COP) targets and aspirations. The climate emergency is now widely recognized. Everyone depends on transport.

In the (rather brief, it has to be said) introduction of this book, the editors flag the topics of carbon footprints (including of suppliers), (including shorter) supply chains [4], city logistics (with the use of urban consolidation centres), as well as systems-thinking approach, and operational models for scheduling and vehicle routing (including with Artificial Intelligence and Smart Computing). The editors are right to say (p. 2) that "freight transport has traditionally focussed on decreasing costs and increasing service levels. However, it is no longer possible or socially responsible to neglect the environmental [and previously 'externalised'], social, climate and energy implications of the freight moving globally". This also relates to safety, accessibility, reliability, and resilience to significant shocks and disruptions (including fuel-dependency, price rises, and climate change-related impacts to infrastructures).

The first chapter by Boloukian on 'Logistics and Freight Transport as the Kernel of Resilient Airport-Driven Development', is engaging and valuable for readers. It rightly sees airports as hubs (clusters of a range of activities and logistical connections), and importantly so in

emergent as well as economically more mature countries in a global context of urbanisation. It acknowledges aeronautical and non-aeronautical revenues and economic development aspects. Here, the focus is on freight and logistics. The chapter usefully reviews a number of airport-driven development concepts (such as decoplex (more like an industrial jetport), airport-city (a mixed-used property setup), airfront (commercial/industrial/transportation facilities and services), airport-corridor (a band of integrated rail/road infrastructure and property development), aeropolis (global connections airport-centric urban development), and airea (an analytical concept to work out the influence zone of an airport in its hinterland). Some useful conceptual figures are displayed here around the schematic complexities of flows and interactions. The main focus is on a concept termed Airport-Drive Development, with speed the competitive differentiator of air transport to logistics (as assessed by the distance-transit function), especially for high value shipments. At the core of this is diagnosed a powerful reinforcement loop or development loop (seen as positive here) though also some considerable – and largely environmental – negative feedbacks. This is supported by examples throughout. One could have done with a better indication of the types of quantitative data for these models.

The second chapter by Dinwoodie on 'Sustainability Management in Smaller UK Ports to Promote More Sustainable Freight Development' focuses on performance, planning and reporting from a change management standpoint. There has been a maturing of the conceptual focus on ports' (environmental) sustainable development, with the IMO, the OECD, Ecoports, Greenports, Port Technology International, as well as regional organisations such as the ESPO, the EU and indeed national ones (such as the HSE, the BRA and UKHMA in the UK). Active sustainable management systems implementation and improvements can indeed lead to competitive advantages and costs reductions through regulatory compliance and waste (including of energy) minimisations. They can also lead to new economic advanced business services activities. Sustainable management systems are becoming more digital on that domain, with ports catching on fast now. As Dinwoodie points out, the challenge on both fronts is often more difficult and needs customisation to at least mirror some of the improvements in megaports/large ports underway. Strategies such as Total Quality Management and Business Process Reengineering can help internally, as can an active focus on greening supply chains with underpinning accounting activities and adaptations of sustainability and governance concepts to the ports sector to preserve revenues.

The next chapter by Rachaniotis et al. adopts a more computing and mathematical approach to discuss 'A bio-objective problem of scheduling fuel supply vessels', with a heuristic algorithm developed, a model tested and evaluated for a small Greek company. The reviewer can see how the model can be tweaked and fed with input data for other vessel fleets of this nature.

Similarly, Demir tackles 'value creation through green vehicle routing' for the context of road transportation, where there have been many developments and start-up service companies in recent years. But, as this chapter stresses, it really rides on how heavily negative 'externalities' (such as air pollution, GHG emissions, noise pollution, congestion, accidents, and land use) are weighted and costed in through (self-)regulation and societally to keep up to pressure to exert improvements through technology, process innovations (including of methodologies) and their actual implementation.

A further chapter, by Guajardo, on 'environmental benefits of collaboration and allocation of emissions in road freight transport', seeks to establish quantitively the gains that may be made by a more coordinated and collaborative (game theory informed) approach between companies or customers. The worked example and the review of applications are stimulating to connect

conceptually and methodologically not just the allocation of costs but also emissions/pollution. But, the prices set for this by regulators for an underpinning of those costings and potentially emissions trading are then critical, and need to be high enough to make a real difference – including as an incentive for pursuing optimisation.

Nsamzinshiti et al. in turn tackle the question of 'Short supply chains as a viable alternative for the distribution of food in urban areas?' This means localisation efforts including more direct selling/marketing routes with fewer intermediaries. This has largely stayed a fringe activity so far. A range of barriers and current logistical constraints are formally and systematically reviewed here, with modelling and an interesting application for the Brussels Capital Region in Belgium.

Paddeu's chapter on 'Sustainable solutions for urban freight transport and logistics: an analysis of urban consolidation centres' is an absorbing follow-on, with a case study focus of the Bristol-Bath Freight Consolidation Centre in the UK so as to distil successes in terms of both stakeholders and sustainability.

Navarro Lopez' consideration of Urban Vehicle Access Regulations will not any longer be up-to-date with new developments at, for instance EU and national levels, but the systematic approach for conditions and success factors is still of interest.

Finally, Agăn et al. contribute a well-written chapter on 'the importance of supplier development for sustainability', and set out a general framework for supplier development and the effects on sustainability in supply chains.

Overall, this book can be read with significant benefits to readers in this field, conceptually as well as methodologically.

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