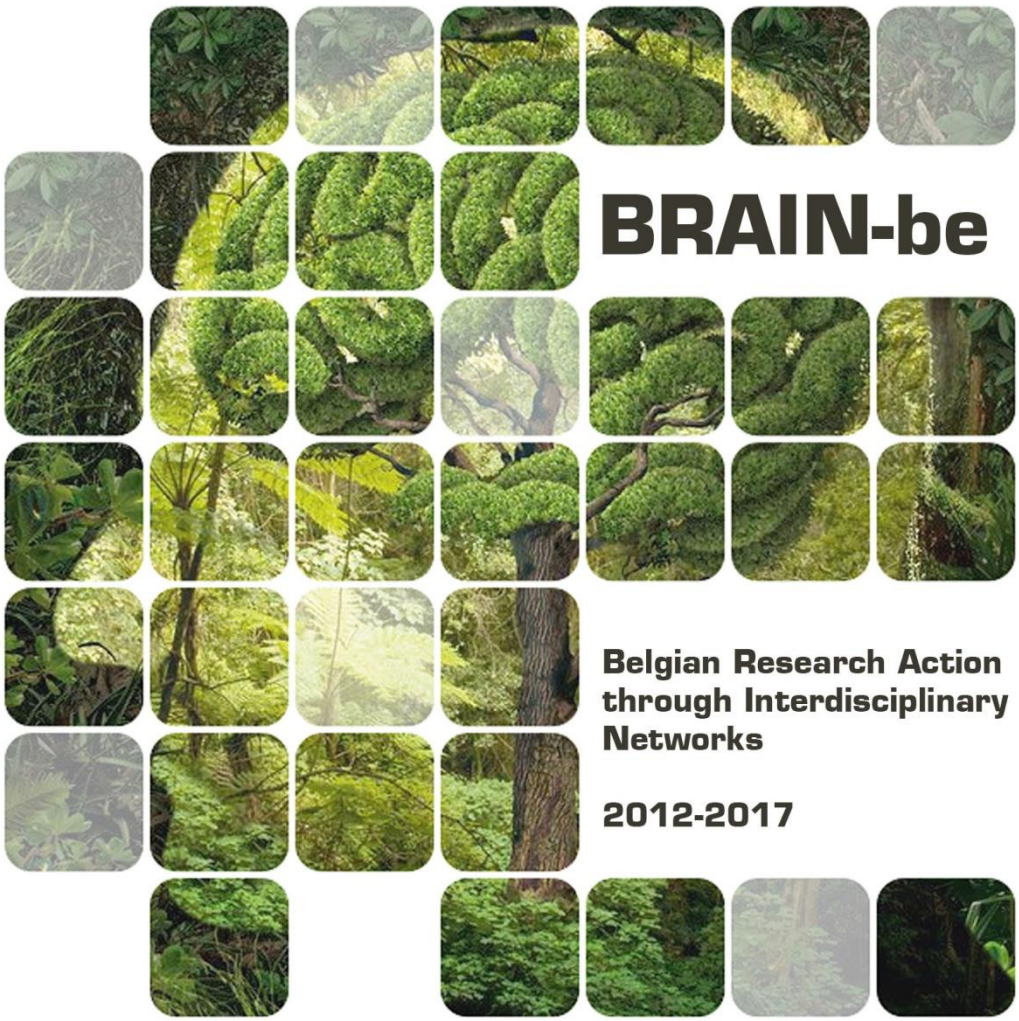


VALORISATION PROJECT

BRAIN-TRAINER

BRAIN-TRansversal Assessment of Intermodal New Strategies Trainer

VALORISATION PROJECT

BRAIN-TRAINER

BRAIN-TRansversal Assessment of Intermodal New Strategies Trainer

FINAL REPORT

PROMOTORS: THIERRY VANELSLANDER (University of Antwerp)
SABINE LIMBOURG (University of Liège)
KOEN VERHOEST (University of Antwerp)
ANGELIQUE LEONARD (University of Liège)

Universiteit Antwerpen LIÈGE université

belspo .be

Published in 2021 by the Belgian Science Policy Office
WTCIII
Simon Bolivarlaan 30 Boulevard Simon Bolivar
B-1000 Brussels
Belgium
Tel: +32 (0)2 238 34 11
http://www.belspo.be
http://www.belspo.be/brain-be

Contact person: Emmanuèle Bourgeois
Tel: +32 (0)2 238 36 90

VANELSLANDER, Thierry. ***Valorisation project BRAIN-TRAINER***. Final Report. Brussels: Belgian Science Policy Office 2021 – 9 p. (BRAIN-be - (Belgian Research Action through Interdisciplinary Networks))

TABLE OF CONTENTS

1. SUMMARY

This valorisation action is directly linked to the BRAIN-TRAINS Belspo project, started in 2013, and successfully finished in 2018. Transport is critical for Europe's economic competitiveness and commercial exchange. The Common Transport Policy, set out in the European Commission's White Papers on Transport, with the last version dating back only to 2011, establishes ambitious objectives, seeking to achieve an efficient and sustainable balance between the various transport modes, to the benefit of commercial transport users and society at large. In contrast to this policy objective, the dominant freight transport mode by far is road transport, with a market share of 71.7% in Europe in 2015) (as compared to 73.7% in 2000), and 71.2% in Belgium (as compared to 77.4% in 2000). Even though there is an improvement to be observed in Belgium, there is still ample spare capacity for the so-called alternative transport modes, being rail, inland navigation and pipelines as far as freight is concerned. Effectively integrating the alternative modes of transport into today's highly international logistics supply chains will be key to reaching a better balance between the modes. Such intermodality requires that the different modes (rail, inland navigation, pipelines, road and maritime transport) be easily inter-operable, physically in the first place. It is important that the BRAIN-TRAINS recommendations get actually picked up by the sector and policymakers, and that both use the conceptual instruments made available by BRAIN-TRAINS to support their decisions, as such instruments till today were largely absent to them. To that purpose, the BRAIN-TRAINS conceptual instruments needed to be transformed into user-friendly interfaces. The output is useful not only in a Belgian context, but has scientific merits which are also applicable in other contexts, both as to the methods and techniques developed, as to the types of scenario applications made. The lessons learned and methods developed can for instance be applied also to measure economic and environmental impact for other economic activity sectors, to optimize regulatory setups, and to create a suitable government interaction and co-ordination framework. Therefore, the impact of the BRAIN-TRAINER Action may far exceed the mere field of rail freight intermodality.

2. INITIAL OBJECTIVES AND VALORISATION FOCUS

It is important that the BRAIN-TRAINS recommendations get actually picked up by the sector and policymakers, and that both use the conceptual instruments made available by BRAIN-TRAINS to support their decisions, as such instruments till today were largely absent to them. To that purpose, the BRAIN-TRAINS conceptual instruments need to be transformed into user-friendly interfaces. The way that should be done, was determined in consultation with academics, sector and policymakers, through a series of workshops. The workshops had a threefold function:

- Create further in-depth awareness of the need to implement the BRAIN-TRAINS conclusions and recommendations by sector operators and policymakers.
- Determine the nature of user-friendly spin-off interfaces from the conceptual BRAIN-TRAINS instruments, so that these could be developed within this valorisation action, eventually with the help (practical or financial) of non-BRAIN-TRAINS sector and policy stakeholders.
- Provide input to a research agenda for items that would require further research in a later stage.

To maximize impact, the workshops were combined with other events where a substantial number of academics, sector and/or policymakers from the rail freight field are present, also so as to minimize

budget needs for the Action. A total of minimum 6 workshops was aimed at, globally spread. In each of the workshops, 20 participants were expected. That is a good number, sufficiently large so as to cover various points of view and disciplines, but also not too large, so as not to prevent stakeholders from participating in the discussion.

The interfaces to be developed were furthermore also to be presented and demonstrated at various public events, again globally spread. It was observed that there are quite some fora where above-mentioned issues are being discussed, but it turns out that instruments are lacking to substantiate discussions, and that therefore no firm conclusions can be taken, and discussions turn in circles.

3. OVERVIEW EXTERNAL COLLABORATION(S)

Active support has been found among many external stakeholders. Actually, already towards the end of the BRAIN-TRAINS project, many of them had voluntarily contacted the consortium so as to get follow-up to the project and see the recommendations and conceptual instruments translated into strategies and policies, supported by calculation interfaces. The list of involved external stakeholders is as follows:

- Lineas
- Port of Antwerp
- North Sea Port
- Port of Zeebruges
- Central Economic Council (CRB-CCE)
- FPS (FOD/SPF) Mobility
- National Bank of Belgium
- Belgian Federal Planning Office
- Flemish Institute for Logistics (VIL)
- Logistics in Wallonia
- Combinant
- CMA-CGM
- North Sea – Mediterranean Rail Corridor
- Union Internationale des Chemins de Fer (UIC)
- World Conference on Transportation Research (WCTR)
- European Transport Conference (ETC)
- University of Lyon

For the workshops and events, attachment was sought to existing fora, so as to avoid a further multiplication of workshops or events, but support existing ones with solid contents and a clear target. Due to the COVID pandemic, a number of planned events got cancelled. The ‘input’ workshops (WP1) to which adherence was found, are:

- A half-day workshop during the Antwerp Rail School 2019 (11-15 March 2019, University of Antwerp) – target audience: locally active sector players and policymakers.
- An invited session during the World Conference on Transport Research 2019 (26-31 May 2019, Mumbai) –audience: international academics, sector players and policymakers joining the event.
- An invited session during the European Transport Conference 2019 (9-11 October 2019, Dublin) –audience: international academics, sector players and policymakers joining the event.

As ‘output’ presentation workshops (WP3), due to COVID, main focus was on the working groups and steering committee of the Belgian Rail Freight Forum, with various sessions held as of summer 2020. Participants involve:

4. GENERATED PRODUCTS AND IMPLEMENTED APPROACHES

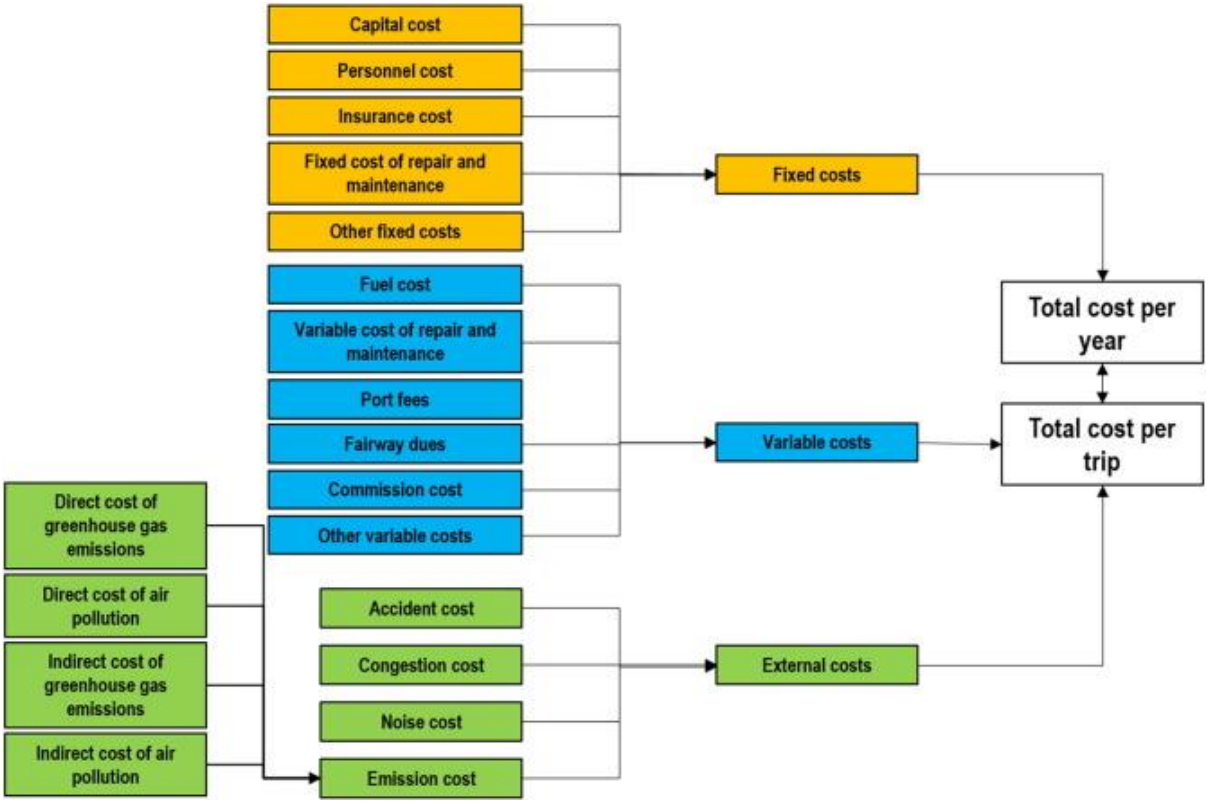
The main quantification track involved simulating the optimal setup of national and international intermodal rail freight corridors, taking into account government roles and incentives. Use was made in that analysis of cost functions that deal simultaneously with the modes of transport as such, but also with transfer points. As part of the analysis, cost differences between the different intermodal solutions and also a comparison with road-only solutions are calculated.

BRAIN-TRAINER developed a new cost calculation model by vessel type, taking into account internal fixed and variable out-of-pocket costs, from the ship owner's perspective, as well as external cost elements of the various land transport modes.

The new cost calculation model proposed in this paper is to serve as an application calculating company-specific costs, while taking average values and estimations into account, for a benchmark of own costs with those for the same or similar vehicle and operations types in the sector. The model can be utilized as an instrument for applications such as:

- Cost calculations for a certain trip and comparing these with a benchmark which can be derived. Changing from one sub-market to another (from transporting coal to containers for example).
- Changing freight contract (from voyage charter to time charter for example).
- Making investment analyses for installing a new engine or retrofitting investment.

The figure below presents the structure of the model which forms the basis for the cost calculation instrument. The model considers internal fixed and variable cost components, as well as external cost elements. Fixed cost elements include capital, labor, and insurance costs, as well as the fixed share of repair and maintenance costs, port fees calculated on an annual basis, and other fixed cost components. Variable cost elements comprise fuel costs and variable costs of repair and maintenance, as well as port fees, fairway dues, and commissions and other variable costs per specific trip. Total annual costs and the cost per individual trip can be calculated by taking both fixed and variable components into account. Since freight rates between given origin and destination points are usually negotiated per ton or TEU transported, the model also provides information on the cost of transporting one ton or TEU on a certain voyage. This figure is finally compared to the actual freight rate, to show the profitability of a trip.



Soon, this instrument will also be available as a web tool.

5. IMPACT AND ADDED VALUE OF THE VALORISATION ACTION

The results of the BRAIN-TRAINS project have been disseminated through their presentation in several scientific conferences of operations research and transport. Results of the project are also used for academic purposes such as presentations during courses such as the Antwerp Rail School edition 2015 and 2017. Results have been valorized through their publication in scientific journals and proceedings of conferences. Results are also publicly published on the website (http://www.brain-trains.be). However, it was key that the BRAIN-TRAINS results got transformed in a user-friendly interface, which gets disseminated, as the BRAIN-TRAINS valorisation track brought to light a high need for that.

The five thematic BRAIN-TRAINS tracks compose a truly interdisciplinary approach, with interlinkages and mutual inputs, and with feedback scenario loops among them. This interdisciplinary character was also applied during the BRAIN-TRAINER Action. This provides governments realistic approaches to future developments. The output is useful not only in a Belgian context, but has scientific merits which are also applicable in other contexts, both as to the methods and techniques developed, as to the types of scenario applications made. The lessons learned and methods developed can for instance be applied also to measure economic and environmental impact for other economic activity sectors, to optimize regulatory setups, and to create a suitable government interaction and co-ordination framework. Therefore, the impact of the BRAIN-TRAINER Action may far exceed the mere field of rail freight intermodality.

The Action first of all set up a number of workshops (WP1), attached to other, national and international events. As also indicated, those workshops had a triple function (further awareness creation, sketching out the user-friendly interface needed for each conceptual BRAIN-TRAINS instrument, and feeding a research agenda).

After that, the interface development (WP2) will start for the track identified as most relevant. That decision depended on the outcomes of the preceding workshops, and the nature of the interface that seemed most desirable and feasible.

The final stage was a dissemination (WP3) of the interface at another series of events. Attachment was sought to a number of local events and workshops in Belgium for having the interfaces disseminated widely also among the Belgian community of sector operators and policymakers, among others with the stakeholders mentioned above for the additional workshops.

6. MEASURES TO MAINTAIN THE COLLABORATION(S)

BRAIN-TRAINS has delivered new and much-wanted results, also by the sector and by policymakers. The reactions from that side to the BRAIN-TRAINS achievements have been very positive, encouraging, and especially longing for a continuation and a translation of the findings and instruments into actual strategies and policies. They explicitly asked the BRAIN-TRAINS consortium for support in this, given the multitude of useful results achieved.

The above external stakeholders are long-standing contacts and partners from consortium members. BRAIN-TRAINS and BRAIN-TRAINER gave a further impulse to these strong ties. The collaboration may lead to the further joint involvement in research projects or other forms of collaboration, for instance in training.

The most important achievement of the BRAIN-TRAINER Action is that the recommendations of BRAIN-TRAINS got translated into lasting and sustainable strategies and policies, among operators and policymakers. To that purpose also, the developed interfaces should be able to act as self-standing and neutral instruments, that can be used by any interested party, also after the lifetime of this project. To that purpose, the BRAIN-TRAINER workshops were also used to search for active involvement by stakeholders in the interface development and especially in their usage after the BRAIN-TRAINER action has finished. Given the interests expressed already, doing so should raise no problems.