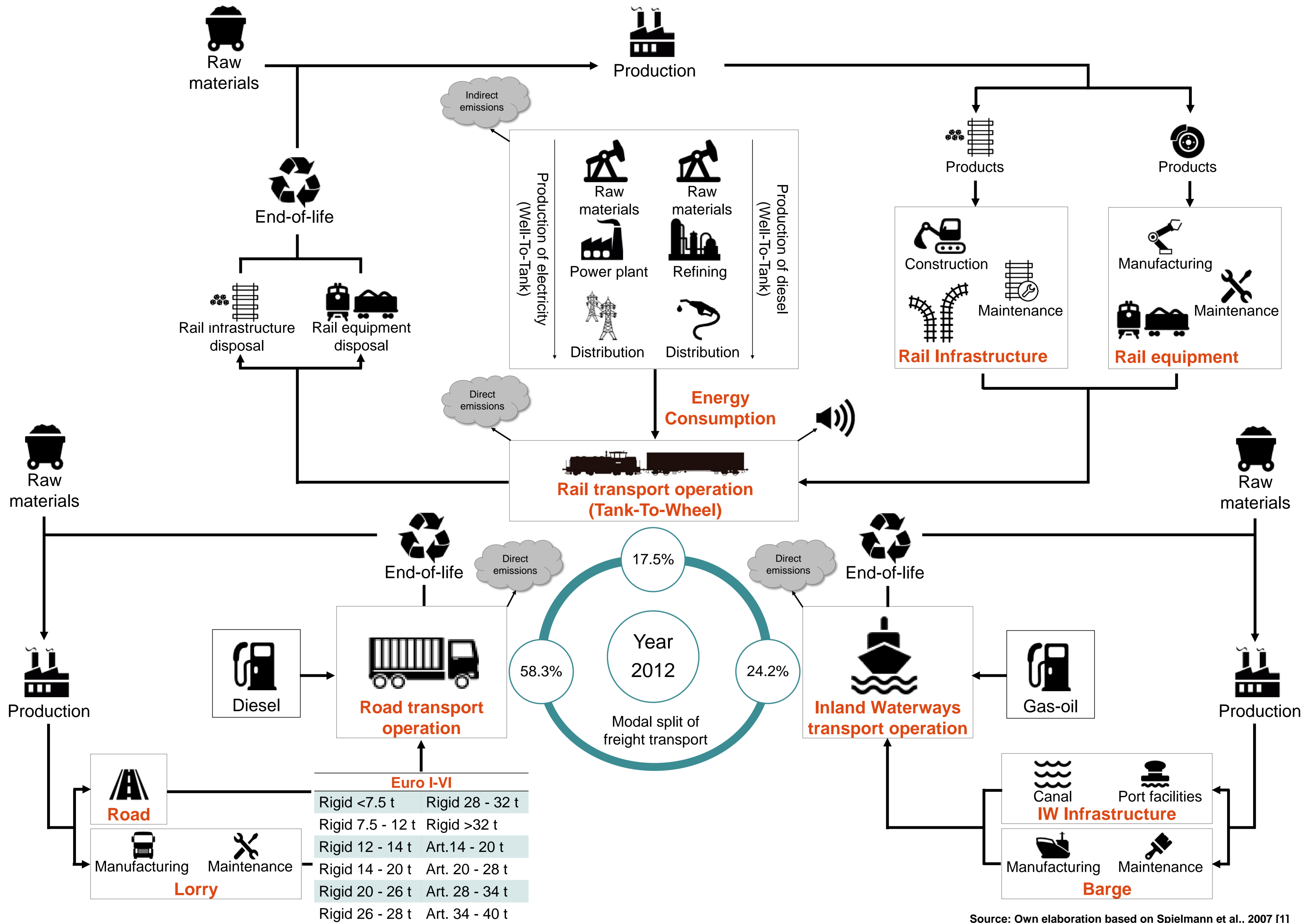


Introduction

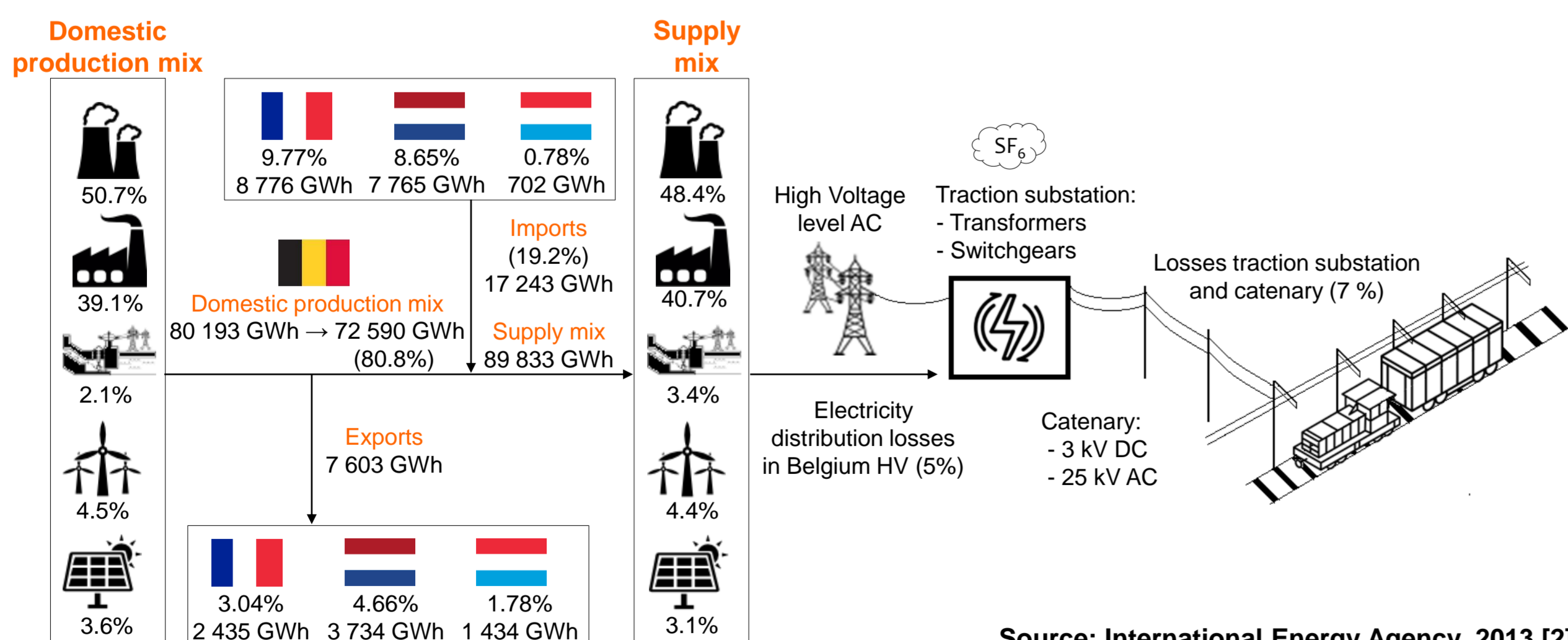
BRAIN-TRAINS is a project that deals with the **possible development of rail freight intermodality in Belgium** from an interdisciplinary perspective: macroeconomic impact and market regulation, effective governance, optimal corridor and hub development and **sustainability impact of intermodality**. Life Cycle Assessment methodology has been used to analyse the sustainability impact of rail freight intermodality for 3 divergent Belgian scenarios by 2030.

Life Cycle Assessment of the intermodal freight system in Belgium

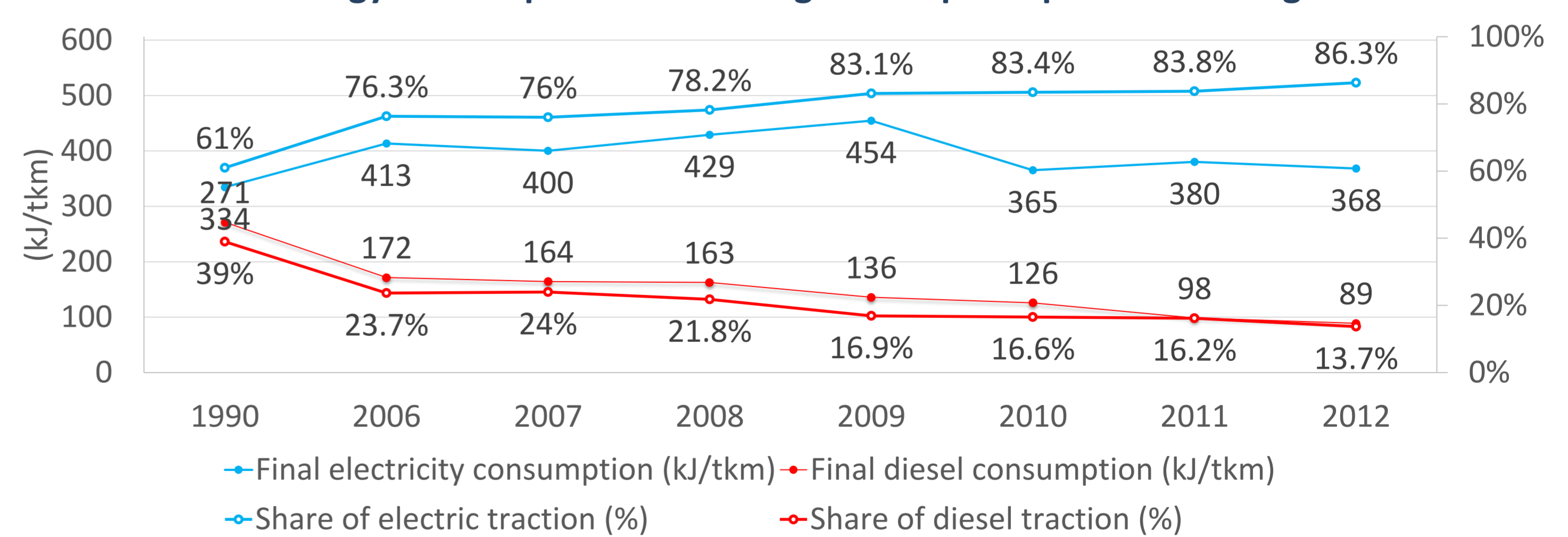


Rail freight transport

- For diesel traction, main emissions are produced at the vehicle operation activity.
- For electric traction, main emissions are produced during the electricity production and they have been determined using the electricity supply mix of Belgium per year.
- Determination of:
 - exhaust emissions from diesel locomotives,
 - direct emissions to soil from the abrasion of brakes, wheels and rails,
 - SF₆ emitted during conversion of electricity at traction substations.



Final energy consumption for rail freight transport operation in Belgium



- The energy consumption of electric and diesel trains has been determined separately, including empty returns, shunting activity, as well as electrical losses.
- To move 1 tkm of freight on rail in Belgium in 2012, both consumptions were needed:
 - 368 kJ of electricity
 - 89 kJ of diesel (including 29 kJ of shunting activity)

Conclusions and perspectives

- A detailed study of the rail freight transport in Belgium has been conducted, collecting data directly from Infrabel (the Belgian railway infrastructure manager) and B-Logistics, which is the main rail freight operator in Belgium.
- Comparison of the environmental impacts related to rail freight transport, inland waterways transport and road transport will be performed.

- Obtaining of a decision support tool to the development of intermodal transport in Belgium, including environmental aspects and allowing the reduction of emissions.
- Development of a transport database specific to Belgium to allow a better modelling of the obtained environmental impacts and to improve the specificity of the results.