Environmental impact assessment of rail freight intermodality

Angel L. Merchan(1), Sandra Belboom(1) and Angélique Léonard (1)

(1) Department of Chemical Engineering – Products, Environment, Processes (PEPs) - University of Liège, Allée de la Chimie 3 Bat B4a (Sart-Tilman) 4000 Liège, Belgium. a.merchan@ulg.ac.be

Introduction

The project BRAIN-TRAINS deals with rail freight intermodality from an interdisciplinary perspective (macro-economic, logistic, environmental and legislative), determining for several Belgian scenarios the environmental impact using the Life Cycle Assessment methodology.

« To develop a blueprint establishing the detailed criteria and conditions for developing an innovative intermodal network in and through Belgium as part of the Trans-European Transport Network (TEN-T) »

Rail freight transport

Environmental impact studies on intermodality transport show that rail freight transport is the land-based transport that has a higher environmental performance compared to intermodal road-rail and all-road transport [2], especially when electrified railway is used [3].

Belgium meets the conditions for improving the development of the rail freight transport, such as presenting a high density of rail network and having the 2nd freight traffic EU seaport (Port of Antwerp) [1].

Life Cycle Assessment

More reliable sources of information will be identified and we will proceed to collect information through interviews with transport sector members and freight operators.

LCA studies demonstrate that all life-cycle phases of transport and not only the modelling of energy consumption and direct emissions are determinant for the environmental impact.

The rail freight transport system is divided as follows:

• Life Cycle Inventory for rail operation: the change of diesel engines for electric power is one of the key factors for sustainable rail transport.

• Life Cycle Inventory for rail equipment: locomotives and goods transport wagons.

• Life Cycle Inventory for rail infrastructure: allocation between passenger and goods transportation.

Conclusions and perspectives

1. It is required to improve the current methodology with the development and harmonization of new impact categories relative to accidents, noise impact and land use planning.

2. A study of external costs will be considered to complete the environmental impact assessment.

3. The results of this study could help in making optimised policy decisions relative to the development of intermodal transportation in Belgium including environmental aspects and allowing the pollution reduction.

4. A transportation database specific to Belgium will be developed. The results also improve the accuracy of current transport databases.