Internship: Evaluation of life cycle performance of rail transport

The International Energy Agency (IEA) is an intergovernmental organisation committed to advancing security of energy supply, economic growth and environmental sustainability through energy policy co-operation. The IEA operates as an autonomous body within the framework of the Organisation for Economic Co-operation and Development (OECD). Both the OECD and the IEA seek opportunities to work with an increasing number of non-members of growing importance to the world economy.

The IEA is looking for one intern to work on analyses of life cycle performance of rail transport compared to alternative transport modes in its Paris office.

Internship description

The International Energy Agency (IEA) and the International Union of Railways (UIC) work together on a new publication that aims at analysing the current state of railway and energy use, as well as its future prospects to support the transition to a cleaner energy and transport system. This publication builds on data published in previous editions of the IEA UIC Railway Handbook, yet will have a more analytical character with forward looking analysis similar to the Global EV Outlook series and The Future of Trucks report.

This report will also take into account the emissions from rail on a life-cycle basis. This accounts not only for well-to-wheel emissions, but also for the environmental costs of building railway infrastructure, and thus goes beyond the environmental footprint of only operational energy demand of railways. This analysis will primarily base on results available in existing reviews from literature. The section should be drawing from analyses that looked at specific examples and provided a general assessment for:

- High-speed-rail (HSR) and aviation (i.e. short-haul flights) and, if possible, HSR and cars
- Metros and cars and, if possible, also buses/BRTs
- Freight rail and road freight and, if possible, also shipping

The analysis aims at providing quantitative indications on the environmental payback period for rail services compared to alternative modes which have less infrastructure requirements but higher specific energy demand, taking into account for instance:

- Network utilization rates which enable lower footprint than alternative transport modes
- The need for tunnels and bridges, which influences environmental footprint through higher material requirements
- The influence of different grid carbon intensity across regions on life cycle performance

The intern will conduct this analysis and draft report sections under supervision of IEA transport analysts.

Requirements & Information

Experience with energy and material analysis, for instance material flow analysis, lifecycle assessment, or environmental input output analysis, ideally in relation to transport and especially railways is essential. Demonstrated capacity to work on large spreadsheets and databases is a requirement. Modelling experience is desirable. Very good knowledge of English is a strict requirement.

Interns have to be enrolled as students throughout the duration of the internship. Contribution to living expenses of approximately EUR 700 per month can be paid for a period up to 6 months. Application is open as of 15/08/18. Internship start is from 03/09/18 or later.

Contact: Till.Bunsen@iea.org