Industry 4.0 and the effects on transport logistics

Industrie 4.0 und ihre Auswirkungen auf die Transportlogistik

Funding: National (Austria)
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Background & policy context:
Industry 4.0 refers to the digitisation of industrial production, which will bring about far-reaching changes in the field of transport and logistics.
It also describes a new way of organising production over the entire life cycle of a product. A key element in this respect is the intelligent integration of:
- Products
- Machines
- objects and
- ICT and humans in the process of production.
The resulting digitalisation offers a variety of opportunities for increasing efficiency in production: Not only can production times and service cycles be optimised, but also cost-efficient production of a small number of individualised products becomes feasible.
This radical realignment of production is therefore often considered the fourth stage of industrial revolution.

Objectives:
The R&D service investigates the effects of Industry 4.0 on the transport and logistics sector both from a practical and a scientifically based perspective, taking special consideration of Austria’s external relationships. The investigation is intended to supply a suitable basis on which to elaborate different handling and strategy recommendations for RTI and transport policy.
Because of the strong interconnectedness of production and logistics services, drastic changes in the field of logistics are to be expected. Thus, the objective of the analysis was to evaluate the opportunities as well as the risks that arise from the above-mentioned developments.

Methodology:
The impact was analysed both on the demand and on the supply side of logistics on the macroeconomic, industry-specific as well as firm-specific level with a focus on cross-border transactions. Expert interviews primarily dealt with qualitative aspects of future demand (by industrial firms) for, and the supply (by transport and logistics service providers) of, logistics. Special attention was paid to:
- new business opportunities
- last-mile solutions
- city logistics and the organisation of supply chains
The results from this first step were crosschecked by carrying out a standardised survey of logistics and transport firms for industrywide validity. In addition, four case studies on industrial and transport firms were conducted for a deeper investigation of the industry 4.0 -impact on logistics and transport.
On the demand side, scenarios about the digitalisation of the German industry were developed, which served as a basis for assessing the impact on production of individual industries in Austria and in its key trading partners (in particular Central Eastern European countries). These effects on production were
used in a subsequent step to quantitatively estimate the resulting transport volumes.

**Parent Programmes:**
- MOTF - Mobility of the Future

**Institute type:** Public institution

**Institute name:** FFG - Die Österreichische Forschungsförderungsgesellschaft

**Funding type:** Public (national/regional/local)

**Other funding sources:** bmvit - Bundesministerium für Verkehr, Innovation und Technologie

**Partners:**
- WU-Wien - Institut für Transportwirtschaft und Logistik
- WU Wien – Institut für Betriebswirtschaftslehre des Außenhandels

**Organisation:** Oesterreichische Kontrollbank AG

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**Organisation Website:** bmvit: future mobility

**Key Results:**

Industry 4.0 is definitely having an impact on industry, but also on the transport and logistics sector in Central and Eastern European economies. This offers a range of opportunities (Austria as a Central European logistics hub, efficiently and ecologically used means of transport etc.) but also bears risks (digitalisation might lead to rationalisation, increase of risk of job loss for low-skilled workers etc.).

The framework of this study, addressing the effects of Industry 4.0 at a macroeconomic, industry-specific as well as firm-specific level, allows to assess these risks and opportunities in a transparent way and therefore provides a Sound basis for the formulation of differentiated recommendations for economic and Transport policies, supplemented by considerations about social, educational, gender and locational policies.

Initial interim results highlight the importance of advancing the integration of the railway system into a digitised and/or automated future in the transport of goods and in transport logistics.

**Documents:**
- Final report (German)

**STRIA Roadmaps:** Network and traffic management systems

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Societal/Economic issues, Environmental/Emissions aspects, Other

**Geo-spatial type:** Urban