

## Q4 - Quattromodal nodes: research and practice relevance for freight transport

The linking of four modes of transport (water, rail, road and air) to multimodal transport chains is currently a largely unknown topic. However, the implementation of quattromodality in freight transport bears the potential of economical, environmental and social impacts due to enhanced transport options. Research- and practice-relevance of quattromodal nodes are analyzed in a probe.

Transport policy papers frequently use the term "multi-modality" in connection with the choice of modes of transport, and declare a transport organization, which is an intermodal transport organization a strategic goal. Up to now, projects have mainly focused on bimodal, partly on trimodal, but hardly on quattromodal transports. Airfreight in particular is often neglected in the context of multimodal junctions. In terms of the economic importance for global logistics, airfreight is, however, an important component, although it is characterized by comparatively low transport volumes. Therefore the question arises,

- (1) how a freight transport system changes when a quattromodal traffic point is created by the integration of the "air" carrier; and
- (2) what impact can be expected at the macroscopic level (business location Austria) for the respective actors and areas involved; and
- (3) which demand impulses or synergies (for example, shifting to environmentally-friendly modes of transport) the concept provides, for example, for waterways or railways.

Currently, there are hardly any quattromodal traffic points in freight transport, which are already optimally networked and / or organizationally interlinked.

While trimodal junctions (for example, ports) have a certain spatial proximity to agglomeration areas, airports are mainly located outside of sensitive areas due to their land use and noise emissions. Within the framework of this probe it is examined,

- How existing trimodal junctions and airports would need to be integrated to function as a quattromodal node (definition of a node over a region),
- How the currently mutually exclusive nodes could benefit (e.g. relocation of lorry services from urban regions to the airport) and
- What effects could be expected from the economic, social, ecological, and thus the economical point as a whole (qualities of quattromodality from a geographical, political and economical perspective)?

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