Item 6 (a)

Emerging issues in freight transport and logistics / Issues, trends and performance in the industry

Geospatial analysis: Specific Corridor analysis

ECE/TRANS/WP.24/2022/8

Goals for Geospatial intermodal analysis

- Where can goods be shifted from road to rail (or IWW) for the greatest economic/environmental/social/logistical benefit?

What is convenient: shift is to result in a reasonable number of trains to be operated in both directions (incentive to create a service, availability of service to meet a demand)

Case Study: Lithuania>Germany via Poland

- Data used:
- UNECE 2015 E-Road census.
- UNECE 2015 E-Rail Census.
- Eurostat: **road_go_ia_rc** table (2020)

Numbers:

DE>LT	**932 kt**
LT>DE	**817 kt**

For reference:

LT>PL	*2935 kt*
PL>DE	*39438 kt*
DE>PL	*31090 kt*
PL>LT	*3707 kt*

Case Study: Lithuania>Germany via Poland

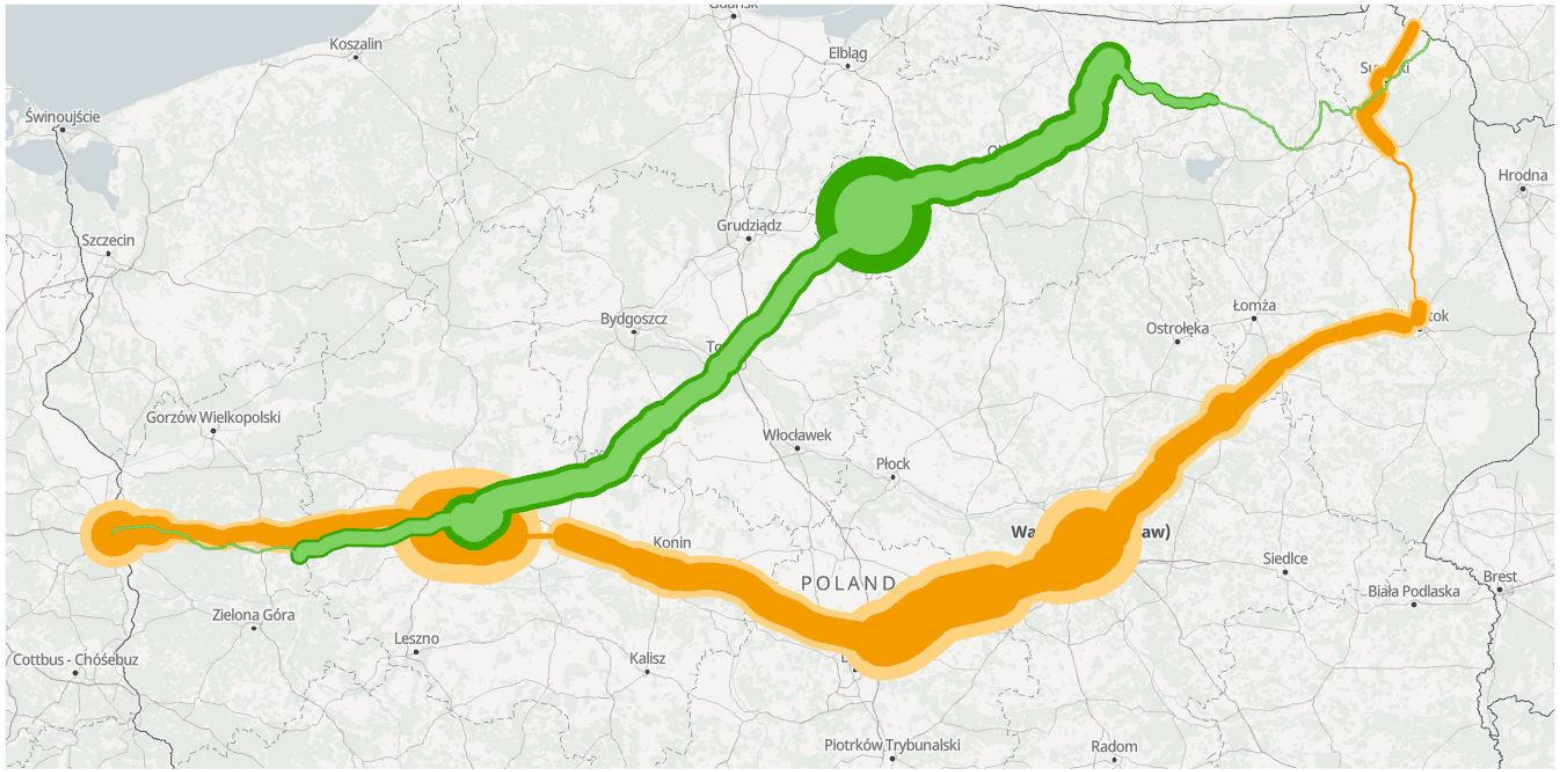
- Assumptions:
- One lorry carries one TEU
- One goods train carries 60 TEU
- Each TEU carries 7 tonnes (33% capacity)
- (Data for countries involved suggest 12-16 tonnes per journey).

Therefore:

- DE>LT 365 lorries a day
- LT>DE 320 lorries a day

- Leads to:
- 4 goods trains/day LT<>DE shifts 70-75% of LT<>DE traffic (613 kt)
- Current LT<>DE train quantities are very low, 12kt a year.
- This 70-75% reduction in LT>DE traffic represents 3-5% of heavy traffic on some sections of Polish E-Roads.

Example of geospatial analysis (map)



Rail corridor (before shift) Freight (trains/year)	Rail corridor (after shift) Freight (trains/year)	Road network (before shift) AADT (heavy)	Road network (after shift) AADT (heavy)
1	1,000	1,000	1,000
10	5,000	2,500	2,500
100	10,000	5,000	5,000
1,000	50,000	7,500	7,500
10,000	100,000	10,000	10,000

Note: the symbol width for the “after shift” layers has been increased by x1.5 to better visualize the decrease/increase

Way Forward

- Combining data across modes in a geospatial format can reveal modal shifting opportunities for specific corridors and across countries. Interest in such analysis from countries/organisations?
- We can perform such analysis upon availability of:
  - Census-like traffic data, OR
  - Rail and road origin-destination tonnage figures,
  - (Or something else?)
  - Further visualization ideas can be explored.