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Analysis of major selected routes within the SPECA region using the UNESCAP Time/Cost-Distance Methodology (UNESCAP/ SPECA member countries)

(Item 5.3 of the draft agenda)

1. With the rapid development of transport infrastructure, the UNESCAP Time/Cost-Distance methodology has emerged as a valuable tool to measure the performance of transport routes and corridors. It captures and analyzes costs and times (or durations) associated with transport by any mode of transport (road, rail, inland waterway, sea, multimodal) and enables policy makers to take periodic snapshots of a particular corridor and assist transport operators and other stakeholders to select the most efficient transport route.

2. Furthermore, the UNESCAP Time/Cost-Distance methodology may be used to discuss the value of time in freight transport operations by analyzing transit times by mode and route. Any kind of intermediate stops, such as points of transshipment, at border crossings or between modes, are illustrated along the cost/time curves as vertical steps. The height of the step is proportionate to the amount of the costs and/or to the duration of the stop (e.g. waiting period at border crossings). Vertical steps along the curves can be differentiated to reflect causes of charges or durations, such as document fees, transit charges and cargo clearance costs. In this regard, bottlenecks along the route are made visible and their independent analysis or comparative analysis as part of the overall route becomes available to the user.

3. The UNESCAP Time/Cost-Distance methodology was substantially revised in 2007 to increase the ease of use. Besides the development of a user manual and the translation of the material into French, Russian and Arabic, the data entry template has been improved and a number of additional analytical functional were added. The revision enables the decision-maker to immediately review the above mentioned analyses on additional worksheets.

4. In sum and under the provision of feedback from the countries applying the methodology, the “UNESCAP Time/Cost – Distance Methodology” enables policy makers to:

a. compare - over a period of time - the changes of cost and/or time required for transportation on a certain route (e.g. by comparing the time/cost spent at stops);

b. compare and evaluate competing modes of transport operating on the same route (e.g. by assessing the average speed);

c. compare alternative transit routes (e.g. by comparing the efficiency of activities at different stops).

5. Under the SPECA programme, data for the UNESCAP Time/Cost-Distance Methodology has been supplied for Kyrgyzstan and by USAID for routes in SPECA countries. The Research Institute of Transport and Communications (NIITK) in Almaty has also applied the model for studies under the projects "Identification and Analysis of Routes in the TRACECA Transport Corridor" and "Routes from the SPECA Countries to the Port of Bandar Abbas (Islamic Republic of Iran)". For example, Kazakhstan has provided detailed time and cost data for rail transport from Urumqi (China) to Seddin (Germany). The following paragraphs discuss the application of the UNESCAP Time/Cost-Distance Methodology for the analysis of the route Urumqi to Seddin.[1]

6. As the analysis (see Annex 1) of time along the first part of the route (from Urumqi to Krasnoe, 5,208 km)) shows, a major bottleneck is the border crossing between China (Alashankou) and Kazakhstan (Druschba). The train spends approximately 80 hrs at Alashankou and another app. 14 hrs at Druschba. In addition, the border crossing between Kazakhstan (Petropavlovsk) and the Russian Federation (Kurgan) is time-intensive. These waiting times reduce the average speed on these sections of the route and overall the average speed of 47.56 km/hr between stops is reduced to 36.30 km/hr as overall average for this part of the route, which is a reduction of 24%. The analysis of the second part of the route from Krasnoe (Russian Federation) to Seddin (Germany) reveals significant bottlenecks at the intermediate stops Malascheviche (33 hrs) and Schepin (6 hrs), both in Poland. Again, all the waiting times significantly reduce the average speed on the respective sections of the route and overall the average speed of 43.73 km/hr between stops is reduced to 24.85 km/hr as overall average for this part of the route, which is a reduction of 44%. Considering the whole route from Urumqi to Seddin the average speed en route of 45.65 km/hr is reduced to 30.58 km/hr when considering the time spent at any kind of stop. That reflects a reduction of speed by one third.

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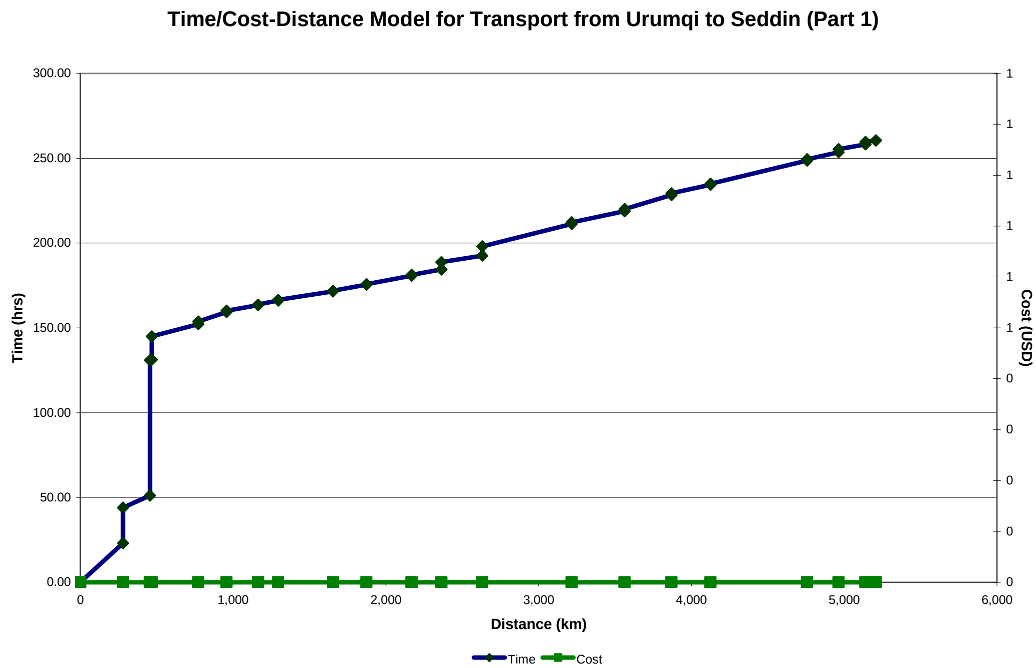
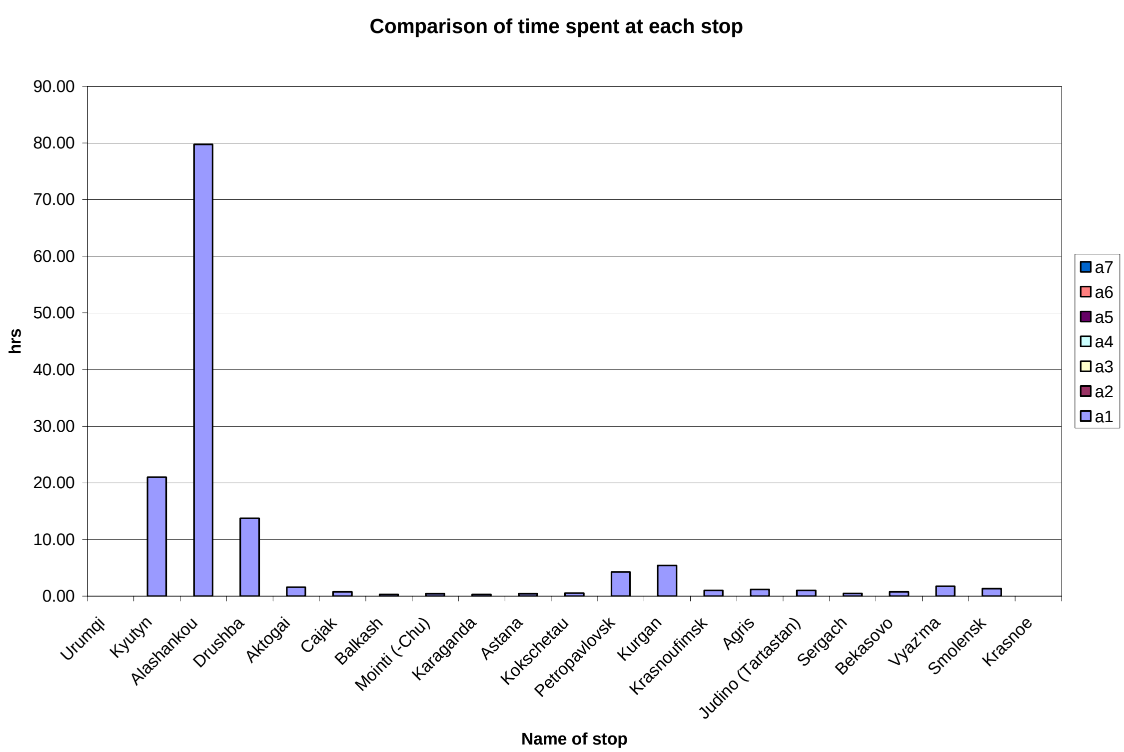
[1] Due to the nature of the information available it is not possible to analyze activities at individual stops and it is also not possible to analyze costs.

Annex 1 to Background Paper SPECA/PWG-TBC Agenda Item 5.3

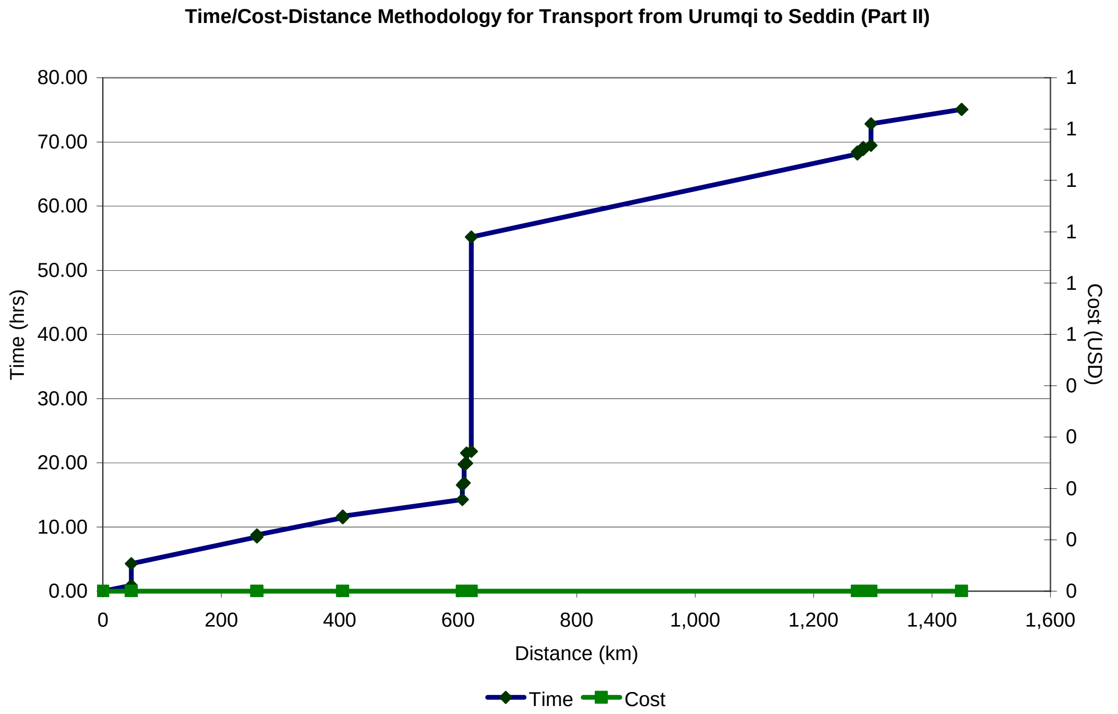
Figure 1: Urumqi (China) to Seddin (Germany)* - Part I

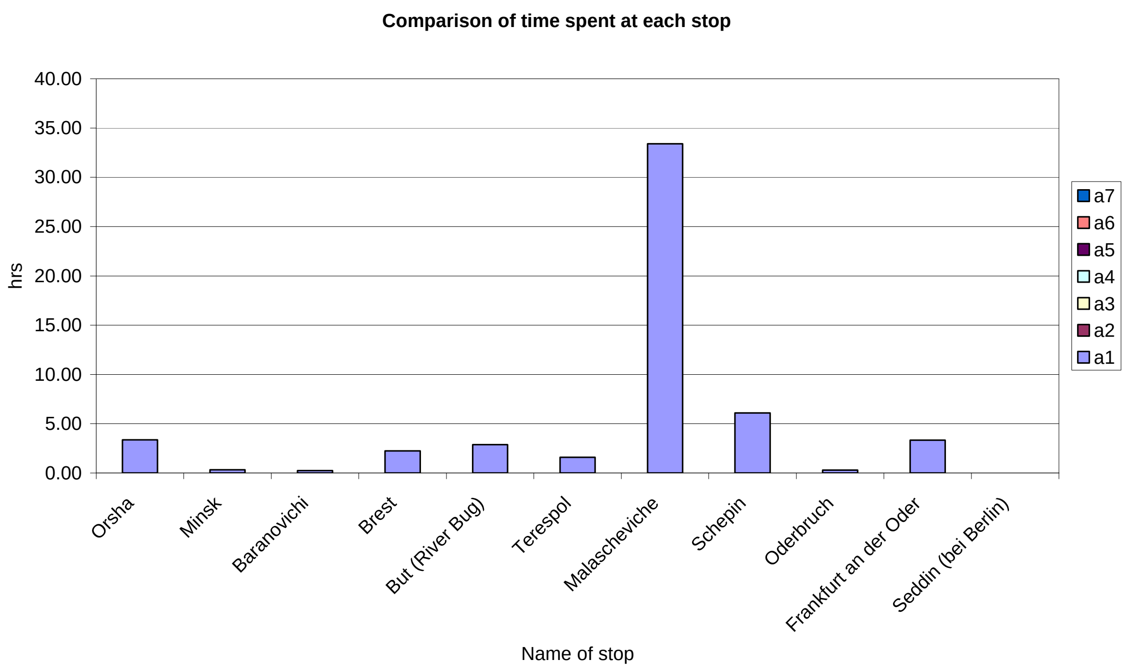




* Please note that there was no information on transport costs provided.

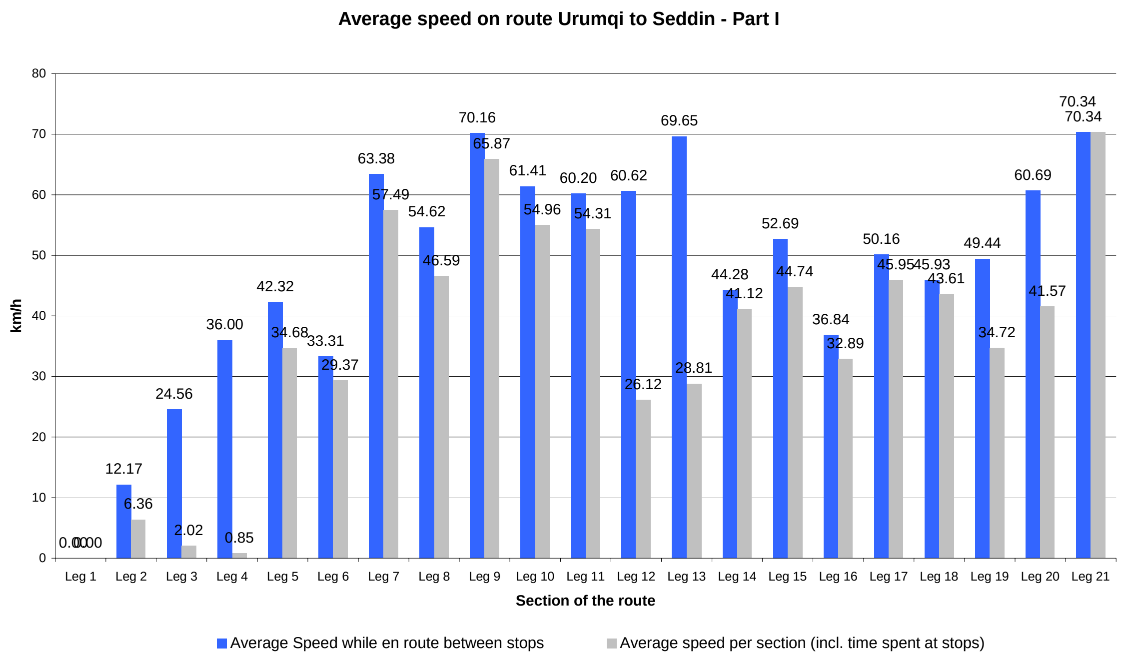
Figure 2: Urumqi (China) to Seddin (Germany)* - Part II





* Please note that there was no information on transport costs provided.

Figure 3: Average Speed on Route Urumqi (China) to Seddin (Germany) - Part I



Average Speed on Route Urumqi (China) to Seddin (Germany) - Part II