



Economic Commission for Europe**Inland Transport Committee****Working Party on Transport Trends and Economics****Group of Experts on Benchmarking Transport Infrastructure Construction Costs****Fifth session**

Geneva, 30 and 31 January 2018

Item 3 of the provisional agenda

Transport Infrastructure Construction costs: Presentations of terminologies used**Terminology on Benchmarking Intermodal Terminals
Infrastructure Construction Costs****Note by the secretariat****I. Mandate**

1. In accordance with its Terms of Reference, the Group of Experts is expected to complete its work within two years (2016-2018) and to submit a full report of its accomplishments (ECE/TRANS/WP.5/GE.4/2016/1). The Group of Experts shall assist in:

(a) Identify models, methodologies, tools and good practices for evaluating, calculating and analysing inland transport infrastructure construction costs;

(b) Identify and list terminologies used in UNECE region for construction costs of inland transport infrastructure, if possible, create a glossary of agreed terminologies and related explanations;

(c) Collect and analyse data in order to prepare a benchmarking of transport infrastructure construction costs along the ECE region for each inland transport mode - road, rail, inland waterways - including intermodal terminals, freight/logistics centres and ports. Analyse and describe the conditions / parameters under which these costs have been calculated on.

2. In carrying out its main tasks, the Group of Experts will, among others, also identify suitable methodological approaches, models and tools for gathering and disseminating information, i.e. conducting studies, distributing questionnaires, using existing studies and national strategies, existing best practices in calculating transport infrastructure construction costs, among others.

II. Terminology

3. Slope: The incline angle of a roof surface, given as a ratio of the rise to the run. Should be less than 2 per cent.
4. Internal Road: Roads that are completely inside the Logistic / Intermodal Platform. Should support mega trucks operations (two lines in each direction, wide enough) and mega trucks weight (about 5 Tn/sq m).
5. Plot: any measured piece or parcel of land, prepared for the installation of logistic activities. The entrance should be free of obstacles, to allow truck operations.
6. Installations: any construction needed to guarantee the supplying to the plot.
7. Telecommunication installation: a kind of telecom technology to guarantee the voice and wide band connection to any plot. Should be done by optical fibre. In addition, it should include an installation to guarantee the supply to all the designed area by connecting to an external network.
8. Energy installation: electrical installation to guarantee the energy consumption of the plot. Should be designed at least with 50 W/sq m. In addition, it should include an installation to guarantee the supply to all the designed area. It can be done by a new electrical substation or by connecting to an external network.
9. Water Installation: installation to guarantee the water consumption of the plot. In addition, it should include an installation to guarantee the supply to all the designed area. It can be done by a depot or by connecting to an external network.
10. Water treatment installation: installation to guarantee the evacuation of sewage water of the plot. In addition, it should include an installation to guarantee the treatment to all the designed area. It can be done by a own treatment plant or by connecting to an external network.
11. Green areas: free areas inside the logistic/intermodal platform dedicate to gardens. It is mandatory in most of designing regulations.
12. Traffic signalization system: all the installation needed to regulate and control the circulation of vehicles into the designed area.
13. Security system: all the installation needed to guarantee the security into the logistic/intermodal platform. It includes gate control, monitoring, and perimeter security. It should select the best technology in any case.
14. Railway connections: railways in logistics platforms and connection to the airport (with railway or roadway) and port (with railway, roadway or inland waterway).
15. Renewable energy: any kind of energy generation that has zero carbon emissions: solar, wind, etc. At least a 30 per cent of the power consumption of a logistic / intermodal platform should be generated by own systems of renewable energy.
16. Acquisition costs: All costs needed to obtain the terrain needed to develop the logistic platform. Can be obtained by expropriation, buying or leasing.
17. Logistic Platform: Centre in a defined area within which all activities relating to the transport, logistics and distribution of goods, both for national and international transit, are carried out by various operators on a commercial basis.
18. Intermodal terminal: Area prepared for the interchange of goods between two different transport means, mainly trucks and train.

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19. Administrative Costs: Costs incurred in contract management administration overhead expenses.
 20. Project: Document that reflect the construction plan and costs of developing o modifying a logistic area.
 21. Line: Each part of a road wide enough for one vehicle, often marked off by painted lines.
 22. Earthmoving: The needed movement to obtain a terrain with less of 2 per cent of scope.
 23. Conduits: A pipe, tube or similar prepared to be used in water circulation or by electrical or telecommunications installations.
 24. Carrying capacity: The capacity of the land to support weight without deformation.
 25. Pavements: The upper part of a road.
 26. Electricity supply: The installation needed to guarantee the power to be used by any area of the logistic platform.
 27. Dark water treatment plant: The installation needed to treat residual water to be adapted for the waste.
 28. IT: Installation of telecommunications.
 29. Potable water: Water prepared for human consumption.
 30. Fire Prevention: Installation needed to combat or avoid the fire risk.
 31. Access Control: All installation needed to check the access of people or vehicles to a area. Usually ir formed by control cams, barriers, plate readers, etc.
 32. CCTV: System of control by images used to security. Usually is formed by fixed cams, domos, recorders and control room).
 33. Previous jobs: Jobs needed to start the development of a logistic platform (all this costs are determine by unit):
 - (a) Demand study (\$/Unit): Analysis of demand in order to determine if the developing of logistic platforms is needed.
 - (b) Ordination modification (\$/Unit): Jobs needed to modifying the local town planning to allow the development of the logistic platform.
 - (c) Environment impact (\$/Unit): Jobs needed to get the administrative approval related to environment impact.
 - (d) Archaeological requirements (\$/Unit): Jobs needed to get the administrative approval related to archaeological requirements.
 - (e) Other administrative approvals (\$/Unit): Other jobs needed to get the complete administrative approval.
 34. Land acquisition: Expropriation, Purchase or renting the land needed to develop the logistic platform:
 - (a) Land Purchase (\$/m2): Cost (by m2) of land acquisition by purchasing the land. Include the needed documents management.
 - (b) Expropriation (\$/m2): Cost (by m2) of land acquisition by expropriating the land. Include the needed documents management.

- (c) Renting (\$/m²/year): Cost (by m² and by year) of land acquisition by renting the land. Include the needed documents management.
35. Engineering jobs: Engineering jobs related to development works of construction:
- (a) Project (\$/Unit): Writing of the engineering project.
- (b) Construction Permit (\$/Unit): Cost of licences (all taxes paid to start the construction jobs).
- (c) Works Management (\$/Unit): Cost of engineering works during the construction jobs.
36. Land adaptation: Jobs needed to adapt the natural land to the technical requirements of a logistic platform:
- (a) Land clearing (\$/m²): Jobs needed to take out the topsoil. Price by m².
- (b) Earth movement (\$/m³): Soil movements needed to adapt the land to the requirements. Price by m³ of soil moved.
- (c) Gravel Column (\$/m³): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor gravel columns. Price of m³ of gravel injected.
- (d) Concrete Column (\$/m³): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor concrete columns. Price of m³ of concrete injected.
- (e) Drain wick (\$/m²): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor drain geotextile. Price of m² of geotextile injected.
- (f) Preload (\$/m³): Technical to increase the carrying capacity of the land. This technical consists on place lots of soil in the floor and wait for the desired effect. Price of m³ of soil placed.
- (g) Perimeter fence (\$/m): Perimeter fence used to guarantee that the logistic area is a closed area. Price of lineal meter of fence.
37. Internal roads: Internal roads in the logistic area:
- (a) Asphalt Road (\$/m²): m² of asphalt road, including all the sub-layers needed.
- (b) Concrete Road (\$/m²): m² of concrete road, including all the sub-layers needed.
38. Pavements: Internal pavements in the logistic area:
- (a) Pedestrian pavement (\$/m²): m² of pavement adapted to pedestrian. This pavements can't support truck circulation. Price by m² of pavement.
- (b) Plot access pavement (\$/m²): m² of pavement adapted to access to the plots. This pavements should support truck circulation. Price by m² of pavement.
39. Conduits: A pipe, tube or similar prepared to be used in water circulation or for electrical or telecommunications installations:
- (a) Rain water drainage conduit (\$/m): Conduits to guarantee the drainage of rain water. Price by lineal m of conduit.
- (b) Dark water conduit (\$/m): Conduits for dark water. Price by lineal m of conduit.

(c) Potable water conduit (\$/m): Conduits for potable water. Price by lineal m of conduit.

(d) Low-tension line conduit (480 v) (\$/m): Conduits for low-tension electrical line. It does not include the cables. Price by lineal m of conduit.

(e) Medium-voltage line conduit (480 v - 20 kv) (\$/m): Conduits for medium-tension electrical line. It does not include the cables. Price by lineal m of conduit.

(f) High-tension line conduit (>20 kv) (\$/m): Conduits for high-tension electrical line. It does not include the cables. Price by lineal m of conduit.

(g) Telecommunication conduit (\$/m): Conduits for telecommunication lines. It does not include the cables. Price by lineal m of conduit.

(h) Telephony conduit (\$/m): Conduits for telephone lines. It does not include the cables. Price by lineal m of conduit.

(i) CCTV conduit (\$/m): Conduits for CCTV installation. It does not include the cables. Price by lineal m of conduit.

(j) Optical fibre conduit (\$/m): Conduits for Optical Fibre installation. It does not include the cables. Price by lineal m of conduit.

(k) Fire prevention conduit (\$/m): Conduits for Fire Prevention installation. It usually use water from tanks. Price by lineal m of conduit.

40. Cables: Cables installed in the logistic area urbanization:

(a) Low-tension electrical cable (\$/m): Low-tension electrical cable installed in the logistic area. Usually a line need more than 1 cable. Price by lineal m of cable.

(b) Medium-voltage electrical cable (\$/m): Medium-tension electrical cable installed in the logistic area. Usually a line need more than 1 cable. Price by lineal m of cable.

(c) High-tension electrical cable (\$/m): High-tension electrical cable installed in the logistic area. Usually a line need more than 1 cable. Price by lineal m of cable.

(d) Multimode optical fibre (\$/m): Multimode fibre optics cable installed in the logistic area. Usually each cable has more than 1 fibre (typically, 16 or 32). Price by lineal m of cable.

(e) Monomode optical fibre (\$/m): Monomode fibre optics cable installed in the logistic area. Usually each cable has more than 1 fibre (typically, 16 or 32). Price by lineal m of cable.

(f) Telephone cable of pairs (\$/m): Telephone cable of pairs installed in the logistic area. Usually each cable has more than 1 pair (typically, 32). Price by lineal m of cable.

41. Roads installation: Internal roads additional installation:

(a) Road Paint (\$/m²): All the signalling painting in the roads. Price by m² of paint.

(b) Pedestrian cross-roads (\$/m²): Pedestrian cross-roads. Usually are elevated from roads, in order to help the accessibility and the speed control of trucks. Price by m² of pedestrian cross-road.

(c) Sign Posts (\$/unit): All the sign-posts needed in the logistic area to control the internal circulation. Price by sign posts installed.

- (d) Streetlights (\$/unit): All the streetlights installed in the logistic area. Price by streetlights.
42. Potable water supply: All the installation needed to guarantee the supply of potable water:
- (a) Deposit (\$/m³): If needed, deposit of potable water to supply to the area. Prize of m³ of deposit.
- (b) External conduit (\$/m): Connection from the logistic area to external point of connection (given by local water company supplier). Price by lineal m of conduit.
- (c) Connection valve (\$/Unit): Connection valves installed in the logistic area. Price by valve installed.
- (d) Check valve (\$/Unit): Check valves installed in the logistic platform. Price by valve installed.
- (e) Pumping (\$/Unit): If needed, pump system of potable water. Price by system installed.
43. Power supply: All the installation needed to guarantee the supply of electricity:
- (a) Power station transformer (\$/Unit): Power station transformer installed in the logistic area. Price by unit installed.
- (b) Low-tension electrical panel (\$/Unit): Electrical panel installed in the logistic area. Price by unit installed.
- (c) Power sub-station (\$/MW needed): Construction (or payment) of sub-station needed to guarantee the power supply. Prize by MW needed in the logistic area and used in the sub-station.
44. Rain drainage: All the installation needed to guarantee the rain drainage, excluding conduits:
- (a) Pumping (\$/Unit): If needed, pumping system to guarantee the rain drainage. Price by unity installed.
- (b) Oil separators (\$/Unit): Installation of fat separators to avoid that truck fat go to rain drainage. Price by unity.
- (c) Storm tank (\$/Unit): Storm tank is a tank that can collect rain water during a time to avoid rising. Price by unity installed.
- (d) Existing courses canalising (\$/m²): Canalising of existing courses in the land selected to developing the logistic platforms. Price by m² of canalising.
45. Dark water treatment: All the installation needed to guarantee the circulation and treatment of dark water:
- (a) Treatment system (\$/eq people): Installation of treatment system to adapt the dark water to the current regulation. Price by equivalent people served by the treatment system.
- (b) Pumping (\$/Unit): If needed, pumping system to guarantee the circulation of dark water. Price by unity installed.
46. Technical and social facilities complex:
- (a) Hotels and Restaurants and other Social facilities (\$/Unit): hotels, restaurants, resting area, training centre, hairdresser, sewer etc.

(b) Technical support and trade area (\$/m²): wheels, wires, mechanics, painting, maintenance, technical consulting etc.

(c) Administration and commercial offices (\$/Unit): Customs, standards and permission issues; freight forwarding, transportation offices; insurance, banks and other commercial offices etc.

(d) Other facilities (\$/m²): support services for the companies in logistics platform.

47. Garbage treatment plant:

Garbage Treatment Plant (\$/m³): solid and liquid waste management area after certain amount.

48. Telecom supply: All the installation needed to guarantee the telecom service:

(a) Outside telephone pairs panel (\$/Unit) : Outside telephone pair panel installed (where any customer is connected to the telecom company). Price by unit installed.

(b) Monomode optical fibre interconnection panel (\$/Unit): Interconnection panel of monomode optical fibre. Price by unit installed.

(c) Optical fibre repeater (\$/Unit): Signal repeater of monomode optical fibre. Price by unit installed.

(d) Multimode optical fibre interconnection panel (\$/Unit): Interconnection panel of multimode optical fibre. Price by unit installed.

(e) Multimode optical fibre interconnection panel (\$/Unit): Signal repeater of multimode optical fibre. Price by unit installed.

49. Fire prevention: All the installation needed to the fire prevention network:

(a) Fire tank (\$/m³): Water tank used to supply water to the fire prevention network. Price by m³ of tank.

(b) Check valve (\$/Unit): Valves installed to guarantee the separation of sector in the fire prevention network. Price by valve installed.

(c) Fire prevention pumping (\$/Unit): Pump system to guarantee the pressure of water in the fire prevention network. Price by pump system installed.

(d) Firework vehicle (\$/Unit): rescue beginning time shall be less than 5 minutes.

50. Green areas: All the jobs done to prepare the internal green areas and its maintenance:

(a) Transplant (\$/Unit): Any transplant needed from the original land to the logistic area. Price by transplant done.

(b) Topsoil movement (\$/m³): Topsoil moved to the green areas. Price by m³ of topsoil moved.

(c) Gardening (\$/m²): Gardening jobs needed to finalize the green areas. Price by m² of green area adapted.

(d) Irrigation network (\$/m): Network of pipes need to guarantee the irrigation in the green areas. Price by lineal meter of pipe installed.

(e) Irrigation tank (\$/m³): Tank to collect rain and other kind of water to avoid the irrigation with potable water. Price by m² of tank installed.

(f) Irrigation pumping (\$/Unit): Pump system to guarantee the pressure needed in the irrigation network.

51. CCTV: Close Control TV system:

(a) Fixes digital cam (\$/Unit): Fixed digital cam installed in the logistic area. Price by unit.

(b) Domo cam (\$/Unit): Domo cam installed in the logistic area. Price by unit.

(c) Digital recorders (\$/Unit): Digital recorders with more than 14 days of autonomy. Price by digital recorder installed.

(d) Control room (\$/Unit): Control room complete equipped (monitors, tables, chairs, etc.). Price by control room installed.

52. Access control: Access Control system:

(a) Access control barrier (\$/Unit): Automatic Barrier for the access control system. Price by Access control barrier installed.

(b) Plate recognition (\$/Unit): Plate reader system in order to control the access of vehicles in the logistic area. Price by Plate reader installed.

(c) Logical of access control (\$/Unit): Set of computers, routers, etc. installed to implement the logical of the access control. Price by system installed.

53. Intermodal terminal: An intermodal terminal is a big area, usually done in reinforced concrete to allow the interchange between trucks and train. In the logistic area it is not considered the rail installation:

(a) Land clearing (\$/m²): Jobs needed to take out the topsoil. Price by m².

(b) Earth movement (\$/m³): Soil movements needed to adapt the land to the requirements. Price by m³ of soil moved.

(c) Gravel Column (\$/m³): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor gravel columns. Price of m³ of gravel injected.

(d) Concrete Column (\$/m³): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor concrete columns. Price of m³ of concrete injected.

(e) Drain wick (\$/m²): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor drain geotextile. Price of m² of geotextile injected.

(f) Preload (\$/m³): Technical to increase the carrying capacity of the land. This technical consists on place lots of soil in the floor and wait for the desired effect. Price of m³ of soil placed.

(g) Reinforced concrete area (\$/m³) : Construction of pavement with reinforced concrete of the intermodal terminal.

54. Truck park: A truck park is a big area, usually done in reinforce concrete to allow the trucks to park:

(a) Land clearing (\$/m²): Jobs needed to take out the topsoil. Price by m².

(b) Earth movement (\$/m³): Soil movements needed to adapt the land to the requirements. Price by m³ of soil moved.

(c) Gravel Column (\$/m3): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor gravel columns. Price of m3 of gravel injected.

(d) Concrete Column (\$/m3): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor concrete columns. Price of m3 of concrete injected.

(e) Drain wick (\$/m2): Technical to increase the carrying capacity of the land. This technical consists on inject in the floor drain geotextile. Price of m2 of geotextile injected.

(f) Preload (\$/m3): Technical to increase the carrying capacity of the land. This technical consists on place lots of soil in the floor and wait for the desired effect. Price of m3 of soil placed.

(g) Reinforced concrete area (\$/m3): Construction of pavement with reinforced concrete of the intermodal terminal.

55. Container freight station (CFS): Area prepared to handling the containers:

(a) General CFS area (\$/m3): Handling received goods to handle for another transport mode or arrival country.

(b) CFS area for Dangerous Goods (\$/m3): special segregation, separation and handling for certain stowage plan.

56. Warehouse: a building for the storage of goods:

(a) General cargo Goods (\$/m2): Long, middle and short term products storage area.

(b) Heat Controlled Goods (\$/m2): Long, middle and short term products storage area for special products.

(c) Separated Goods (\$/m2): Long, middle and short term products storage area for special products.

(d) Dangerous Goods (\$/m2): Long, middle and short term products storage area for special products.

(e) Goods in Pressured Equipment (\$/m2): Long, middle and short term products storage area for special products.

(f) Explosive Goods (\$/m2): Long, middle and short term products storage area for special products.

(g) Cold Chain Goods (\$/m2): Long, middle and short term products storage area for special products.

(h) Handling area (\$/m2): daily loading and unloading quantity.

(i) Loading and Unloading area (\$/m2) : daily loading and unloading quantity.