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TRANSPORT DATABASE AND INFORMATION SYSTEMS DEVELOPMENT

TER Database and GIS Mapping activities

Transmitted by TER PCO

I. SUMMARY

1. The Trans-European Railway Project Central Office (TER PCO), based in Budapest, following the recommendations of its member countries for the development of a TER Project database and GIS application, has been collecting and processing information about railway infrastructure and rolling stock within the TER region since 1995.

2. A TER GIS Pilot study started in October 1995 and finished in February 1996.

3. A restructuring procedure of the TER PCO data aiming at the upgrading of its collection and processing was launched in 1997. Due to the large volume of data, this restructuring procedure was split into two parts (Part I. and Part II.).

Part I of the restructuring was concluded in 1999. Thereafter, the TER database had been tested on real data. During this test period the foundations for the TER GIS Atlas were also established. The TER Project today counts some 300,000 data, from 12 TER member countries, and over 80 GIS maps.

Part II of the restructuring has not started yet.

4. The TER PCO is now preparing a new TER Database and GIS mapping policy as well as an action plan to be presented to the competent TER bodies for approval. This policy is taking into account the current evolutions in the European transport sector as well as the existing experiences within and outside the TER Project and the needs of its member countries.

5. The TER Project is also aiming at the completion of the TER GIS Atlas by the end of the current year. The development of the existing TER Project border stations data and processing programmes is under consideration.

II. SHORT INTRODUCTION TO THE TER DATABASE

6. The TER Database has been built on the data previously collected in the TER PCO. At the beginning, a simple structure for data collection was agreed. Later on, the restructuring at an upgraded level of the data was proposed and approved as an effective solution for the utilization of query operations.

7. Therefore, the member countries adopted the general rules for restructuring of data and the establishment of the TER Database. The new system was tested during a period of three years by the end of which considerable results were arrived at. Furthermore, during the period of the discussions for the approval of the new TER data structure, the deadlines for the data delivery and their updating and control procedures were defined.

8. The data restructuring included the complete analyses of 551 data fields. Now, Part I comprises 211 data fields. The list of all the data fields is reproduced in annex 1. As can be seen from the list, the data are divided into 14 data files according to their contents. Part 2 comprises 220 data fields which are not implemented, so far, they are reproduced in annex 2. As in the previous case, the data in annex 2 are divided into 9 data files, which describe more deeply some railway elements that were not yet mentioned in the data of Part 1.

9. At the moment, the whole TER Database has over 431 “active” data fields that originated from the analyses and which are organized according to the general rules. Regarding the contents of data, four groups of the sub-databases can be distinguished, as follows:

- 1) Database of the basic railway and social information.
- 2) Database of the Railway infrastructure data.
- 3) Database of the Railway operational data.
- 4) Database of the Railway rolling stock data.

10. It is worth mentioning that a comparative analysis of data collected in the context of the WP.6 and of TER, showed that 62 out of 114 items in total were found compatible between these two systems. It was also found that the TER system is advanced by one year i.e. TER is processing in every year the data of the previous one, whilst the data collection system based on the Common Questionnaire for Transport Statistics (CQ) is working on the data collected two years earlier.

III. TER DATABASE GENERAL RULES

11. Usually, each project needs its own Terms of Reference (TOR). In this case, the TOR has been replaced with the TER Database General Rules (TDGR) presented below. Some of the rules have been stipulated on the basis of experiences gained from discrepancies discovered during the Data Controls, (DC) and Data Analyses, (DA) carried out on the previous data. The other rules were created in cooperation with the TER member countries.

IV. FIVE RULES OF THE TDGR

1. RULE OF THE UNICITY OF DATA

Each data value inserted into the database cannot be repeated

2. RULE OF THE MASTER FILE'S KEY DATA FIELDS

The "Master file" contains all "key data" needed for interconnection among the data field of the lines, sections, nodes, etc.

3. RULE OF THE LINE OVERLAPPING

In case of the line overlap, the overlapping section used the data value inserted in the database by the first data entry.

4. NUMBERING OF THE SECTIONS

Numbering of the sections is mainly done in one from two directions. It means either from North to South or from West to East.

5. DISTINGUISHING OF THREE DISTANCES

The TER Database distinguishes three different distances (lengths):

(a) **Main Location Distance.** It is the distance of the Start Node of the line section from the Border Crossing Point of each country.

(b) **Distance of the railway structure inside the section** (tunnels, bridges etc.). It is the distance from the Start node of the section where the structure is found.

(c) **Distance of the terminal branch.** It is the distance of the branch rail from the "nearest" Start node of the section to the connected terminal.

12. As can be seen the TER Database General Rules are far too strict and they could not guarantee a complete understanding and a correct data entry. Bearing in mind this argument, the TDGR was worked out more deeply in a book called a Data Entry Manual.

V. DATA ENTRY MANUAL

13. In order to avoid further misunderstandings and ensure a correct entry for all the data into the TER database, a Data Entry Manual, (DEM) was worked out as a guidebook. The DEM defines the structure of each data field by 6 characteristics that are mandatory for all the TER member countries. The DEM is not annexed to this material due to the large number of pages (170). It can be made available on request. Except for the description of the particular

data items, the DEM has a special explanatory chapter in which all the requested characteristics are explained in writing and graphically. In addition to these guidelines, the TER PCO organized special training courses about the DEM. At the courses all the rules, data entry parameters, and their controls were broadly explained, and practised.

VI. TER GIS APPLICATIONS

14. In response to requests for a geographic presentation of the TER lines in Europe, from the side of investors and financial institutions, the TER PCO began to survey available Geographical Information Systems (GIS). After a broad analysis of the existing GIS programmes, the MapInfo was selected as the most suitable one for its quick presentational power.

15. The MapInfo also cooperates with the classic databases and spreadsheets. In connection with the survey, a TER Pilot study was prepared for Slovakia in order to identify an appropriate method adapted to the requirements of that country. The mapping of other countries is envisaged in the work programme.

16. To date, the GIS collection has over 80 charts carried out in different analytical views that can be used for further data analysis or visual projections after the filling in by the necessary data. The TER GIS charts are two dimensional, and form the GIS Atlas of the Trans European Railways, which is split up at present into the following chapters.

- 1) TER member countries,
- 2) AGC, AGTC, TER lines,
- 3) TER network,
- 4) TER section on the TER network,
- 5) TER border stations,
- 6) TER project for the revitalisation of the railways.

17. All the charts were drawn up on the basis of information stored in the TER Database. Only the border shapes of the countries and their railway lines were produced from the official ADC MapInfo database.

18. Finally, it should be mentioned that these charts and data were not only used in the TER Project but also drawn upon in many other projects, such as "TINA", "GISCO", and various "EU projects".

VII. PRESENTATION

19. In the last 5 years, the TER PCO has prepared several hundreds of pages of written and overhead material for many presentations. In view of time constraints, the presentation of the TER Database and GIS applications during the Working Party on Transport Statistics (WP.6) will consist of an overview of them, which will not contain all the material grouped essentially into these main chapters:

- 1) TER Data Analyses,
- 2) TER Data Structures Proposals,
- 3) TER Data Entry Manual,

- 4) TER Database,
- 5) TER PCO Internet and its connection to the WAN,
- 6) TER Data Control system, etc.

20. TER PCO considers a closer cooperation with ITC/WP.6 for exchange of information, experience and development of compatible statistical data as essential.

21. Those who need more information on the project may contact directly the TER PCO, Central Office, UN/ECE, Andrásy út 66, H-1062 BUDAPEST, Hungary or the UNECE Regional Adviser Mr. Michalis Adamantiadis, Transport Division, Palais des Nations, CH-1211 GENEVA 10, Switzerland.

Annex 1

PART I

LIST of DATA of the TER Database

1. Master file

- 1.1 Record Number
- 1.2 Country Code
- 1.3 National Time Table Code
- 1.4 Name of Start Node of the Line Section
- 1.5 Name of End Node of the Line Section
- 1.6 Start Node Code
- 1.7 End Node Code
- 1.8 AGC or TER Line Code 1
- 1.9 Section code
- 1.10 Main Location of the Start Node
- 1.11 Data relate to Year
- 1.12 Control Value

2. General data per Country

- 2.1 Record Number
- 2.2 Country Code
- 2.3 Name of the Country
- 2.4 Size of the Country
- 2.5 Number of Inhabitants in the Country
- 2.6 Gross Domestic Product (GDP)
- 2.7 Foreseen growth of the GDP
- 2.8 Total length of the rail network (Km)
- 2.9 Number of Passengers Travelling by rail per year
- 2.10 Number of passengers kilometres per year
- 2.11 Foreseen growth of the rail passenger transport
- 2.12 Number of tonnes transported by rail per year
- 2.13 Number of tonnes kilometres realised per year
- 2.14 Foreseen growth of the rail freight transport
- 2.15 Total number of railway workers
- 2.16 Data Relate to Year
- 2.17 Control Value

3. Code file

- 3.1 Record Number
- 3.2 Country Code
- 3.3 AGC or TER Line Code 1

- 3.4 Section code
- 3.5 Railway Enterprise
- 3.6 Number of the Railway Service Operator
- 3.7 Railway Service Operator – I.
- 3.8 Railway Service Operator – II.
- 3.9 Railway Service Operator – III.
- 3.10 Railway Code
- 3.11 AGC or TER line Code 2
- 3.12 AGC or TER line Code 3
- 3.13 Pan European Code 1
- 3.14 Pan European Code 2
- 3.15 Pan European Code 3
- 3.16 Data Relate to Year
- 3.17 Control Value

4. Line section File

- 4.1 Record Number
- 4.2 Country Code
- 4.3 AGC or TER Line Code 1
- 4.4 Section code
- 4.5 Length of Line Section
- 4.6 Type of Line Section
- 4.7 Max. Speed Allowed by the Track
- 4.8 Design Speed
- 4.9 Load Limits for Railway Lines
- 4.10 Number of Tracks
- 4.11 Distance between Axes of Tracks
- 4.12 Track Gauge
- 4.13 Loading Gauge
- 4.14 Rail Structure gauge
- 4.15 Traction System
- 4.16 Two-way Direction Operation
- 4.17 Type of signalling
- 4.18 Max. Gradient
- 4.19 Min. Radius of Curve
- 4.20 Max. Capacity of Line Section
- 4.21 Authorised mass per axle wagons < 100 km/h
- 4.22 Authorised mass per axle wagons < 120 km/h
- 4.23 Construction year of the Line Section
- 4.24 Year of Last Main Overhaul of Line Section Track
- 4.25 Data relate to Year
- 4.26 Control Value

5. Nodes

- 5.1 Record Number
- 5.2 Country Code
- 5.3 Start Node Code

- 5.4 Node Type
- 5.5 Station type
- 5.6 Distance of the Node from the Main AGC or TER Line
- 5.7 Access to the station
- 5.8 Intermodal operation
- 5.9 System of traction on Border Station and on Border tracks
- 5.10 Abbreviation of the Connected Country
- 5.11 Average truck waiting time
- 5.12 Combined Transport Border Crossing Possibilities
- 5.13 Minimum Main Track Length
- 5.14 Minimum Siding (Track) Length
- 5.15 Minimum (Main) Passenger Platform Length
- 5.16 Number of tracks
- 5.17 Maximum Speed on Switches
- 5.18 RO-LA Transit Trains
- 5.19 RO-LA Export or Import Trains
- 5.20 Combined Transit Transport
- 5.21 Combined Export or Import Transport
- 5.22 Block or Shuttle Trains Transit
- 5.23 Block or Shuttle Export or Import Trains
- 5.24 Mixed Freight Transit Trains Inspected
- 5.25 Mixed Freight Transit Trains without Inspection
- 5.26 Mixed Freight Trains Export or Import Inspected
- 5.27 Mixed Freight Trains Export or Import without Inspection
- 5.28 Processing Time for Passenger Long Distance Trains with
- 5.29 Processing Time for Passenger Regional or Local Trains
- 5.30 Type of Passenger Border Control
- 5.31 Customs Procedure for Freight on the Border
- 5.32 Track Gauge
- 5.33 Change of gauge
- 5.34 Phyto Inspection
- 5.35 Veterinary Inspection
- 5.36 Nuclear safety Inspection
- 5.37 Dangerous Goods Transported across the border
- 5.38 Construction year of the Node
- 5.39 Year of Last Main Overhaul of Node
- 5.40 Data Relate to Year
- 5.41 Control Value

6. Bridges

- 6.1 Record Number
- 6.2 Country Code
- 6.3 AGC or TER Line Code 1.
- 6.4 Section Code
- 6.5 Order Number of the parallel railway Structure
- 6.6 Location from the Start Node of the Line Section
- 6.7 Length of Bridge
- 6.8 Number of Tracks

- 6.9 Loading Gauge
- 6.10 Rail Structure Gauge
- 6.11 Test Train
- 6.12 Year of Construction of the Bridge
- 6.13 Year of Last Main Reconstruction of Bridge
- 6.14 Data Relate to Year
- 6.15 Control Value

7. Tunnels

- 7.1 Record Number
- 7.2 Country Code
- 7.3 AGC or TER Line Code 1.
- 7.4 Section Code
- 7.5 Order Number of the parallel railway Structure
- 7.6 Location from the Start Node of the Line Section
- 7.7 Length of the Tunnel
- 7.8 Number of Tracks
- 7.9 Loading Gauge
- 7.10 Rail Structure Gauge
- 7.11 Year of Construction of the Tunnel
- 7.12 Year of Last Main Reconstruction of Tunnel
- 7.13 Data Relate to Year
- 7.14 Control Value

8. Overpasses

- 8.1 Record Number
- 8.2 Country Code
- 8.3 AGC or TER Line Code 1
- 8.4 Section Code
- 8.5 Location from the Start Node of the Line Section
- 8.6 Number of Tracks
- 8.7 Loading Gauge
- 8.8 Rail Structure Gauge
- 8.9 Construction year of the Overpass
- 8.10 Year of Last Main Reconstruction of Overpass
- 8.11 Data Relate to Year
- 8.12 Control Value

9. Level crossings

- 9.1 Record Number
- 9.2 Country Code
- 9.3 AGC or TER Line Code 1.
- 9.4 Section Code
- 9.5 Location from the Start Node of the Line Section
- 9.6 Number of Tracks
- 9.7 Type of Protection of Crossing

- 9.8 Construction year of the Level Crossing
- 9.9 Year of Last Main Overhaul of Level Crossing
- 9.10 Data Relate to Year
- 9.11 Control Value

10. Operational data

- 10.1 Record Number
- 10.2 Country Code
- 10.3 AGC or TER Line Code 1.
- 10.4 Section Code
- 10.5 Minimum Travel Time for Passenger Trains
- 10.6 Minimum Travel Time for Freight Trains
- 10.7 Number of Present Freight Train
- 10.8 Number of Present Passenger Train
- 10.9 Freight Net Load
- 10.10 Passenger - km per year
- 10.11 Passenger Gross Load
- 10.12 Freight Gross Load
- 10.13 Passenger Train Movements
- 10.14 Freight Train Movements
- 10.15 Type of service
- 10.16 Frequency of service
- 10.17 Data Relate to Year
- 10.18 Control Value

11. Locomotives or Railcar (abbreviated to: Locos/Rcars)

- 11.1 Record Number
- 11.2 Country Code
- 11.3 Locos/Rcars Code
- 11.4 Type of Locos/Rcars
- 11.5 Railway Enterprise Code 2.
- 11.6 Total Number of Locos/Rcars owned by the Railway Enterprise
- 11.7 Total Number of Locos/Rcars but not owned by the Railway Enterprise
- 11.8 Type of Power Driven
- 11.9 Length over Buffers
- 11.10 Wheel set Gauge
- 11.11 Maximum Axle Load
- 11.12 Maximum Speed
- 11.13 Data Relate to Year
- 11.14 Control Value

12. Coaches

- 12.1 Record Number
- 12.2 Country Code
- 12.3 Coach Code
- 12.4 Type of Coach

- 12.5 Railway Enterprise Code 2.
- 12.6 Total number of cars owned by the Railway Enterprise
- 12.7 Total number of cars but not owned by the Railway Enterprise
- 12.8 Average Length over Buffers
- 12.9 Wheel set Gauge
- 12.10 Maximum Axle Load
- 12.11 Maximum Speed
- 12.12 Data relate to Year
- 12.13 Control Value

13. Wagons

- 13.1 Record Number
- 13.2 Country Code
- 13.3 Wagon Code
- 13.4 Type of Wagon
- 13.5 Railway Enterprise Code 2.
- 13.6 Total Number of Wagons owned by the Railway Enterprise
- 13.7 Total Number of Wagons but not owned by the Railway Enterprise
- 13.8 Average Length over Buffers
- 13.9 Wheel set Gauge
- 13.10 Maximum axle load
- 13.11 Maximum speed
- 13.12 Data relate to Year
- 13.13 Control Value

14. Combined Transport Quantity

- 14.1 Record Number
- 14.2 Country Code
- 14.3 Railway Enterprise Code 3.
- 14.4 Total number of TEU Export
- 14.5 Total weight of Combined Transport Export
- 14.6 Total number of TEU Import
- 14.7 Total weight of Combined Transport Import
- 14.8 Total number of TEU Transit
- 14.9 Total weight of Combined Transport Transit
- 14.10 Definition of route (relation-1) Start Node
- 14.11 Definition of route (relation-2) End Node
- 14.12 Definition of route (relation-3) Via Node 1
- 14.13 Definition of route (relation-4) Via Node 2
- 14.14 Definition of route (relation-5) Via Node 3
- 14.15 Data relate to Year
- 14.16 Control Value

Annex 2

PART II

LIST of DATA of the TER Database

5. Nodes

- 5.1 Average train forming time
- 5.2 Average time for acceptance of consignment
- 5.3 Average time for disposal of consignment
- 5.4 Max. loading capacity of existing cranes
- 5.5 Max. container storage capacity
- 5.6 Changing of bogies for different gauges
- 5.7 Bottlenecks in combined trans. terminals
- 5.8 Type of combined transport received
- 5.9 Normal duration of formalities at border station
- 5.10 If duration is regularly prolonged give explanation
Type of separation of electrification systems
1 = not necessary
2 = between the border stations
3 = In border station separation systems changeable
4 = In border station separation systems not changeable
- 5.11 No. of tracks for Passenger Trains
- 5.12 No. of tracks for freight trains
- 5.13 Shunting tracks
- 5.14 Maximum length of Passenger trains allowed
- 5.15 Maximum length of freight trains allowed
- 5.16 Track signaling in border area
- 5.17 Station signaling
- 5.18 Change of locomotives
- 5.19 Change of locomotive crew
- 5.20 System of train offer for the neighboring railway authority
- 5.21 System of passenger border control
- 5.22 Passenger border control in sleeping and couchette cars
- 5.23 Border control lines
- 5.24 Effective border control time
- 5.25 Passenger check
- 5.26 Passenger train technical inspection
- 5.27 Checking the number of luggage and express parcel charges
- 5.28 Luggage checking
- 5.29 Number of passengers per year
- 5.30 Forwarding agency at the station
- 5.31 List of rolling stock exchange elaborated at the station
- 5.32 Crossing list elaborated at the station
- 5.33 Brake report elaborated at the station
- 5.34 Change of position of brakes
- 5.35 Completion of the commercial checking of the train
- 5.36 Computer system used at the station

- 5.37 Transport documents elaborated by computers
- 5.38 Computer system connected to neighboring railway authority
- 5.39 Custom procedure based on pre-mailed documents
- 5.40 Prediction system
- 5.41 Share of customs cleared wagons in import
- 5.42 Share of customs cleared wagons in export before arrival on the border station
- 5.43 Length of export clearance procedure
- 5.44 Special regulations concerning dangerous goods which are not included in multilateral agreements
- 5.45 Technical taking over of freight trains by confidence
- 5.46 Method of transport document checking
- 5.47 Average number of freight wagons per day
- 5.48 Intergovernmental agreement with connected country for facilitation of border crossing
- 5.49 Bilateral or multilateral agreement with connected railway enterprise for facilitation of border crossing
- 5.50 Shortening of border crossing stops is possible by
 - 0 = reorganisation only
 - 1 = with new investments
- 5.51 Data relate to Year
- 5.52 Controle Value

10. Locomotives or Railcars (abbrev. Locos/Rcars)

- 10.1 Number of Locos/Rcars old (1 ...10 years)
- 10.2 Number of Locos/Rcars old (11 ...20 years)
- 10.3 Number of Locos/Rcars old (21 ...30 years)
- 10.4 Number of Locos/Rcars old (21 ...40 years)
- 10.5 Number of Locos/Rcars old (over 40 years)
- 10.6 Performance
- 10.7 Type of Electric Current
- 10.8 Number of 1st class seats
- 10.9 Number of 2nd class seats
- 10.10 Weight of Locos/Rcars
- 10.11 Wheel Arrangement
- 10.12 Manufacturing Company
- 10.13 Manufacturing Country
- 10.14 Data relate to Year
- 10.15 Controle Value

11. Coaches

- 11.1 Number of coaches old (1 ...10 years)
- 11.2 Number of coaches old (11 ...20 years)
- 11.3 Number of coaches old (21 ...30 years)
- 11.4 Number of coaches old (21 ...40 years)
- 11.5 Number of coaches old (over 40 years)
- 11.6 Type of seats
- 11.7 Number of 1st class seats

- 11.8 Number of 2nd class seats
- 11.9 Number of berths
- 11.10 Average Tare Weight
- 11.11 Wheel Arrangement
- 11.12 Manufacturing Company
- 11.13 Manufacturing Country
- 11.14 Data relate to Year
- 11.15 Control Value

12. Wagons

- 12.1 Number of wagons old (1 ...10 years)
- 12.2 Number of wagons old (11 ...20 years)
- 12.3 Number of wagons old (21 ...30 years)
- 12.4 Number of wagons old (21 ...40 years)
- 12.5 Number of wagons old (over 40 years)
- 12.6 Average Useful Surface of wagon
- 12.7 Average Useful Volume of wagon
- 12.8 Average Loading Capacity of wagon
- 12.9 Average Tare Weight
- 12.10 Wheel arrangement
- 12.11 Manufacturing Company
- 12.12 Manufacturing Country
- 12.13 Data relate to Year
- 12.14 Controle Value

13. Combined Transport Quantity

- 13.1 Number of record
- 13.2 Country Code
- 13.3 Node Code
- 13.4 Export via a land frontier point-number of container
- 13.5 Export via a land frontier point-number weight
- 13.6 Export via a sea or river port - number of container
- 13.7 Export via a sea or river port - weight [1000 tonnes]
- 13.8 Import via a land frontier point-number of container
- 13.9 Import via a land frontier point-number weight
- 13.10 Import via a sea or river port - number of container
- 13.11 Import via a sea or river port - weight [1000 tonnes]
- 13.12 Trans. between two lands frontier points of containers
- 13.13 Transit between two frontier points weight
- 13.14 Trans. between land frontier and a port num. containers
- 13.15 Transit between land frontier and a port weight
- 13.16 Trans. between a port and land frontier num. containers
- 13.17 Transit between a port and land frontier weight
- 13.18 Trans. between two sea or river ports num. containers
- 13.19 Transit between two sea or river ports weight
- 13.20 Empty large containers departed from stations on the RW sys.
- 13.21 Empty large containers from foreign RW sys.

- 13.22 Empty large inter. transit via two land frontier points
- 13.23 Empty large containers total
- 13.24 Export Road/Rail units num. of wag. loaded with road/rail
- 13.25 Export Road/Rail units weight
- 13.26 Import Road/Rail units number of wag. loaded with road/rail
- 13.27 Import Road/Rail units weight
- 13.28 Road/Rail unit transit number of wag. loaded with road/rail
- 13.29 Road/Rail transit number weight
- 13.30 Road/Rail total number of wagons loaded with road/rail
- 13.31 Road/Rail units according to traffic weight
- 13.32 Data relate Year
- 13.33 Control Value

18. Tractive Vehicle Movements

- 18.1 Number of record
- 18.2 Country Name
- 18.3 Railway Enterprise Code
- 18.4 Tractive vehicle movements TOTAL
- 18.5 Diesel Railcar Tractive Movements
- 18.6 Hauled Vehicle Movements Total
- 18.7 Electric Loco Hauled Movements
- 18.8 Diesel Loco Hauled Movement
- 18.9 Steam Loco Hauled Movement
- 18.10 Electric Railcar Hauled Movement
- 18.11 Diesel Railcar Hauled Movement
- 18.12 Data relate to Year
- 18.13 Control Value

19. Freight Transport By Commodities

- 19.1 Lives animals, animal and vegetable products, animal or vegetable fats and waxes
- 19.2 Prepared foodstuffs, beverages, spirits and tobacco
- 19.3 Mineral products
- 19.4 Products of chemical industries, fertilisers, plastics and rubber
- 19.5 Wood, wood charcoal, cork, pulp of wood, paper and paperboard
- 19.6 Metallurgical products
- 19.7 Construction materials, glass, ceramic
- 19.8 Products of mechanical and electrical industries
- 19.9 Transport equipment
- 19.10 Commodities not elsewhere specified or included
- 19.11 Loaded intermodal consignments
- 19.12 Total cols. 19.5 to 19.15
- 19.13 Empty privately owned wagons
- 19.14 Total cols. 19.16+19.17
- 19.15 Data relate to Year
- 19.16 Control Value

20. Staff - Annual Main Railway Staff Strength

- 20.1 Number of record
- 20.2 Country name
- 20.3 General headquarters and regional headquarters
- 20.4 Central and regional offices
- 20.5 Station services
- 20.6 Train services
- 20.7 Total col.20.4.2.1 to 20.4.2.3
- 20.8 Central and regional offices
- 20.9 Motor vehicle driving staff
- 20.10 Main workshops
- 20.11 Other staff
- 20.12 Total col.20.4.3.1 to 20.4.3.4
- 20.13 Central and regional offices
- 20.14 Permanent way maintenance and supervision
- 20.15 Total col.20.4.4.1 to 20.4.4.2
- 20.16 Total railway operations col.20.4.1 +20.4.2.4 +20.4.3.5 +20.4.4.3
- 20.17 Road services
- 20.18 Shipping services
- 20.19 Miscellaneous (electric power plants, cartage, hotels, etc.)
- 20.20 New works, reconstruction, etc.
- 20.21 Total railway staff strength
- 20.22 Of which permanent staff
- 20.23 Staff supplied by contractors
- 20.24 Data relate to Year
- 20.25 Controle Value

21. Productivity in Rail Transport

- 21.1 Number of record
- 21.2 Country name

***** Labour productivity**

**** Conventional rail transport - per kilometre**

- 21.3 employee per km of network in use - per employee
- 21.4 freight net ton-kms + passenger-kms (millions) 1) per employee
- 21.5 freight net ton-kms (millions) per employee
- 21.6 passenger-kms (millions) per employee

**** High-speed rail transport- per kilometre**

- 21.7 employee per km of network in use - per employee
- 21.8 freight net ton-kms + passenger-kms (millions) per employee
- 21.9 freight net ton-kms (millions) per employee
- 21.10 passenger-kms (millions) per employee

**** Total (Conventional + High-speed)- per kilometre**

- 21.11 employee per km of network in use- per employee
- 21.12 freight net ton-kms + passenger-kms (millions) per employee
- 21.13 freight net ton-kms (millions) per employee
- 21.14 passenger-kms (millions) per employee

**** Productivity of freight transport- per kilometre**

- 21.15 gross ton-kms (millions) per km of network
- 21.16 net ton-kms (millions) per km of network- per employee
- 21.17 gross ton-kms (millions) per employee
- 21.18 net ton-kms (millions) per employee

**** Productivity of passenger transport**

*** Conventional rail transport- per kilometre**

- 21.19 passenger-kms (millions) per km of networks
- 21.20 passenger-kms (millions) per employee

*** High-speed rail transport p. kilometres- per kilometre**

- 21.21 passenger-kms (millions) per km of networks- per employee
- 21.22 passenger-kms (millions) per employee

**** TOTAL- per kilometre**

- 21.23 passenger-kms (millions) per km of networks- per employee
- 21.24 passenger-kms (millions) per employee

**** Productivity of traffic**

*** Conventional rail transport**

- 21.25 freight net ton-kms + passenger-kms (millions) per km of network
- 21.26 freight net ton-kms (millions) per km of network
- 21.27 passenger-kms (millions) per km of network

*** High-speed rail transport**

- 21.28 freight net ton-kms (millions) per km of network per km of network
- 21.29 freight net ton-kms (millions) per km of network
- 21.30 passenger-kms (millions) per km of network

*** Total (Conventional + High speed)**

- 21.31 freight net ton-kms + passenger-kms (millions) per km of network
- 21.32 freight net ton-kms (millions) per km of network
- 21.33 passenger-kms (millions) per km of network

**** Productivity of locomotives**

- 21.34 gross ton-kms (millions) per locomotive
- 21.35 gross ton-kms (millions) per diesel locomotive
- 21.36 gross ton-kms (millions) per electric locomotive

*** Productivity of wagons**

- 21.37 net ton-kms (millions) per wagon

*** PRODUCTIVITY OF LINES**

21.38 freight net ton-kms + passenger-kms (thousands) per km of network

21.39 freight net ton-kms (thousands) per km of network

21.40 passenger-kms (thousands) per km of network

*** Energy consumption for traction**

21.41 MJ per 1000 gross ton-kms

21.42 MJ per 1000 gross ton-kms electric

21.43 MJ per 1000 gross ton-kms diesel freight

21.44 MJ per 1000 gross ton-kms diesel passenger

21.45 Data relate to Year

21.46 Control Value