

# Transport Mode Typology

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# Introduction

## Transport Mode Typology 10 Dimensions

1. Type of Load
2. Costs
3. Traffic
4. Project duration
5. Operational Characteristic
6. Performance
7. Funding structure
8. Geography
9. Sensitivity to external risks
- 10. Regulation - Deregulation level**

# Introduction

## Transport Mode Typology

### Regulation - Deregulation level

1. Admission to the occupation
2. Access to the market
3. Social Harmonisation
4. Technical Harmonisation
5. Pricing
6. State grants
7. Market

| Dimension      | Description                                                                                    | Indicator                         | More measurable indicators           | Indicators in «Template» | <u>Direct or Indirect</u><br>impact on funding and financing |
|----------------|------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------|--------------------------|--------------------------------------------------------------|
| 1.Type of Load | Classifying transport modes according to their load: which can be passengers, freight or both. | The mix of passengers and freight | Ratio “passengers to freight”        | N/A but may be exerted   | Indirect                                                     |
| 2.Costs        | Costs for the construction and maintenance of the different transport modes                    | Magnitude of construction cost    | OK<br>(indicator already measurable) | Yes                      | Direct                                                       |
|                |                                                                                                | Magnitude of Maintenance cost     | OK                                   | Yes                      | Direct                                                       |

| Dimension  | Description   | Indicator                                                                                              | More measurable indicators                                 | Indicators in «Template» | <u>Direct or Indirect</u> impact on funding and financing |
|------------|---------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------|-----------------------------------------------------------|
| 3. Traffic | a. Passengers | <u>Usage</u> : Individual and common                                                                   | Capacity utilisation                                       | No                       | Indirect                                                  |
|            |               | <u>Usage</u> : Regular, Irregular, Special forms of regular passenger transportation and taxi services | 1.Number of stops                                          | No                       | Indirect                                                  |
|            |               |                                                                                                        | 2. Frequency of transportation services (regular or not)   | No                       | Indirect                                                  |
|            |               |                                                                                                        | 3. Number of school buses                                  | No                       | Direct                                                    |
|            |               |                                                                                                        | 4. Number of busses transporting employees (special forms) | No                       | Direct                                                    |
|            |               |                                                                                                        | 5. Number of taxis (taxi services)                         | No                       | Direct                                                    |
|            |               |                                                                                                        | 1. Number of private vehicles                              | No                       | Direct                                                    |
|            |               |                                                                                                        | 2. Number of public vehicles                               | No                       | Direct                                                    |
|            |               | End User Demand                                                                                        | Number of Passengers                                       | No                       | Indirect                                                  |
|            |               | <u>Average Distance</u> travelled per mode                                                             | 1. Number of pkms                                          | No                       | Direct                                                    |
|            |               |                                                                                                        | 2. Number of vkms (passengers)                             | No                       | Direct                                                    |
|            |               |                                                                                                        | 3. kms travelled per mode                                  | No                       | Direct                                                    |
|            |               | Mode share                                                                                             | 1. % of travellers per mode                                | No                       | Indirect                                                  |
|            |               |                                                                                                        | 2. Number of trips per mode                                | No                       | Indirect                                                  |
|            |               | Passenger transport can be classified based on the criteria in the next column:                        | <u>Availability</u> : public and private                   | No                       | Direct                                                    |
|            |               |                                                                                                        |                                                            |                          |                                                           |
|            |               |                                                                                                        |                                                            |                          |                                                           |
|            |               |                                                                                                        |                                                            |                          |                                                           |

| Dimension  | Description                                                                   | Indicator                       | More measurable indicators                                                            | Indicators in «Template» | <u>Direct or Indirect</u><br>impact on funding and financing |
|------------|-------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------|
| b. Freight | Freight transport can be classified based on the criteria in the next column: | Capacity utilization            | Tonnes transported per mode                                                           | No                       | Indirect                                                     |
|            |                                                                               | Availability                    | Number of vehicles                                                                    | No                       | Direct                                                       |
|            |                                                                               | Type of freight                 | 1. Number of “special vehicles” for fragile freight (for example refrigerator trucks) | No                       | Direct                                                       |
|            |                                                                               | Value of freight                | Value of freight (in euro) transported                                                | No                       | Direct                                                       |
|            |                                                                               | End user demand                 | Tonnes transported                                                                    | No                       | Indirect                                                     |
|            |                                                                               | Average distance for every mode | 1.Kms travelled                                                                       | No                       | Direct                                                       |
|            |                                                                               |                                 | 2.tkms                                                                                | No                       | Direct                                                       |
|            |                                                                               |                                 | 3. Vkms freight                                                                       | No                       | Direct                                                       |
|            |                                                                               |                                 | 4. Kms travelled per mode                                                             | No                       | Direct                                                       |
|            |                                                                               | Mode share                      | 1. % of travellers per mode                                                           | No                       | Indirect                                                     |
|            |                                                                               |                                 | 2. Number of trips per mode                                                           | No                       | Indirect                                                     |

| Dimension                     | Description                                                                                                                                                                                                                                                                                                                          | Indicator                                                           | More measurable indicators                     | Indicators in «Template» | <u>Direct or Indirect</u> impact on funding and financing |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------|--------------------------|-----------------------------------------------------------|
| 4. Project duration           | In which way the duration of a transport infrastructure project could be important for its funding.                                                                                                                                                                                                                                  | Duration of lifetime or service life (of transport infrastructures) | Years of operation of transport infrastructure | No                       | Direct                                                    |
| 5. Operational characteristic | The operational flexibility refers to the ability of each transport mode to reduce <b>discontinuity</b> . For example, vehicles can serve several purposes but are rarely able to move outside roads, this is the reason why road transport has average operational flexibility. Flexibility is improved thanks to containerization. | Operational flexibility                                             | Rerouting                                      | No                       | Indirect                                                  |

| Dimension           | Description                                                                                                                                                                                                                                    | Indicator                                        | More measurable indicators                                                           | Indicators in «Template» | <u>Direct or Indirect impact on funding and financing</u> |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------|
| 6.Performance       | Performance indicators, which are also called measures of effectiveness, are measurable outcomes used to evaluate progress toward established goals and objectives.                                                                            | Accessibility                                    | 1. Number of accidents                                                               | No                       | Indirect                                                  |
|                     |                                                                                                                                                                                                                                                |                                                  | 2. Number of obstacles                                                               | No                       | Indirect                                                  |
|                     |                                                                                                                                                                                                                                                | Availability                                     | Hours of availability of a transport infrastructure per day                          | No                       | Indirect                                                  |
|                     |                                                                                                                                                                                                                                                | Reliability                                      | Degree of trust/ satisfaction for each mode                                          | No                       | Indirect                                                  |
|                     |                                                                                                                                                                                                                                                | Safety                                           | Number of deaths, heavily and light injured                                          | No                       | Indirect                                                  |
|                     |                                                                                                                                                                                                                                                | Average speed                                    | Kms/hour                                                                             | No                       | Indirect                                                  |
|                     |                                                                                                                                                                                                                                                | Transit time                                     | Hours needed for the transportation of passengers or freight from point A to point B | No                       | Indirect                                                  |
| 7.Funding structure | Funding Schemes are ways/ schemes through which we try to take back the money we spent for the construction, management, maintenance and operation of a transport infrastructure (European Commission, 2007 and Law Library of Congress, 2014) | Pricing                                          | Euro paid per month by the operator to the investor                                  | Yes                      | Direct                                                    |
|                     |                                                                                                                                                                                                                                                | Repayment method                                 | Amount of money collected per method (tolls, user fees etc.)                         | Yes                      | Direct                                                    |
|                     |                                                                                                                                                                                                                                                | Repayment recipient_ Owner of the infrastructure | Amount of money paid to public sector, to PPP, to a bank etc.                        | Yes                      | Direct                                                    |

| Dimension   | Description                                                              | Indicator                                      | More measurable indicators                                                  | Indicators in «Template» | <u>Direct or Indirect</u><br>impact on funding and financing |
|-------------|--------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------|
| 8.Geography | Important geographical factors for the categorization of transport modes | Physical & Physiographical constraints         | 1. Number of rivers, lakes, physical obstacles                              | No                       | Indirect                                                     |
|             |                                                                          |                                                | 2. kms of rugged terrain                                                    | No                       | Indirect                                                     |
|             |                                                                          | Level of horizontal integration                | Links to other connections and modes                                        | Yes                      | Indirect                                                     |
|             |                                                                          | Type of connection (national or international) | 1.Interurban road<br>- international<br>- national<br>- regional<br>- local | No                       | Indirect                                                     |
|             |                                                                          |                                                | 2. Urban road                                                               |                          |                                                              |
|             |                                                                          | Exclusivity                                    | Number of users per type (industrial, private etc.)                         | No                       | Indirect                                                     |
|             |                                                                          |                                                |                                                                             | Yes                      | Indirect                                                     |

| Dimension                       | Description                                                                           | Indicator          | More measurable indicators                                                          | Indicators in «Template» | <u>Direct or Indirect</u> impact on funding and financing                               |
|---------------------------------|---------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------|
| 9.Sensitivity to external risks | The effect of different kind of risks and financial crisis on each mode of transport. | 1. Regulatory risk | % of risk: the regulation to influence funding                                      | Yes                      | Indirect or Direct, if the regulations concern the funding of transport infrastructures |
|                                 |                                                                                       | 2. Financial risk  | % of risk to lose part of the money invested on a road for example                  | Yes                      | Direct                                                                                  |
|                                 |                                                                                       | 3. Revenue risk    | % of risk not to recover the money spent for the construction of the infrastructure | Yes                      | Direct                                                                                  |

| Dimension                                | Description                                                                                                                                                                          | Indicator                                                          | More measurable indicators | Indicators in «Template» | <u>Direct or Indirect impact on funding and financing</u> |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------|--------------------------|-----------------------------------------------------------|
| <b>10. Regulation-Deregulation level</b> | The level of government's/ state's intervention through regulations.                                                                                                                 |                                                                    |                            |                          |                                                           |
| <b>a) Admission to the occupation</b>    | There are three necessary conditions so as someone to be admitted to the occupation (in some transport modes): 1) good repute, 2) professional competence and 3) financial standing. | % of hauliers without serious/repeated or recent criminal offences | OK                         | No                       | Indirect                                                  |
|                                          |                                                                                                                                                                                      | Number of official certificates                                    | OK                         | No                       | Indirect                                                  |
|                                          |                                                                                                                                                                                      | Available capital and reserves per vehicle/ boat etc.              | OK                         | No                       | Indirect                                                  |
| <b>b) Access to the market</b>           | Regulation 484/2002 certifies that the driver is legally employed by the transport operator who owns the vehicle.                                                                    | Number of permits per Member State                                 | OK                         | No                       | Indirect                                                  |
|                                          |                                                                                                                                                                                      | Number of legally employed drivers/ boatmasters etc.               | OK                         | No                       | Indirect                                                  |
| <b>c) Social Harmonisation</b>           | In order to achieve social harmonisation, the following rules should be followed:                                                                                                    | Driving hours per day                                              | OK                         | No                       | Indirect                                                  |
|                                          | 1) Specific driving/ flying time                                                                                                                                                     |                                                                    |                            |                          |                                                           |
|                                          | 2) Work time                                                                                                                                                                         | Working hours per day                                              | OK                         | No                       | Indirect                                                  |
|                                          | 3) Rest periods of drivers/captains etc.                                                                                                                                             | Rest hours per day                                                 | OK                         | No                       | Indirect                                                  |

| Dimension                  | Description                                                                                                                                                                                                                                                  | Indicator                                                              | More measurable indicators      | Indicators in «Template»    | Direct or Indirect impact on funding and financing                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| d) Technical Harmonisation | It refers to:1) environmental norms, 2) safety norms, 3) maximum weight of vehicles                                                                                                                                                                          | Noise and pollution emissions                                          | 1.Noise level/decibels per mode | No                          | <u>Indirect or Direct</u> ,<br>If we internalise the externalities. In this way, tolls or user charges will be higher and the providers of financing will take back their money faster. |
|                            |                                                                                                                                                                                                                                                              |                                                                        | 2. % of emissions per mode      | No                          |                                                                                                                                                                                         |
|                            |                                                                                                                                                                                                                                                              | Average speed per hour                                                 | Km/hour                         | No                          | Indirect                                                                                                                                                                                |
|                            |                                                                                                                                                                                                                                                              | Number of accidents                                                    | OK                              | No                          | Indirect                                                                                                                                                                                |
|                            |                                                                                                                                                                                                                                                              | Tonnes per vehicle/ vessel etc.                                        | OK                              | No                          | Indirect                                                                                                                                                                                |
| e) Pricing                 | It refers to rules about what prices the transport companies may charge or not exceed.                                                                                                                                                                       | Level of freedom on the fixing of rates                                | Degree of tariff freedom        | Yes_ Pricing_ tariff policy | Indirect                                                                                                                                                                                |
| f) State grants            | Granting aids to transport companies so as them to cover infrastructure costs                                                                                                                                                                                | Amount of money offered by the State as aid:                           |                                 | No                          | Direct                                                                                                                                                                                  |
|                            |                                                                                                                                                                                                                                                              | -grants to cover infrastructure costs                                  | OK                              |                             |                                                                                                                                                                                         |
|                            |                                                                                                                                                                                                                                                              | -grants to help transport companies survive                            | OK                              | No                          | Indirect                                                                                                                                                                                |
| g) Market                  | <u>Regulations of revitalising the market of a transport mode</u> (White Paper, A strategy for revitalizing the Communities railways” so as to help railways to win back the lost market shares. 1996) and <u>regulations about liberalising the market.</u> | Level of liberalisation of the market _use of LIB-Liberalisation Index | LIB index                       | No                          | Indirect or Direct                                                                                                                                                                      |

# Thank YOU