
Appendix 3 Basic Check List (Transportation)

Appendix 3 provides a list of the most representative indices and check items used when ascertaining the current level of infrastructure development in the transportation sector for a particular country or region. However, statistical data of developing countries is not by any means complete, and there are many instances where projects begin with preparatory study or development study due to inadequate or unreliable data.

While the desirable final result is that information on all of the check items be complete, here, the data items are separated into two categories: (1) Basic Data, which is relatively easy to obtain from past study reports and various statistical publications, and (2) Transportation Sector Data, obtaining a full set of which would be a favorable end result.

(1) Basic Data

In order to recognize the level of transportation infrastructure development in a particular country, it is first necessary to know the basic indicators. Comparing these with the average levels in low-income countries, lower-middle-income countries, and higher-middle-income countries can give an overall indication of the particular level of infrastructure development in that particular country or region.

Since there are limits to the transportation sector data that is obtainable in all developing countries, it is not possible to ascertain what level transportation infrastructure is at in a particular country with the basic data alone. It simply provides an estimate. Here, based on the World Bank's (2003) "*World Development Indicators*" and the Japan Railway Technical Service's (2005) "*Sekai no Tetsudo*[The World's Railways]," the following data is used.

Social and economic indicators: surface area (km²), GNI per capita (US \$)

Transportation indices: Roads: total road length (km), percentage of paved roads (%)

Railways: total railway operating distance (km)

Maritime transportation: volume of container transportation
(Twenty-Foot Equivalent Unit: TEU)

Air transportation: annual volume of air freight (ton-km)

Table A 3-1 Levels of Transportation Infrastructure (1996–2003)

	Surface area (km ²)	GNI (US \$)	Road coverage ratio (km/km ²)	Percentage of paved roads (%)	Railway coverage ratio (km/1,000km ²)	Container transportation (1,000TEU)	Air freight volume (million ton-km)
Low-income countries							
Kenya	580,367	360	0.11	12.1	4.32	-	377
Viet Nam	329,566	430	0.28	25.1	7.89	1,290.6	524
Bangladesh	143,998	380	1.44	9.5	19.38	486.3	632
Lower-middle-income countries							
Peru	1,285,215	2,020	0.06	12.8	1.55	537.6	196
Philippines	300,076	1,030	0.67	21.0	1.62	3,270.8	1,661
Thailand	513,115	2,000	0.11	98.5	7.88	3,800.9	5,571
Higher-middle-income countries							
Malaysia	329,758	3,540	0.20	75.8	5.16	7,541.7	1,924
Poland	312,683	4,570	1.17	68.3	65.71	287.4	5,346

Source: World Bank (2003), and others

Figure A 3-1 Levels of Transportation Infrastructure by Income Level Displayed Using the Level of Transportation Infrastructure in Higher-Middle-Income Countries as an Index of 100

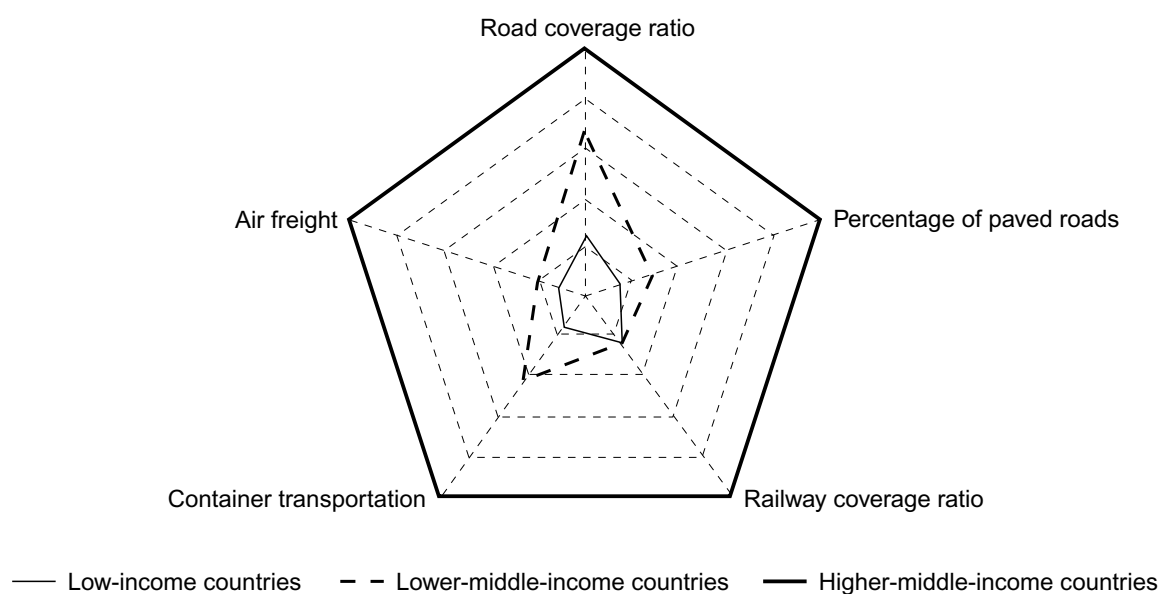


Table A 3-2 Basic indicators (Dataset for Figure A 3-1)

	Road coverage ratio (km/km ²)	Percentage of paved roads (%)	Railway coverage ratio (km/1,000km ²)	Container transportation (1,000TEU)	Air freight volume (million ton-km)
Low-income countries	0.3	10	7	1000	600
Lower-middle-income countries	0.8	20	7	3000	1000
Higher-middle-income countries	1.2	70	30	7000	5000

(2) Transportation Sector Data

Provided here, based on the concepts and structure of the Transportation Development Objectives Chart, is a list of the indices and check items required for ascertaining the current state of transportation and implementing transportation infrastructure development.

Social and Economic Data

	Check item/Index	Unit	Calculation method	Remark
	Surface area (national)	km ²		
	Total population (current/future)	persons		
	Population in capital (current/future)	persons		
	Real GDP per capita (current/future)	US \$		
	GINI coefficient (current/future)			
	Urban population rate	%		

Transportation Data

	Check item/Index	Unit	Calculation method	Remark
Improvements to the environment of transportation infrastructure development				
(Strengthening of sector administration system)				
1	Existence of road administration laws			
2	Existence of railway administration laws			
3	Existence of port administration laws			
4	Existence of airport administration laws			
5	Existence of transportation white papers			
6	Consistency with national development plans			
7	Private sector participation in the transportation sector			
8	Existence of local legal systems in the transportation sector			
9	State of BOT related laws			
(Strengthening financing)				
1	Inflows and outflows of transportation sector financing			
2	Existence of earmarked taxes/specific revenue sources			
3	Current management state of national transportation corporations			
4	Ratio of private sector capital in the transportation sector			
(Capacity development of personnel)				
1	Annual number of graduates from maritime universities/colleges	persons		
2	Annual number of graduates from aviation universities/colleges	persons		
3	Annual number of graduates from other transportation related technical universities/colleges	persons		
4	Number of licensed/certified maritime personnel	persons		
5	Number of licensed/certified aviation personnel	persons		
(Strengthening laws and regulations)				
1	Existence of road development/operation laws			
2	Existence of railway development/operation laws			
3	Existence of port development/operation laws			
4	Existence of airport development/operation laws			

	Check item/Index	Unit	Calculation method	Remark
Responses to internationalization and regionalization				
(Facilitation of the movement of goods and people)				
1	Total road length	km		
2	Total railway length	km		
3	Total number of berths at international ports	berths		
4	Total number of runways at international airports	runways		
5	Total number of cross-border railway services	services/day		
6	Total number of cross-border buses	services/day		
7	Existence of road development guidelines			
8	Existence of railway development guidelines			
9	Existence of ICAO membership			
10	Existence of IMO membership			
11	Volume of international freight (by sea)	ton		
12	Volume of international freight (by air)	ton		
13	Volume of international freight travel (by air)	ton-km		
14	Number of international passengers (by sea)	passengers		
15	Number of international passengers (by air)	passengers		
16	Volume of international passenger travel (by air)	passenger-km		
(Simplification of border-crossing procedure)				
1	Percentage of port facilities using EDI			
2	Percentage of airport facilities using EDI			
Balanced national development of a whole country				
(Improvement of road transportation)				
1	Share of cargo transportation by mode of transportation	%		
2	Share of passenger travel by mode of transportation	%		
3	Road construction ratio by road specification category	km/km ²		
4	Total road length by road specification category	km		
5	Total length of highways/expressways	km		
6	Percentage of paved roads	%		
7	Existence of road structure ordinance			
8	Number of registered vehicles by type of vehicle	vehicles		
(Improvement of railway transportation)				
1	Number of railway accidents	accidents		
2	Volume of freight (by railway)	ton		
3	Volume of freight travel (by railway)	ton-km		
4	Number of passengers (by railway)	passengers		
5	Volume of passenger travel (by railway)	passenger-km		
6	Railway operating distance	km		
7	Total length of double-track or greater sections	km		

	Check item/Index	Unit	Calculation method	Remark
(Improvement of maritime transportation)				
1	Ship tonnage by vessel type	vessels		
2	Ship tonnage by vessel type	G/T		
3	Ship tonnage by use, vessel age, tonnage class	vessels		
4	Ship tonnage by use, vessel age, tonnage class	G/T		
5	Number of shipbuilding facilities by scale	facilities		
6	Number of ports (by classification)	ports		
7	Total number of berths at domestic ports	berths		
8	Number of maritime accidents	accidents		
9	Volume of domestic cargo (by sea)	ton		
10	Volume of domestic cargo transportation (by sea)	ton-km		
11	Number of domestic passengers (by sea)	passengers		
12	Volume of domestic passenger travel (by sea)	passenger-km		
13	Volume of cargo handled nationwide (by sea)	ton		
(Improvement of air transportation)				
1	Number of registered airplanes by type	aircrafts		
2	Number of aviation accidents	accidents		
3	Volume of freight transportation (by air)	ton-km		
4	Volume of passenger travel (by air)	passenger-km		
5	Volume of domestic freight (by air)	ton		
6	Volume of domestic freight transportation (by air)	ton-km		
7	Number of domestic passengers (by air)	passengers		
8	Volume of domestic passenger travel (by air)	passenger-km		
9	Number of airports	ports		
10	Number of passengers by airport	passengers		
11	Volume of cargo handled by airport	ton		
Toward sustainable urban development and improvement of urban life				
(Development of transportation systems to secure smooth transportation)				
1	Total road length in urban areas	km		
2	Road construction ratio in urban areas	%		
3	Signalized intersection ratio	%		
4	Average urban congestion rate	%		
5	Total tram/LRT length	km		
6	Number of passengers (by tram/LRT)	passengers		
7	Total urban railway/subway length	km		
8	Number of passengers (by urban railway/subway)	passengers		
9	Bus operating distance	km		
10	Number of passengers (by bus)	passengers		
11	Share of public transportation by mode	%		
12	Percentage of heavy vehicles (vehicle mix)	%		
13	Existence of prior introduction of TDM			
14	Parking capacity in urban areas	vehicles		
15	Existence of a traffic control center			
(Establishment of a safe environment for urban transportation)				
1	Total number of road traffic accidents	accidents		
2	Total number of fatal accidents	accidents		
3	Number of traffic violation arrests	arrests		