SECTOR ASSESSMENT (SUMMARY): ROAD TRANSPORT (NONURBAN)

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Pakistan's transport sector contributes 10% to its gross domestic product (GDP), consumes 35% of the total energy annually, and is the recipient of 20%–25% of the annual federal public sector development program. It generates a large number of employment opportunities, estimated at 2.3 million jobs (5.9% of the employed labor force). Total inland traffic by road and rail transport is estimated at 239 billion passenger-kilometers (km) of passenger traffic and 153 billion ton-km of freight traffic, growing at 4.5% (passenger traffic) and 3.0% (freight traffic) per annum.

2. The total road network is about 260,000 km, consisting of national highways (about 11,400 km), provincial highways (92,500 km), and district and urban roads (156,100 km). The National Highway Authority (NHA) is responsible for national highways, including access-controlled motorways and expressways, while provincial and district administrators are responsible for provincial highways and district roads. The national highway network, which comprises 4% of the total road network, caters to 80% of commercial traffic. Road transport is a dominant transport mode in Pakistan, accounting for 91% of passenger traffic and 96% of freight traffic. Despite the high reliance on road transport, the quality of the road infrastructure causes severe capacity constraints. Although the quality of the national highways has improved considerably through continuous investments and better road asset management, the overall road condition is not good—only 7% is in good condition while 26% is still in poor or very poor condition.[1] The condition of the provincial highways is worse—many roads are either permanently impassable or subject to closure during bad weather.

3. **Transport policy framework.** A national transport policy is a prerequisite for the effective development of a sustainable and cost-effective transport system. Recognizing the importance of this, the government developed a national transport policy in 2008 with Asian Development Bank (ADB) assistance that covers transport policy and governance; institutional development; policy implementation and management capabilities; and infrastructure financing, investment, and maintenance.[2] It focuses on (i) improved efficiencies in railways, (ii) effective road asset management, (iii) viable urban transport options, (iv) commercialized port operations based on the landlord concept[3], (v) improved shipping operations, (vi) liberalized open skies for civil aviation, (vii) a multimodal planning system, and (viii) trade facilitation. This comprehensive national transport policy, which was supposed to guide the government's transport sector development and aid agencies' intervention, has yet to be approved and adopted by the government.[4]

4. **Road funding**. Road investment is mainly funded by the annual allocation of the federal public sector development program. The federal budget allocation has been insufficient for the timely and necessary expansion of road capacity. The unstable allocation of the annual federal

[1] The maintenance condition of motorways is much better—35% in good condition and 65% in fair condition—as access is controlled for overloaded trucks and nonmotorized and slow-moving traffic.
[2] ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic Republic of Pakistan for the National Highway Development Sector Investment Program.* Manila.
[3] Under the landlord concept, a port authority owns, develops and maintains infrastructure but leases/ rents it to the private sector.
[4] National Highway Authority. 2008. *Draft National Transport Policy*. Islamabad.

budget has caused difficulty for the NHA to spend scarce resources effectively with adequate planning (Table).

Table: Federal Road Expenditure

Item	**Actual** (PRs billion) FY2008[5]	FY2009	FY2010	FY2011	FY2012	FY2013
1. Construction (PSDP)	28.6	32.3	44.7	28.3	56.5	50.7
Annual growth (%)		12.8	38.4	(36.6)	99.6	(10.3)
2. Maintenance						
Toll revenue	6.8	6.5	8.3	10.4	12.4	12.8
Federal grants	0.8	0.9	1.0	1.1	1.2	1.4
Others (police fines, ROW revenue, weigh bridges)	2.5	1.4	2.0	1.6	2.5	2.3
Subtotal	**10.1**	**8.8**	**11.3**	**13.1**	**16.1**	**16.3**
Annual growth (%)		(12.9)	28.3	16.8	22.5	1.9
3. Unconstrained Maintenance Requirement under HDM-4	14.3	15.8	19.0	25.1	28.6	28.0
Actual maintenance versus unconstrained requirement (%)	70.3	55.6	59.4	52.4	56.3	58.6

( ) = negative, HDM-4 = Highway Development and Management Model-4, PSDP = public sector development program, ROW = right-of-way, PRs = Pakistan rupees.
Source: NHA Road Asset Management System Report.

5. **Sustainable maintenance.** Through lengthy policy dialogues led by key development partners, the government established a dedicated road maintenance fund in 2003 that is financed by toll revenue from the motorways and national highways, federal grants, and other road revenues. This has provided the NHA a stable source for road maintenance expenditure—free from federal fiscal budget allocation, which is open to political influence. This has enabled the NHA to plan and use scarce resources effectively. As the table shows, maintenance spending increased steadily year by year compared with spending on road construction, except for FY2009 when the national economy shrank because of the global financial crisis. However, resources generated by the road maintenance fund are short of the unconstrained requirement. The challenge is how to expand the base of toll collection. The solution may be to build more toll-based motorways and transform existing national highways into toll-based ones with some improvement, which could only be pursued in the long term.

6. On a short- or medium-term basis, however, the adequacy of toll rates needs to be assessed and made comparable with international practices. Toll rates in Pakistan are some of the lowest in the world, particularly compared with those of other South Asian countries. According to the NHA Tolling Policy (2010), the NHA is authorized to raise toll rates based on the inflation rate on a 3-year periodic basis or on a needs basis. Toll rates have not been increased since 2011. The NHA should assess the optimum level of toll rates in Pakistan, particularly compared with those of other South Asian countries, and make them realistic to recover road expenditure and ensure adequate user-pay approach. This will help narrow the gap between the maintenance requirement and resources generated through the road maintenance fund, and slow down the accumulation of backlog maintenance.

7. **Road asset management system.** The road transport cost consists of (i) the road user/vehicle operating cost, (ii) the road construction cost, and (iii) the road operation and maintenance cost. The road user and vehicle operating cost is dominant—normally 50% of the total cost—while the road construction cost is 15%, and the road operation and maintenance is

[5] The fiscal year (FY) of the government ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2008 ends on 30 June 2008.

35%. Hence, managing and controlling the road user and vehicle operating cost is critical to managing the adverse impact of the road transport cost to the economy. The road user and vehicle operating cost consists of fuel consumption, oil consumption, tire wear and tear, parts replacement, vehicle depreciation, travel time, and accidents—all of which are closely linked to road quality. Data show that it increases gradually in proportion to the international roughness index (IRI) until the IRI reaches about 4, but beyond 4 it grows exponentially. Maintaining road quality within a tolerable level is thus important to stem the road transport cost in the economy.

8. The NHA established the Road Asset Management Directorate, and installed a sophisticated road asset management system based on the Highway Development and Management Model-4 (HDM-4) aided by various development partners including ADB. The system monitors the road conditions of all national highways by regularly collecting pavement condition data, traffic data, falling weight deflectometer data, roughness data, road user and vehicle operating cost data, socioeconomic data, and revenue data from toll plazas. Fed by these data, the system generates the annual road maintenance plan based on the strategy and program analysis, focusing on preventive maintenance. This systematic way of prioritizing road maintenance prevents scarce resources from being misused.

9. **Road asset preservation.** Vehicle overloading is a major cause of premature pavement deterioration and an impediment to sustainable development of the highway network. Overloading reduces the economic benefits of road projects and increases maintenance costs. Two-axle trucks, accounting for over 50% of truck traffic, contribute most to overloading. NHA efforts to monitor and control overloading through weighing stations and fining violations are ineffective, as no unloading facilities or storage spaces are available at the weighing stations.[6] Fining violations with the low level of fines is tantamount to legalizing overloading.

10. The cause of rampant overloading is the archaic trucking industry. The trucking sector has a small fleet of owners who usually own less than five vehicles. The trucking fleet is largely outdated and runs on underpowered engines. High import tariffs on high-capacity multi-axle trucks protect local manufacturers producing low-capacity and low-powered trucks, and prevent the trucking sector from improving its fleet. This makes the trucking sector highly competitive, characterized by low barriers to entry, many small operators, and low freight rates. Many trucks operate long hours and carry excessive loads while traveling at low speeds (20 to 25 km/hour). To maintain high revenues, trucks are overloaded. Without restructuring the trucking industry, overloading will persist despite the NHA struggling to stem it through law enforcement.

11. **Road safety.** The fatality rate of 38 per 10,000 vehicles in Pakistan is very high compared with developed countries, although comparable with developing countries. Road improvements increase the risk of severe accidents because of speeding. Accidents result from high speeds, lack of road safety measures, poor discipline and enforcement of rules, and poor condition of vehicles. The problem is exacerbated by lack of awareness and poor knowledge of road safety among the public and road users. National and provincial efforts and coordination are not concerted, and responsibilities and accountability among the institutions and provincial departments are unclear.

12. The National Highway and Motorway Police (NHMP) was established under the federal Ministry of Communications in September 2000. The NHMP has managed road safety on motorways and national highways. The NHMP's efforts prove that enforcement, coupled with

[6] Monitoring and controlling overloading through weigh stations on motorways is not as ineffective, as the access of overloaded trucks to the motorways can be controlled.

engineering improvements and vehicle monitoring, can significantly reduce traffic accidents and deaths. NHMP services along motorways include ambulances with paramedics, mobile workshops with mechanics, roadside emergency telephones, and campaigns targeting commuters at motorway entry points. Through effective training and proactive organization reforms, the NHMP has achieved a highly motivated and dedicated team of officers at each patrol point, commanded by a chief patrol officer. Development partners have recognized the successful performance of the NHMP, and assist in expanding its operations to cover the national highway network.

13. **Public–private partnership.** Large investments in road infrastructure are needed to support accelerating economic growth, which is necessary to reduce poverty and unemployment. The existing resource base—mainly the government's public sector development program and development partners' assistance—is inadequate to meet road development needs, and private sector investment is necessary to fill the resource gap. ADB provided a loan to help the NHA establish a public–private partnership (PPP) framework of policy, laws, and regulations; and improve the PPP legal and regulatory framework.[7] The government adopted and announced the policy for PPP in the national highway subsector. Awareness and ownership at the highest levels of government were deepened, as evidenced by rapid approval of the policy by the NHA executive board and the National Highway Council, chaired by the minister of communications, and establishment of the PPP Cell in the NHA in 2007. Thereafter, the NHA identified 35 PPP projects with a total value of at least PRs420 billion. Yet, these projects have made little progress toward financial closure, demonstrating the difficulty of pricing the risks shared by private investors. Nonetheless, the NHA makes a great effort to move forward and reach financial closure for identified PPP projects to accelerate road investments, unconstrained from scarce public resources. The key challenge is how to reduce the country risk to a tolerable level for private sector investors to price it properly and internalize it in their financing structure.

2. Government's Sector Strategy

14. The Medium Term Development Framework (MTDF), 2005–2010[8] outlined government policy for the transport sector as follows: (i) optimal utilization of existing capacity, with an emphasis on rehabilitation and upgrading; (ii) selective and cost-efficient investments in economically viable new roads, including expanding the rural network; (iii) developing a road network to facilitate transport and trade with Afghanistan, the Central Asian republics, and India; (iv) developing an innovative financing mechanism and enhancing private sector participation; (v) prioritizing road maintenance and safety; (vi) effective control of overloading on the roads; and (vii) enhancing the capacity of the road sector agencies. Since cross-border and domestic trade traffic in Pakistan are concentrated along the north–south national trade corridor (Karachi–Lahore–Peshawar), under the MTDF the government launched a National Trade Corridor Improvement Program (NTCIP) in 2005, to be funded jointly with development partners.

15. The aim of the NTCIP was to develop regional trade through improvement of multimodal infrastructure—to link domestic industrial centers and neighboring countries in the north (Afghanistan, People's Republic of China [PRC], and Central Asian states) with ports in the south. Apart from corridor development, the NTCIP emphasizes trade facilitation, including an integrated border management system at land border crossings. The government's midterm

[7] ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic Republic of Pakistan for the National Highway Development Sector Investment Program.* Manila.

[8] Planning Commission. 2005. *Medium Term Development Framework (MTDF), 2005–2010*. Islamabad.

review of the MTDF, conducted in 2008, reaffirmed the main thrusts of the MTDF and supported concentrated efforts to develop the national trade corridor through the NTCIP. The initial time frame for the NTCIP was 2006–2012, but implementation has been delayed mainly because of political insecurity, the unstable security situation, and the global financial crisis. The NTCIP still governs the country's road sector development, particularly for enhancing regional connectivity.

16. Pakistan joined the Central Asia Regional Economic Cooperation (CAREC) Program in 2010. New CAREC corridors, expanded to include Pakistan and endorsed by CAREC ministers in October 2013, specify CAREC road routes in Pakistan that more or less overlap with the national trade corridor under the NTCIP. CAREC road routes in Pakistan, together with the NTCIP, will guide the government's future road sector investment program until 2020. In addition, the government announced the development of a new Pakistan–PRC economic corridor linking Kashgar in the PRC to Gwadar port in Pakistan, mainly passing the western side of the Indus River. Detailed alignment of the economic corridor and its development program has yet to be firmed up. Nonetheless, the Pakistan–PRC economic corridor development, once launched with a specific financing plan, will make a substantial change in the government's strategy for nationwide road network development.

3. ADB Sector Experience and Assistance Plan

17. Before 1995, ADB assistance to Pakistan focused on improvement of rural access roads to ensure all-weather access to villages, which complemented ADB's then focus on agriculture sector development. From 1995, the perspective was expanded to national connectivity for economic growth in general, and assistance started to cover provincial and national highways. Since 2005, ADB assistance has focused on the trade corridor and regional connectivity. Two multitranche financing facilities provided in 2005 and 2007 for the purpose are due to be completed by 2015 and 2017. While ADB's focus on the trade corridor and regional connectivity will continue, in line with the government's emphasis on the national trade corridor and CAREC road routes, some resources will be shifted to provincial highways for balanced road network development. As part of improving regional connectivity, ADB will also assist in improving border services by modernizing border point infrastructure and procedures.

18. ADB's program loan, provided in 2001 for the national sector policy reform program, assisted the NHA to implement comprehensive reform programs covering transport policy, road sector resource management, road sector preservation, institutional efficiency improvement, and road safety. Subsequent ADB assistance followed up on the reform programs set by the program loan and replicated the same reform programs at provincial level. The NHA has become a capable road agency through such efforts, despite various structural constraints. Key achievements are (i) establishing the road maintenance fund and securing a stable source of road maintenance expenditure; (ii) establishing the road asset management system, which facilitates more efficient use of scarce resources; (iii) establishing the NHMP, which has contributed to controlling overloading and reducing traffic violations and accidents on motorways and national highways; (iv) promoting road safety awareness of policy makers and regulators; and (v) changing the mindset of policy makers and NHA officials toward the necessity of PPP. Credit for these achievements should be shared with other development partners such as the World Bank, Japan International Cooperation Agency, and bilateral agencies. ADB will continue to promote institutional capacity development and sector reforms, focusing on (i) establishing a national transport policy, (ii) promoting road safety, (iii) preventing overloading, and (iv) expanding PPP operation in cooperation with other development partners.

Sector Results Framework (Road Transport [nonurban], 2013–2018)

Country Sector Outcomes		Country Sector Outputs		ADB Sector Operations	
Outcomes with ADB Contribution	**Indicators with Targets and Baselines**	**Outputs with ADB Contribution**	**Indicators with Incremental Targets**	**Planned and Ongoing ADB Interventions**	**Main Outputs Expected from ADB Interventions**
Reduced travel time on the key road corridors linking sea ports, industrial centers, and border-crossing points	Travel time for Karachi–Peshawar reduced from 39 hours (2013) to 24 hours (2018) Travel time for Karachi–Chaman reduced from 34 hours (2013) to 20 hours (2018)	Road corridors expanded, improved, and rehabilitated	300 km of motorway (expressway) newly constructed by 2018 1,500 km of national highway improved/rehabilitated by 2018 2,000 km of provincial roads improved/rehabilitated by 2018	**Planned target subsectors** Motorways or expressways (67% of funds) National highways (17% of funds) Provincial roads (16% of funds) **Pipeline projects with estimated amounts** NTCHIP II ($200 million) and NTCHIP III ($500 million) Balochistan National Highway Network Improvement ($195 million) Provincial Road Improvement ($200 million) **Ongoing projects with approved amounts** NTCHIP I ($170 million) NHDSIP II ($230 million) Flood Emergency Reconstruction ($370 million)	**Planned key activity areas** 240 km of motorway (expressway) constructed 630 km of national highway improved/rehabilitated 800 km of provincial roads improved/rehabilitated **Pipeline projects** 180 km of motorway constructed 200 km of national highway and 400 km of provincial roads improved/rehabilitated **Ongoing projects** 60 km of motorway constructed 430 km of national highway and 400 km of provincial roads improved/rehabilitated

ADB = Asian Development Bank, NHDSIP = National Highway Development Sector Investment Program, NTCHIP = National Trade Corridor Highway Investment Program.
Source: National Highway Authority and ADB staff estimates.