1. Country and Sector Background
The Lao People’s Democratic Republic (Lao PDR) has a population of 6.5 million and a land area of 236,800km², with a density of 27 persons/km²; one of the lowest in the region. Most of the population, 65 percent, lives in rural areas. The country is mostly mountainous and has no sea access. It is, however, located centrally within the Greater Mekong Sub-region (GMS), which includes Cambodia, Lao PDR, Myanmar, Thailand, Vietnam, and Yunnan and Guangxi Provinces of China – and thus, is land-linked with the sub-region’s population of 300 million. Lao PDR has been growing rapidly in the last years, with the economy expanding on average by 6.5 percent per year between 1990 and 2009. Despite continuous uncertainty in the global economy in 2009-2010, and two typhoons that caused large-scale devastation in 2011, the Lao economy achieved 8.0 percent growth in 2011. The economy is projected to maintain an annual average growth rate of 7.5 percent between 2012 and 2015 and of 7.5 percent over the longer term (2016 to 2020). Cross-border investment and trade with neighboring countries continues to grow as Lao PDR becomes more integrated into the region. Furthermore, regional integration is expected to accelerate as ASEAN members have agreed to establish the ASEAN Economic Community (AEC) with the goal of regional economic integration by 2015. The ASEAN single market and production base is to comprise free internal movement of goods, services, investment, capital and skilled labor.

Despite this rapid growth around 28 percent of the population continues to live under the national poverty line and household vulnerability to shocks, including those arising from natural disasters, remains high. The incidence of poverty varies according to geographic areas; rural poverty at 38 percent is far higher than urban poverty at 20 percent. The expansion of the road network has been one of the major drivers of poverty reduction in the last decade.

The Lao Road Network
Road is the predominant mode of transportation in Lao PDR. The road network carries 93 percent of passenger traffic (passenger-km) and 81 percent of freight traffic (ton-km). The Mekong River and its tributaries carry the remaining share of freight (19%) along with 5 percent share of passenger traffic. Airfreight is negligible, although domestic-passenger air transport has
reached 2 percent of the demand and plays a critical role linking urban areas to otherwise inaccessible parts of the country. In 2009, a 3.5 km rail link was opened, extending the Thailand network to Vientiane.

The road system extends over 35,500 km. The national road network comprises approximately 6,900 km of roads, a majority of which have either a sealed (56%) or gravel (30%) surface. Only 53 percent of the national roads are paved and are mostly in acceptable condition (80 percent of paved roads are classified as good or fair), generally constructed to an appropriate standard for the volume and nature of the traffic carried. However, the provincial roads (totaling 7,000 km) and district and rural roads (almost 21,000 km) are mostly gravel or earth roads making them highly vulnerable to heavy rains and floods. Embankment erosion, road flooding, and seasonal closures of roads occur frequently. Only 3 percent of the local roads are paved and 40 percent of the villages do not have year-round road access.

**Current Challenges for the Sector**

**Road Maintenance and Financing.** One of the main challenges for the sector is the growing gap in public financing to respond to the demand for expansion of the road network and its maintenance. Rapid economic growth in the last years has increased the pressure on the existing road network through traffic volume and overloading, while large sections of the existing network are approaching the end of their life-cycle. Natural disasters have posed additional challenges adding to the likelihood of deterioration. Since appraisal of the original project, the country has been hit by two Typhoons in 2011 (Nok Ten and HaiMa), which negatively affected the overall condition of the road network. The typhoons caused extensive flooding with an estimated total damage of US$ 174 million. The damage to road transport accounted for more than 60%. Even though the Government of Laos allocated more than LAK 200 billion from the national budget to undertake emergency repair works, a substantial financing gap remained. Growing trade and regional integration are expected to continue expanding, which will increase the pressure for maintaining the network in good condition and to upgrade the routes connecting Laos with neighboring countries whose economies are also rapidly growing.

**Traffic Safety and Environmental aspects.** Growing traffic volumes, speed, and heavy transport are increasing the vulnerability of pedestrians and communities along national and provincial roads to traffic accidents; in addition, dust generated by an increase of traffic using unpaved roads is imposing health risks to communities living alongside the road. In urban centers the rate of accidents has rapidly increased in the last years, particularly in the three most populated centers of Vientiane Capital, Pakse, and Savannaketh, resulting in an expanding agenda for traffic management and road safety and the need for investing more resources in traffic furniture, as well as traffic education and awareness.

**Sector Policies and Strategy**

The Government of Lao PDR (GOL)’s Seventh National Socio-Economic Development Plan (NSED P 2011-2015) defines the main objective for infrastructure development as to ensure that an efficient transport system creates favorable conditions for sustainable growth, industrialization, and poverty reduction, as well as regional integration. Connecting North-South and East-West economic corridors and linking with neighboring countries is an integral aspect of
the overall national strategy for graduating from the ranks of the Least Developed Countries by 2020. Targets for the sector include the annual expansion of freight volumes by 7 percent.

In 2009, the Ministry of Public Works and Transport (MPWT) developed a National Transport Strategic Plan (NTSP) for 2009-2015 with technical assistance from the World Bank, Swedish International Development Cooperation Agency (SIDA) and Australian Agency for International Development (AusAID), as a basis for aligning government and donor resources to support the identified sector priority investments. The NTSP serves as planning foundation to ensure that the Government is able to lead the sector development and coordinate all available resources in an efficient manner for the benefit of the country. The priorities of the NTSP reflect national directions and emphasize the development of road infrastructure focusing on measures for maintaining and preserving the existing road networks, and improving rural accessibility by completing provincial and district linkages with all-weather road access. The NTSP prioritizes rolling investment and maintenance program for the road sector based on the application of a Unified Road Management Framework (URMF). The URMF extends the existing Road Management System (RMS) by applying the Provincial Roads Management Maintenance System (PRoMMS) data such that an optimized program can be developed from all road classifications. The combined use of these two systems facilitates the establishment of overall sector priorities and funding allocations.

To reflect the new directions set in the Seventh NSEDP, the NTSP was updated in 2011 to include the need to explore innovative sources of financing and to strengthen governance mechanisms for the sector. The MPWT has organized two high level workshops on Good Governance in November 2011 and on Public Private Partnerships in February and April 2012.

2. Objectives
The Project Development Objective (PDO) is (a) to improve road services on two main national corridors and the provincial road network, (b) to rehabilitate roads damaged by Typhoon Ketsana, and (c) to establish and operationalize a contingency fund for quick disaster response in the road sector.

The achievement of the objective will be measured through the following key outcome indicators by the end of the project:

- Reduced travel time on upgraded roads;
- Increased number of people connected by paved roads;
- Increased percentage of provincial road network in good and/or fair condition;
- Recovered conditions of Typhoon Ketsana damaged roads; and
- An emergency contingency fund established for quick restoration of passability and safety of disaster affected national and provincial roads.

3. Rationale for Bank Involvement
The Bank has a long-standing engagement in the sector and remains committed to promote growth and poverty alleviation through the improvement of the transport sector as a whole and the road sector in particular through the Lao Road Sector Project (LRSP).
A cost overrun developed during implementation of the LRSP caused mainly from necessary changes in design to enhance the disaster resilience of the two national road sections (slope stabilization, water-crossing, and drainage structures) and to accommodate the recent installation of electricity lines along National Roads 1B and 6A which increased the quantity of earth works and rock excavations. The cost overrun also resulted from (a) discrepancies in the original design of both national corridors, particularly on road alignment, quality of existing embankment, sub grade and base-course materials, and underestimation of quantities. In addition, (b) Typhoon Haiima and Nok Ten in 2011 caused severe deterioration of the provincial network which resulted in a large financing gap for road maintenance; and overall price escalation for materials and fuel. Additional Financing is also proposed to scale up project impact by building on institutional development interventions in the area of governance and the strategic management of sector priorities based on lessons learned from original project implementation. Strengthening sector capacities at central and provincial levels for strategic management, internal controls, fiduciary, environmental and social safeguard management, remain highly relevant, while sector governance and the identification and management of innovative financing instruments such as Public Private Partnership have been identified as emergent strategic issues. Additional Financing would also top up the emergency contingency fund used up following Typhoons Haiima and Nok Ten, and would replenish the components from where resources were reallocated to meet emergency road repairs after these Typhoons, as anticipated in the original project following OP/BP 8.00.

**Economic Analysis**

Economic analysis was carried out for upgrading of National Roads 1B and 6A based on the traffic data collected in March, 2012, the updated costs that reflect additional works to strengthen disaster resilience of the project roads and for NR 6A, and the construction of a Bridge over Nam Ma River. Results indicate that both roads would yield significant economic benefits. The Economic Internal Rate of Return (EIRR) combined for both NR1B and NR6A is 26% and the Net Present Value (NPV) is US$24.3 million. Large increases in base traffic since appraisal explain the robust EIRR compared with the original estimation at appraisal stage: the current Adjusted Annual Daily Traffic (AADT) of NR 6A is 1,351 compared with 285 in 2008 when the baseline traffic was counted for appraisal, and the equivalent for NR 1B is 557 compared with 163 in 2008. Although motorcycles account for most of the increase in traffic, the volume of large vehicles also increased: the combined AADT of buses and trucks is now 140 for NR 1B compared with 36 in 2008, and 48 for NR 6A compared with 11 in 2008. This is a conservative estimation as generated traffic and diverted traffic, which are expected to be significant as the project roads will provide shorter connections with neighboring China (NR1B) and Vietnam (NR6A), are not taken into account. Sensitivity analysis shows that the project is economically robust even if the cost increases by 20% and the traffic growth decreases by 20%. An evaluation period of 20 years and a discount rate of 12 percent were adopted. The economic costs of the road works – net of taxes – were considered 80 percent of financial costs. The cost-benefit analysis was computed using the Highway Development and Management Model (HDM-4) based on: (i) actual traffic volumes and forecasts; (ii) vehicle operating costs and travel time savings for users; and (iii) maintenance cost savings.

**4. Description**
The following is a summary of the activities financed by the additional financing.

**Component A: Road Network Improvement and Preservation.** Under AF upgrading of National Roads 1B and 6A and maintenance of provincial roads would continue and would include additional works for slope stabilization, drainage systems and water crossing structures (small bridges and culverts), and surface treatment, works that would help increase the disaster resilience of the investment. Changes under Component A include the construction of a bridge over the Nam Ma River (180 meters long) connecting two sections of National Road 6A, which would replace an inefficient ferry currently operating only for 6 to 8 months a year due to extreme water level fluctuations during dry and wet seasons. The bridge would also serve to facilitate the connection between the Lao and Vietnamese road networks, which in turn is expected to have a positive impact on trade between the two countries. AF would also finance supervision consultancy services required due to additional road and bridge works on NR1B and 6A, and the application of disaster resilience measures on provincial roads. The provision of road safety furniture (e.g. fixtures, signage, equipment) initiated during the original project would continue during AF and would be complemented with institutional development activities including: (a) support to the implementation of the National Road Safety Strategy 2011-2020 and Action Plan, and strengthening coordination and management capacities at both, central and local levels, (b) strengthening provincial and district capacity for traffic management and road safety planning, enforcement, and community awareness, and (c) accident prevention and safety rules enforcement focusing on: (i) training for the police force, (ii) awareness-raising campaigns targeting schools, local communities, and the general public, and (iii) strengthening the capacities for quality assurance of driving schools.

1. **Component B: institutional strengthening.** The AF would finance scaling up institutional strengthening activities in three main areas: (a) development of sector capacities for the management of innovative financing mechanisms such as Public Private Partnerships (PPP), which in turn would help address growing demand for connectivity and resulting financing gaps; feasibility studies of PPP pilots would be conducted for selected road sections; (b) further strengthening governance mechanisms through: (i) expanding the e-governance platform initiated under the original project to integrate the various business processes (accounting, asset management, local and national roads management system, and GIS), developing a new application for e-statistics, and testing the network in Vientiane Capital and selected provinces; (ii) enhancing disclosure capacity, developing internal control guidelines, training, and piloting their application in MPWT departments and selected provinces; and (iii) strengthening citizen feedback mechanisms through the development of the MPWT hotline; (c) maintaining support for the development of strategic sector capacities on financial management, safeguards monitoring, supervision and quality assurance, and M&E, through technical assistance, mobilization of global knowledge through South-South cooperation in the above mentioned areas, and related initiatives.

**Component C: Disaster Recovery and Contingency.** AF would be used for: (a) topping-up the emergency contingency fund, and (b) providing technical assistance to strengthen the management of this emergency facility through the development and establishment of standard operating procedures for planning, procurement, implementation, safeguards, disbursement, monitoring and reporting; and subsequent training.
5. Financing

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<td><strong>Total</strong></td>
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6. Implementation

There are no major changes in the implementation arrangements under the AF. The MPWT is the Project Implementing Agency and remains responsible for overall technical supervision, execution and management of the project. The project continues to work with the Department of Planning and Cooperation (DPC) for strategic planning, capacity building, and monitoring; the Department of Roads (DoR) for road maintenance and improvement activities; the Department of Inspection (DOI) for the internal control system; Cabinet Office for public disclosure; the Department of Personnel (DoP) for training; The Department of Transport (DoT) for Traffic safety; and the provincial DPWT for data collection, local road planning, civil works, and contract management. MPWT will continue to provide strategic review and oversight of the Project led by the Minister or a designated high-ranking official. The Director General of DPC, or a designated Deputy Director General of DPC, will continue to manage and coordinate day-to-day project implementation and monitoring. During the implementation of the original project, the financial management function was transferred from the DOR to the Department of Planning and Cooperation (DPC); this arrangement will be maintained during AF.

7. Safeguard Policies (including public consultation)

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<td>Environmental Assessment (OP/BP 4.01)</td>
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8. List of Factual Technical Document

- *Economic Analysis of National Road 1B and 6A*. April 13, 2012
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