1. Country and Sector Background

1. Over the course of the past five years the Armenian economy has grown by double-digit rates annually on average, and high growth rates have been achieved for over a decade. Being the economic center of Armenia, Yerevan’s competitiveness and attractiveness is critical to sustain these remarkable growth rates. Nonetheless, like the experience of similar cities in Western Europe in the 1960s and 1970s, the congestion of Yerevan’s transport system and its inability to efficiently and safely satisfy the growing and diverse mobility needs in the city may be creating a serious bottleneck for productivity growth and poverty reduction.

2. The strong economic growth has naturally led to a sharp increase in car ownership and motorization in Armenia and in Yerevan in particular. It is estimated that there are currently 160,000 registered motor vehicles in Yerevan with a population of 1.1 million, or about 145 vehicles per 1,000 persons. This is still a low per capita car ownership level as compared to higher income countries where ownership typically exceeds 400 vehicles per 1,000 persons.
However, as the economy of Armenia continues to grow, as much as 20,000 vehicles could be
added to Yerevan streets every year, and the motor vehicle fleet in Yerevan could easily double
in eight years or less, and if the experience in other rapidly developing countries is any guide, the
fleet could even triple within a decade or soon thereafter. With the rapid motorization, Yerevan
is in the beginning stages of experiencing severe traffic problems that will only dramatically
worsen in the near term future without substantial corrective actions.

3. While private vehicle ownership offers greater freedom of movement for those who have
access to these vehicles, the adverse consequences of this trend are already manifesting
themselves in congestion at selected times and places, increasing accident rates, and emerging air
pollution. Particularly concerning is the high accident rate. In 2006 there were 332 reported
traffic fatalities and 2,089 injuries in Armenia representing increases of 40 percent and 66
percent respectively compared to the situation five years earlier. The death rate per 1 million
inhabitants is 103, about twice as high as the best performing European countries, and the death
rate per 10,000 vehicles is 10.5, over five times as high as Europe’s best. Approximately 25
percent of the deaths are occurring in Yerevan of which about 77 percent are pedestrians.

4. Beyond the challenges posed by the rapid growth of the motor vehicle fleet are the dramatic
changes in public transport operations in Yerevan. Municipality-owned and run surface and
underground operators have been loosing market share, and it is only the private minibus
operators that satisfy the increasing demand for public transport. The municipality-owned bus
and trolleybus companies during 2006 carried only about 7.5 percent of total public transport
trips and are in poor financial condition. The ridership on the single line metro is very low,
contributing only about 7.5 percent of total public transport trips in 2006, and this share is
modestly declining. The dominant share, approximately 85 percent in 2006, of all public
transport trips is being carried by the non-subsidized private sector and almost entirely in the
form of minibuses despite the fact that their fare level is twice that of the publicly-owned
operators. The minibus system has been serving Yerevan extremely well, but in recent years, the
extreme dominance of minibus operations has begun to show the limits of this transport mode.
With a city of Yerevan’s size, the level and quality of service offered by minibuses on some high
demand corridors have been declining mainly due to overloading and congestion created by
minibuses themselves. The decline of the quality of public transport services and the increase in
people’s income have led to a decline in people’s mobility accommodated by public transport
relative to private cars. The experience of Western Europe and other industrial economies in the
1960s and 1970s has shown that this trend could have very high social costs in terms of
congestion, environmental impacts, and oil dependency.

5. While the private operation of the minibus system has spared Yerevan a severe transport
crisis, traffic management and parking have not been used as a tool to manage people’s mobility in
Yerevan. Yerevan Municipality is ill-equipped to handle the traffic situation which continues to
deteriorate. The existing traffic signal system is mostly outdated and not adequate for
addressing current, much less, rapidly growing traffic. It cannot change signal phases in response
to different traffic patterns; and separate cycles for pedestrians and complex turning patterns
cannot be accommodated. The location of signal heads is inadequate in many locations, and the
lights are difficult to see, which contributes to traffic accidents. As for parking, Yerevan
Municipality districts have instituted paid parking programs, which are rather seen as a source of
revenue to the districts. The organization, enforcement, and even the legality of these programs
need to urgently be addressed, not to mention the pricing, which is very low -- typically in the
AMD 100-200 range independently of length of stay. Ineffective management and operations of on-street parking create very adverse impacts on traffic operations, especially at intersections, and lead to inadequate vehicle turnover, inefficient use of road space, and a loss of revenue for the Municipality.

6. The Municipality plans to consolidate transport management and strengthen the transport institutions. For this, the Municipality plans to retain a lean Transport Department primarily for policy development and for oversight of all transport functions conducted by others such as the metro, the bus companies, the trolleybus company, YerevanTrans, and private operators. Under these arrangements the primary responsibility for addressing traffic management measures on a technical level will be assigned to YerevanTrans, and the Transport Department of the Municipality will handle policy matters.

7. The Government of Armenia and Yerevan Municipality are moving rapidly to develop concrete actions that will impact urban mobility including public transport, traffic management and safety. While a coherent strategic vision is still missing, improving the transport institutions in Yerevan and developing their capacity, modernizing traffic management in the city, reviewing and gradual restructuring of the public transport operations, improving parking as a mobility management tool, building the needed institutional capacity are all good stated goals of the Municipality and the Government.

2. Objectives

8. The Project Development Objective would be to improve urban mobility in Yerevan. The proposed project development objective will be achieved through:
   a. Increasing the traffic carrying capacity of the existing urban street network through traffic management measures and implementation of a comprehensive program of on-street and off-street paid parking.
   b. Preparing for more comprehensive reforms aimed at integrated, efficient, and quality public transport services.
   c. Developing institutional capacity of Yerevan Municipality to better manage traffic and public transport in Yerevan.

3. Rationale for Bank Involvement

9. The Bank has an advantage of being well accustomed to local circumstances and having good working relations with all stakeholders established during previous projects. It is also well positioned to provide substantial value-added in terms of institutional development, strategic transportation planning, economic analysis of alternative solutions, and other areas where Armenia needs advanced expertise.

10. The World Bank has been actively involved in the transport sector in Armenia since the mid 1990s through the Highway Project in 1995 which aimed at preserving the road network and improving the efficiency of road maintenance operations, and the Transport Project in 2000 which aimed at improving road conditions and railway services. These projects also strengthened the planning capability of the Ministry of Transport and Communication particularly in the use of economic analysis as a basis for setting priorities and making investment decisions in the transport sector, and in establishing a basis for improvement of urban transport services in
Yerevan. Bank-supported activities as confirmed in the Implementation Completion Report for the Transport Project helped Armenia: (i) improve physical road and railway infrastructures, (ii) introduce new road financing principles, (ii) create adequate institutional settings for incorporating safety concerns in road management, (iv) revise railway policies and Armenian Railway’s financial performance, and (v) take the initial steps to incorporate modern governance structures and principles to the transport sector.

4. Description

11. The total Project cost is estimated at US$ 40.00 million including taxes, duties and contingencies. The Project includes three components:

Component 1: Traffic Management and Parking

12. This component consists of four sub-components: (a) Traffic signal system and associated intersection improvements, including works supervision; (b) traffic management schemes in selected locations and corridors; (c) a paid parking program in the city center; and (d) institutional development and training. This component is designed to significantly improve the mobility of people in Yerevan, as it would positively impact the flow of all modes of transport and enhance the experience and safety of pedestrians. The subcomponents are described in sequence below.

13. Traffic Signal System and Associated Intersection Improvements. This subcomponent comprises the supply, installation, operation and maintenance of a new traffic signal system for approximately 165 intersections and 35 additional pedestrian crossings. The installations under the new system will either replace the existing outdated traffic signal installations or cover intersections that do not have a signal system in place. Central monitoring of all new traffic signal installations will be possible permitting rapid detection of traffic signal faults and for resetting traffic signal timings as needed. Several intersections within Yerevan are not properly designed to handle increased traffic flows and to adequately accommodate safe pedestrian crossing of streets. All intersections to be signalized under the project will have appropriate accompanying street markings, appropriate channelization and other geometric improvements where required, and will include pedestrian islands on wider street crossings. This subcomponent also includes the provision of consultancy services to supervise the traffic signal and civil works installations under the project, as well as the final designs of these installations prior to their implementation.

14. Traffic Management Schemes in Selected Locations and Corridors. This subcomponent includes development and implementation of various traffic management schemes to improve traffic flow and safety including: (a) comprehensive improvements of selected street corridors, and especially medians and left turn bays; (b) pedestrian system continuity improvements, and particularly provision of safer at-grade or grade-separated crossings; (c) selected traffic circulation improvements in the city center including provision for additional left turns; (d) a high priority program to improve intersection operations through marking and enforcing parking bans at intersections and designated locations for mini-bus stops; and (e) technical assistance for design and detailed engineering of these schemes.
15. **Paid Parking Program in the City Center.** This subcomponent includes development and implementation of a paid parking program in the city center. In order to make parking a full fledged traffic management tool, this sub-component will support centralizing parking administration at the Municipality level and development of parking expertise and capacity in the Municipality. A comprehensive parking policy for Yerevan and a parking plan for central Yerevan will be developed and adopted. The subcomponent will support contracting-out paid parking in central Yerevan to a private operator through a long-term concession. The concessionaire will manage the system and will provide agreed equipment and other facilities. In addition, to supporting this public-private partnership, the project will include selected investments in parking infrastructure. Revisions to existing Armenian law permitting parking enforcement other than by the police will be required.

16. **Institutional Development and Training.** This subcomponent comprises consulting services, studies, the provision of equipment, training, and study tours to assist and strengthen the capacity of the Municipality and other institutions with regards to traffic management and parking administration and to develop and implement public information and awareness campaigns. The staff of Yerevantrans will be suitably increased and trained, and additional training will be supplied to the Municipality Transport Department which will retain overall policy direction in urban transport matters. As part of the effort to strengthen the ability of Yerevantrans and the Municipality Transport Department to better manage urban transport, the component will include office renovation, office equipment, professional documents, traffic models, and training. The subcomponent also includes the development of a national urban traffic management manual as well as a national urban transport strategy.

### Component 2: Preparation of Public Transport Reforms

17. This component includes consulting services, studies, training, and study tours to prepare public transport reforms to be implemented under a second phase. It is expected that this second phase would include: (a) substantial route restructuring and longer concession periods to improve service efficiency, to encourage provision of larger buses, and to improve utilization of the metro system; (b) consolidation of the number of awarded bus route concessions to foster larger and better managed bus companies; (c) integrated routing and ticketing to facilitate transfers among bus routes and the metro; (d) provision of high capacity express bus services and bus rapid transit services (BRT), and institutional strengthening to support these reforms. It is expected that these reforms will require supporting public investments in physical infrastructure including dedicated bus lanes, bus stations, bus terminals and bus depots. Engineering services will be provided under this subcomponent for design of these facilities.

### Component 3: Support to Project Implementation

18. This would support Project implementation, monitoring, evaluation and impact assessment through the acquisition of software for the financial management of the Project, and the provision of: (i) funds for incremental operating costs; (ii) training to PIU staff on project management, procurement and financial management; (iii) consultancy and advisory services for audits and for the monitoring and evaluation of the Project; and (iv) public awareness campaigns.
It is expected that the PIU would be in place over the anticipated life of the project which is expected to be four years.

5. Financing

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<th>Source</th>
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<tr>
<td>BORROWER/RECIPIENT</td>
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<td>INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT</td>
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<td>Total</td>
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6. Implementation

19. The proposed Project will be implemented by Yerevan Municipality with the assistance of a Project Implementation Unit (PIU) at the Ministry of Transport and Communication (MOTC). The Government has appointed the same PIU that implemented the previous Bank transport project to prepare, together with Yerevan Municipality, the proposed project from the Borrower’s side. The Government has established a Project Management Board (PMB) to provide strategic oversight and management of project activities at the policy level. The PMB is chaired by the Minister of Transport, and includes in its members representatives of the Municipality, the Traffic Police, and other ministries.

7. Sustainability

20. This is the first relatively large scale urban project in Yerevan, and sustainability may be an issue. Sustainability is expected to stem from the efforts under the project to ensure sound management of urban transport issues in Yerevan. An important aspect to avert risks to sustainability is the successful implementation of the project’s institutional capacity building components. The project will seek to improve the chance of sustainability by: (i) developing the technical and institutional capacity in Yerevan Municipality to manage urban transport in the city; (ii) including operations, maintenance, and management of the new traffic signal system for a period of three years in the supplier’s contract; (iii) developing a parking plan and introducing a private management of parking with a predictable stream of income; (iv) preparing public transport reforms that will encourage and scale up the existing private sector provision of public transport services; and (v) the preparation to implement the second phase of the Yerevan urban transport improvement program.

8. Lessons Learned from Past Operations in the Country/Sector

21. A key lesson learned from a number of similar projects concludes that the extensive coordination necessary between the multiple Municipality agencies involved can, if measures are not taken, make implementation difficult and can also lead to delays. Indeed, procurement and implementation of the traffic signal system is complicated, and extensive coordination between
different elements of the works is needed. The project is taking several steps to mitigate these risks, including carrying out major studies in the key areas, and placing a strong emphasis on implementation arrangements in project design. In addition, the strong and close coordination between the participating agencies has taken place during the course of project preparation. Regarding procurement, a Project Implementation Unit (PIU) with trained staff is already in place, and additional training to staff and also, as needed, to Municipality staff will be provided.

22. Lessons from around the world and in several similar Bank projects have shown that the fundamental requirement for successful implementation of any traffic management program is the existence of a strong core of technical professionals. Unless such a group of professionals exists or is created with adequate powers and financing, successful implementation of traffic management systems will be at risk. Drawing on this lesson, the Project will on one hand include multi-year operations and maintenance of the traffic system in the contract to supply and install the system, and on the other hand, the Project will provide training and develop this capacity within the municipality.

23. Another factor that has emerged in other urban transport projects is that the general public was not sufficiently informed of project activities, and more importantly, of the many new changes that would be taking place thanks to the project. A carefully targeted information and awareness campaign together with education of local politicians and training of traffic agencies staff, including the police, have improved the acceptance of subsequent traffic improvement projects. The Project includes funds to take this lesson into account, including public information and awareness campaigns to ensure dissemination of project activities and to manage change.

24. Because traffic in Yerevan is growing rapidly, measuring benefits from the project will have an added dimension. Designing a workable monitoring and evaluation system, and ensuring that it is carried out with due diligence will be essential. Public surveys will also be necessary to gauge certain improvements and benefits.

9. Safeguard Policies (including public consultation)

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<td>Projects on International Waterways (OP/BP 7.50)</td>
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</tr>
</tbody>
</table>

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas
10. List of Factual Technical Documents


11. Contact point

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