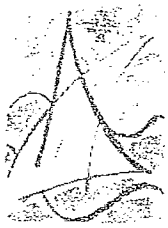

Republic of Lebanon
Directorate General of Land and Maritime Transport

STUDY FOR THE REVITALIZATION OF THE PUBLIC AND FREIGHT TRANSPORT INDUSTRY IN LEBANON

Final Report – Component B – Goods Transport

May 29th, 2009

IBI GROUP

TEAM

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Joint Venture IBI Group and TEAM International

Study for the Revitalization of the Public & Freight Transport Industry in Lebanon

Urban Transport Development Project (UTDP)

World Bank Loan No. 7123-LE - Contract No.: SPU-CS-001

May 29th, 2009

Mr. Abdel Hafeez Kayssi

Director General

Directorate General of Land & Maritime Transport

Ministry of Public Works and Transport

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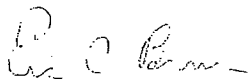
Subject: **Submission of Interim Report 3 – Component B**

Dear Mr. Kayssi:

Please find attached the Final Report for the Freight Transport Component of this project.

Yours Sincerely,



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LIST OF ABBREVIATIONS AND ACRONYMS

AVL	Automatic Vehicle Location
BCTC	Beirut Container Terminal Consortium
BOD	Board of Directors
CAD/AVL	Computer Aided Dispatching/Automatic Vehicle Location
CDR	Council on Development and Reconstruction
DC	Distribution Centre
DGC	Directorate General of Cooperatives
DGLMT	Directorate General of Land and Maritime Transport
DOC	Department of Cooperation
GA	General Assembly
GBA	Greater Beirut Area
GHG	Greenhouse Gases
GPS	Global Positioning System
HazMat	Hazardous Materials
IBI	Shortened version of "IBI Group"
ISF	Internal Security Forces
IT	Information Technology
ITS	Intelligent Transportation Systems
JV	Joint Venture
LCC	Lebanese Commuting Company
LTA	Land Transport Authority
MC	Monitoring Committee
MCC	Manual Classification Count
MOIM	Ministry of the Interior
MOPWT	Ministry of Public Works and Transport
NBT	Disused main railway station
O-D	Origin-Destination
O & M	Operations & Maintenance
POS	Point of Sale
RFID	Radio Frequency ID
RFP	Request For Proposals
ROW	Right Of Way

RPTA	Rail and Passenger Transport Authority
TMO	Transport Management Organization
USD	U.S. Dollars
VAT	Value Added Tax
WIM	Weigh-in-Motion

1. EXECUTIVE SUMMARY

The Lebanese economy is highly dependent on the trucking industry for the movement of freight, both within the country itself and between Lebanon and its trading partners. Privately owned, the industry is highly fragmented and its fleet is in poor physical condition. This is due to the inability of operators to renew the fleet due to low profitability levels caused by over-capacity and the lack of enforcement of existing regulations that under normal circumstances would weed out illegal operators and remove trucks in poor physical condition from the road. This report suggests a variety of recommendations to overcome these challenges, some of which can be done quickly and with a minimum of difficulty. Others take more time and require a complex support apparatus. But even the most immediate recommendations will require additional resources beyond those currently available to the DGLMT.

Prerequisites for Success

In order for the recommendations to be carried out successfully according to the suggested timeline for the goods transport sector, a number of prerequisites must be put in place in the immediate near term (0-2 years). These prerequisites include the following:

- Key elements of the Draft Land Transport Policy need to be enacted including the creation of a Land Transport Authority that could manage long-term projects and contracts, hire and retain staff with the appropriate skills and control the operations of Red Plate vehicles.
- The authority for conducting multiple-year contracting and budgeting is required in order to implement many of the infrastructure recommendations (e.g., truck facilities, enforcement facilities).
- A mechanism needs to be put in place to create and staff the necessary transport regulatory bodies.
- Data collection methods must be developed to be able to measure financial trends and the fiscal impacts related to transport.
- Expropriation, land purchases or easements must be done expeditiously to protect available land necessary for transport purposes (e.g., weigh stations).
- Attention and resources must be focussed on vehicle and licensing enforcement. Without a commitment to enforcement measures, all other recommendations are likely to prove ineffective.
- Greater Beirut needs a metropolitan planning organization.
- Incentives (e.g., financial) must be introduced to renew the commercial vehicle fleet.

It is not expected that passage of the Land Transport Policy will occur within the timeframe of the implementation plan. Thus, some interim measures will need to be taken as follows:

- Establishment of multi-year budgets through a *Loi Programme.*
- Procurement and deployment of license identification technology (e.g., RFID license plates) to penalize offenders.

- Resolution of licensing and traffic enforcement responsibilities from the Ministry of the Interior to the DGLMT and its successor agencies.
- Permission and the necessary funding to facilitate the hiring of professional staff at the DGLMT or its successor agencies.
- Ongoing negotiation and discussion with vehicle owner-operators to facilitate the introduction of the various measures and regulations under the implementation plan.
- The DGLMT or its successor agencies should be authorized (with contingency funds) to buy back some red plates under the *Loi Programme*.

As indicated above, the hiring of professional staff at the DGLMT or other agencies is a necessary prerequisite. For the Goods Transport sector, a freight transport economist is recommended to monitor and assess trends in goods transportation and the supply chain and the impacts of regulatory changes or major infrastructure investments on the freight transportation industry. This individual could also lend his skills to the Public Transport sector if required. This is the only incremental position recommended under the Goods Transport budget. All other positions are under the Public Transport budget. Some of the Public Transport positions (e.g., ITS expert, Control Centre staff) would work part-time on freight transport issues if required.

Key Infrastructure Requirements

Infrastructure requirements for the trucking industry can involve the road network, logistics and intermodal facilities, enforcement facilities as well as facilities related directly to the trucking industry (e.g., truck stops). Interim Report 2 did not identify specific new road infrastructure investments required by the trucking industry because it shares the road network with public transit and the private automobile. However, other studies have identified the east highway (Damascus Road Corridor) in particular, as being in need of major road investment in the longer term to relieve traffic congestion as commerce builds and relations improve with neighbouring countries. A separate truck corridor or possibly a rail line (connected with the existing Middle East rail network) are also potential options. However, other infrastructure requirements for the trucking industry were identified as described briefly below.

Truck Facilities

The establishment of truck stops inside Lebanon just past the border crossings at Masnaa and Abboudieh were recommended to help relieve the truck congestion at the border crossings as trucks wait for approval of the goods testing. The functions of these truck stops could include:

- The parking of trucks awaiting the results of goods testing. It is understood that trucks can proceed into Lebanon without approval of the test results as long as the load is not tampered with and all customs duties have been paid.
- Drivers, many of whom have been travelling long distances, may welcome the chance to stop and use the facilities (e.g., washrooms, food/restaurants, accommodations).
- Internet stations so drivers can communicate with shippers, the trucking company, etc. as well as make inquiries into a freight exchange system about picking up a return load.
- Vehicle and load weight inspections and docking facilities for trailers with perishable loads.

These truck stops could also be expanded to become a logistics park that includes storage and warehousing facilities. Government involvement and investment would be involved in land expropriation, provision of basic services (e.g., electricity, water) and access roads. The truck stops are expected to be private sector built and operated. Tenants such as food outlets and government agencies would lease space from the owner.

The above two trucking stops should be considered a starting point for the establishment of other truck stops within Lebanon. Future road network planning and construction should take into consideration the need for other trucks stops and the associated space requirements.

Logistics Facilities

The establishment of logistics facilities on the periphery of the GBA has been recommended to improve the efficiencies of goods distribution, reduce traffic congestion and noise on residential streets and remove dangerous hazmats to a more isolated location(s) with proper supervision and security.

Six potential sites were identified:

- The abandoned Mar Mkhaeil train station next to the bus storage garage of the RPTA
- The Sinn El Fil Plain near the Beirut River
- On sea fill behind the City Mall near Al Judaydah
- The NBT abandoned train station area
- The plain beside the *Mecanique* facility in Radio Orient
- An area beside the Nahr Al Mot quarries

One of the most attractive sites due to its close access to major highways and away from the downtown core is the NBT site. The Port of Beirut plans to use 10 hectares of the 24 hectare site to store full containers and relieve capacity constraints at the container terminal (BCTC). Initial discussions with BCTC have raised the possibility of also transferring the container destuffing and stuffing operations to the site and setting up a DC centre next to these operations for goods distribution purposes not only related to the container operations but general goods distribution in the GBA.

The logistics facilities are expected to be private sector built and operated. Government involvement and investment would be restricted to land expropriation, provision of basic services (e.g., electricity, water) and access roads.

Enforcement Facilities

There are currently no weigh and inspection stations in operation along public roads in Lebanon to verify that trucks are adhering to compulsory operating and maintenance safety standards. Previous studies have indicated the need for such stations along the North Coast highway, along the East highway (the Damascus Road corridor) and along the South Coast highway.

The North Coast highway is the most problematic due to the desire to capture trucks doing business within the GBA where a high percentage of truck movements take place. Lack of space along this corridor will require the use of WIM technology to pre-screen trucks. A fixed scale (that requires more land) would be located off the highway to back-up the WIM technology. Based on our survey of the North Coast highway within the GBA, the following candidate locations have been identified:

- The Jounieh rail yard which is quite a large area to capture trucks in the southbound direction, but trucks in the northbound direction would have to cross over the highway. It is also located quite far north so a significant number of truck movements could not be verified.
- Debayeh northbound which could be used by removing a frontage road but would probably need WIM due to lack of width and storage space.
- Emile Lahoud Blvd. which is very wide with lots of room to manoeuvre. Two stations could be built along with storage and rest space for truckers. However, it would require that all trucks leave the main roadway and make a u-turn at some point. WIM could be considered to be used as an alarm for trucks that did not exit. The on and off ramps from the weigh station would be on both sides of the road segment having WIM

The Damascus Road corridor can also prove problematic in terms of suitable locations. Dahr El-Baidr has been mentioned in the past as a potential site location. The Bahmdoun Train Station on the north side of the highway has also been identified by the JV team as a potential site for truck traffic moving in the westbound direction. In the eastbound direction, the rail roadway right-of-way on the south side of the highway could be used. There may be a need for WIM technology pending the final layout.

On the South Coast highway, Jisr El-Awali has been identified as a good location for a weigh inspection station.

The costs and operation of the weigh and inspection stations would be the responsibility of the DGMLT or its successor agencies.

Implementation Plan

The implementation plan for Goods Transport has been been grouped into four main themes for the strategic initiatives identified in Interim Report 2:

1. Internal Resourcing and Organization
    - Initiatives to be undertaken by the Ministry of Transport, including the DGLMT or its successor agency that address internal resourcing (staffing), policies, intra-governmental agreements, etc. necessary to prepare the agencies to manage transport sector initiatives.
2. Policy/Institutional/Regulatory/Legislative
    - Actions undertaken by legislative bodies or subordinate units of government to develop framework laws, policies, intergovernmental or international agreements, tariff structures, and other actions related to implementation of a coherent national land transport policy.
3. Enforcement
    - Actions undertaken to increase or sustain adherence to transport laws and regulations.
4. Freight Improvement Strategy Implementation
    - Implementation of other measures to improve the efficiency, competitiveness, safety and management of the national freight transport network and its stakeholders including carriers, freight forwarders and shippers.

The strategic initiatives are summarized by time frame in the timeline presented in Figure A below.

Figure A: Freight Initiatives Timeline

Themes	Prerequisites	0-5 Year Near Term	Medium to Long Term
Internal Resourcing and Organization	• Enact the Draft Law of the LTA • Restructure MOT • Enable multi-year budgets and contracting • Restructure public funding to increase cost-effectiveness • Hire staff • Develop capacity to trend financial data and fiscal impacts		
Policy/Institutional/Regulatory/ Legislative	• Re-engineer the Land Transport High Council • Enact enforcement legislation • Reform red plate legislation	• Establish finance mechanisms to improve affordability for newer equipment • Adjust weight and dimension standards to match international standards • Adopt international conventions and European safety procedures • Allow commercial vehicles to operate on highways at all times • Establish a driver license classification system	• Adopt and carry out the Land Transport Sector Policy Statement
Enforcement	• Enforce red plate restrictions	• Highway inspection facilities • Prohibit use of renting temporary parts • Cargo/shipment manifest paperwork • Reduce Mecanique inspections of goods vehicles to once/year • Control/monitor entry-exit of freight operators • Monitor transit and Hazmat vehicles using AVL technology	• Increased enforcement of near term initiatives
Freight Improvement Strategy Implementation		• Streamline inspection procedures at border crossings • Provide priority for goods movement • Rationalize trucking industry	• Implement AVL-based monitoring • Build truck stops at border crossings • Establish a freight exchange or load matching system • Construct DCs in appropriate locations • Improve competitiveness of Lebanese trucking industry in international commerce

Financial Evaluation

The costs and benefits that would be derived by implementing the recommended strategic initiatives for Goods Transport are presented briefly below.

Costs

The majority of the capital costs to be incurred by the government involve the following items:

- Weigh and inspection stations that are estimated to cost in the range of $1.5 million to $2.0 million per station depending on the needs for WIM technology. This amount would include road works, buildings, scale(s) installation, electrical installation, traffic control instrumentation, electronic screening equipment and associated computer software.
- Portable weigh scales that cost in the range of $3,000 to $8,000 depending upon the weight capacity and level of accuracy required. The total cost will depend on the number and precision required by conducting a needs identification analysis.
- Portable AVL equipment for transit and Hazmat vehicles. An average cost for AVI equipment is in the range of $5,000 per vehicle. Using an assumption that a maximum of 50 vehicles will require them at a time, the total cost will be $250,000 for AVI equipment.

The capital costs for land appropriation, access ramps and public utilities for the truck and logistics facilities have not yet been developed because location and design have yet to been finalized.

Government operating costs will cover a wide range of activities some of which is also being undertaken for the public sector component. For example, the RFID and AVL technologies are to be initially deployed for public transit and it is assumed that the freight sector will leverage off these public sector initiatives at minimal cost to the freight sector. In terms of staffing, the cost of the freight transport economist is estimated to be in the range of $2-5K per month (plus fringe benefits).

The major operating costs will involve the operation of the weigh and inspection stations. Staffing will be required both at the management level and at the technical level to operate and maintain the stations. The initial staffing costs (salaries) for the three weigh stations are as follows:

- Overall management of the weigh/inspection stations would be under the responsibility of the Control Centre (see staffing requirements section of the report)
- 3 Scale masters located at each of the stations-($2-5K/month each plus fringe benefits)
- 5 Control and monitoring staff at each of the stations-($2-4K/month each plus fringe benefits)
- 2 Administrative/clerical staff-($1-2K/month each plus fringe benefits).

Law enforcement staff is assumed to be provided by the ISF and/or Customs at no cost to the DGMLT or its successor agencies.

Benefits

There are significant benefits that will be derived by renewing the truck fleet through improved enforcement and the introduction of financial incentives. These are listed below.

1. **Fiscal Benefits of Renewing the Truck Fleet.** It was demonstrated that by introducing financial incentives (e.g., removal of the 5% customs duty, provision of low interest loans through Kafalat), the losses in the 5% customs duty could more than be offset by increases in revenues (due to increased truck sales) generated by the 10% VAT. Secondly, improvements in fuel efficiency of a renewed fleet would have a positive contribution to the trade balance of Lebanon (i.e., less fuel imports) that would more than offset some reduction in tax revenues (i.e., VAT).
2. **Environmental and Health Benefits of Truck Fleet Renewal.** A reduction in fuel emissions also brings a reduction in GHG emissions. In addition, a renewed truck fleet would lead to a reduction in traffic accidents and in air pollution. Both in turn could have significant positive fiscal impacts on the Lebanese health system and on the economy in general.
3. **Fiscal Benefits of Weigh and Inspection Stations.** In addition to contributing to the removal of unsafe and obsolete vehicles from the road that would be included in the above benefits, weigh stations would generate revenues through fines levied against vehicle owners who contravene the regulations and help reduce damage to the road network due to less overloading of vehicles.
4. **Economic Benefits of a Revitalized Trucking Industry.** A more efficient and modernized trucking industry will bring significant economic benefits to goods movement within Lebanon and between Lebanon and its trading partners. It will lead to greater efficiencies in the supply chain network that in turn will lead to lower prices for goods and make Lebanese industry more competitive in world markets.

Observations and Conclusions

The renewal of the trucking industry in Lebanon will be a gradual, evolutionary, long-term process. The government's role in this process will be to put in place the appropriate financial incentives, regulations and enforcement measures that will improve the viability and physical condition of the privately held trucking industry while at the same time protecting the social well-being of society in areas such as safety, security and the environment. Enforcement will play a key role in the success of the various strategic initiatives being proposed in this report. Technological initiatives will also play a key role in assisting speed up the process.

This report has demonstrated that the costs to be incurred by the Government of Lebanon to revitalize the freight transportation industry may in fact be outweighed by the benefits to both the economic and social well-being of Lebanese society by implementing the suggested strategic initiatives. These benefits include:

- Additional tax revenues generated by a revitalized industry that would more than compensate for the proposed reductions in customs duties and other financial incentives;
- A more efficient and productive trucking industry that will lead to a more efficient supply chain network and movement of goods;
- Significant positive economic spin-offs for the Lebanese economy in general due to a revitalized trucking industry;
- Reductions in traffic accidents, air pollution and greenhouse gases that in turn will have positive fiscal impacts on the Lebanese health system and the economy (e.g., increased labour productivity and agricultural production);

- Reductions in damages and associated maintenance of the road network as more efficient vehicles respect the weight limit regulations;
- Increased safety (e.g., reduction in traffic accidents) and security on the roads for all Lebanese citizens.

Therefore, the strategic initiatives recommended in this report should be introduced as soon as reasonably possible.

2. PREREQUISITES FOR SUCCESS

As observed in Interim Report 2, the Lebanese economy is highly dependent on the trucking industry for the movement of freight, both within the country itself and between Lebanon and its trading partners. Privately owned, the industry is highly fragmented and its fleet is in poor physical condition. This is due to the inability of operators to renew the fleet due to low profitability levels caused by over-capacity and the lack of enforcement of existing regulations that under normal circumstances would weed out illegal operators and remove trucks in poor physical condition from the road. This report suggests a variety of recommendations to overcome these challenges, some of which can be done quickly and with a minimum of difficulty. Others take more time and require a complex support apparatus. But even the most immediate recommendations will require additional resources beyond those currently available to the DGLMT.

The purpose of this section is to describe the types of resources needed and why they are needed. ***These prerequisites must be carried out in the immediate near-term (years 0-2) in order for the rest of the near-term recommendations in the timeline to be feasible.*** This section is written to the maximum extent possible without transport-industry technical jargon so that non-transport experts can fully understand it.

2.1. Prerequisites

Key elements of the Draft Land Transport Policy need to be enacted

The Draft Land Transport Policy is the product of careful deliberations over many years and has been further refined over the course of this project. It has many aspects, which if approved, would enable and support other key recommendations made in this project. Without the implementation of at least some elements of this Draft Policy, the range of successful actions that can be taken is very limited. A key element is the creation of a Land Transport Authority which would have financial authority and autonomy to manage long-term projects and contracts and to hire and retain staff with appropriate skills in support of these projects and contracts. Another key element relates to the ability of such an Authority to control where and under what conditions Red Plate vehicles may operate. The importance of enacting these elements should be made clear in the discussion of the prerequisites that follow.

Multiple year contracting and budgeting authority

Currently, all funding must be in hand at the start of a multi-year contract. This is a large obstacle to program implementation for the DGLMT. Some of the recommendations resulting from this study require multiple year contracts to implement.

Key examples of the value of multiple year contracting and budgeting authority include:

- Implementation of more sophisticated services which require extensive capital investment over several years is facilitated by multi-year contracts.
- Repair and modernization of major roads that are important to freight movement, commerce or tourism.
- Stronger competition for contracts due to size and length of contracts or purchase agreements

- Reduced staff time and administrative effort associated with less frequent procurement activities and cycles

The 246 Law program met with some success, but this approach requires separate enabling legislation for each major project and eventually expires. As an interim measure, this method could be considered, but it will limit the number of long-term projects due to the difficulty of passing legislation in a timely manner.

The stability created by multiple-year budgets would also enable cross-subsidy of transport system users. This could enable a more rapid implementation of programs. One example would be financing of purchase of RFID license plates for the general population through the sale of "vanity plates" to more prosperous citizens, as was done recently in Lebanon when vanity mobile numbers were auctioned and the number 70707070 was sold for $450,000. Another example would be higher priced express services that realize an operating profit where the excess is used to provide socially necessary services. The ability to cross-subsidize could prove to be an important political consideration. It could cushion lower-income groups hardest hit by fuel price increases, could provide services catering to the elderly and disabled populations, improve walking conditions for pedestrians, to mitigate transport system impacts on communities, etc.

In general, the ability to retain and reprogram collected revenues allows for more creative and rapid response to public transport market opportunities. Success in the public transport program will help freight transport as well. Some examples: trucks will be allowed to use selected bus lanes. The ITS technologies used to monitor buses will be extended to support supervision of hazardous material (HazMat) vehicles and international transit vehicles. The importation of very modern bus designs through a mass purchase will be accompanied be advanced training and technology transfer usable in the freight sector, as well.

Furthermore, multiple-year contracting would enable government Ministries and their appointed oversight agencies to hire persons with the requisite skills needed to manage and regulate the type of transport service structure we recommend. Currently, particular Ministries are not at liberty to directly hire the types of individuals that would be needed to support particular programs. This is discussed further below.

A dedicated Transport Trust Fund that pooled all transport related taxes, fees and revenues would provide additional benefits. It would enable the leveraging of limited government funds through Public Private Partnerships, through research and development grants, and other mechanisms. These opportunities usually can not wait for enabling legislation because they are competitive and opportunistic in nature.

Need for a mechanism to create and staff transport regulatory bodies

Lebanese administrative policy usually is predicated on the assumption that if we "privatize" we will make it "easier" on government. In reality, the regulatory functions (that can not be delegated to the private sector) that should accompany privatization are in some ways more demanding than those for regulating a publicly run public transport.

Thus, the current hiring freeze combined with a lack of dedicated funds is an obstacle to many potential strategies for revitalization. Strategies that use advanced technology to maximize staff productivity as well as ones that use a high degree of outsourcing are included in the recommendations, but they don't preclude a role for government staff. In fact, they require a nucleus of staff with special competence.

As another example, the Traffic Management Organization (TMO) now belonging to Traffic Engineering and Vehicle Registration Authority will begin monitoring traffic only as it is today. But within a few years, it might well be overseeing a multi-modal street system with adaptive signal control, transit priority, and other advanced technologies. To maximize the benefit of the data that can be collected and from the experience gained, analysts will be needed to process and interpret the results to continually respond to changing traffic patterns and public policy priorities.

Yet another example would be the monitoring of commercial vehicles. The enforcement technologies will generate important information. Analysts will be needed to assemble and periodically analyse data to determine enforcement priorities and locations, desirable vehicle specification and licensing requirement changes, roadway modifications needed for bottlenecks and accident reduction, etc.

The higher cost of hiring very highly skilled staff at the regulatory bodies could easily be justified through cost savings elsewhere. Continuing with the public transport example, a good analyst can adjust service levels to eliminate wasteful service without adversely impacting the riding public. Continuing with the commercial vehicle example, a skilled analyst can target the times and places where violators are likely to be concentrated. The worldwide trend is to increase the role and prevalence of ITS but some of the strategies the JV team investigated were rejected for the near term simply because of lack of suitable regulatory bodies.

If the regulatory bodies can't be staffed with actual government employees due to hiring freezes, or if the salaries that can be offered are not competitive, then contract employees could be considered. However, it is very important that this staff person be empowered with full governmental authority for his/her mission. Furthermore, this person must have a lasting position. Otherwise contractors will be reluctant to conduct any negotiations or reveal sensitive information.

Methods to be able to trend financial data and the fiscal impacts of public policies related to transport must be developed

Financial data from government ministries such as tax intake from licensing and registration, from fuel, VAT, customs duties, and so on, are needed in order to establish a financial baseline for the transport-related operations of the government. This baseline is used to estimate the fiscal impacts and thus the realism and sustainability of any recommendations that would impact revenues. The success or failure of such recommendations will be assessed, in part, through the fiscal impacts over time.

With the eventual establishment of a Transport Trust Fund, there would be a realignment of many cash flows. Thus, an accounting system for this Fund separate from the Ministry of Finance system would also have to be developed

Expropriation, land purchases, or easements need to be done expeditiously

It is extremely difficult to obtain land in precisely the desired locations for a specific purpose. The GBA is very densely developed and land prices have climbed steeply in the recent past. Nevertheless, some land is essential to support a few of the recommendations.

The north Coastal Highway, in particular, has very little available land. But the weighing station proposed for this corridor must be close to Beirut (closer than Jounieh) as the survey data reveals that over 70 percent of all trucking occurs within the GBA. Thus, the Ministry of Public Works and Transport would need to take action soon if enforcement is to improve in the near future. Several potential sites for weigh stations are discussed in the Goods

Component of the Final Report. A decision in the near future is essential if an effective deterrent for vehicles that operate exclusively within the GBA is to be established.

There is also some disused public land at a few other sites, including a large one near the NBT and smaller ones elsewhere. Part of the NBT site has already been planned for expansion of the container port and a potential future logistics center site.

Focus attention and resources towards vehicle and licensing enforcement

The recommendations likely to result from the project include the use of advanced technology such as Radio Frequency Identification (RFID) license plates that maximizes the productivity of enforcement staff. Nevertheless, it is impossible to have full automation of any aspect of transport-related enforcement. ***Without a commitment of staff to enforcement measures, all other recommendations are likely to also prove ineffective.***

Of particular importance will be enforcement against invalid or counterfeit license plates, particularly commercial plates. We anticipate that enforcement would have to be intense during the early stages of deployment. Similarly, weigh station enforcement would also have to be intense. Later, the known presence of the technological checkpoints acts a deterrent and only random spot-checking would be required.

The Internal Security Force (ISF) has historically not been able to provide the level of resources required for strong enforcement. But it is the logical party for such enforcement if a separate traffic division could be created since it spans the entire country and the same staff could simultaneously do contraband inspections. If the ISF is not given this responsibility then other police forces can do it, but they must be supported by central government funds. Whoever would fulfil this role would have access to the analysis results of the various regulatory agencies and could coordinate closely with them in designing cost-effective enforcement plans. It would preferably also be able to hire expert staff to do their own additional analyses that takes advantage of their own special insights and capabilities.

Goods transport needs a champion within the government

Revitalization of goods transport is a complex task that involves many aspects of the society including identifying and serving the diverse logistic needs of its members, the development of the economy, the improvement of the environment, and the quality of life. Thus goods transport spans across the responsibilities of several levels of government. As such, it can be time consuming and contentious to address all concerns and conduct all of the formal procedures needed, first for decision making and second for implementation. Other regions have often benefited from a person or group that has wide-ranging respect and trust. This can often speed the negotiations and financing considerably. Therefore, on a go-forward basis, it will be vital to the successful implementation of the recommendations and revitalization of goods transport in Lebanon as a whole that a "champion" be identified.

Greater Beirut needs a metropolitan planning organization

There are numerous medium to longer-term unresolved issues with respect to location of distribution centers, districts where street design should focus on access for commercial vehicles, and other planning and design aspects for the GBA. The complexity and size of the GBA argues for a planning district that is below the central government level but above the local, representative of and responsible to it members municipalities. The membership boundary should be determined by travel patterns; locations where the majority of travel is in the direction towards the central area as opposed to rural areas and smaller cities should be included. A joint planning body would simplify and improve the planning of regional public

transport services. Travel patterns are best studied and transport demand and planning models are best developed at the regional level. Indeed, it is unrealistic to expect smaller municipalities to maintain their own professional planning staffs and models due to the expense.

A member-operated organization would also facilitate the negotiation and distribution of fare revenues and subsidy obligations that will be necessary with the advent of smart cards and fully integrated services. In a similar manner, negotiation and distribution of the vignette tax and infrastructure repair funds could be facilitated through a longer-term and regional perspective that balances with the interests of a particular municipality.

Incentives to renew both the commercial passenger and freight vehicles must be provided.

The current financial condition of most small fleet owners and owner-operators is so marginal that they simply can not afford to renew their vehicles to modern standards of safety, fuel efficiency and pollution generation. In the case of public transport, it is additionally important that the aesthetics and comfort standards be vastly improved. While reducing the number of illegal vehicles and improving traffic conditions will improve the financial viability of remaining operators, the rate of vehicle replacement may remain too low to benefit much from the better standards of newer vehicles. Financial incentives, only after the authority to regulate transport services quantitatively, qualitatively, and geographically is established within DGLMT (or LTA when established), such as access to low interest loans and the waiving of customs duties, should be provided. Even if there are reductions to the intake to the treasury, it should be accepted that the increase in benefits elsewhere more than compensate.

2.2. Advice for Meeting the Prerequisites

2.2.1. Immediate Needs from Parliament

The creation of the Land Transport Authority and other the institutional changes that would occur as with passage into law of the Draft Land Transport Policy would greatly enhance both the public transport and freight implementation plans. However, this study assumes that the passage will not have occurred within the timeframe of this implementation plan. Thus some interim measures would need to be taken instead.

Establishment of multi-year budgets through a Loi Programme

The law as it currently stands does not permit multi-year contracts unless the entire sum required has already been allocated. If one assumes that the requisite changes to laws will not be enacted in the near future to permit multi-year budgeting, then it will be essential to allocate at least 3 to 5 years of budget in advance.

There are further elements of a multi-year nature as well. The implementation plan includes a battery of proposed legislative and regulatory elements and physical design elements. Thus, the Implementation Plan deserves to be enacted as a Loi Programme. We further recommend that the implementation plan proposed by this study be made an integral part of the Loi Programme.

Procurement and deployment of license identification technology and penalizing offenders

The single most important measure that must be taken is the removal of vehicles with counterfeit red license plates from the streets of the GBA. This will require both an initial intensive effort to identify the vehicles and to penalize the owners. Failure to penalize will mean that the possibility of being identified as a violator quickly fades away in deterrence value.

The recommended solution is RFID license plates for reasons that are explained in detail elsewhere in this report. This includes permanently mounted field reading devices, portable reading devices, and the vehicle database software. It should also include the difference in the purchase cost of a current license plate and an RFID license plate. Although it would be fair to ask all commercial vehicle owners to pay the full cost of such a plate (around $24 as of this writing) we don't recommend it. The political discussions required to address the opposition arguments about the financial hardship it would create would delay the project, as well as provide an opportunity to pass legislation against such license plates. Instead, license plates should be viewed as an upfront cost. For a fleet of 30,000 legal vehicles, this would be about $720,000 at current prices. This is insignificant compared to the benefits it would bring. Moreover, there are many ways to recover this initial investment. A very small addition to the vehicle registration annual fees of private cars, not more than one USD per car, will cover this entire investment.

As one of the first elements in the Loi Programme, the Parliament should authorize the rapid purchase and deployment of new license plate technology. This should be done with a low profile since its initial effectiveness will be stronger if potential violators are not given an early opportunity to study the system to try to create countermeasures, or to interfere in the deployment plan.

Resolution of licensing and traffic enforcement responsibilities

Currently the vehicles registration and issuing driver's licenses is in the domain of the Ministry of the Interior. The Memorandum of Understanding which is under discussion at the time of writing this report delegates to the DGLMT and its successor agencies after their creation the authority to license transport service providers, whether corporate or individuals. A new vehicle database associated with RFID licensing would thus require that it be shared between two or more ministries. Furthermore, in support of the Implementation Plan, it will be necessary that Interior take enforcement action against repeat offenders.

The means of identifying offenders will be through officers in the field. On enforcement days, they will stand at the permanent reader. Any vehicle that passes by and the matching license number does not read out on the laptop computer connected to this reader will be pursued by an officer on a motorcycle, or stopped by a road block down stream. The suspicion of a counterfeit plate carried by the stopped vehicle will then be confirmed using a portable reader.

Either municipal police or Internal Security Forces could do this task. Historically, the ISF has done limited traffic enforcement due to higher priorities. Thus, the approach recommended in this report is based on limited random spot checks, more frequent at the inception of their use, less frequently once deterrence is established. In this way, it may be possible to assign ISF staff with only limited impact on other duties. It is very important that the municipal police and ISF participate in the planning of the enforcement procedures and agree in advance to allocate adequate officer hours, particularly in the early months of enforcement.

RFID licensing and traffic enforcement responsibilities are under the traffic law. We thus recommend in the enabling language for the aforementioned Loi Programme that there be a high level statement to charge the MOIM and the MOPWT, or its successor agency, to deploy modern technology tools for vehicle license identification and licensing and traffic enforcement responsibilities, for sharing databases, and for maintaining the infrastructure associated with it.

Permission and budget to facilitate hiring of professional staff

The preparatory work before procurement of buses can begin and contracts of services for services can begin to be drafted will require that several high-level professionals be hired. These positions are described in detail in following section of this report. Although the estimated salary needed for some of these positions will be high by Lebanese Civil Service standards, it might prove necessary to provide generous offers in order to attract highly qualified individuals. As with the purchase of RFID, this cost is insignificant in comparison with the long-term benefits that can be expected from a revitalized public transport and goods transport systems.

As another early element of the Loi Programme, funding should be made available as soon as possible to hire the requisite staff. The positions can be filled using long-term contracts with private individuals, who will constitute a Project Implementation Unit. Still, a few of the sensitive positions would best be filled by persons who are actually employees of the government. Thus, critical and key vacant positions at DGLMT, or its successor agencies, should be filled.

Ongoing negotiation and discussion with vehicle owner-operators

As another early element of the Loi Programme, we recommend that a further position (discussed in more detail elsewhere) at the DGLMT or its successor agency be created that negotiates with municipalities, syndicates, and large employers.

Recent experience from other nations with similar major re-organizations of commercial transport shows that there can be serious delays to implementation, and indeed active opposition, if the incumbent individuals making their living in this sector are not consulted and accommodated to some extent. They should be told in detail how the new regulation would unfold and the role that they will continue to play. Their concerns about maintaining profitability should be addressed as best as possible, but without undercutting the key component of the implementation plan. Thus, a second task for the new position would be to provide outreach to owner-operators and facilitate the dialogue with Ministry and elected officials, and with the implementation plan project team members.

Authorization of the buying back of red plates

The DGLMT, or its successor agency, should be authorized and contingently funds as part of the Loi Programme to buy back some red plates at a sufficient price to incentivize the voluntary surrender of the social benefits associated with a red plate.

2.2.2. Professional Staffing Requirements

General Comment on Internal Staffing

Although much can be outsourced, there is still a nucleus of skills that needs to be retained internally. There is the initial critical problem of selecting the firms and individuals who are the most appropriate to assist in achieving the aims of the revitalization project. This requires

expertise that must be available at the beginning of the implementation plan. The wrong selections could delay or even jeopardize execution.

Furthermore, some of the contractual requirements will have stipulations regarding the submittal of proprietary financial and operating cost data from firms. Firms will not be willing to submit data to an individual who is not seen to solely represent the interests of the government and who is not empowered to negotiate or modify terms of agreements. Thus, while some positions could indeed be filled on a contractor basis rather than as Civil Service employees, the contracts must be long term and without any conflicts of interest, either real or perceived.

The following are descriptions of the skills of some key positions needed to build up the capacity of the government. Some of these positions could be in any of several governmental departments, depending upon the details of the organizational responsibility and the specific stage in implementing a program. Clearly, at least two of these positions must permanently be within the Ministry of Public Works and Transport, or its successor in charge of public and goods transport.

Some positions could actually play more than one role and could be involved in more than one agency and in both Goods Transport and Public Transport issues. There is quite a bit of overlap of functions and responsibilities.

Contracting Managers (2 positions at $3-7K per month each)

There will be a variety of contracts that need to be developed, tendered and then continually administered. These will be for materiel procurement as well as services.

Materiel purchase and maintenance contracting

The focus on materiel procurement should be on rolling stock and advanced technologies for operational control and enforcement. CDR has a solid capability in procurement of public works and goods. This expertise should be utilized awaiting re-enforcing the capabilities of DGLMT or its successors, especially if the procurement depends on funds from donors who have a history of successful dealing with CDR.

There will be a variety of other ITS technologies to be procured for both public transport and goods transport. Enforcement, tracking and weighing technologies, for instance, are both rapidly evolving fields that require an individual who can balance the need for timely acquisition against the danger of obsolescence. The public transport aspect of the Loi Programme will include procuring a large order of sophisticated buses from a large corporation and will include the potential for technology transfer and advanced training opportunities of potential benefit to the freight sector as well. Thus, the ideal candidate would also have relevant experience with an array of ITS technologies as well as bus technologies.

The Contract Manager must also have ability to specify practical systems integration requirements and delegate project responsibility to vendor(s) such that delivery and operability is not delayed and duplicative work is not performed. This position also requires the ability to guide the entire procurement process, including selection of evaluation criteria and design of a fair and effective procurement process. Although some of this management can be outsourced, even identifying the proper consultant to assist in this task and supervising his performance requires deep expertise.

This position is likely to be assigned to the RPTA since it will be responsible for the vehicle fleet. But this person could also have a joint appointment with the CDR for procurements related to freight vehicle enforcement and inspections.

Services Contracting

Similar to *Mecanique's* role in annual vehicle inspection, field inspection and enforcement functions for goods transport vehicles may also be outsourced. Development of effective contracting documents that get the best value for the public's resources is a skill that requires previous experience with similar situations. The quality of the contracts is critical as the consequences of a poorly performing contract could cause delays in the revitalization and loss of public and political support for the implementation plan.

The ideal candidate should have done similar exercises. This probably means that the search must be international due to lack of recent similar contracting in Lebanon. It is more important that the selected individual has a solid understanding of the industry, the cost structures, the activities that must be performed, and the modern contracting regimes than it is to understand the intricacies of existing Lebanese contract law, which warrants extensive review and modernization. Help in the formalities of the contract language can be obtained from legal staff within the government on an as-needed basis.

It would be advisable to have at least two positions for performing the contracting function. The individual in the less senior position would gain experience by assisting the project leader. It could help to retain institutional memory should the more senior person leave. The contracts can also be sequenced such that the relatively easier ones involving granting of concessions would come earlier. Later, the relatively more complex gross or composite contracts could be developed and negotiated. This would increase the chances of success, as there will always be unforeseen difficulties when one is not experienced within a particular country.

An ideal candidate for one of the positions will also be an experienced route planner or analyst. The negotiations will involve back and forth discussion about costing assumptions, profitability potential, reliability requirements, network connectivity requirements, planning responsibilities, supervision and other issues that are key to an effective contract that incentivizes good performance. Accordingly, the contracts must be negotiated in close council with the route planner.

An ideal candidate for the second position would have complementary knowledge about Intelligent Transportation Systems technologies and about field enforcement and inspection activities.

This second person would logically be assigned to the regulatory authority.

Route Planning and Operations Expert

See Component A-Public Transport report.

Mathematical Transport Model Expert

See Component A-Public Transport report.

Ministry of Public Works and Transport Outreach Representative/Negotiator

See Component A-Public Transport report.

Control Center/Operations Contract Manager and Shift Supervisors (1 position at $2-5K per month plus 3 positions $2-5K per month)

The contract-operated public transport vehicles in the GBA will be subject to continuous monitoring. This will involve maintaining a presence of one Shift Supervisor during all hours of public transport operation at the control center (ideally co-located with the TMO) to ensure

that all operations that are contractually obligated are actually delivered. Additional functions will be to monitor all government mandated users of AVL and/or electronic seal equipped trucks, such as those carrying hazmats or transit cargo as well the weigh and inspection station operations. These positions will also coordinate in real-time with the traffic monitoring staff to resolve traffic problems that are causing delays to services. They will report to the transit-planning expert about any chronic deficiencies they observe. The Control Center/Operations Contract Manager can also be a Shift Supervisor but will also be responsible for formal reporting of contractor performance, and for liaison between the contract operating firms and the TMO to find solutions for recurring problems in the interest of improving reliability and minimizing operating costs.

These positions must also direct any field supervision staff, who most likely will come from existing RPTA staffing and budgets. Not included here is the training cost to become effective field supervisors.

While their chief responsibility would be to the public transport regulatory body, the Shift Supervisors may also be vested with additional responsibility and authority by the Customs and TMO center. (A duplicate monitoring workstation could be installed at a Customs facility, if desired.)

ITS Technology and IT Systems Manager (1 position at $3-7K per month)

As with any complex, large scale advanced technology deployment, the array of systems will require continual upgrading, troubleshooting and administration. While these tasks can sometimes be outsourced to the supplying vendors, it is not recommended here. Rather, someone must represent the government's interest in having appropriate levels of integration between disparate systems to avoid duplicative equipment and databases and inefficient upkeep procedures.

Due to the lack of recent experience with either CAD/AVL or with weighing and inspection enforcement technology in Lebanon, this position will probably require an international search.

This position should be placed in the regulatory authority, but due to the multiple applications and users of ITS, this position can work parallel with the person managing the other ITS technologies placed under the responsibility of the TMO.

Public Transport (and part time Freight Transport) Implementation Program Manager (1 position at $3-7K per month)

The successful execution of the implementation plan will require that someone be responsible for coordinating and overseeing the execution of all the strategic initiatives included in it. This position would hold the authority for allocation of the budget in accordance with the project timeline and for making revisions as needed. The authority would also extend to monitoring and taking needed corrective or disciplinary actions for all active contracts associated with the plan.

This position would represent the DGLMT and/or its successor agencies in an effort that would involve foreign vendors, multiple funding sources, several publicly owned authorities and institutions as well as multiple jurisdictions. Accordingly, the ideal candidate would have extensive experience in managing public transport projects of similar complexity. Due to lack of recent opportunities for relevant experience in Lebanon, this position requires an international search in order to fill.

This position should be located within the DGLMT or one of its successor agencies.

Freight Transport (and part time Public Transport) Economist (1 Position at $2-5K per month)

This position requires a solid understanding of modern goods movement, particularly the role of trucking and intermodal transportation within the supply chain. The individual should have strong analytical skills in data, economic and financial analyses in order to assess the economic impacts of any proposed regulatory changes or major infrastructure investments on the transportation industry.

An individual with the relevant background experience may have to be sourced from the private sector (e.g., freight forwarding industry). Due to his/her skill set, the position could also support the DGLMT or its successor agency with similar analyses for the public transport sector in financial/economic analysis.

This position should be located within the DGLMT or one of its successor agencies.

3. KEY INFRASTRUCTURE REQUIREMENTS

Infrastructure requirements for the trucking industry can involve the road network, logistics and intermodal facilities, enforcement facilities as well as facilities related directly to the trucking industry (e.g., truck stops). The road network is a complex issue because the trucking industry shares it with a myriad of passenger transportation vehicles including public transit buses in the GBA, a number of commercial operations including taxis, vans and large buses and of course the private automobile. Thus the planning of major road infrastructure facilities must take into account the costs and benefits of serving the various classes of road users. Interim Report 2 did not identify specific new road infrastructure investments required by the trucking industry. However, other studies have identified the east highway (Damascus Road Corridor) in particular, as being in need of major road investment in the longer term to relieve traffic congestion as commerce builds and relations improve with neighbouring countries. A separate truck corridor or possibly a rail line (connected with the existing Middle East rail network) are also potential options.

Traffic congestion is a major factor contributing to inefficiencies in the Lebanese trucking industry and expansion of existing routes or possibly new routes would help alleviate the problem. But, as indicated above, a solution must involve all users of the road infrastructure and the costs associated with new investments must be shared. Therefore, specific road infrastructure requirements for the trucking industry were not developed in this Study. However, other infrastructure requirements for the trucking industry were identified as discussed below.

3.1. Truck Facilities

The issues and problems facing the trucking industry at the Lebanese border crossings were discussed in Interim Report 2. The delays were particularly acute in the inbound direction as trucks must wait for the approval of goods testing from the various Lebanese ministries. There is also a lack of facilities for drivers including washrooms and food services.

The establishment of truck stops inside Lebanon just past the border crossings at Masnaa and Abboudieh were recommended to help relieve the truck congestion at the border crossings as trucks wait for approval of the goods testing. The functions of these truck stops could include:

- The parking of trucks awaiting the results of goods testing. It is understood that trucks can proceed into Lebanon without approval of the test results as long as the load is not tampered with and all customs duties have been paid.
- Drivers, many of whom have been travelling long distances, may welcome the chance to stop and use the facilities (e.g., washrooms, food/restaurants, accommodations).
- Internet stations so drivers can communicate with shippers, the trucking company, etc. as well as make inquiries into a freight exchange system about picking up a return load.
- Vehicle and load weight inspections and docking facilities for trailers with perishable loads.

These truck stops could also be expanded to become a logistics park that includes storage and warehousing facilities. Government involvement and investment would be involved in land expropriation, provision of basic services (e.g., electricity, water) and access roads. The

truck stops are expected to be private sector built and operated. Tenants such as food outlets and government agencies would lease space from the owner.

The above two trucking stops should be considered a starting point for the establishment of other truck stops within Lebanon. Future road network planning and construction should take into consideration the need for other trucks stops and the associated space requirements.

3.2. Logistics Facilities

As was mentioned in Interim Report 2, warehousing activities in the Greater Beirut Area (GBA) are very fragmented and located in make-shift facilities such as in the basements of residential buildings. Goods being stored include hazardous materials that raise serious safety concerns. Trucking movements to and from these facilities is contributing to traffic congestion and noise on residential streets in the GBA. This fragmentation leads to inefficiencies in goods distribution as trucks are delayed due to congestion and a lack of consolidation in shipment deliveries. The establishment of one or more distribution warehouses on the periphery of the GBA has been raised as a solution to improve the efficiencies of goods distribution, reduce traffic congestion and noise on residential streets and remove dangerous hazmats to a more isolated location(s) with proper supervision and security.

Six potential sites were identified:

- The abandoned Mar Mkhaeil train station next to the bus storage garage of the RPTA
- The Sinn El Fil Plain near the Beirut River
- On sea fill behind the City Mall near Al Judaydah
- The NBT abandoned train station area
- The plain beside the *Mecanique* facility in Radio Orient
- An area beside the Nahr Al Mot quarries

One of the most attractive sites due to its close access to major highways and away from the downtown core is the NBT site. The JV team has since learned that the Port of Beirut plans to use 10 hectares of the 24 hectare site to store full containers and relieve capacity constraints at the container terminal (BCTC). Initial discussions with BCTC have raised the possibility of also transferring the container destuffing and stuffing operations to the site and setting up a DC centre next to these operations for goods distribution purposes not only related to the container operations but general goods distribution in the GBA. Significant synergies could be created by having both operations on the same site. This DC site would also serve as a testing ground for the possible establishment of other DC sites in the GBA.

It is therefore recommended that discussions commence as soon as possible with the Port of Beirut and BCTC to plan for the NBT site as a combined operation for both container and DC operations. Government involvement and investment would be limited to land expropriation, provision of basis services (e.g., electricity, water) and access roads. The DC centre itself is expected to be private sector built and operated.

3.3. Enforcement Facilities

There are currently no weigh and inspection stations in operation along public roads in Lebanon to verify that trucks are adhering to compulsory inspection requirements at

Mecanique facilities and thus meeting maintenance safety standards (e.g., working brakes, lights), respecting load limit restrictions, hazmat rules, etc. Previous studies have indicated the need for such stations along the North Coast highway, along the East highway (the Damascus Road corridor) and along the South Coast highway. It has also been recommended that where lack of space does not permit a traditional fixed weigh station to be used, Weigh-in-Motion (WIM) technology would be used to pre-screen trucks. The less accurate WIM stations would be backed up by a fixed scale more off the highway for those vehicles indicated of being over weight based on the WIM reading.

The North Coast highway is the most problematic due to the desire to capture trucks doing business within the GBA where a high percentage of truck movements take place. Lack of space along this corridor will require the use of WIM technology. Based on our survey of the North Coast highway within the GBA, the following candidate locations have been identified:

- The Jounieh rail yard which is quite a large area to capture trucks in the southbound direction, but trucks in the northbound direction would have to cross over the highway. It is also located quite far north so a significant number of truck movements could not be verified.
- Debayeh northbound which could be used by removing a frontage road but would probably need WIM due to lack of width and storage space.
- Emile Lahoud Blvd. which is very wide with lots of room to manoeuvre. Two stations could be built along with storage and rest space for truckers. However, it would require that all trucks leave the main roadway and make a u-turn at some point. WIM could be considered to be used as an alarm for trucks that did not exit. The on and off ramps from the weigh station would be on both sides of the road segment having WIM

The Damascus Road corridor can also prove problematic in terms of suitable locations. Dahr El-Baidr has been mentioned in the past as a potential site location. The Bahmdoun Train Station on the north side of the highway has also been identified by the JV team as a potential site for truck traffic moving in the westbound direction. In the eastbound direction, the rail roadway right-of-way on the south side of the highway could be used. There may be a need for WIM technology pending the final layout.

On the South Coast highway, Jisr El-Awali has been identified as a good location for a weigh inspection station.

The costs and operation of the weigh and inspection stations would be the responsibility of the DGMLT or its successor agency.

4. IMPLEMENTATION PLAN

The implementation plan has been structured based on a number of strategic initiatives identified in Interim Report 2 that have been grouped into four main themes as follows:

1. Internal Resourcing and Organization
    - Initiatives to be undertaken by the Ministry of Transport, including the DGLMT or its successor agency that address internal resourcing (staffing), policies, intra-governmental agreements, etc. necessary to prepare the agencies to manage transport sector initiatives. These include planning, finance, regulation, policy-making, etc.
2. Policy/Institutional/Regulatory/Legislative
    - Actions undertaken by legislative bodies or subordinate units of government to develop framework laws, policies, intergovernmental or international agreements, tariff structures, and other actions related to implementation of a coherent national land transport policy.
3. Enforcement
    - Actions undertaken to increase or sustain adherence to transport laws and regulations. It also includes implementation of mechanical and electronic enforcement mechanisms such as weight scales and RFID licences, safety programs, inspections and enforcement of traffic laws and codes governing vehicle operations.
4. Freight Improvement and Vehicle Replacement Strategies
    - Implementation of other measures to improve the efficiency, competitiveness, safety and management of the national freight transport network and its stakeholders including carriers, freight forwarders and shippers. Measures include investments in technology, multi-modal distribution centres, border facility improvements and freight corridors.

The strategic initiatives for each of the four themes are presented in Appendix 1 according to a number of descriptive headers as follows:

1. Timeframe: 1) Near Term (0 to 5 years) and 2) Medium to Long Term (+5 years). Some of the initiatives have been identified as a pre-requisite prior to implementation of the plan.
2. Needs addressed and key benefits
3. Lead entity
4. Other entities involved
5. Prerequisite and co-requisite implementation activities
6. Performance measures to facilitate future monitoring and evaluation of the success of each strategy if measurable.

The strategic initiatives are summarized by time frame in the timeline in Figure 1.

Figure 1: Freight Initiatives Timeline

Themes	Prerequisites	0-5 Year Near Term	Medium to Long Term
Internal Resourcing and Organization	• Enact the Draft Law of the LTA • Restructure MOT • Enable multi-year budgets and contracting • Restructure public funding to increase cost-effectiveness • Hire staff • Develop capacity to trend financial data and fiscal impacts		
Policy/Institutional/ Regulatory/ Legislative	• Re-engineer the Land Transport High Council • Enact enforcement legislation • Reform red plate legislation	• Establish finance mechanisms to improve affordability for newer equipment • Adjust weight and dimension standards to match international standards • Adopt international conventions and European safety procedures • Allow commercial vehicles to operate on highways at all times • Establish a driver license classification system	• Adopt and carry out the Land Transport Sector Policy Statement
Enforcement	• Enforce red plate restrictions	• Highway inspection facilities • Prohibit use of renting temporary parts • Cargo/shipment manifest paperwork • Reduce Mecanique inspections of goods vehicles to once/year • Control/monitor entry-exit of freight operators • Monitor transit and Hazmat vehicles using AVL technology	• Increased enforcement of near term initiatives

Themes	Prerequisites	0-5 Year Near Term	Medium to Long Term
Freight Improvement Strategy Implementation		• Streamline inspection procedures at border crossings • Provide priority for goods movement • Rationalize trucking industry	• Implement AVL-based monitoring • Build truck stops at border crossings • Establish a freight exchange or load matching system • Construct DCs in appropriate locations • Improve competitiveness of Lebanese trucking industry in international commerce

5. FINANCIAL EVALUATION

This section examines both the costs and benefits that would be derived by implementing the recommended strategic initiatives for goods transport.

5.1. Government Capital Costs

The majority of the capital costs to be incurred by the government specifically for freight transport involve the following items:

- Weigh and inspection stations
- Portable weighing equipment (the actual number will depend upon the need)
- Portable AVL equipment for transit and Hazmat vehicles
- Access ramps and public utilities for the truck and logistics facilities (capital costs have not been developed yet because location and design have yet to been finalized).
- Land appropriation, access roads and associated public services (e.g., provision of electricity, water) for truck stops and logistics centres.

The capital costs for the weigh and inspection stations will depend on the road works and structures needed at each of the three sites and the need or not for WIM technology. An initial average estimate is in the range of $1.5 million to $2.0 million per station[1]. This amount would include roadworks, buildings, scale(s) installation, electrical installation, traffic control instrumentation, electronic screening equipment and associated computer software.

The cost of a portable weigh scale is in the range of $3,000 to $8,000 depending upon the weight capacity and level of accuracy required. The total cost will depend on the number and precision required by conducting a needs identification analysis.

An average cost for AVI equipment is in the range of $5,000 per vehicle. Using an assumption that a maximum of 50 vehicles will require them at a time, the total cost will be $250,000 for AVI equipment.

5.2. Government Operating Costs

Government operating costs will cover a wide range of activities some of which is also being undertaken for the public sector component. For example, the RFID and AVL technologies are to be initially deployed for public transit and it is assumed that the freight sector will leverage off these public sector initiatives at minimal cost to the freight sector. In terms of staffing, the cost of the freight transport economist is estimated to be in the range of $2-5K per month (plus fringe benefits).

[1] Based on the following sources: 1) Anderson, Dr. Johann, *Overload Control Strategy for South Africa: The Role of Technology*, 15th World Congress on Intelligent Transport Systems, New York, November, 2008; 2) Maze, T., Monsere, C., Analysis of a Multi-State Corridor Deployment of Intelligent Transportation Systems for Commercial Vehicle Operations;, Paper presented at the 6th World Congress Conference on ITS, Toronto, November 1999; 3) Orban, et al., Evaluation of the Commercial Vehicle Information Systems Networks (CVISN) Model Deployment Initiative (Final Report), Federal Highway Administration, March 2002.

The major operating costs will involve the operation of the weigh and inspection stations. Staffing will be required both at the management level and at the technical level to operate and maintain the stations. The initial staffing costs (salaries) for the three weigh stations are as follows[2]:

- Overall management of the weigh/inspection stations would be under the responsibility of the Control Centre (see staffing requirements section of the report)
- 3 Scale masters located at each of the stations-($2-5K/month each plus fringes)
- 5 Control and monitoring staff at each of the stations-($2-4K/month each plus fringes)
- 2 Administrative/clerical staff-($1-2K/month each plus fringes).

Law enforcement staff is assumed to be provided by the ISF and/or Customs at no cost to the DGMLT or its successor agencies.

5.3. Benefits

There are significant benefits that will be derived by renewing the truck fleet through improved enforcement and the introduction of financial incentives (e.g., removal of the 5% customs duty, provision of low interest loans through Kafalat). These were analyzed in Activity 28-Financial Sustainability Improvements in Interim Report 2 that is enclosed as Appendix 22 of this report for reference purposes.

5.3.1. Fiscal Benefits of Renewing the Truck Fleet

The research carried out in Activity 28 demonstrated that by introducing financial incentives, the losses in the 5% customs duty could more than be offset by increases in revenues generated by the 10% VAT. The example given was that if 450 red-plated trucks were imported versus the 300 now imported, the increases in VAT revenues would offset the losses in customs revenues. If new trucks imported rose to 750 per annum because of the financial incentives, the net gain in taxes collected rose to $ 4 million per annum.

However, it was recognized that improvements in fuel efficiency due to a renewed fleet would mean some reduction in tax revenues (i.e., VAT) for the government. Based on 750 trucks being renewed each year[3], a VAT revenue shortfall could be in the range $500,000 to $ 1 million per annum depending on the fuel efficiencies gained. This amount would become cumulative (i.e., double in the second year, triple in the third year) as the truck fleet is gradually renewed. On the positive side, a reduction in fuel consumption helps the balance of trade. Using the same reductions in litres consumed, it would have a positive contribution of $ 5 to $ 10 million per annum in the trade balance of Lebanon. Again this amount would be cumulative, doubling in the second year, tripling in the third year as the fleet is renewed.

Therefore, it can be generally concluded that renewal of the truck fleet should have positive economic benefits to the economy of Lebanon.

[2] Source: Anderson, Dr. Johann, Overload *Control Strategy for South Africa: The Role of Technology*, 15th World Congress on Intelligent Transport Systems, New York, November, 2008.

[3] The 750 vehicles represents 5% of the 15,000 red-plated truck fleet and assumes that the entire fleet would be renewed over a 20 year time period.

5.3.2. *Environmental and Health Benefits of Truck Fleet Renewal*

The research in Activity 28 also demonstrated a reduction in fuel emissions also brings a reduction in GHG emissions. Again using the 750 annual fleet renewal figure, 25 tonnes of GHG would be reduced each year. Again this would be cumulative, doubling in the second year, tripling in the third year, etc.

However, some other environmental and health benefits of renewing the truck fleet through financial incentives and enforcement were not mentioned in Activity 28 that could represent significant fiscal benefits to the Lebanese economy. These benefits include:

- A reduction in traffic accidents due to the fact that more well-maintained vehicles would be circulating on the highway. Accident costs include property damage, medical costs, productivity losses and possible loss of life. Total costs of accidents cover both the private costs to individuals and to society at large (e.g., accident prevention, health system, accident clean-up).
- A reduction in air pollution that includes nitrogen oxides (NOx), sulphur dioxides (SOx), volatile organic compounds (VOC) such as gasoline fumes, and particulate matter (PM). Visible examples are smog which is a mix of NOx, VOC and PM. Air pollution has negative impacts on the health system (morbidity or disease, mortality rates, etc.) as well as on ecosystems (biosphere, soil, water) that in turn can affect economic activity (e.g. agricultural production).

5.3.3. *Fiscal Benefits of Weigh and Inspection Stations*

In addition to contributing to the removal of unsafe and obsolete vehicles from the road that would be included in the above environmental benefits, weigh stations have two additional benefits:

1. Revenues that would be generated through fines levied against vehicle owners who are not respecting the regulations in regard to weight limitations, compulsory maintenance check-ups, etc.
2. A reduction in damage to the road network due to the overloading of vehicles. This can be a significant cost and just the presence of weigh scales will remove a certain percentage of potential offenders from the road. Road maintenance costs can be significantly reduced if trucks respect the load limits prescribed by law.

5.3.4. *Economic Benefits of a Revitalized Trucking Industry*

The Lebanese economy is almost totally dependent on the trucking industry for the transportation of freight. Thus, a more efficient and modernized trucking industry in Lebanon will bring significant economic benefits to goods movement within Lebanon and between Lebanon and its trading partners. It will lead to greater efficiencies in the supply chain network that in turn will lead to lower prices for goods and make Lebanese industry more competitive in world markets. This will improve the economic well-being of the average Lebanese citizen as well as stimulate growth both in terms of consumer spending and industrial production in Lebanon.

6. OBSERVATIONS AND CONCLUSIONS

The renewal of the trucking industry in Lebanon will be a gradual, evolutionary, long-term process. The government's role in this process will be to put in place the appropriate financial incentives, regulations and enforcement measures that will improve the viability and physical condition of the privately held trucking industry while at the same time protecting the social well-being of society in areas such as safety, security and the environment. Enforcement will play a key role in the success of the various strategic initiatives being proposed in this report. Technological initiatives will also play a key role in assisting speed up the process.

This report has demonstrated that the costs to be incurred by the Government of Lebanon to revitalize the freight transportation industry may in fact be outweighed by the benefits to both the economic and social well-being of Lebanese society by implementing the suggested strategic initiatives. These benefits include:

- Additional tax revenues generated by a revitalized industry that would more than compensate for the proposed reductions in customs duties and other financial incentives;
- A more efficient and productive trucking industry that will lead to a more efficient supply chain network and movement of goods;
- Significant positive economic spin-offs for the Lebanese economy in general due to a revitalized trucking industry;
- Reductions in traffic accidents, air pollution and greenhouse gases that in turn will have positive fiscal impacts on the Lebanese health system and the economy (e.g., increased labour productivity and agricultural production);
- Reductions in damages and associated maintenance of the road network as more efficient vehicles respect the weight limit regulations;
- Increased safety (e.g., reduction in traffic accidents) and security on the roads for all Lebanese citizens.

Therefore, the strategic initiatives recommended in this report should be introduced as soon as reasonably possible.

7. APPENDICES

Appendix 1: Strategic Initiatives

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Internal Resourcing and Organization							
Enact the Draft Law of the LTA	Finalization and enactment of the law establishing the Land Transport Authority in accordance with the policy statement of Report 2. The new market organization scheme will require a regulatory/supervisory authority to monitor compliance. The LTA shall simplify and improve the planning of regional public transport services, and facilitate the negotiation and distribution of fare revenues and subsidy obligations necessary with the advent of smart cards and fully integrated service.	Prerequisite	Good Governance, creation of oversight and accountability for improved service quality, cost-effectiveness, and sustainability.	DGLMT	Legislation and Consultancy Authority at MOJ, Council of Ministers, Parliament	Consistent follow-up by MOT throughout the process.	Enactment of the law and publishing in the Official Gazette.
Restructure DGLMT	Redesign the structure of MOT and redefine its new role based on the transport policy objectives and the laws establishing the LTA and the THC.	Prerequisite	Streamlining the DGLMT structure with Transport policy and strategy and the requirements of good governance to generate the intended transport outcomes.	DGLMT	Legislation and Consultancy Authority at MOJ, Council of Ministers, Parliament	Draft laws of LTA and THC approved by Council of Ministers, parliament	Decree of the new MOT structure published in Official Gazette.
Prepare and enact a *Loi programme* to enable multi-year budgets and contracting	Enable the retention and reprogramming of collective revenues. This is partially, though not adequately achieved through the 246 Law program.	Prerequisite	Difficulty in pursuing multiple year projects, inability to cross-subsidy, low staff capacity	DGLMT	Council of Ministers, parliament	Approval of Implementation plan and championing by DGLMT	Loi programme enacted

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Restructure public funding to improve resource allocation and increase cost-effectiveness	Establish a funding source based on government allocations, taxes or surcharges, and/or partnerships with major institutions. Redirect the $8 million in RPTA funding and the $5.33 daily transport employee allowance to a Public Transport Fund/Transport Trust Fund. Introduce legislation to enable use of transport funds for other transportation needs.	Prerequisite	Poor fiscal situation, loss of revenue through taxing imports and customs duties, DGLMT, long-term viability of service.	DGLMT	MOF, Council of Ministers, Parliament.	Establishing public finance principles based on sound economic allocation of resources.	Transport Trust Fund established.
Fill vacancies at DGLMT especially for staff to oversee concessions	Release hiring freeze and offer competitive salaries to develop a nucleus of staff with special competence to oversee contracts and commercial vehicles, and analyze collected data.	Prerequisite	Management Capacity to monitor and control system efficiency, service quality, enforcement, etc.	DGLMT	Civil service Board	Dedicated multi-year funding source.	The needed staff are in place at DGLMT
Develop capacity to trend financial data and fiscal impacts	Develop methods to gather and analyze financial data from government ministries to establish a financial baseline for transport-related government operations, as well as an accounting system for the Transport Trust Fund.	Prerequisite	System efficiency, financial sustainability.	DGLMT	MOF	Existence of staff capable of carrying out analysis.	High transport system efficiency. Performance-based budgeting and accounting
Enforcement							
Enforce red plate restrictions	Elimination of counterfeit license plates and tighter control of registration using technological advancements related to license plates.	Prerequisite	Poor vehicle condition due to oversupply, low profitability and lack of maintenance enforcement.	MOIM	DGLMT	RFID license plates and database capabilities. Institutional and staff capabilities to manage and use technology.	A reduction in red plates and renewal/rationalization of the trucking fleet

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Highway vehicle inspection facilities	Utilize Weigh-in-Motion and vehicle inspection facilities at specific locations as well as mobile equipment and implement vehicle inspections in a more rigorous manner	Near-Term	Air quality, safety, improvement in physical condition of the trucking fleet, eliminate truck overloading and associated damage to the surface of the road network.	MOIM	Municipalities	Adequate vehicle standards Good geographical coverage of inspection facilities	≥95% inspection coverage
Reduce Mecanique inspections of goods vehicles	Reduce red-place truck inspection requirements to once per year at Mecanique facilities.	Near-Term	Encourage use of inspection facilities and to conform with passenger vehicle inspection requirements	MOIM	Municipalities	Implementation of Weigh-in-Motion and vehicle inspection facilities at specific locations.	Number of truck inspections conducted at Mecanique facilities
Make renting of temporary parts illegal	The renting of temporary parts be made illegal as soon as possible and that vehicles known to be using such parts be denied inspection approval.	Near-Term	Air quality, safety and improvement in physical condition of the trucking fleet	MOIM	Municipalities		Decision issued by MOIM
Entry-exit of freight operators	Require any new operator to pass safety inspection and have a legitimate inspection sticker, and keep on hand proof of insurance and other documentation.	Near-Term	Poor physical state of fleet, low economic viability of operators, enforcement, inefficiencies in conducting commerce.	DGLMT	Inspection Facilities	Adequate geographical coverage of inspection facilities	Violations reduced to ≤ 5%
Availability of shipment or cargo manifest	All red-plated carriers must have in their vehicle, appropriate cargo manifests indicating appropriate shipment and transport data of the goods that they are carrying.	Near-Term	Security and potential development of a database for goods movement	MOIM	DGLMT	Documentation and enforcement mechanisms in place	Violations reduced to ≤ 5%

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Monitor transit and HazMat vehicles	Use both field staff and advanced technology methods like AVL, as appropriate, to monitor transit and HazMat vehicles	Near Term	Security	DGLMT	Municipalities	Institutional and staff AVL capabilities	Performance-based evaluations using AVL data
Increased enforcement to meet safety requirements	Increase realization of safety goals through licensing, vehicle design and maintenance, and generally adopting European standards.	Near-Term	Sustainability of service, lack of safety standards.	DGLMT	MOIM Municipalities Inspection facilities	Safety planning and enforcement mechanisms in place	Violations reduced to ≤ 5%
Policy/Institutional/Regulatory/Legislative							
Re-engineer the Land Transport High Council	Redesign the role of the council to be the decision maker over intermodal policies, modal performance evaluation and resource allocation. Rename it: Transport High Council (THC).	Prerequisite	Modal balance and competition between modes against transport objectives and targets.	DGLMT	Legislation and Consultancy Authority at MOJ, Council of Ministers, Parliament	Consistent follow-up by DGLMT throughout the process.	Enactment of the law and publishing in the official gazette.
Reform red plate legislation	Abolish the concept of "ownership" of red plates in favour of a timed operator license regulated by the DGMLT. Allow registration of new or less than 6-year old used red-plated vehicles only if an older vehicle be exchanged in return.	Prerequisite	Poor vehicle condition due to oversupply, low profitability, and lack of maintenance enforcement.	DGLMT	MOIM	Approval of Transport Policy and Implementation Plan by the Council of Ministers	New legislation enacted
Enact enforcement legislation	Legislation should address empowerment of enforcement bodies through sufficient budgets, training, and new technology.	Prerequisite	Good Governance, creation of oversight and accountability for improved service quality, cost-effectiveness, and sustainability.	MOIM	DGLMT	Training of enforcement forces	

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Establish finance mechanisms to improve affordability of newer equipment	Exempt purchase of red-plated trucks over 3500kg free from customs duties and obtain low interest loans for trucking industry (as is done with other industries with Kafalat).	Near-Term	Poor physical state of fleet, low economic viability of operators, low competitiveness internationally, air quality, safety.	DGLMT	MOF	Approval of Implementation Plan	Increased % of new vehicles Improved Safety Better Service Improved environmental Conditions
Adopt international conventions and European safety procedures	Adopt international conventions and safety standards, such as length of driving shifts, profile records, use of digital tachographs.	Near-Term	Enforcement, inefficiencies in conducting commerce, low competitiveness internationally, safety.	DGLMT		Selection and documentation of procedures	Issuing the procedures
Adjust commercial trucking standards to match international standards	Adjust Lebanese weight and dimension standards to match international standards to increase operating efficiency.	Near-Term	Low economic viability of operators, low competitiveness internationally.	DGLMT		Approval of Implementation Plan	Improved economic viability and competitiveness
Allow commercial vehicles to operate on highways at all times	Eliminate the time restrictions on truck operators on highways.	Near-Term	Low economic viability of operators, trucking inefficiencies	DGLMT			
Establish a driver license classification system	Establish a diver license classification system reflecting the skill and driving experience necessary for the type of vehicle being driven, with serious consideration given to adoption of European policies.	Near-Term	Enforcement, inefficiencies in conducting commerce, low competitiveness internationally, safety.	MOIM	DGLMT	Amendment of existing system	Issuing the amendment

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Adopt and carry out the Land Transport Sector Policy Statement	Adopt the policy, as described in Interim Report 2, to ensure that transportation serves the vision for rebuilding the Lebanese economy and creating a better quality of life for all Lebanese.	Mid-Term	Lack of an integrated, effective, multi-modal sustainable transportation system.	DGLMT	Council of Ministers	Consistent follow-up and championship by DGLMT	Approval by council of Ministers and Parliament
Freight Improvement Strategies							
Obtain essential land plots to develop transportation services and infrastructure	Obtain land necessary for weighing/inspection stations, truck stops and distribution/logistics centres though expropriation, land purchases, or easements.	Prerequisite	System efficiency, lack of infrastructure.	DGLMT		Approval of Implementation Plan	
Streamline inspection procedures at the border crossings	Excessive delays at the border crossings (mainly inbound) due to procedures and hours of operation of the Customs Service and the inspection procedures of other ministries	Near-Term	Inefficiencies in conducting commerce.	Customs Service	Customs Service, Health, Agriculture, Economy & Trade, Industrial Research Institute		Decrease in delay time of trucks in the inbound direction
Provide priority for goods movement	Improve freight vehicle movement by allowing them to share certain facilities with public transport.	Near-Term	Congestion, inefficiencies in conducting commerce, low economic viability of operators.	DGMLT			
Build truck stops inside Lebanon near border crossings	Establish truck stops near border crossings to reduce congestion at the border, provide food and facilities, and allow communication with shippers, companies, and the freight exchange system.	Mid-Term	Slow border crossings, lack of facilities for truckers, inefficiencies in conducting commerce.	DGMLT	Customs Service, Private Sector	Planning and acquisition of land, provision of public utilities	

Strategic Initiatives	Description	Timeframe	Needs Addressed	Lead Entity	Other Entities Involved	Prerequisite/ Corequisites	Performance Measures
Establish a freight exchange or load matching system	Develop web-based systems to match freight with available vehicle space.	Mid-Term	Inefficiencies in conducting commerce.	DGMLT	Private Sector		
Construct distribution center(s) in appropriate location(s).	Construct distribution center(s) in appropriate location (s) in the GBA to improve goods movement efficiencies.	Mid-Term	To improve efficiencies in goods distribution and reduce traffic congestion and noise on city streets.	DGMLT	Private Sector	Planning and acquisition of land, provision of public utilities	
Implement AVL-based monitoring	Implement AVL for continuous monitoring of vehicle, loans, and driver for international transit and transport of hazardous materials.	Mid-Term	Security and safety.	DGLMT	Municipalities	Institutional and staff AVL capabilities	Performance-based evaluations using AVL data
Improve competiveness of Lebanese trucking industry in international commerce	Cooperate with Syria, Jordan, and other neighbours to reduce the cost of shipping in a way that benefits all three countries.	Mid and Long-Term	Slow border crossings, restrictions in international commerce, excessive fees	DGMLT	Neighbouring countries		Improved economic viability and competitiveness
Rationalize trucking industry	Encourage consolidation of carriers, remove unsafe/obsolete vehicles from the road and eliminate counterfeit red plates	Long-Term	Improved Services Higher competitiveness sustainability	DGLMT	-	Capacity building in policy management and transport economics at DGLMT	Continual improvement in goods transport

Appendix 2: Interim Report 2

Republic of Lebanon
Directorate General of Land and Maritime Transport

STUDY FOR THE REVITALIZATION OF THE PUBLIC AND FREIGHT TRANSPORT INDUSTRY IN LEBANON

Interim Report 2 – Component B – Goods Transport

December 22, 2008

IBI GROUP

TEAM

IBI GROUP

TEAM

Joint Venture IBI Group and TEAM International
Study for the Revitalization of the Public & Freight Transport Industry in Lebanon
Urban Transport Development Project (UTDP)
World Bank Loan No. 7123-LE - Contract No.: SPU-CS-001

December 22, 2008

Mr. Abdel Hafeez Kayssi
Director General
Directorate General of Land & Maritime Transport
Ministry of Public Works and Transport
Georges Picot Street, STARCO Building 3rd Floor
Beirut - LEBANON
Via e-mail to SPU

Subject: Submission of Final Interim Report 2 – Component B

Dear Mr. Kayssi:

Please find attached the final version of Interim Report #2 for the Goods Transport portion (Component B) of the *Study for the Revitalization of the Public and Freight Transport Industry in Lebanon*. We have considered the comments provided by DLGMT and incorporated changes accordingly. A few comments will be addressed in Phase III in the development of the Implementation Plan.

A Power Point presentation that highlights the key findings and recommendations of this report was delivered under separate cover.

We are confident that we can present an implementation plan that would be both effective and has a realistic chance of being successful if certain prerequisites for success are set in place. We look forward to a rapid completion of the remainder of this project.

Yours Sincerely,

For Joint Venture IBI Group / TEAM International

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Team Leader
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EXECUTIVE SUMMARY

This report summarizes the strategies considered, key results of the analyses that were performed and the recommendations that have resulted in connection with the goods component for Phase II of the Revitalization Project. Its primary purpose is to describe and defend the recommendations for the benefit of any and all stakeholders. Only after they have had a chance to comment and critique will the more detailed Implementation plan be finalized as Phase III of this project.

This report is the product of input from numerous research reports and information gathered from many sources prior to this project's inception. These were summarized in the Collection and Review of Existing Data section of Interim Report 1. It is also the product of much additional research performed in Phase I, as described in the Desk Investigations section. The ultimate recommendations were the product of a group effort. All of the persons who led particular Activities also reviewed all of the material as a whole so that synergies and contradictions between strategies would be apparent and the set of strategies would therefore be coherent towards solving particular problems or meeting particular objectives.

Key observations and recommendations are presented here from a variety of perspectives, as they were defined in the Activity list in the Terms of Reference (Appendix A - Description of Services).

Definition and Evaluation of Alternate Strategies (Activity 24)

The road goods transport industry is a fundamental contributor to the economic and social well-being of any nation. In Lebanon, due to its geographic size and location as well as to the complete lack of any other alternate means of freight land transport (e.g., rail), the trucking industry takes on even added importance for Lebanese trade and commerce.

However, as stated in the findings of Interim Report No.1 and reinforced in further research documented in Progress Report No.2, the trucking industry in Lebanon is currently in poor financial health and physical condition and as such, impedes the efficient flow of goods and internationally competitive commerce of Lebanon.

The core issue for the revitalization of the goods transport sector is to improve the viability of the trucking industry in Lebanon. There are a number of factors that must be addressed in order for this to happen:

- Financing mechanisms to improve the affordability of newer equipment to be purchased by for-hire trucking companies
- Incentives to encourage the scrapping of obsolete and/or unsafe equipment that is beyond the point of repair in order to pass an inspection
- Rationalization of the industry through a balancing of supply and demand that will permit fair compensation and a stability in rate levels
- Significant improvement in enforcement of safety rules and regulations in order to get offenders off the road while at the same time reward well-managed companies
- Institutional problems need to be addressed such as inspection procedures at the border and the testing of goods that enter Lebanon
- Investment in new facilities such as warehouses, distribution centres and truck stops to improve truck operating efficiencies

- Better cooperation with Lebanon's neighbours, in particular Syria and Jordan to reduce the costs of trucking operations that would benefit all three countries.

To encourage investment in newer trucks in Lebanon by transport enterprises, the following initiatives are recommended:

- All trucks over 3500 kg to be red-plated that are 5 years old or less should be exempt from the customs duty of 5% on the CIF price.
- The *Kafalat,* should provide low interest loans to the trucking industry as it does for other industries. It could perhaps restrict the loans to trucking companies with a minimal number of vehicles (e.g., 4) to encourage some consolidation in the industry.

In addition to providing financial incentives to make the purchase of new equipment more affordable to operators, other measures will be required to rationalize the existing fleet mainly by removing trucks that are obsolete or in poor running order or maintenance condition

- **Weigh-in-Motion (WIM) stations combined with vehicle inspection facilities at specific locations.** A traditional static method of weighing would require a very large land area along highways for queuing of vehicles. Such space is in short supply in the GBA and along some of the mountain roads.
- **A buy-back program for old or obsolete vehicles** could be introduced.
- In conjunction with the Public Transport initiatives, the introduction of **Radio Frequency Identification (RFID) for license plate verification and validation** of red-plated trucks using manually held reading devices at the WIM/vehicle inspection stations suggested above.

In order to facilitate the conducting of commerce between the trucking industry and the shipping public, the introduction of freight exchange or load matching systems should be seriously considered. Examples include:

- **Téléroute** of *Éditions Lamy* is based in France but covers most of Europe in more that 40 countries
- **Internet Truckstop** is based in the United States and covering North America including Canada and Mexico.

Of course, enforcement will be a key ingredient to the success of these initiatives. The technological solutions proposed are considered longer-term in nature. However, since the upgrading of the trucking fleet will be a gradual, long-term process in any case, these solutions will also play key role in the eventual revitalization of the trucking industry.

Institutional Reform (Activity 25)

A number of institutional impediments both within Lebanon and in its neighbouring countries were also highlighted that are causing inefficiencies within the trucking industry and in turn on overall goods movement in the region.

- In order to effectively contribute to sustainable economic and social development in Lebanon, the role of MPWT should be aligned with and supportive to achieving the policy objectives and strategies of the land transport sector. The role of the Ministry should grow more as an enabler and less as a service supplier.
- Good governance requires the separation of governance and oversight from executive management functions in order to exercise accountability over operations. This means that the functions of policymaking, planning and regulation should be separated from service delivery. There should be a proper system for policy and resource management in order to be able to evaluate regularly the achievements and

costs of transport activities to ensure achieving value for money. This requires that the most efficient means of service delivery are selected, based on good understanding of outputs, level of service and costs.

- Transparency is critical to good governance and requires public consultation and external review of planning, regulatory and performance evaluation activities.
- Decision-making across all levels of the management of public funds from policy setting, to planning through implementation should be based on public interest. The interest of sub groups should not compromise the interest of the community at large.

The separation of policy management and regulation from service delivery can be achieved through the enactment of the proposed draft law to establish the Land Transport Authority. The proposed functions of the Land Transport Authority as specified in the draft law are shown in Box 1.

Box 1. Proposed Functions of the Land Transport Authority – Draft Law.

a. Defining the land transport network and its lines inside Lebanon, and between cities and the exterior.
b. Establishing and updating modal specifications of vehicles and rolling stack in collaboration with concerned parties, in line with environmental preservation and public safety.
c. Issuing and renewal of licenses, authorizations and permits, and suspension and cancellation of same in case of violation of this law or any regulation issued thereto.
d. Determining the penalties for violating permits and licenses provisions.
e. Determining the location of land transport facilities and ancillary services in coordination with concerned parties.
f. Establishing the bases of organizing and monitoring the activities of land transport facilities and ancillary services.
g. Regulating and developing the affairs of the railroad network.
h. Suggesting transport tariffs and charges and issuing same after approval of the Minister.
i. Monitoring the implementation of transport tariffs and charges and control of practice.
j. Monitoring of vehicles, and facilities of land transport and supervision of services.
k. Collection of charges, fees tariffs and penalties due.
l. Monitoring and developing, and transport services.
m. Participation in preparing draft bilateral, regional and international land transport agreements. Follow up of signed agreements.
n. Preparing plans, projects and studies pertaining to the development of the activities of land transport sector and issuing periodic publications and reports on the sectors activities.

We recommend the Land Transport High Council be renamed the "Transport High Council" or the "National Transport High Council" with a totally different mandate of intermodal policy coordination, including:

- Review, coordination and conciliation of modal and intermodal transport policies.

- Monitoring and evaluation of transport sector performance and the achievement of social and environmental objectives.
- Advising on intermodal resource allocation based on competitiveness and level of service of various modes.

Policy Guidance (Activity 26)

This section presents the official land transport policy for the Republic of Lebanon that the Study Team advocates in support of any revitalization effort. It is should be read as a proposal, not as a statement of current fact. It should be read in its entirety and is thus not repeated here.

Guidelines for Regulatory Improvements (Activity 27)

It is recommended that:

- **Inspection of red-plated trucks be reduced to once per year at *Mecanique* facilities** once the proposed inspection/weigh stations are put into operation. This would result in a more effective and efficient management of truck inspections
- **The use of "rent-a-parts" supplied by motor vehicle workshops be curbed.** The users of temporary part rentals be fined and their vehicle removed from the road until it can pass legitimately the maintenance inspection.

None of the recommended compulsory inspection requirements will work unless backed up by enforcement. This is now the fundamental problem in trying to improve the physical condition of the existing trucking fleet.

The requirement of keeping refrigerated trailers with tractors (i.e, one licence is issued for the combined tractor-trailer combination) should also be re-considered. It leads to inefficiencies in truck fleet operations.

We also recommend that that three key criteria be met in order to be a bona fide operator:

- Be in good repute (i.e., comply with rules and standards)
- Be in sound financial standing (i.e., guarantee the viability of their business)
- Demonstrate professional competence (i.e., follow safety rules and procedures)

It is further recommended that a driver licence classification system be established in Lebanon reflecting the skill and driving experience necessary for the type of vehicle being driven. Adoption of European policies and standards for driver certification and training should be seriously considered by Lebanon in collaboration with its immediate trading partners.

Safety standards with respect to hazardous materials, driver working hours, use of tachographs and other measures can be adopted from Existing European standards.

Financial Sustainability Improvements (Activity 28)

The fiscal impact on the Lebanese economy could be positive if a sufficient number of trucks were imported over and above current levels of about 300 heavy-duty trucks per annum. For example, if the financial incentives results in at least 450 red-plated trucks being imported, then the losses in the 5% duty are offset by the increases in revenue generated by the 10% VAT. If 5% of the truck fleet could be renewed each year (i.e.,750 vehicles), then the contribution to the Treasury will actually increase over current levels. This is illustrated in

Table 1 below with the assumption that the average new/used price for a heavy-duty truck (CIF) is $80,000 (U.S.).

Table 1 Annual Tax Impacts-Renewal of the Truck Fleet (U.S. $)

	With Duty		Without Duty		
Number of vehicles	1	300	1	450	750
CIF Price (U.S.$) (per vehicle)	80,000	80,000	80,000	80,000	80,000
Total CIF	80,000	24,000,000	80,000	36,000,000	60,000,000
Duty @ 5%	4,000	1,200,000	-	-	-
VAT @ 10%	8,400	2,520,000	8,000	3,600,000	6,000,000
Dealer Cost	92,400	27,720,000	88,000	39,600,000	66,000,000
Dealer Mark-up (10%)	9,240	2,772,000	8,800	3,960,000	6,600,000
VAT @ 10%	10,164	3,049,200	9,680	4,356,000	7,260,000
Customer Price	111,804	33,541,200	106,480	47,916,000	79,860,000
Total Duty	4,000	1,200,000	-	-	-
Total VAT	10,164	3,049,200	9,680	4,356,000	7,260,000
Total Taxes	14,164	4,249,200	9,680	4,356,000	7,260,000

There will be two main impacts due to improvements in the fuel efficiency of a renewed fleet:

- A reduction in fuel consumption that in turn will mean some reduction in tax revenues (i.e., VAT) for the Government of Lebanon.
- A reduction in fuel emissions that in turn will result in a reduction in air pollution and GHG emissions as well as have a positive impact on the physical health of Lebanese citizens.

Based on the trucking fleet being renewed by 750 trucks per annum and each truck operating at 100,000 km per annum, the impacts on VAT revenues are presented below in Table 2.

Table 2 Fuel Tax Revenue Impacts

	Existing Fleet		Renewed Fleet
Consumption Rate (Kms per litre)	1.67	2.00	2.50
Litres consumed	44,910,180	37,500,000	30,000,000
VAT Revenues (U.S.$)	$ 3,323,353	$ 2,775,000	$ 2,220,000

Therefore, the Government of Lebanon could face a VAT revenue shortfall of between $500,000 (U.S.) to over $1,000,000 (U.S.) per annum as the truck fleet is renewed based on the assumptions used in this analysis. It should be noted that this shortfall would be cumulative (i.e., double in the second year, triple in the third year, etc.)

On the positive side, a reduction in fuel consumption would help with the balance of trade. From the table above, from 7.5 to 15 million litres of diesel fuel would be saved in the first year alone. Based on a cost of 1,068,000 LL per 1,000 litres or $712 (U.S.) per 1,000 litres, it would have a positive contribution to the trade balance of from 5 to 10 million U.S.$ per

annum. This amount would double in the second year, triple in the third year, etc, as the fleet is renewed and fuel saved.

Renewal of the fleet could reduce the production of GHGs by up to 25 tonnes per annum. Again, these savings would augment each year (e.g., double in the second year, triple in the third year) as the fleet is renewed.

Transport Agreements (Activity 29)

This study did not identify the need for a specific bi-lateral transport agreement that needs to be reached or an existing agreement that needs to be revoked. But some international conventions were identified, whose content is recommended to be adopted,

- *Accord européen sur les transports routiers* (AETR), translation: *the European Agreement concerning Work of Crews of Vehicles engaged in International Transport*. It is recommended to adjust Lebanese regulations for licensing road transport vehicles to ensure compliance with AETR rules, adjust specifications, inspection regulations and traffic code to ensure seamless enforcement of the AETR agreement for national and international vehicles operating on roads in Lebanon and participate in concerned UN Working Parties.
- Incorporate ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road) into Lebanese regulations, training programs, and safety and security manuals and procedures, and participate in concerned UN Working Parties.
- Participate in concerned UN Working Parties, committees and IRU (International Road Transport Union) bodies regarding TIR (*Transports Internationaux Routiers*) or the International Customs Transit system.

Planning Considerations (Activity 30)

Locations with sufficient land area for a DC are very limited due to the already extensive residential and commercial development of the GBA. Six potential sites have already been identified by the Joint Venture project team based on previous studies and further research. These are:

- The abandoned Mar Mkhaeil train station next to the bus storage garage of the RPTA
- The Sinn El Fil Plain near the Beirut River
- On sea fill behind the City Mall near Al Judaydah
- The NBT abandoned train station area
- The plain beside the *Mecanique* facility in Radio Orient
- An area beside the Nahr Al Mot quarries

A site location map indicating the location of each of these locations is presented in Photo 1. Two of the locations: the Mar Mkhaeil train station and the plain beside the *Mecanique*, are less than ideal due to lack of available space and relative location (e.g., still considered close to congested streets and/or other buildings) and may be removed from the list upon further evaluation. The possibility of creating one or more smaller DCs based on different kinds of commodities and/or traffic flows should also not be ruled out.

Existing shippers now requiring storage and/or warehousing facilities in the GBA and existing operators of warehousing facilities will have to be incentivized and/or motivated by enforcement measures to relocate.

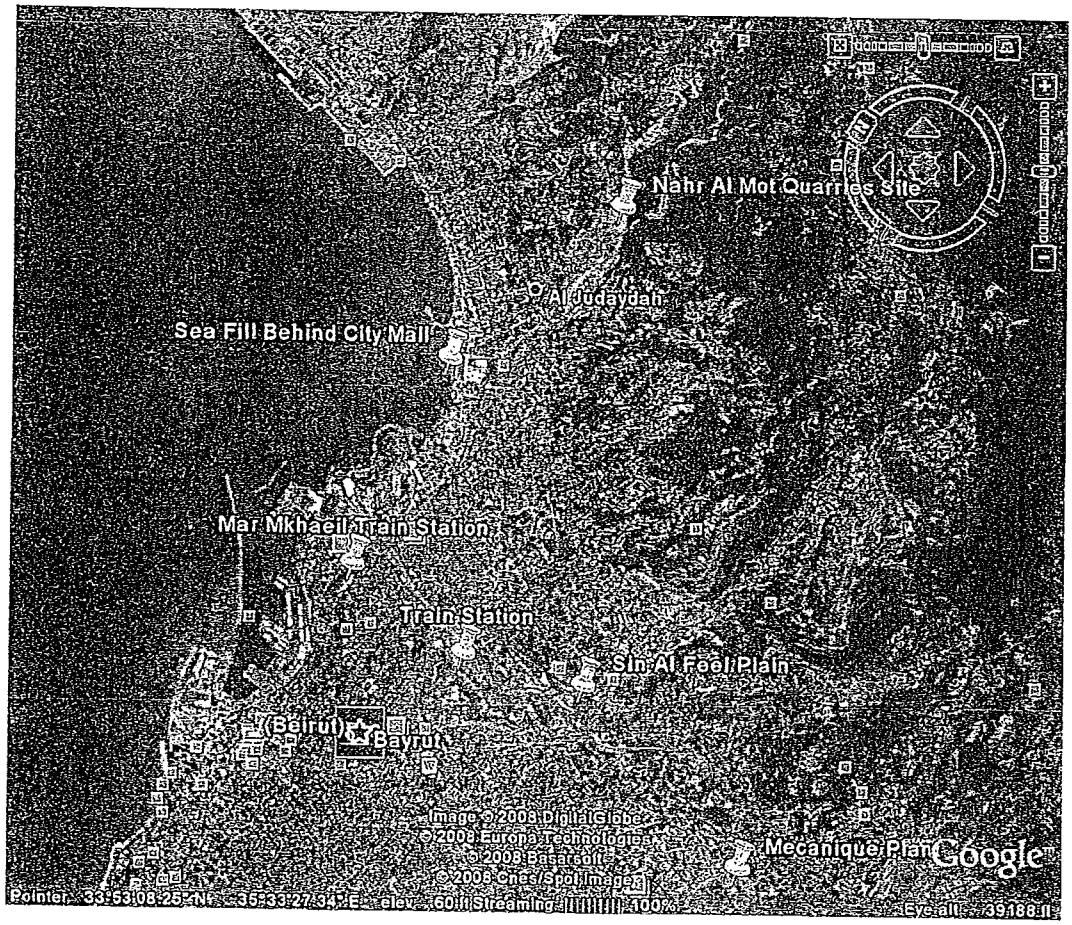

Photo 1: Candidate Distribution Center Locations within the GBA

Enforcement Improvements (Activity 31)

We recommend that the same technologies mandated for passenger vehicles with Red Plates be extended to goods vehicles with Red Plates as a second phase. It should also be considered for vehicles with special licensing requirements such as transit vehicles and hazardous material vehicles. The third phase would extend this technology to the remainder of vehicles.

A new vehicle database must be created at the time of installation of the first RFID readers used to read the license plates. The new database need not be comprehensive, that is, include all 750,000 vehicles currently registered. The new database can start with red license plates, then commercial license plates, and eventually all license plates, over the course of the normal renewal cycle. This database would not be developed by the RFID license plate vendor, but by a third party, and is subject to additional purchase and user license agreements.

We concur with the recommendations from previous studies that portable weighing equipment be acquired.

We recommend using WIM technology to pre-screen trucks in the North Corridor and at any other location in the South or East where space proves to be difficult or expensive to acquire. The WIM would be accompanied by a fixed scale behind it for legally valid measurements for suspect vehicles. There is little value for WIM at the border stations, as vehicles must stop in any case.

Over the longer term, the weigh inspection stations should be upgraded to permit the reading of electronic manifests, electronic vehicle registrations, and other documents upon approach through a radio receiver mounted on a gantry ahead of the checkpoint.

Monitoring of international transit trucks and HazMats can be addressed through the leveraging of technology that is recommended for monitoring of public transportation vehicles.

It might be possible improve freight vehicle movement at certain times of the day as well by letting these vehicles share the facilities that are upgraded for public transport use as part of this revitalization effort.

Legislative Implications (Activity 32)

We recommend a speedy enactment of the proposed amendments to Law 341 dated 2001, in particular, the provision that having a red plate is not sufficient to operate a public transport or goods transport vehicle and that operations shall be subject to an operation license from a competent authority (the LTA).

The recommendation for establishing a Transport Fund is well argued in proposed Transport Policy Statement proposed by this study.

The big hurdle against the establishment of a Transport Fund rests with the interpretation of the current public finance law, which directs all revenues to the general fund, and does not permit targeting some revenues to specific uses. The concept of 'user charges' does not have a legal pretext. It is a priority to explore how best this issue can be approached. A legislative action in that direction is over due.

Legislation texts pertaining to enforcement shall address empowerment of enforcement bodies through sufficient budgets, training and new technology. Particular areas of enforcement include:

- Truck weight regulations (e.g., overloading)
- Required inspections at *Mecanique* inspection facilities
- Traffic flow and driver behaviour

INTRODUCTION

This report summarizes the strategies considered, key results of the analyses that were performed and the recommendations that have resulted in connection with the goods component for Phase II of the Revitalization project. Its primary purpose is to describe and defend the recommendations for the benefit of any and all stakeholders. Only after they have had a chance to comment and critique will the more detailed implantation plan be finalized. The implementation plan will be the product of Phase III.

This document is the product of input from numerous research reports and information gathered from many sources prior to this project's inception. These were summarized in the Collection and Review of Existing Data and section of Interim Report 1. It is also the product of much additional research performed in Phase I, as described in the Desk Investigations section. It included field surveys (traffic data collection and analysis, user surveys of truck operators, etc.), described in Progress Report 2. There were also reviews of government publications, government statistics, site visits, and interviews, and a workshop held with a variety of stakeholders. Together, all of this information helped to establish a Goods Transport Profile that allowed the identification and listing of the strengths, weaknesses, deficiencies and major issues associated with the goods transport sector within the Republic of Lebanon.

The starting point was the Profile developed in Phase I. From this flowed potential strategies. We used the collective expertise of many persons within the IBI/TEAM Joint Venture to select which strategies should be included in the implementation plan and in what order they should be implemented. During the selection of effective strategies, literature searches were conducted on various costs, design specifications, comparative policies and best practices around the Middle East and the world.

Report Organization

Much thought was given as to how to organize this report. In the end, the JV team decided that simply following the Activity list in the Terms of Reference (Appendix A -Description of Services) was the most advantageous way. The clearly delineated subject matter allows for readers with particular interests and responsibilities to focus on particular sections without continual reference to other sections. As a result, there is intentionally some overlap in content between sections, but not so much that it would make reading tedious.

Study Team Task Leads

While several persons were involved in each Activity, one or two persons took the lead as follows

- Activity 24: Definition and Evaluation of Alternate Strategies: Don McKnight/Mike Kieran
- Activity 25: Institutional Reform: Yusef Salam
- Activity 26: Policy Guidance: Tammam Nakkash/Yusef Salam
- Activity 27: Guidelines for Regulatory Improvements: Don McKnight/Mike Kieran
- Activity 28: Financial Sustainability Improvements: Don McKnight
- Activity 29: Transport Agreements: Dr. Tammam Nakkash

- Activity 30: Planning Considerations: Don McKnight
- Activity 31: Enforcement Improvements: Dr. Eric Bruun/Don McKnight
- Activity 32: Legislative Implications: Dr. Tammam Nakkash

All of the persons who led activities also reviewed all of the material as a whole so that synergies and contradictions between strategies would be apparent and the set of strategies would therefore be coherent towards solving particular problems or meeting particular objectives.

Timeframe for Recommendations

Recommendations span from:

- short term (actions that can be implemented immediately), to
- medium term (within approximately 5 years), to
- long term that promote the fulfillment of a vision for 10 years from now.

The shortest-term strategies address items that could be implemented almost immediately without legislative changes or major funding. Other changes are not even within the current responsibilities or purview of the DGLMT, per se. Such medium-term strategies involve changes in funding arrangements, governance and governmental staffing such that time is required to enact legislation and conduct re-organizations. This highlights the need for a coordinated effort between ministries as well as between local governments.

DEFINITION AND EVALUATION OF ALTERNATE STRATEGIES (ACTIVITY 24)

The road goods transport industry is a fundamental contributor to the economic and social well-being of any nation. In Lebanon, due to its geographic size and location as well as to the complete lack of any other alternate means of freight land transport (e.g., rail), the trucking industry takes on even added importance for Lebanese trade and commerce.

However, as stated in the findings of Interim Report No.1 and reinforced in further research carried out and documented in Progress Report No. 2, the trucking industry in Lebanon is currently in poor financial health and physical condition and as such, impedes the efficient flow of goods and internationally competitive commerce of Lebanon.

An inefficient trucking industry means inefficiencies in the movement of goods and in turn, inefficiencies within the entire supply chain of the Lebanese economy. Conversely, improvements to the goods transport sector are expected to have positive repercussions for the broader Lebanese economy, its domestic production efficiency, and regional economic competitiveness.

The major issues and problems with the trucking industry are reviewed briefly below. These are then followed by a number of proposed strategies to improve the viability of the trucking industry in Lebanon and the physical condition of its fleet.

Review of Issues and Problems

Fragmentation of the Sector

The trucking industry in Lebanon is also highly fragmented with little consolidation in the industry. There are about 15,000 red plate trucks over 3500 kg (estimate only) and about 175,000 private fleet trucks (over 500 kg)[1]. Most trucking companies own only one truck although there are a few small fleets (up to 100 trucks maximum) being operated. Owner-operators represent about one-third of the total Lebanese common carrier truck fleet. This lack of consolidation in the industry also leads to inefficiencies in managing the trucking fleet and a lack of coordination to serve the shipping public. It can also put added downward pressure on rate levels.

The Physical State of the Truck Fleet

As stated above, the current truck fleet is in general in poor physical condition due to its age (obsolete in many cases) and lack of maintenance and inspection. This leads to:

- Higher maintenance costs for these older vehicles if in fact these older vehicles are properly maintained; otherwise the fleet falls into disrepair and becomes unsafe (which is also the case).
- Higher fuel consumption and costs for older diesel engines that in turn results in higher exhaust emissions and the resultant negative impacts on the environment and the physical health of Lebanese citizens.

[1] Source: Chafik El-Kassis, Syndicate of Truck Owners

- Higher road maintenance costs because older trucks generally have higher tare weights than the newer truck designs. Lower tare weights allow larger payloads for the same gross weight. This will increase profitability with legal loads and reduce the need for overloading (and resultant damage to the highway).
- Dangerous driving conditions and accidents due to the chronic overloading of trucks and poor maintenance practices. This also has negative impacts on the Lebanese economy and health system. The lack of enforcement (see below) is the prime cause of this situation.

Economic Viability of Operators

The current poor physical state and age of the truck fleet in Lebanon is a definite sign that most operators are not viable or are at such low levels of profitability that they cannot afford to upgrade their vehicle(s). Like in most countries, the trucking industry in Lebanon operates is a highly deregulated environment and the government relies on market forces to hopefully create a competitive and efficient transport system. *However, this policy assumes that safety codes and regulatory standards are being adhered to and enforced.* This allows well managed trucking companies to earn reasonable profits and be able to renew their fleets in spite of the very competitive nature of the industry.

In Lebanon, there is strong evidence that safety codes and regulatory standards are not being adhered to and/or enforced. Poorly maintained and obsolete vehicles (that should be off the road) are being allowed to circulate and to provide services to the shipping public. This is causing an over-supply of trucks on the highway and keeping rate levels depressed as a result. Costs are also being kept artificially low as these older vehicles are already fully depreciated and maintenance costs are being kept to the absolute minimum to the detriment of safety.

According to industry sources, most Lebanese trucks could not carry a *Transport International Routier (TIR)* certificate because they would not meet the emission standards or the weight limitations.

Enforcement

The lack of enforcement has been cited above and is a crucial impediment to revitalization of the trucking industry. Examples include:

- The complete lack of roadside inspections and associated facilities to pull trucks off the road that don't meet safety standards (e.g., working brakes, lights, etc.), load restriction limits or hazmat rules.
- A large percentage (perhaps 50%?) of red-plated commercial trucks are not adhering to the twice-a-year compulsory inspections at government sponsored inspection facilities operated by *Mecanique*. Although inspected vehicles are provided a sticker to indicate the date that they have been inspected, there is no enforcement of this inspection requirement.
- There is evidence of counterfeit red-plated license plates being in circulation but again little effort is being made to eliminate this practice.

The impacts of lackluster enforcement include obvious deficiencies that threaten safety as well as economic incentives to overload vehicles, posing further safety hazards and causing damage to roadway pavements and infrastructure.

Conducting of Commerce

There are a number of issues that have been raised that can cause inefficiencies in the effective movement of goods and the conduct of commerce within Lebanon. These include:

- The lack of an efficient and coordinated supply chain management relationship between trucks, warehouses and shippers.
- Except for international goods transport, composition by commodity and value are poorly known due to a lack of documentation such as manifests. The lack of this information makes targeting of solutions for the benefit of stimulation or development of particular sectors very difficult.
- Due to congestion in the road network, slower speeds can affect vehicle operator costs and profitability. Lack of reliability in travel times can in turn affect shipper efficiency.
- Trucks are not tailored to their specific role in distribution. Vehicles are typically used for many different types of loads in order to provide more revenue opportunities for the owner operator, at the cost of somewhat lower efficiency at each. A prime example is the 12-metre, 6-axle standard truck trailer in Lebanon with a tare weight of 12 tons that is used to transport containers as well as a variety of bulk or breakbulk shipments.

Facility Locations

There are too many ad-hoc locations of warehouses and truck terminals, which has several negative consequences:

- There are community complaints as noise and traffic may exist at all hours. Alternative locations need to be found or mitigation measures will need to be identified.
- There is congestion in the streets caused by loading and unloading activity. It can block traffic and contribute to congestion.
- There are numerous incidences of possibly unsafe hazardous materials (hazmat) storage. Some commodities may represent a genuine danger to the neighborhood. A means must be found to enforce the prohibition of hazmats in unauthorized areas.
- Trucks are parked overnight in the public domain, due to lack of special yards. Suitable large-scale storage facilities for vehicles that are close to major warehousing and terminal locations should be identified. If they don't exist, then creation of such locations must be considered.

Border Crossings

There are a number of issues at the Lebanese border crossings[2] that are affecting the efficiency of trucking operations and in turn the costs and service levels of goods delivery:

- While the Lebanese Customs Service has moved rapidly into the e-documentation at the airport and seaports, customs procedures still involve the use of paper at the land

[2] Note: The study team only viewed the operations and facilities at the Masnaa Station but assumes that similar conditions exist at Abboudieh.

borders. Combined with an apparent understaffing of personnel, this contributes to the long delays being incurred by trucks at the border crossings.

- Facilities are only open during daylight hours for trucks (to allow for visual inspections) even though the border customs is open 24/7 for passenger vehicles. The physical facilities are also in need of upgrading including some basic necessities such as toilets for drivers.
- Trucks entering Lebanon incur much longer delays. Certain traffic such as in-transit traffic and courier trucks (e.g., DHL) are processed faster. Waits from a couple of hours to a maximum of a day were the norm in the outbound direction. For the inbound direction, waits of several days were the norm due to increased inspection procedures (e.g., all inbound trucks must pass through an x-ray machine as well as be inspected by the Army) as well as due to the various testing of goods before they are allowed to be sold or consumed in Lebanon.
- The required testing of goods by various ministries is the main problem in the inbound direction. The National Committee for Trade Facilitation in Lebanon found that 70% of the delay in the inbound direction was due to this testing and only 30% was due to the actual customs procedures and inspections[3]. One or more of the ministries of Health, Agriculture and Economy & Trade as well as the Industrial Research Institute (IRI) can be involved in the testing of goods. Only the Ministry of Health has labs close to Masnaa located at Zahle. The labs of Agriculture and the IRI are based in Beirut and that leads to long delays before goods are allowed to enter Lebanon when these two organizations are involved in testing. The testing done by IRI is very questionable since it involves the testing of machinery or appliances which in most cases has already been certified by the originating country. In the case of Agriculture, testing is necessary because agricultural and food products do enter the Lebanese food chain. Irrespective, trucks can wait for several days, or up to as much as a week, to receive the test results from either the Agriculture Ministry or the IRI..
- Outside the control of government, delays can also occur because shippers or brokers are not in position to make the appropriate payments to Customs or will only wait to arrange payment once testing approval is received. Drivers will often abandon their vehicles to visit family while awaiting for testing approval and/or signatures of payment.

Competitiveness of the Trucking Industry for International Traffic

The trucking industry is Lebanon is becoming non-competitive and too costly on longer haul/international routes because of a number of factors:

- The high cost of fuel.
- More obsolete trucks in Lebanon mean that foreign operators with more efficient trucks can have an operating cost advantage.
- The restrictions on freight movements by neighbouring countries. This presumably protectionist policy are a strategic disadvantage for Lebanese ports that could more efficiently serve regional markets:
  - Syria requires that all inbound marine freight destined for Syria must pass by Syrian ports even though distances are much longer;

[3] Source: Faoud Bawarshi, Vice-President-General Manager, Gezairi Transport.

  - Jordan requires that the Port of Aqaba handle all containers destined to Jordan. Containers must be destuffed and the goods transported in breakbulk across the Jordanian border if handled via the Port of Beirut.

- The various fees and taxes imposed by neighbouring countries such as:
  - The excessive fuel tax imposed by Syria for all trucks entering Lebanon to cover off the possibility that trucks have filled up with subsidized Syrian diesel fuel;
  - The Syrian transit or passage fee imposed on trucks based on a weight/distance formula.
- The delays at border crossings that has a negative impact on trucking costs and efficiencies.

All these factors contribute to higher trucking costs for international commerce that affects not only Lebanon, but also its trading neighbours. A prime example is a Lebanese shipper that now ships product to Saudi Arabia in containers via the Port of Beirut rather than overland via truck for cost reasons.

Proposed Alternate Strategies

The core issue for the revitalization of the goods transport sector is to improve the viability of the trucking industry in Lebanon. Renewal of the truck fleet is also closely related to the viability issue since the trucking operators must be able to afford/purchase the appropriate equipment. This then will facilitate the application of new technologies to further enhance the viability of the industry. There are a number of factors that must be addressed in order for this to happen:

- Financing mechanisms to improve the affordability of newer equipment to be purchased by for-hire trucking companies
- Incentives to encourage the scrapping of obsolete and/or unsafe equipment that is beyond the point of repair in order to pass an inspection
- Rationalization of the industry through a balancing of supply and demand that will permit fair compensation and a stability in rate levels
- Significant improvement in enforcement of safety rules and regulations in order to get offenders off the road while at the same time reward well-managed companies
- Institutional problems need to be addressed such as inspection procedures at the border and the testing of goods that enter Lebanon
- Investment in new facilities such as warehouses, distribution centers and truck stops to improve truck operating efficiencies
- Better cooperation with Lebanon's neighbours, in particular Syria and Jordan to reduce the costs of trucking operations that would benefit all three countries.

It should be pointed out that revitalization of the trucking industry in Lebanon will be a gradual process that will take a long period of time to be fully realized. Implementation of the above policies may be drivers for industry consolidation that increase the overall efficiency and modernization of the sector. A number of alternate strategies that address the many issues and problems now facing the trucking industry are presented below.

Financing Mechanisms

Current law does not allow the importation of any truck greater than 3500 kg to be over 5 years old. With the apparent low viability of the trucking industry, few operators can afford new or recently fabricated used trucks that respect these age limitations. According to the Central Administration for Statistics, a total of only 316 new and used hiring or red-plated trucks were registered in 2007.

Syria by contrast has put in place Investment Laws or Decrees (e.g., Legislative Decree 8 dated January 27, 2007 and previously Law 10 of 1991) that encourage investment for establishing, expanding or upgrading an enterprise including transport enterprises. For example, imported assets are exempt from customs duties and new companies are exempt from income taxes for a number of years. Apparently, this has encouraged the purchase of more than 6,000 new trucks (unofficial) in Syria over the past 4 years. The rationale is that the benefits from safety and economic competitiveness offset the short-term decline in direct tax revenues to the government, but which can be recouped indirectly or attributed to investment in the modernization of the sector.

To encourage investment in newer trucks in Lebanon by transport enterprises, the following initiatives are recommended:

- All trucks over 3500 kg to be red-plated that are 5 years old or less should be exempt from the customs duty of 5% on the CIF price. This is turn will have slightly greater impact of the final selling price due to the compounding impact on the VAT of 10% and the dealer mark-up. The fiscal impact to the Lebanese economy may even be positive if it encourages more truck purchases. For example, if one assumes an average CIF price of $100,000 for an average new/used truck, the initiative would cost the government a maximum of approximately $1.5 million per annum in customs duties based on the importation of 300 trucks. However, if it encouraged the purchase of more trucks, then the revenues generated by the 10% VAT could more that offset the loss in customs duties if sales reached 450 trucks.
- *Kafalat,* the Lebanese financial company that assists small and medium sized enterprises to access commercial bank funding should also provide low interest loans to the trucking industry as it now does for other industries. It could perhaps restrict the loans to trucking companies with a minimal number of vehicles (e.g., 4) to encourage some consolidation in the industry.

The impact of these suggested financial incentives should be closely monitored. The trucking industry should be made well aware of these incentives by the Lebanese Government through an outreach campaign. Further financial incentives may have to be considered if the above financial incentives are having any effect.

Renewal and Rationalization of the Truck Fleet

In addition to providing financial incentives to make the purchase of new equipment more affordable to operators, other measures will be required to rationalize the existing fleet mainly by removing trucks that are obsolete or in poor running order or maintenance condition (i.e., could not pass the safety inspection without a prohibitive overhaul). Many operators will still not be in a sufficient viable position to take advantage of the financial incentives suggested above or may be working illegally (e.g., counterfeit red plate; vehicle has not been inspected in the last year). In this regard, the following initiatives should be considered:

- **Weigh-in-Motion (WIM) stations combined with vehicle inspection facilities at specific locations.** A traditional static method of weighing would require a very large

land area along highways for queuing of vehicles. Such space is in short supply in the GBA and along some of the mountain roads. The WIM, by contrast, can allow the selective stopping of vehicles. Even if all vehicles are to be weighed on a particular day, the vehicles move at a moderate speed across the scales so that the queues don't get very long. The case is further strengthened since it can be combined with driver licensing, vehicle registration, pollution inspection, HazMat certification and for load screening on security days. The same vehicle identifier read on vehicle approach that is used to check the weight on the manifest with the allowable capacity of the truck, can be linked to all of these other purposes as well. Thus, WIM would also be an effective deterrent to other violations and for security enhancement. The cost and location of these stations is still being investigated. These stations would be open on a random basis and would also act as a deterrent (even if not open) for fear of getting the truck impounded and/or receiving a heavy fine.

- **A buy-back program for old or obsolete vehicles** could be introduced. This could involve the creation of scrap metal facilities by the private sector that would buy old vehicles at nominal prices and sell off the truck parts or make scrap metal for use in steel or metal manufacturing. The potential markets for scrap metal are still to be investigated.
- In conjunction with the Public Transport initiatives, the introduction of **Radio Frequency Identification (RFID) for license plate verification and validation** of red-plated trucks using manually held reading devices at the WIM/vehicle inspection stations suggested above. Of course, this only becomes effective when there is a sufficient number or RFID tags to read. A computerized manual check will be required to verify licence plate numbers and weed out the counterfeit ones.

It should be pointed out that Law 341 (that only permits diesel engines on heavy trucks greater than 3500 kg) is now being amended. Currently before Parliament, an amended Law 341 will now introduce environmental standards for vehicles. When passed, Law 341 will only permit vehicles with emission standards two steps below European Standards (e.g., when Euro 5 comes into effect, Euro 3 will apply for Lebanon) to circulate on highways in Lebanon.. This may also assist in weeding out older vehicle assuming that these vehicles are inspected either at the *Mecanique* facilities or at the roadside WIM inspection facilities.

Freight Exchange Systems

In order to facilitate the conducting of commerce between the trucking industry and the shipping public, the introduction of freight exchange or load matching systems should be seriously considered. These systems are now in place and working successfully in North America and in many European countries. Examples include:

- **Téléroute** of *Éditions Lamy* is based in France but covers most of Europe in more that 40 countries
- **Internet Truckstop** is based in the United States and covering North America including Canada and Mexico.

These freight exchange systems are web-based systems that match freight with available vehicle space (usually truckers trying to fill an empty backhaul). Shippers post their shipment needs on-line and truckers can access the system at any time from any internet access point. If a match is made, the rate and pick-up details are concluded on-line. There is a cost to both the shipper and the carrier to utilize the system.

Due the very fragmented nature of the trucking industry in Lebanon, a freight exchange system may be one avenue to improve the efficiencies of the trucking industry and in turn the movement of goods in Lebanon. A reduction in empty movements will also help reduce

congestion on the highway system in Lebanon and in turn reduce air pollution and CO_2 emissions into the environment.

Truck Stops Close to Border Crossings

The issues and problems facing the trucking industry at the Lebanese border crossings were summarized earlier in this section. The delays were particularly acute in the inbound direction as trucks must wait for the approval of goods testing from the various Lebanese ministries. There is also a lack of facilities for drivers including washrooms and food services.

The establishment of truck stops just past the border crossings at Masnaa and Abboudieh could serve multiple purposes and help relieve the truck congestion at the border crossings as trucks wait for approval of the goods testing. The functions of these trucks stops could include:

- The parking of trucks awaiting the results of goods testing. It is understood that trucks can proceed into Lebanon without approval of the test results as long as the load is not tampered with and all customs duties have been paid.
- Drivers, many of whom have been travelling long distances, may welcome the chance to stop and use the facilities (e.g., toilets, food, accommodation).
- Internet stations so drivers can communicate with shippers, the trucking company, etc. as well as make inquiries into a freight exchange system (see above) about picking up a return load.
- Vehicle and load weight inspections.

These truck stops could also be expanded to become a logistics park that includes storage and warehousing facilities including the possibility of installing bonded warehousing administered by Customs.

Observations

The suggested alternate strategies can all be considered for implementation in Phase III of the Study. However, the main focus should be on upgrading the trucking fleet while at the same time improving the financial viability of the truck operators. These issues are intertwined and one cannot be done without the other.

Of course, enforcement will be a key ingredient to the success of these initiatives. The technological solutions proposed are considered longer-term in nature. However, since the upgrading of the trucking fleet will be a gradual, long-term process in any case, these solutions will also play key role in the eventual revitalization of the trucking industry.

A number of institutional impediments both within Lebanon and in its neighbouring countries were also highlighted that are causing inefficiencies within the trucking industry and in turn on overall goods movement in the region. The solutions for these impediments also involve other ministries and/or other governments that hopefully will also find resolution.

INSTITUTIONAL REFORM (ACTIVITY 25)

Guiding Principles and Criteria

Institutional reform has to do with bringing the current institutional set up as close as possible to achieving social and economic objectives through good governance: producing efficient and user responsive services, improving the quality of life and ensuring financial, technical and environment sustainability. The proposed reform is based on the following criteria:

Role of the Ministry of Public Works and Transport (MPWT)

- In order to effectively contribute to sustainable economic and social development in Lebanon, the role of MPWT should be aligned with and supportive to achieving the policy objectives and strategies of the land transport sector, (Figure 1), including policy setting, resource allocation, control and evaluation of the sector's activities. The role of the Ministry should grow more as an enabler and less as a service supplier. The government has prepared a draft law to establish an autonomous regulatory Land Transport Authority which is a step in the right direction.

Good Governance

- Good governance requires the separation of governance and oversight from executive management functions in order to exercise accountability over operations. This means that the functions of policymaking, planning and regulation should be separated from service delivery. There should be a proper system for policy and resource management in order to be able to evaluate regularly the achievements and costs of transport activities to ensure achieving value for money. This requires that the most efficient means of service delivery are selected, based on good understanding of outputs, level of service and costs.
- Transparency is critical to good governance and requires public consultation and external review of planning, regulatory and performance evaluation activities.

Public Interest

- Decision making across all levels of the management of public funds from policy setting, to planning through implementation should be based on public interest. The interest of sub groups should not compromise the interest of the community at large. Should a policy result in damages or grievances to a sub group, it should be heard and compensated fairly. All this requires building capacity in policy management, planning and regulatory skills to manage and control various aspects of service provision including market entry/exit, pricing, competition, safety and environmental protection.

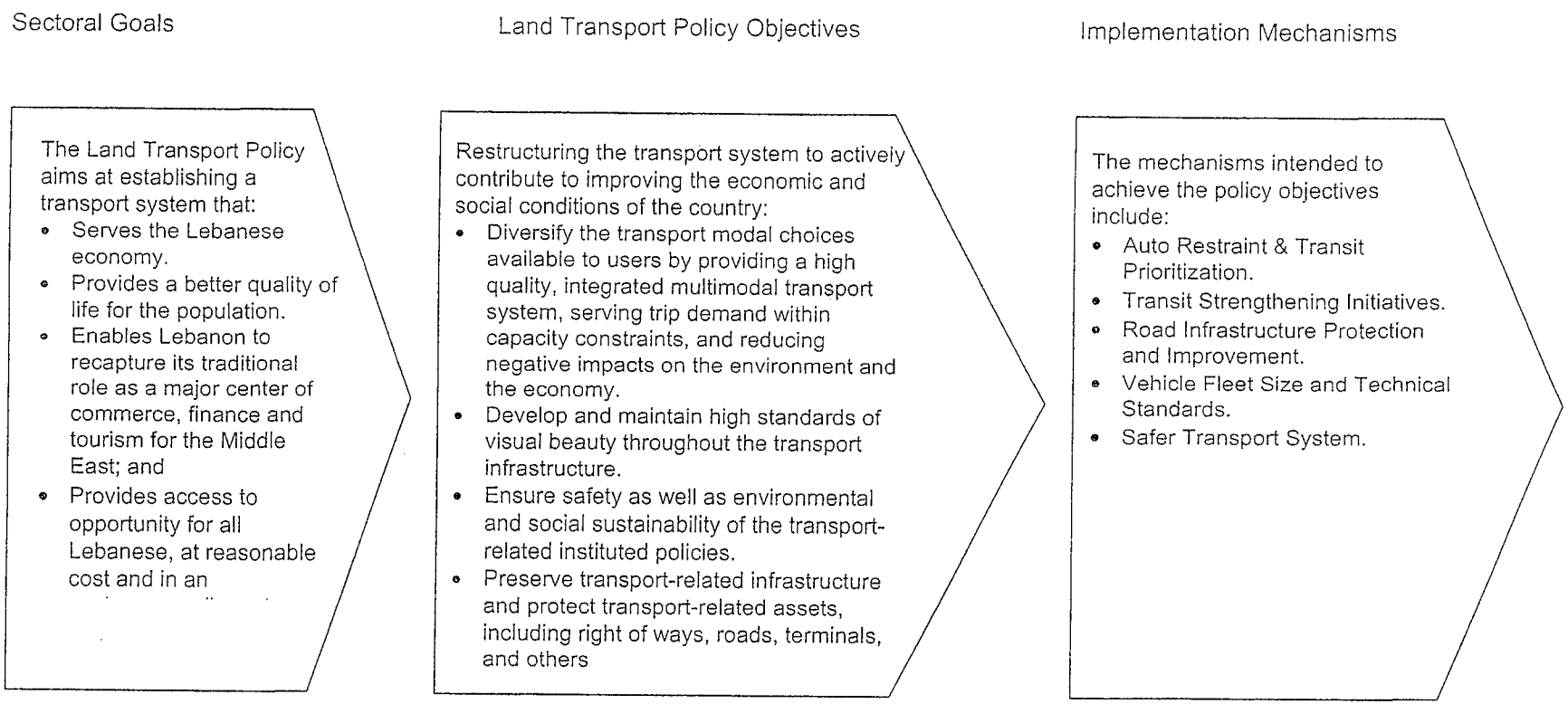

Figure 1 :DGLMT Proposed Land Transport Policy Directives

Current Deficiencies in Land Transport Services

The problems, shortages and deficiencies of the current goods transport sector have been outlined in Activities 24 and 26.

The key objective of institutional reform is to drive a turnaround of the goods transport sector from being fragmented, inefficient, undisciplined and environmentally unfriendly to becoming an effective, efficient and self-sustaining transport sector.

Institutional Rethinking

The separation of policy management and regulation from service delivery can be achieved through the enactment of the proposed draft law to establish the Land Transport Authority.

The proposed draft of this law specifies the objectives of the Land Transport Authority as follows:

- Implementing the general policies of the land transport sector.
- Regulating the land transport sector and establishing the rules and bases for practicing all its activities and the supervision of public transport and freight transport services and their level of service.
- Activating the performance of the land transport sector in order to meet the demand for public transport and freight transport services affordably and at a good level of service.
- Developing the land transport sector in line with the international developments of the sector to achieve the requirements of social and economic development in Lebanon.
- Upgrading the performance level of manpower in the land transport sector.
- Coordination with concerned parties to achieve the best public safety level and environmental protection.
- Encouraging competition and preventing monopoly in the land transport sector.
- Encouraging investment in the land transport sector in line with the social and economic development objectives in Lebanon.
- Ensuring the provision of goods transport service in all areas of Lebanon with the best means and lowest possible cost.

The proposed functions of the Land Transport Authority as specified in the draft law are shown in Box 1.

Box 1 : Proposed Functions of the Land Transport Authority - Draft Law

Box 1: Proposed Functions of the Land Transport Authority – Draft Law

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a. Defining the land transport network and its lines inside Lebanon, and between cities and the exterior.

b. Establishing and updating modal specifications of vehicles and rolling stack in collaboration with concerned parties, in line with environmental preservation and public safety.

c. Issuing and renewal of licenses, authorizations and permits, and suspension and cancellation of same in case of violation of this law or any regulation issued thereto.

d. Determining the penalties for violating permits and licenses provisions.

e. Determining the location of land transport facilities and ancillary services in coordination with concerned parties.

f. Establishing the bases of organizing and monitoring the activities of land transport facilities and ancillary services.

g. Regulating and developing the affairs of the railroad network.

h. Suggesting transport tariffs and charges and issuing same after approval of the Minister.

i. Monitoring the implementation of transport tariffs and charges and control of practice.

j. Monitoring of vehicles, and facilities of land transport and supervision of services.

k. Collection of charges, fees tariffs and penalties due.

l. Monitoring and developing, and transport services.

m. Participation in preparing draft bilateral, regional and international land transport agreements. Follow up of signed agreements.

n. Preparing plans, projects and studies pertaining to the development of the activities of land transport sector and issuing periodic publications and reports on the sectors activities.

Proposed Transport Sector Governance Structure

The proposed governance structure of the transport sector is shown in Figure (2). The main elements for land transport are:

- The **Ministry of Transport**, including the DGLMT.
- The **Land Transport High Council**, issued by decree 5540 in 1966 as a consultative / coordinating body between the concerned ministries and other agencies. The membership of this Council was modified by Decree 4775 dated 21 Feb 1994 as follows:
  - President: Minister of Transport (and Public Works).
  - Vice President: Director General of Land and Maritime Transport.
  - Members:
  - D.G. RPTA

- D.G. Roads and Buildings at MPWT
- D.G. Ministry of Interior
- D.G. General Security
- D.G. Internal Security Forces
- D.G. State Security
- D.G. Customs
- D.G. Economy and Trade
- Officer from the Army delegated by National Defense Minister
- Head Vehicle Registry of Ministry of Interior

The main purpose of this Council is to promote the development of land transport sector, its regulation, coordination and monitoring, road network utilization, stations and terminals, company formation, and staff training.

The functions of the Council / attributed by law include specifically:

Land Transport High Council

- General studies and projects for the development of the transport system i.e. the increase of the transport networks capacity (evolution and needs of railways, situation of the road system and conditions of use by the different modes); creation of new public transport lines
- Projects and studies as far as the taxi licensing is concerned;
- Creation of new companies and new public organisms in the field of the land transport; and
- Preparation of training programs for traffic control staff and for the road network management.

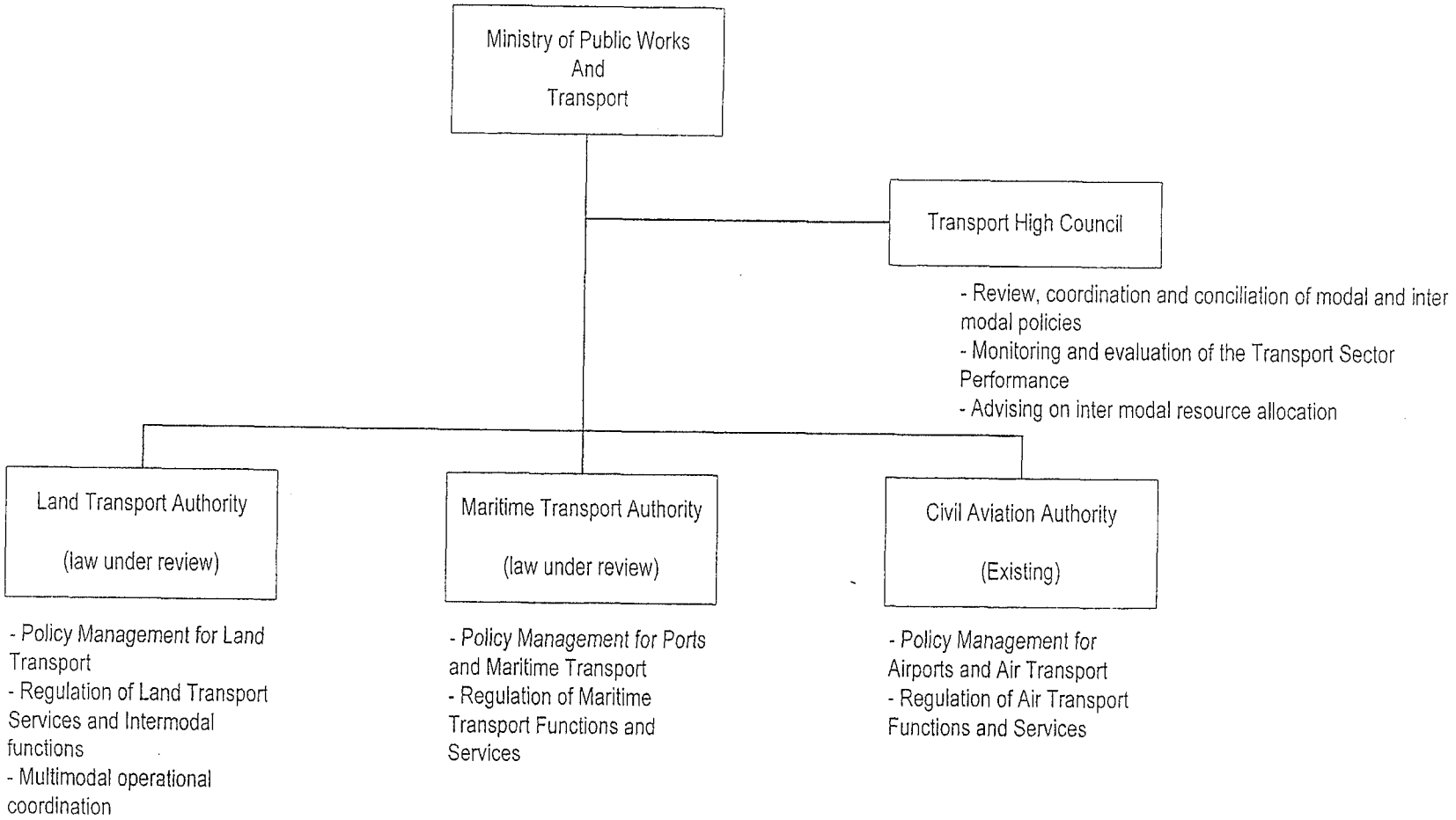

Figure 2: Governance Structure of the Transport Sector

The council should hear the point of view of syndicate representatives and the opinions of experts and specialists in the subjects under discussion.

This council, however, has not been effective. It rarely met and so far played no role in the development of transport sector. In fact:

- There has been little coordination between the concerned ministries and agencies.
- No strategies have been put into effect to organize, regulate and control the sector.
- The public transport services outcomes show the failure of the system in this regard.

Looking at the functions attributed to the Council it is seen that they almost totally overlap with those of the proposed Land Transport Authority, as shown above. **We therefore recommend that these functions be part of the functions of the authority and we recommend the Land Transport High Council be renamed the "Transport High Council" or the "National Transport High Council" with a totally difference mandate of intermodal policy coordination**, including:

- Review, coordination and conciliation of modal and intermodal transport policies.
- Monitoring and evaluation of transport sector performance and the achievement of social and environmental objectives.
- Advising on intermodal resource allocation based on competitiveness and level of service of various modes.

Land Transport Authority

The proposed Land Transport Authority described above will be the policy management cum regulatory body for the land transport sub-sector. It will also handle intermodal and multi-modal regulatory and operations coordination and policy management. It will assume by virtue of its proposed mandate, all the current functions attributed to the Land Transport Higher Council.

LAND TRANSPORT POLICY RELEVANT TO GOODS TRANSPORT (ACTIVITY 26)

This section presents the official land transport policy for the Republic of Lebanon that the Study Team advocates in support of any revitalization effort. It is should be read as a proposal, not as a statement of current fact.

The section headings for sections relevant only to passenger transport are retained, but the text has been deleted.

Preface

The economic, safe, and convenient movement of people and goods is at the core of transport policy-making. An integrated approach is essential. It shall involve balanced reliance on a multi-modal transport system, which provides alternative attractive choices.

A transport policy, once approved by the Council of Ministers, provides direction to all governmental actions that impact the transport sector. The champion of its implementation is the Ministry of Public Works and Transport, but the policy is binding on all ministries, whose support and cooperation is essential, each within its mission.

The target is to adopt a policy that fosters transport systems which satisfy economic, environmental, and social sustainability.

Economic and financial sustainability requires that resources be used efficiently and that assets be maintained properly. This is particularly important for Lebanon, where so many demands compete for the meager resources available at the country's disposal currently.

The primary economic and financial objective is to make transport cost-effective and continuously adaptive to changing demands, thus increasing responsiveness of transport offer to users' needs through competition and enhancement of user participation.

Establishing an enabling framework for competition requires creating or strengthening regulatory institutions and performance standards for transport, to ensure fair competition and protect public interest. It also requires unbundling and restructuring agency responsibilities to enhance the potential for the contracting of the provision, operation, and maintenance of transport systems and services. It is also necessary to increase the capacity for creating private-public partnerships by defining more clearly and sharing more fairly the liabilities, risks, and returns in concession contracts.

Finally, it is necessary to develop strategic planning and system management capabilities by creating or strengthening the public strategic planning capabilities necessary to complement and underpin a more competitive transport network. It is also important to establish processes for the effective participation of users and affected communities in making decisions on the design, management, and maintenance of transport infrastructure and services.

Environmental and ecological sustainability requires that the external effects of transport be taken into account fully when public or private decisions are made that determine future development. The objective is to ensure that environmental issues are addressed as an integral part of the formulation of transport strategy and project design.

The objective of addressing health-threatening impacts as a priority requires initiating benchmarked safety programs and adopting environmental standards. It also requires integrating environmental and economic elements in project appraisal through requiring more systematic estimation of the impact that transport programs and projects have on safety and on the environment.

Social sustainability requires that the benefits of improved transport reach all sections of the community. The objective is to increase the social sustainability of transport by:

- Targeting the transport problems of low income groups; and
- Protecting low-income groups against the adverse effects of changes in general transport policies and programs.

A change in focus in transport policy implies a radical change in the role of government. The private sector can take on more responsibility for providing, operating, and financing transport services through concession arrangements. Thus, the role of the government as supplier or quantitative regulator will decline, but its importance as the enabler of competition and the custodian of environmental and social interests will increase. The role of government is not made less demanding; on the contrary, it requires a higher level of competence. More participation of the private sector in the provision of transport services requires a better public administration.

In the search for formulating or revising policies, one starts by diagnosing current conditions, measuring the level-of-service provided and the efficiency of the operations. While this is a starting point, the effort of formulating a policy should not get entangled with addressing project-level and operational details. The focus should remain at the strategic level.

Preamble to Statement of Land Transport Sector Policy

The Government of Lebanon, in recognition of the fact that transport policy is required to ensure that transport serves the vision of rebuilding the Lebanese economy and creating a better quality of life for all Lebanese, intends to adopt a Statement of Land Transport Sector Policy. The current Lebanese transport system which comprises infrastructure (roads, terminals, railways etc.), fleets, operating procedures, regulatory framework, institutional set-up, fiscal elements, transport services providers, and end-users does not currently serve the intended policy vision, and requires major public action to change the current situation and trends, and establish institutions capable of leading and managing that change.

What follows is a qualitative description of the current status of the Lebanese transport system, serving as a preamble to the statement of policy.

Preamble

- The current transport system does not provide adequate levels of access and mobility to support the needs of a modern economy, or the need to provide suitable access for all Lebanese, both in urban as well as rural areas.
- The current transport system is dominated by the automobile, which is available to approximately 75 % of households in the Greater Beirut Area, leaving 25 % of households with substantially less mobility. Vehicle kilometres traveled per vehicle are low, and still reflect the fragmentation and localization of the economy. A modern

economy with reasonable accessibility to opportunity requires far more mobility than the current congested system can support. Current parking supply is low in comparison to rising demand, but any uncontrolled increase in parking supply would attract more vehicles to areas of activities and worsen already excessive congestion.

- Public transport lacks coherent organization of adequate scale to provide a reasonable alternative to the automobile, and congestion causes the quality of public transport to be low and the cost of its production to be high, restricting its use only to "captive" riders who have no alternative.
- The system is trapped in a negative vicious cycle, where individuals perceive that the only way to improve mobility is to secure access to an auto, and incremental government attempts to expand roadway capacity (and parking supply) is immediately absorbed by the latent demand for travel, so the situation continues to worsen.
- The transport system generates extremely high pollution costs. Emission levels are far in excess of acceptable standards. It is estimated that the transport sector accounts for nearly 24% of Lebanon's Green House Gases (GHG) emissions (El Fadel and Bou Zeid, 1999). Emission levels are made worse by a badly maintained vehicular fleet and by the use of high sulfur diesel fuel. In addition to emissions, the vehicle fleet generates significant amounts of waste, such as used oil, Lead-acid batteries, and used tires. Disposal of these wastes is not always controlled and some are dumped directly into the environment. Scrapped vehicles litter the landscape as they are abandoned in valleys or open fields. The transport sector thus negatively impacts the environment due to its gaseous emissions, other liquid and solid wastes; and as well is degrading the aesthetic quality of the environment. This is particularly important for Lebanon, where tourism has historically been important to the economy.
- Accident impacts on the population are excessively high, mitigated only by the low speeds caused by congestion. Estimated total losses to the Lebanese economy of traffic accidents during 2003 amounts to US Dollars 784.1 million, or 4.76% of the GDP (SweRoad, May 2004).
- Road maintenance is mostly unplanned, and responds poorly to correction of defects adopting costly interventions that concentrate on the treatment of the wearing surface with asphalt overlays, neglecting to address the causes of failures. Accordingly, the maintenance cost per kilometre is much higher than that in countries with well maintained networks. Bad road conditions lead to high maintenance costs for automobiles and contribute to the causes of accidents. Moreover, traffic control devices (signage, pavement marking, and traffic signals) are often non-existent. This too contributes to accidents, as well as to the confusion of even responsible motorists.
- Visual impacts of the existing road network combined with the urban sprawl encouraged by the current dependence on the auto, and the chaotic development due to lack of adequate land use controls are strongly and negatively affecting the quality of life. How people perceive their own environment and how a region is perceived by visitors is an important element of the quality of life, and the economic competitiveness of a region. This perception is strongly influenced by what is seen as a pedestrian, bus passenger, or auto driver. The current lack of access control on highways, lack of landscaping and street planting and growing urban sprawl detract from the traditional beauty of the Lebanese landscape.
- The cost of the current situation is high according to the Road User Charging Study conducted by the Ministry of Public Works and concluded in 2000, the 1997 congestion

cost in Greater Beirut was estimated at $1,423,000,000. Expenditures on automobiles and petroleum imports represent a constant drain on balance of payments. In addition, in an attempt to secure mobility, individuals and households of modest means are forced to divert resources from basic needs and necessities, and higher income individuals divert savings which might otherwise be invested in economic growth into automobile purchase and associated consumption. At the government level, public expenditure in terms of direct transfers to the RPTA during the last ten years is estimated at more than L.L. 225 billion, an amount which did not have a positive impact on the quality of services.

- The transport sector is the source of job opportunities in driving or maintaining vehicles currently operating as a taxi-service or involved in trucking activities, but a significantly higher number of jobs could be created by successful organized public transport, goods movement, logistics, and infrastructure maintenance sectors. There may also be possibilities for further economic development through local assembly and manufacture of transport equipment and infrastructure during the revitalization process.
- Responsibility for transport is fragmented among different agencies with no clear effective means of policy coordination, resulting in carrying out actions and expending scarce resources which may actually worsen the situation.
- The flow of goods across international borders and entry ports to Lebanon is hindered by a considerable amount of procedural complexity. Issues impeding the development of efficient and competitive freight movement also include licensing requirements, high fees, lack of coordination among authorities, and obsolete or counterproductive regulations. Studies comparing the cost of hauling a container from European ports to destinations in the Gulf via Port of Beirut with the same via other ports of the region show a cost advantage for some competing ports, mainly because of cross-border and transit charges on Lebanese trucks. This results in a serious lack of competitiveness and impedes the growth of the Lebanese economy.
- The logistics function is still underdeveloped and mostly primitive. The link between shipper and trucker remains an informal process which does not benefit from a transparent information on the need for trucks to meet the transport demand and truck availability. The matching of trucks to loads is mostly done orally without any record. This lack of information results in a concurrent over supply and under supply of trucks. This does not only reduce the efficiency of the utilization of the truck fleet and imposes delays for shippers (particularly shippers of perishable agricultural products) but also denies the regulator and enforcer the benefit of statistical records essential for planning, policy development, and corrective actions.
- Goods distribution in the Greater Beirut Area suffers from the lack of a clear logistics setup. The existence of makeshift warehousing in residential buildings poses serious safety as well as efficiency concerns. In addition, the chaotic loading and unloading of trucks on urban streets compound an already difficult roadway congestion problem
- The almost complete absence of any enforcement of axle and total loads has proliferated heavily overloaded trucks, inflicting significant damage to the national road system and contributing to serious accidents.
- Lebanese universities have traditionally provided high quality education. Many of their graduates leave upon graduation seeking better opportunities worldwide. Lebanon does not currently enjoy a critical mass of world class technical capacity focused on transport activities in the private nor public sectors. This lack of a pool of trained professional capacity in the field is both a reflection of the results of the unstable conditions locally

and the attractive job market regionally. There is shortage of expertise in traffic management, traffic control technology, ITS, mass transit, public transport, freight and logistic operations, mainly because many of these functions have not been actively practiced in Lebanon recently. Currently, the shortage of expertise itself may prove to be an impediment to recovery and progress. But a turnaround in local conditions will encourage many Lebanese professionals who gained their experience on challenging projects regionally and globally to repatriate.

- In summary, the current situation results in many negative consequences, and has imbedded within it dynamics which threaten to at least frustrate any significant progress in the short or medium term. This situation, if not treated properly, tends to cause continual worsening as well as excessive costs and problems, threatening to block the potential for sustainable economic growth and improvement in the quality of life for all Lebanese.
- Only a sustained coherent government action effectively coordinated and implemented, can reverse this series of vicious cycles and deteriorating conditions and achieve progress.
- Despite the aforementioned problems, the Lebanese transport system still exhibits many areas of strength. In particular, the Lebanese dense road network, is quite extensive, and should consequently be treated as a national asset that should be preserved and improved and effectively managed, in order to realize fully its potential and maximize the benefits provided by the well managed seaport activity, as described in this policy statement.

Statement of Land Transport Sector Policy

The Government of Lebanon, in recognition of the fact that a well conceived transport policy is required to ensure that transport serves the vision for rebuilding the Lebanese economy and creating a better quality of life for all Lebanese, adopts this Statement of Land Transport Sector Policy. This policy ensures that land transport contributes to re-establishing Lebanon as a world-class country capable of recapturing its traditional role as a major center of commerce, finance, and tourism for the Middle East, and providing access to opportunity for all Lebanese, at reasonable cost and in an environmentally and financially sustainable manner.

Objectives

The objectives set forth in this policy statement are meant to reverse the current situation and position the transport system to support the economic and social well-being of the country. These objectives are summarized as follows:

- **Provide affordable passenger mobility,** thereby, improving on the quality of life and enabling wider participation in the labor force, which in turn would lead to the creation of more work opportunities and encourage increased economic investments.
- **Diversify the transport modal choices available to users** by developing a high quality public transport system, and providing an integrated multi-modal transport system, serving trip demand within capacity constraints, and reducing negative impacts on the environment and the economic cost of transport.

- Provide an efficient and cost effective internal goods movement and distribution system in urban and rural areas.
- **Remove obstacles that undercut the competitiveness of Lebanese freight transport providers,** thereby encouraging investment in the sector. Such an objective will capitalize on infrastructure investments in the Ports of Beirut and Tripoli, and support the growth of the Lebanese export and transit trade sectors.
- **Position Lebanon to compete as a regional logistics service provider** through appropriate policies and development of its intermodal and land transport facilities and services in a manner that is environmentally and socially sustainable.
- **Reduce the financial burden of the transport system on the budget of Lebanon** by developing a transport trust fund adequate to support – to the extent feasible - the cost of bringing the system to a state of good repair, maintaining and improving it, and revitalizing passenger and goods transport. The fund is to be financed primarily from user charges on motorized vehicles and their use.
- **Develop and maintain high standards of visual beauty throughout the transport infrastructure** through extensive planting of street trees, attractive bus shelters and graphics, pedestrian friendly amenities such as benches, regulated access on roads and highways, and enrichments to the visual environment.
- **Attaining a high level of safety, as well as environmental and social sustainability,** by ensuring that they are key considerations in the planning, design, and operation of transport systems.
- **Preserve transport-related infrastructure and protect transport-related assets,** including right-of-ways, roads, terminals, and others. In this respect, a long-term regional view should be preserved, free from the inhibitions promoted by restrictions imposed by current adversarial bi-lateral attitudes and relations.
- **Benefit from state-of-the-art ITS technologies,** in enhancing the efficiency of operating, managing and monitoring of the land transport system while also improving the attractiveness of Lebanon to professionals.
- **Build a world-class intellectual and entrepreneurial capability in the transport and logistics field,** and establish strong local, regional and international partnerships with universities, professional bodies, and private sector companies.

This Statement of Land Transport Sector Policy sets out and elaborates the mechanisms and policies by which the Government intends to achieve the stated land transport objectives.

Coherent Land Transport Policies

- In order to achieve a coherent policy-driven set of government actions in land transport, the authority for transport policy setting will be consolidated, where the Ministry of Public Works and Transport becomes responsible and accountable for the entire sector. As the transport policy evolves, it becomes clearer that the degree of coordination required among various ministries and agencies (such as the Ministry of Public Works and Transport, the Ministry of Finance, the Rail and Public Transport Authority, the Ministry of Tourism, and the Ministry of Interior and Municipalities) is quite high. Consequently, there is a need for a higher body whose role should focus on foreseeing and coordinating the transport-related activities across the agencies involved. The primacy of

transport policy in driving implementation of actions and plans related to land transport is affirmed.

- The expenditure of public funds in the land transport sector should receive the prior and explicit no objection of the Ministry of Public Works and Transport, which may attach policy conditions as it sees appropriate and necessary to coordinate the timing, design, implementation, or modification of public actions in the transport sector, whether the sources of funds are appropriations, loans, fines, toll revenues or user charges.
- Prior to the approval of any proposed project economic feasibility, traffic impact and Environmental Impact Assessment (EIA) studies shall be conducted as needed. These prerequisites should be binding on decision makers at the local and national levels.
- The Government will establish mechanisms and procedures to implement this strengthened policy role, and build the strong technical capacity necessary to carry it out.

Establishment of Transport Fund

- A transport trust fund with annual funding equal to the average amount of spending for transport purposes over the last five years is to be established. The Ministry of Public Works and Transport, jointly with the Ministry of Finance, shall develop a proposal for feeding this fund from charges on vehicles, fuel, parking, and other automobile related sources. This fund shall be available annually without further appropriation for expenditure on transport purposes, based on an integrated multi-year program to implement this transport policy.
- The transport trust fund will support the cost of the transport sector, thus reducing the financial burdens of transport from the general finance of the government of Lebanon and allowing investment decisions be made independently from annual budgetary constraints.
- The unified transport trust fund would support the cost of bringing the national transport system to a state of good repair, maintaining and improving it, and revitalizing passenger and goods transport services. Resources available through the fund shall be used to achieve and maintain in a good state of repair all transport facilities throughout Lebanon, improving the quality and quantity of public transport services, and upgrading the visual environment through tree planting.
- User fees shall be structured in a manner to provide more disincentives against the use of the private auto, and not compromise the competitiveness of the freight industry. Cost allocation to users will assess costs primarily based on impact on traffic capacity and only secondarily based on the physical impact which heavy vehicles place on the roadways. The focus on capacity relates to congested conditions and implicitly prioritizes goods movement over auto use of infrastructure by reducing the relative share of trucks in the infrastructure cost recovery requirements...
- The urgent needs of bringing all roadway infrastructure to a state of good repair, revitalizing public and goods transport, and developing both higher quality and more efficient public transport modes, such as bus rapid transit (BRT), would in the short term require financing through borrowing. Gradual programmed user fee increases will be adopted to secure the loan and eventually support the ongoing transport trust fund. These fees will be charged in stages (over a ten-year period), so that people only pay

increased user fees as they see actual delivery of improvements. Expenditures from the trust fund will be identified with specific packages of projects that satisfy equitable distribution of benefits across geographical regions and income groups.

- Concurrently with the establishment of a Transport Fund, wide and more effective opportunities should be made available for a wider participation by the private sector in the development of land transport, through investing in facility development, operating and managing services.

Auto Restraint and Transit Prioritization

Transit Strengthening Initiatives

Road Infrastructure Protection and Improvement

- The Government shall support the preservation of the national road network, one of the nation's most valuable infrastructure assets, through rehabilitation, timely maintenance, and prevention of damage caused by overloaded vehicles. Continuous efforts should be made to ensure that the national road network is well tied to the regional road network.
- A plan shall be developed to improve the functional and visual quality of the roadway system through a system of access control, tree planting, acquisition of visual and agricultural easements, and improved maintenance.
- The right-of-way of important and strategic road links (e.g. the Beirut Peripherique and a truck route to Damascus) whose implementation was delayed should be preserved by executing the right-of-way acquisition decrees. A plan also needs be developed to reclassify the roads in Lebanon, as to differentiate between urban versus interurban roads, highway versus internal roads, etc. An effort should also be made to promote roads with total control of access along major corridors, and the reservation of space for weigh inspection stations along higher classes of roads.

Passenger Vehicle Fleet Size and Technical Standards

Safer Passenger Transport System

Organization of Intercity and Tourist Travel

Enforcement of Freight Vehicle Loading and Maintenance Standards

- An enforcement of existing regulations regarding weight limitations and maintenance inspection standards in Lebanon will result in withdrawal of a substantial number of trucks from circulation. Plans to upgrade the physical condition of the truck fleet shall include a bundle of incentives, regulations, fines and fees to be presented to the parliament for its consideration and enacting of the enabling legislation as soon as this policy is adopted.

- Existing standards and protocols of the European Union and the International Road Transport Union should be adapted rather than attempting to develop standards specific to Lebanon.

Freight Movement and Logistics Services Initiatives

- The Government shall establish a one-stop shop for harmonization of international freight movements into, out of, and through Lebanon, including the institution of user-friendly customs services. In addition, the adoption of advanced information and communication technologies to enhance inter-modal freight operations, including accelerated border clearance and inspection procedures, shall be pursued. The adoption of modern communication and supply chain management tools is also required to improve the efficiencies of goods movement within Lebanon.
- Logistics services in the Beirut area as well as other major urban areas in Lebanon shall be streamlined. In this regard, a plan shall identify locations of major logistics and warehousing centers that will also serve as break-bulk centers for shipments to be distributed within urban areas. The Government shall implement whatever combination of incentives, regulations, fines, and fees as would be needed to phase out warehousing from urban areas, especially when basements of buildings are used for this purpose.
- In line with the above recommendation, procedures and restrictions regarding truck movements in urban areas that shall pertain to truck sizes, routes, and hours of operation shall be developed.
- Truck load restrictions that are consistent with international and regional trends shall be issued, without jeopardizing the competitiveness of the Lebanese trucking sector. These restrictions shall take into consideration the relation between truck loading limits and the extent of damage caused to the national road system.
- The transport of hazardous materials (hazmats) should be subject to a special regulation that ensures safety and correct response in case of incidences and accidents involving vehicles carrying hazmats.
- The competitiveness of Lebanese transit freight service providers shall be enhanced through a set of actions including improved coordination with neighbouring countries as well as incentives relating to transit fees and storage fees at seaports and land borders.
- In view of the contribution of land transport to efficient trade, a set of actions that are intended to enhance the competitiveness of Lebanese trucking companies shall be developed. Such actions shall include improved coordination with neighbouring countries as well as incentives relating to customs fees on new trucks.
- To ensure full capitalization on the above two policies, the Government shall institute procedures and policies that provide open entry to all segments of the logistics services chain, and encourage infrastructure development that is supportive of emerging market structures. The adoption of advanced information and communication technologies should be at the core of encouragement of this sector.

Leapfrogging Technology for Public Transport Sector

Leapfrogging Technology for Freight Sector

- An integral component of this transport policy is to maximize the use of modern computer and communication technologies, collectively referred to as Intelligent Transport System (ITS), in the implementation of this policy.
- ITS technologies (e.g. RFID) should be considered in assuring correct vehicle registration and non-duplication of license plates
- ITS applications relevant to goods transport shall be required for the purpose of effective monitoring of abidance by regulations and for building up a data base on the activities of this sector. Relevant applications include:
  - AVL for continuous monitoring of vehicle, load, and driver for trips involving international transit and hazardous materials.
  - Web-based applications that match requests for hauls with truck drivers seeking loads to transport. As industry professional capacity increases and the world logistics practices dictate, this should eventually upgrade to more advanced ITS packages such as the Global Intermodal Freight Transport System (GIFTS).
  - Electronic seals for load and cross border security
- Introduce and deploy ITS applications for traffic regulation, traffic surveillance, incident management, parking regulation and public information.

Capacity Building in Land Transport

- In order to develop the technical capacity in Lebanon to implement these policies, and eventually provide transport consulting services to the entire Near and Middle East, the Government shall develop technical transfer mechanisms to bring Lebanese capacity in the public and private sectors, as well as academia, to world class standards. This technical transfer process shall include a center of excellence in transport studies involving Lebanese universities, public and private sectors, with linkages to similar institutions in the United States, Europe, and Asia. Each transport initiative in Lebanon which requires international expertise shall include a technology transfer component involving this center of excellence and Lebanese private sector firms. In this way, the transport intellectual human capital in Lebanon will be upgraded along with the physical infrastructure. .

Institutional Reform and Legislative Action

- The Land Transport Policy must be accompanied by institutional reform that requires high-level political commitment and support that enables adopting changes in ministerial mission statements and responsibilities. This statement of policy is an expression of the political will to introduce the required institutional reform to support this policy statement.
- There should be a separation in responsibility between vehicle registration for the purpose of identifying uniquely the vehicle and its owner, primarily security and liability concerns, and the licensing of a vehicle to provide a commercial transport service. The

first belongs to the Vehicle Registration Department (traditionally belonging to the Ministry of Interior and Municipalities) and the second is a transport regulation function that should belong to the Ministry of Public Works and Transport.

- The current system of vehicle registration of red plates is a form of quantitative regulation. It has been interpreted to give its owner the right to operate without any further regulation of either the type of services or locales where it can be provided. Legislative steps must be taken to abolish this system for passenger vehicles. The right to set restrictions on goods transport vehicles in the interest of environmental protection should also be reserved by the government.

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GUIDELINES FOR REGULATORY IMPROVEMENTS (ACTIVITY 27)

The regulation of the trucking industry in Lebanon is very similar to the regulation of the industry in most countries. Economic regulation (e.g., rates, entry/exit of carriers) is kept at a minimum to allow market forces to create a competitive and efficient transport system. The role of government does remain however as a policy maker and to protect the public good (e.g., safety and security).

A review of the major trucking regulations and procedures in Lebanon and recommendations to consider for improvement of these regulations are presented below. Some of these comments are made in light of the findings presented in Activity 24. These included the poor physical condition of the existing fleet and the low financial viability of operators due in large part to an over-supply of trucks in the marketplace and a lack of enforcement of current regulations.

Composition and Condition of the Fleet

The Government of Lebanon does have some control over the current condition of the fleet by limiting the importation of heavy trucks (>3500 kg) to vehicles with a maximum age of 5 years. The Government is also amending Law 341 that when approved, will only permit vehicles with emission standards two levels below European standards (e.g., when Euro 5 comes into effect, Euro 3 will apply in Lebanon) to circulate on Lebanese roads. It is recommended that these regulations should remain in force to encourage the modernization of the fleet. Most trucks after 5 years of utilization are near the end of their useful life and allowing the importation of older vehicles will only perpetuate the already old and aging Lebanese trucking fleet.

One new regulation that could be considered to reduce the number of trucks on the highway, is to only allow the registration of new or less than 6-year old used red-plated vehicles on condition that an older vehicle (i.e., older than 5 years) be exchanged in return. A reduction in the cost of a red-plate could be considered to encourage this practice. This older truck would be removed from circulation unless it could be re-conditioned at reasonable cost and pass the inspection. Otherwise, it would be scrapped.

The Government also requires that red-plated trucks be inspected twice a year in *Mecanique* facilities to ensure that they meet established mechanical and operating specifications including emission standards. However, the availability of motor vehicle workshops outside *Mecanique* facilities is making it possible for some vehicles in poor condition to pass the inspection. Secondly, the requirement for two inspections per year (versus one inspection per year for passenger vehicles) is considered onerous and too strict in the case of truck operators and probably contributes to the complete avoidance of the inspection requirements. Therefore it is recommended that:

- **Inspection of red-plated trucks be reduced to once per year at *Mecanique* facilities** once the proposed inspection/weigh stations are put into operation. This would result in a more effective and efficient management of truck inspections. Red-plated trucks must still continue to display the approved maintenance sticker on their windshield or face a fine or other penalties.

- **The use of "rent-a-parts" supplied by motor vehicle workshops must be curbed.** The complete elimination of these facilities will be difficult since some may operate as legitimate garages. Instead, it is recommended that the users of temporary part rentals be fined and their vehicle removed from the road until it can pass legitimately the maintenance inspection.

None of the recommended compulsory inspection requirements will work unless backed up by enforcement. This is now the fundamental problem in trying to improve the physical condition of the existing trucking fleet.

Entry/Exit of Operators

There should continue to be only minimal control over the granting of an operating licence for new carriers as long as they meet certain operating and financial conditions that are common in most jurisdictions. In Europe, operators must now hold a "Community Certificate of Professional Competence" that requires that three key criteria must be met in order to be a bona fide operator:

- Be in good repute (i.e., comply with rules and standards)
- Be in sound financial standing (i.e., guarantee the viability of their business)
- Demonstrate professional competence (i.e., follow safety rules and procedures)

In order to help guarantee financial viability, many jurisdictions require that carriers have proof of insurance evidencing that: 1) it has the minimum prescribed insurance coverage of public liability and property damage; and 2) it has cargo insurance coverage (that can vary with the vehicle's maximum gross vehicle weight.

Operators can freely exit the industry but it is recommended that the purchase of any used trucks with red-plates by a new operator must pass the safety inspection before being allowed to circulate again on public roads or have a legitimate inspection sticker indicating that the vehicle has been inspected within the last six months (or within the last year if the recommendations in the last section are accepted).

On a side issue, all red-plated operators or common carriers transporting a load should have in their vehicle, a shipment or cargo manifest describing the name of the shipper(s), type and weight of merchandise, origin, destination consignee and address, transport charges, etc. This documentation is a basic requirement to carry out transport commerce and is a necessity at border crossings. It should also be a necessary part of domestic commerce. Failure to produce adequate documentation could lead to confiscation of the goods and/or vehicle until the appropriate documentation is produced.

Truck Licensing

The concept of green plates (i.e., plates for trucks used exclusively in international transport that are not "owned" by the trucking company) could also be extended for red plates. In order to eliminate the illegal use of green-plated trucks in domestic commerce, the use of one universal plate for both domestic and international commerce (but at the cheaper green plate cost) should be seriously considered. The green plate can be obtained at a cheaper cost than the red plate because it is supposed to be used in a more restricted operation (i.e., international commerce

only). A cheaper universal plate (versus the red plate) may also encourage the purchase of newer trucks as indicated earlier in this section.

The requirement of keeping refrigerated trailers with tractors (i.e, one licence is issued for the combined tractor-trailer combination) should also be re-considered. This issue has been raised by the Reefers Syndicate. It leads to inefficiencies in truck fleet operations by creating a higher tractor-to-trailer ratio than would be the case in a more flexible operation where drivers could drop off a loaded or empty trailer and then proceed to do another operation (possibly even to pick-up a reefer trailer at the same location that was ready for pick-up).

Truck Weights and Dimensions

Truck weights and dimension regulations already exist for vehicles circulating on Lebanese roads. There are also signed protocols regarding the maximum allowable weights of various truck configurations travelling between Lebanon and its neighbouring countries[4]. The consultants are not in position to neither assess in detail these existing standards nor recommend what should be the desired standards for various axle loadings and truck configurations. However, based on a brief review of the existing standards, it can be generally concluded that Lebanese standards allow heavier axle and/or allowable truck weights than the international protocols[5]. This lack of conformity or standardization can cause inefficiencies within the Lebanese trucking industry (e.g., certain trucks cannot operate outside the Lebanese border). It is therefore recommended that a review of these standards be made with a view to having the Lebanese standards conform to the international standards agreed to with its bordering neighbours. In the longer term, Lebanon and all Middle Eastern/Arab countries should consider accession into the road policies and protocols of the European Union and the International Road Transport Union to assure a seamless movement and enforcement of goods movement between Europe and the Middle East.

It is recognized that policies regarding axle load limitations can vary between countries depending on local road and bridge conditions, the needs of local shippers in terms of the types of commodities transported and the economic trade-offs between higher truck weights and damage to the road network. However, by slightly reducing truck weight allowances in Lebanon, damage to Lebanon's road network should be reduced thus saving on road maintenance costs. To be fair to existing truck operators, all existing trucks would be "grandfathered" but all newly registered vehicles in Lebanon would have to conform to the revised standards. It should be added that newer trucks of equal payload have lower gross weights thus allowing shippers to load more and having little adverse impact on shipping practices.

Hours of Operation

Trucks are not allowed (with some exceptions such as reefer trucks, trucks with agricultural produce) to operate during certain times of the day on specified highways in Lebanon, as a measure to reduce traffic congestion. For example, trucks are not allowed on the Beirut-

[4] Memorandum of Understanding regarding the Unification of Goods Transport Principals of Lebanese, Syrian and Jordanian Trucks, October 22, 2002.

[5] For example, the maximum tonnage for a single axle is 13 tonnes under the Memorandum of Understanding versus 14 tonnes under Lebanese Traffic Law.

Damascus highway between 6:30 and 8:30 and between 14:00 and 15:30 during the week and from 13:00 on Saturday to 24:00 on Sunday. These restrictions negatively impact the efficiency of truck operations and in turn the viability of carriers. **We recommend that all red-plated trucks be allowed to circulate on the highways of Lebanon at all times (i.e., 24 hours/day, 7 days/week) to improve the efficiency of trucking operations and goods movement in Lebanon.** This still leaves open the possibility to designate certain streets in downtown Beirut as off-limits to heavy trucks for traffic control purposes.

Other means should also be investigated to reduce traffic congestion on highways (e.g., high-occupancy passenger vehicle lanes, truck passing lanes on hills) rather than just penalize the trucking industry. The above recommendation should be implemented in concert with the introduction of appropriate passing lanes or other enforcement procedures (e.g., trucks must keep on the right lane) if safety is a serious concern in certain locales.

Driver Certification

Most jurisdictions have various classifications of drivers' licences that reflect the difficulty and the complexity of the vehicle being driven. Requirements to obtain a licence to drive heavy vehicle truck combinations (e.g., road tractors equipped with a fifth wheel pulling a semi-trailer or possibly even a semi-trailer/trailer combination) are generally much more stringent. Requirements to drive passenger buses and straight trucks over a certain weight limitation (e.g., 3500 kg) or that use compressed air braking systems are also more stringent than for obtaining a licence to simply drive a passenger automobile[6]. For example, to obtain a heavy vehicle licence, requirements can include: a minimum of 2 or 3 years of driving experience with a passenger automobile; completing successfully a truck driving training course at an accredited training school; and passing 1 or 2 road tests. Requirements for a licence to drive straight trucks less than 3500 kg may be a little less stringent (e.g. training school may not be required). It should be noted that the European Union adopted new directives in 2003 to improve professional driver standards. The 2003 legislation offers the drivers the choice carrying out a compulsory minimum level of training, or a more extensive full basic training package[7].

Therefore, it is recommended that a driver licence classification system be established in Lebanon reflecting the skill and driving experience necessary for the type of vehicle being driven. Adoption of European policies and standards for driver certification and training should be seriously considered by Lebanon in collaboration with its immediate trading partners.

Safety Procedures

There are also a number of safety procedures or standards that most countries adopt regarding commercial truck transport. Transport of dangerous goods is a prime example and there is already in place a memorandum of understanding[8] between Jordan, Syria and Lebanon in this

[6] The European Union agreed to new rules for driving licences in March 2006 including that truck and bus drivers will have to renew their licences every five years.

[7] Road Transport Policy, Directorate-General for Energy and Transport, European Commission, November, 2006.

[8] Memorandum of Understanding regarding the Instructions to Transport Dangerous Goods or Explosive Materials on Roads in Jordan, Syria and Lebanon (Amman, 12/01.2004).

regard. Formal accession to the *Accord européen relative au transport international des marchandises dangereuses par route* (ADR) should be considered in the longer term.

Other examples include hours of service that a driver may drive over a 24-hour period or over a 7-day week to prevent driver fatigue and possible subsequent accidents on the highway. For example, the European Union agreed to a new package of driver working conditions that make it obligatory that drivers rest at least nine hours over a 24-hour period and that they are limited to a maximum of 56 driving hours per week[9]. Carriers could also be required to maintain driver profile records that can be inspected by authorities to ensure that all its drivers have the required drivers licence and safety record.

The use of digital tachographs should eventually be considered by Lebanon and its neighbours to monitor driver operating hours, speed of vehicles, etc. In Europe, digital tachographs are now compulsory in new heavy vehicles and buses as of May 1, 2006. Automatic vehicle location (AVL) technologies may also find application, particularly for vehicles carrying hazardous materials. It is possible that the system being recommended for monitoring public transport could also support this application.

The Republic of Lebanon should consider such additional safety procedures as outlined above in collaboration with its trading partners as a means to protect the safety of its citizens on the highway.

[9] Road Transport Policy, Directorate-General for Energy and Transport, European Commission, November, 2006.

FINANCIAL SUSTAINABILITY IMPROVEMENTS (ACTIVITY 28)

As was mentioned in the Evaluation of Alternate Strategies (Activity 24), renewal of the aging and poorly maintained trucking fleet operating in Lebanon is of utmost priority; not only for safety reasons but the higher fuel consumption of older diesel engines that increases operating costs for operators and causes higher exhaust emissions. These emissions in turn have negative impacts on the environment and the physical health of Lebanese citizens. Truck (and automobile) emissions are of two main kinds:

- Air pollutants such as nitrogen oxides (NOx), sulfur dioxides (SOx), volatile organic compounds (VOC) such as gasoline fumes, and particulate matter (PM). Smog (a mix of NOX, VOC and PM) is a prime visible example of air pollution.
- Greenhouse gas emissions (GHGs) that are made up primarily of carbon dioxide (CO_2), an unavoidable product of combustion. GHGs are strongly linked with global climate change and the gradually increasing world surface air temperature.

This activity examines the financial sustainability improvements that could be obtained by completely renewing the fleet of15,000 red-plated trucks over a 20-year time period[10].

Fiscal Impacts to Renew the Truck Fleet

As described in Activity 24, trucks are in generally poor condition primarily due to: 1) a lack of enforcement that permits poorly maintained trucks to remain on the road leading to an over-supply of trucks; and, 2) the low level of profitability of truck operators due to this over-supply that in turn means that operators cannot afford or justify the purchase of new equipment.

Aside from hopefully improved enforcement in the years ahead, it was suggested in Activity 24 that all trucks over 3500 kg to be red-plated should be exempt from the customs duty of 5% on the CIF price that has been done in other countries (e.g., Syria) in encourage investment. Secondly, the Kafalat should provide low interest loans to the trucking industry (perhaps only for fleets with over a minimal number of vehicles (e.g., 4) to encourage consolidation) as it now does for other industries. It is hoped that these two initiatives will provide some incentive for truck operators to purchase new or used equipment (i.e., under 6 years of age).

The fiscal impact on the Lebanese economy could even be positive if a sufficient number of trucks were imported over and above current levels of about 300 heavy-duty trucks per annum. For example, if the financial incentives results in at least 450 red-plated trucks being imported, then the losses in the 5% duty are offset by the increases in revenue generated by the 10% VAT. If 5% of the truck fleet could be renewed each year (i.e.,750 vehicles), then the contribution to the Treasury will actually increase over current levels. This is illustrated in Table 1 below with the assumption that the average new/used price for a heavy-duty truck (CIF) is $80,000 (U.S.). These numbers will obviously change up or down depending upon actual prices. More importantly, it assumes that truck operators will respond to the price decrease due to removal of the 5% duty (and possibly combined with low-interest loans from the *Kafalat*). Otherwise, further financial measures may have to be considered.

[10] A diesel engine retrofit program could also be part of the solution for newer vehicles still in good driving condition. For an evaluation methodology see: TIAX LLC, *Heavy-Duty Truck Retrofit Technology: Assessment and Regulatory Approach*, September, 2008

Table 1: Annual Tax Impacts-Renewal of the Truck Fleet (U.S. $)

	With Duty		Without Duty		
Number of vehicles	1	300	1	450	750
CIF Price (U.S.$) (per vehicle)	80,000	80,000	80,000	80,000	80,000
Total CIF	80,000	24,000,000	80,000	36,000,000	60,000,000
Duty @ 5%	4,000	1,200,000	-	-	-
VAT @ 10%	8,400	2,520,000	8,000	3,600,000	6,000,000
Dealer Cost	92,400	27,720,000	88,000	39,600,000	66,000,000
Dealer Mark-up (10%)	9,240	2,772,000	8,800	3,960,000	6,600,000
VAT @ 10%	10,164	3,049,200	9,680	4,356,000	7,260,000
Customer Price	111,804	33,541,200	106,480	47,916,000	79,860,000
Total Duty	4,000	1,200,000	-	-	-
Total VAT	10,164	3,049,200	9,680	4,356,000	7,260,000
Total Taxes	14,164	4,249,200	9,680	4,356,000	7,260,000

The VAT revenues accruing to the Government of Lebanon represent the VAT paid by the final purchaser (i.e., the customer). As with any flow through tax, the dealer is reimbursed by the Government for the VAT paid on the CIF price (excluding/including the duty).

Impacts due to Improvements in Fuel Efficiency

There will be two main impacts due to improvements in the fuel efficiency of a renewed fleet:

- A reduction in fuel consumption that in turn will mean some reduction in tax revenues (i.e., VAT) for the Government of Lebanon.
- A reduction in fuel emissions that in turn will result in a reduction in air pollution and GHG emissions as well as have a positive impact on the physical health of Lebanese citizens.

Impacts on tax revenues

For illustrative purposes, it will be assumed that 750 new/used trucks will replace a similar number of older, poorly maintained trucks on an annual basis. It will also be assumed that red-plated trucks travel on average 100,000 km per annum. The other key factor is estimating the average fuel consumption (km per litre) of the existing fleet with the average fuel consumption of the renewed fleet. Fuel consumption depends on a number of factors including average speed, size/type of engine and highway versus city driving. A general fuel consumption range for today's trucks (or a renewed truck fleet) is from 2 to 3 km per litre[11]. It is also a well-known fact that there have been significant advances in truck fuel efficiencies over the past 20 years. For example, due to a variety of factors (e.g., improved aerodynamics, lighter designs, engine and driveline improvements), it has been estimated that truck fuel efficiency had increased by about 25% from 1990 to the turn of the century[12]. There is every reason to believe that truck fuel

[11] Kenworth Truck Company, *White Paper on Fuel Economy*, August, 2008.

[12] Transport Canada, *Transport and Climate Change: Options for Action*, November 1999.

efficiencies have continued to improve to the present day due to continued technological advances in engine design and aerodynamics. Therefore, it is estimated that a renewed trucking fleet would have greater fuel efficiencies of between 25% and 50% in comparison to the fuel consumption of the much older and poorly maintained, existing trucking fleet. If one assumed an average consumption rate of 2.5 km per litre for the renewed fleet, this would imply that the present consumption rate of the existing fleet ranges from 1.67 km per litre to 2.0 km per litre.

The current base import price for diesel fuel is 1,068,000 LL per 1000 litres. The total cost is 1,109, 000 LL per 1000 litres (before applying the VAT) after taking into account the costs of transport, the distribution company and the commission of the gas station[13]. Therefore, the resulting VAT revenue (@10%) is 110,900 LL per 1000 litres (110.9 LL per litre) or $0.074 (U.S.) per litre. It should be noted that no duty is applied on diesel fuel.

Based on the trucking fleet being renewed by 750 trucks per annum and each truck operating at 100,000 km per annum, the impacts on VAT revenues are presented below in Table 2.

Table 2: Fuel Tax Revenue Impacts

	Existing Fleet		Renewed Fleet
Consumption Rate (Kms per litre)	1.67	2.00	2.50
Litres consumed	44,910,180	37,500,000	30,000,000
VAT Revenues (U.S.$)	$ 3,323,353	$ 2,775,000	$ 2,220,000

Therefore, the Government of Lebanon could face a VAT revenue shortfall of between $500,000 (U.S.) to over $1,000,000 (U.S.) per annum as the truck fleet is renewed based on the assumptions used in this analysis. It should be noted that this shortfall would be cumulative (i.e., double in the second year, triple in the third year, etc.) as the truck fleet is gradually renewed by 5% each year.

Impacts on balance of trade

On the positive side, a reduction in fuel consumption would help with the balance of trade. From the table above, from 7.5 to 15 million litres of diesel fuel would be saved in the first year alone. Based on a cost of 1,068,000 LL per 1,000 litres or $712 (U.S.) per 1,000 litres, it would have a positive contribution to the trade balance of from 5 to 10 million U.S.$ per annum. This amount would double in the second year, triple in the third year, etc, as the fleet is renewed and fuel saved.

Impacts on fuel emissions

Fuel emissions will decrease in the same proportion as the increases in fuel efficiencies by renewing the fleet but it is not the intention of this Activity to try and quantify all the positive environmental impacts (e.g., reductions in air pollution, reductions in GHG emissions) that would occur by renewing the trucking fleet. However, to provide some order of magnitude, well-maintained diesel trucks now emit approximately 100 grams per tonne-km of GHGs[14]. If one

[13] Source: Ministry of Power and Water, November 3, 2008.

[14] Transport Canada, *Transport and Climate Change: Options for Action*, November 1999.

assumes that the truck fleet is renewed by 750 vehicles per annum, these trucks could generate 500,000 tonne-km of freight shipments per annum (100,000 km @ 5 tonnes/truck on average, loaded and empty) and would produce 50 tonnes of GHGs as a result. This would compare with a less efficient fleet (e.g., 50% less efficient) that would produce up to 75 tonnes of GHGs per annum. Therefore, renewal of the fleet could reduce the production of GHGs by up to 25 tonnes per annum. Again, these savings would augment each year (e.g., double in the second year, triple in the third year) as the fleet is renewed.

Summary

The purpose of the analysis carried out in this Activity was to provide the approximate fiscal impacts of renewing the red-plate trucking fleet by introducing some financial incentives according to a variety of assumptions. In addition, it was felt important to introduce the positive social and environmental impacts of renewing the fleet and promoting "sustainable" transport in the longer term. These results would form the basis for examining in more depth the fiscal impacts of renewing the fleet once the financial and fiscal measures to be introduced have been clearly defined.

TRANSPORT AGREEMENTS (ACTIVITY 29)

Interim Report No. 1 included an inventory of international transport agreements that Lebanon is part of. In general the following can be stated, based on discussions with DGLMT and the Consultant's own interpretation:

- A transport agreement usually covers passenger and goods transport.
- Passenger transport agreements concern transport via vehicles of 8 passengers plus driver, or larger vehicles.
- Bi-lateral agreements tend to be better enforced than multi-lateral regional agreements
- Multi-lateral agreements take time to negotiate and they are affected by governments' political agenda and policies that are not necessarily transport motivated. Some countries tend sometimes to sign agreements, even if they include articles they do not fully accept, in order to serve higher policy issues. The underlying logic is that even if an agreement is signed, it is not necessarily ratified, and once ratified it is not necessarily enforced.
- It is observed that Lebanon has several bilateral land transport agreements with countries with whom it is most unlikely any land transport activity will materialize (e.g. Morocco).
- Most significant land transport agreements are those with Arab countries that are located to the East of Lebanon.
- Implementation and enforcement of transport agreements enjoy and suffer from the ups and downs of bilateral political relations, which at times override transport and economic and economic interests.
- International land transport agreements suffer from the same low level of weak enforcement as that of national transport national regulations.

This study did not identify the need for a specific bi-lateral transport agreement that needs to be reached or an existing agreement that needs to be revoked. But some international conventions were identified, whose content is recommended to be adopted, as they have a positive impact on the performance of the transport sector, as to productivity, efficiency, and safety, and will bring the transport sector in Lebanon closer to international standards.

The following agreements should be considered by Lebanon, if not for accession, at least for adopting their regulatory clauses within national regulations:

- *Accord européen sur les transports routiers* (AETR), translation: *the European Agreement concerning Work of Crews of Vehicles engaged in International Transport*. It is recommended to adjust Lebanese regulations for licensing road transport vehicles to ensure compliance with AETR rules, adjust specifications, inspection regulations and traffic code to ensure seamless enforcement of the AETR agreement for national and international vehicles operating on roads in Lebanon and participate in concerned UN Working Parties.
- Incorporate ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road) into Lebanese regulations, training programs, and safety and security manuals and procedures, and participate in concerned UN Working Parties.

- Participate in concerned UN Working Parties, committees and IRU (International Road Transport Union) bodies regarding TIR (*Transports Internationaux Routiers*) or the International Customs Transit system.

PLANNING CONSIDERATIONS (ACTIVITY 30)

As has been mentioned in preceding activities, warehousing activities in the Greater Beirut Area (GBA) are very fragmented and located in make-shift facilities such as in the basements of residential buildings. Goods being stored include hazardous materials that raise serious safety concerns. Trucking movements to and from these facilities is contributing to traffic congestion and noise on residential streets in the GBA. This fragmentation is also leading to inefficiencies in goods distribution as trucks are delayed due to congestion and a lack of consolidation in shipment deliveries. The establishment of one or more distribution warehouses on the periphery of the GBA has been raised as a solution to improve the efficiencies of goods distribution, reduce traffic congestion and noise on residential streets and remove dangerous hazmats to a more isolated location(s) with proper supervision and security.

Location of the Distribution Centre (DC)

Locations with sufficient land area for a DC are very limited due to the already extensive residential and commercial development of the GBA. Six potential sites have already been identified by the Joint Venture project team based on previous studies and further research. These are:

- The abandoned Mar Mkhaeil train station next to the bus storage garage of the RPTA
- The Sinn El Fil Plain near the Beirut River
- On sea-fill behind the City Mall near Al Judaydah
- The NBT abandoned train station area
- The plain beside the *Mecanique* facility in Radio Orient
- An area beside the Nahr Al Mot quarries

A site location map indicating the location of each of these locations is presented in Photo 1.

Two of the locations: the Mar Mkhaeil train station and the plain beside the *Mecanique* inspection facility, are less than ideal due to lack of available space and relative location (e.g., still considered close to congested streets and/or other buildings) and may be removed from the list upon further evaluation. The *Mecanique* site was reduced from 35 to 20 hectares when the *Mecanique* facility was built. The NBT site may also become less attractive because of the recent decision by the Port of Beirut to take 10 hectares of the 24-hectare site for the storage of containers that have remained on the container terminal longer than 7 days.

A potential that had been mentioned in the past was at Khaldeh. It has been excluded from consideration due to the use of the site for heavy debris from war damage. It would be costly to recover.

In general, the location of the DC should be close to major highways with easy access (and away from traffic congestion). The DC should also allow for reasonable integration into existing

freight distribution patterns to, from and within the GBA so as not to augment logistics costs for users.

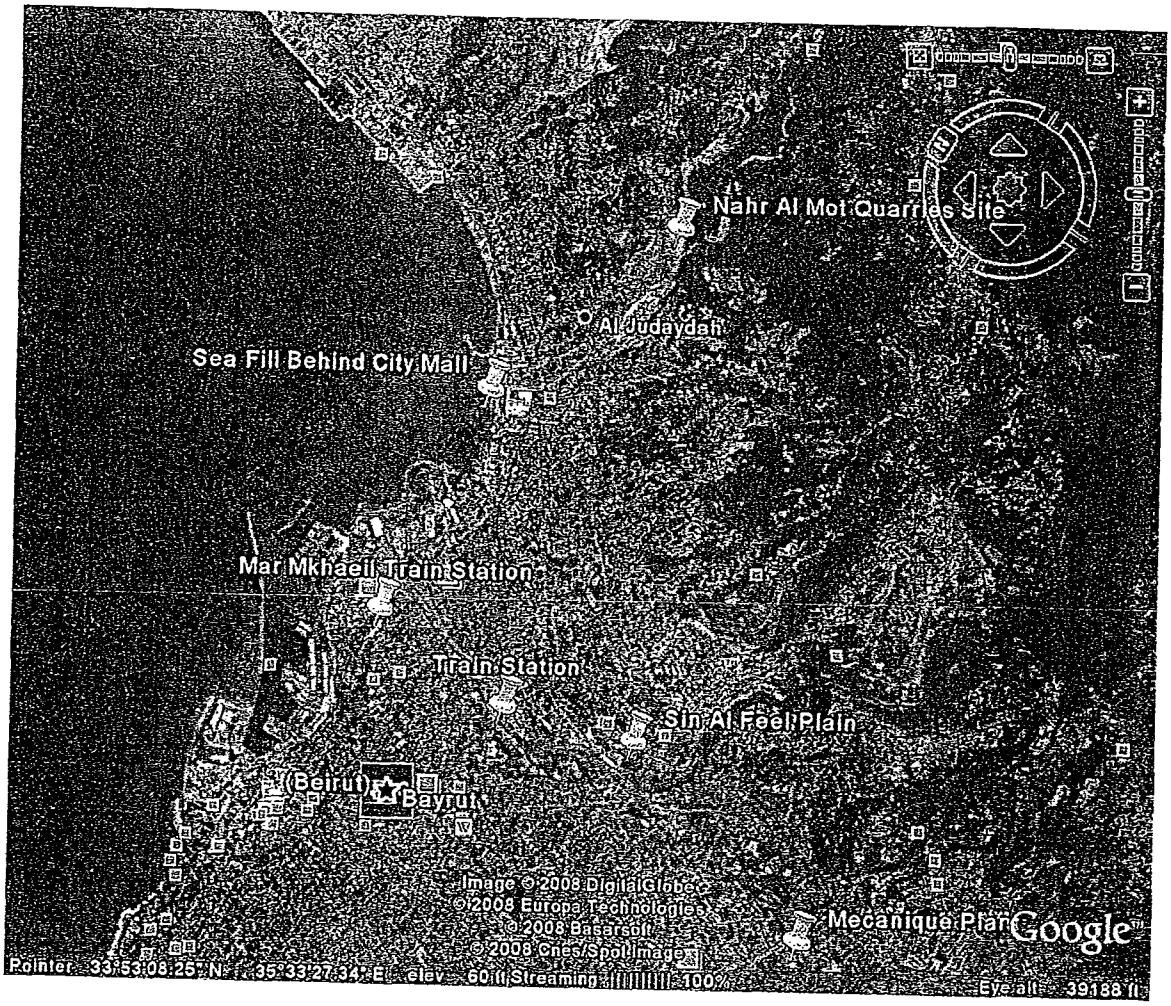

Photo 2: Candidate Distribution Center Locations within the GBA

Design of the DC

The design of the DC will very much depend on the types of commodities to be handled and their associated storage requirements (volume/area requirements, handling requirements such as the need for forklifts). This will very much determine the overall size of the facility in terms of area requirements as well as design specifications. Overall land area requirements include the area of the facility itself but also an adequate area around the truck docking facilities for truck manoeuvring and turnaround space to permit efficient truck operations. Other key design elements include:

- Basic construction design (type of floor, walls, roof- including height)

- Access to water, sewer, and electricity services
- Fire protection systems (particularly if hazmats are involved)
- Communication systems and security (e.g., electronic surveillance).

The design should also allow for expanded use of the facility as it becomes more accepted by the shipping community.

The possibility of creating one or more smaller DCs based on different kinds of commodities and/or traffic flows should also not be ruled out.

Institutional Issues

There are obviously challenges to establishing the DC centre(s) and it will require consultations with key stakeholders including the Port of Beirut and the Beirut Container Terminal Consortium (e.g., for possible use of the NBT site for the destuffing/stuffing of containers) and freight forwarders as to where major customers are located. Existing shippers now requiring storage and/or warehousing facilities in the GBA and existing operators of warehousing facilities will have to be incentivized and/or motivated by enforcement measures to relocate. Involvement of the government will also be critical in terms of land expropriation[15], provision of basic services (e.g., electricity, water) and access roads. A public/private partnership could also be considered to build and operate the facility.

A critical success factor will be the identification of champions or base users of the facility upon which to build additional volume and/or users. The above consultations would be the first step in that direction.

[15] The Government of Lebanon has already agreed to pay for the land or make the necessary land available.

ENFORCEMENT IMPROVEMENTS (ACTIVITY 31)

This section describes technological tools for assisting in enforcement measures by providing an increase in staff productivity and a deterrent effect to potential violators. They do not guarantee success merely by their installation. Indeed, continual upgrading of skills and retraining of staff will be necessary to achieve and maintain the intended results.

Enforcement against Counterfeit License Plates

The issue of excessive numbers of license plates beyond the officially registered amount is discussed in detail in the Public Transport component of this report. While there is ample evidence of counterfeiting amongst passenger vehicles, there is little evidence amongst goods vehicles to date. There are, however, other reasons to replace current license plates with an electronic variety that pertain to both goods and public transport vehicles. **Thus, we recommend that the same technologies mandated for passenger vehicles with Red Plates be extended to goods vehicles with Red Plates as a second phase.** It should also be considered for vehicles with special licensing requirements such as transit vehicles and hazardous material vehicles. The third phase would extend this technology to the remainder of vehicles.

There are two central criteria for a new license plate technology: 1) the capability for a high degree of self enforcement and 2) increased productivity for field enforcement staff. There are two basic types of candidate technologies that address them both. These are License Plate Identification/Recognition (LPI/R) and Radio Frequency Identification (RFID). These are also described in detail in the Public Transport component of this report. We are recommending the RFID technology.

A Note on the Vehicle Registration Database

The field information being read by the RFID detector is only the license plate number and nothing else. It is simply a confirmation that the number written on the license plate is the same as the number being emitted by the RFID tag. If further information is desired in the field, it requires rapid access to a searchable database in order to immediately establish the ownership and other vital statistics about a vehicle. Thus, a new vehicle database must be created at the time of installation of the first readers.

Furthermore, this same database could provide additional value. It would allow statistical analysis of number and type of vehicles crossing reading points to establish travel patterns. It could give totals or separate them into red plate passenger, red plate commercial, commercial and other vehicle type for further planning insights. It thus also functions as a traffic counter.

The new database need not be comprehensive, that is, include all 750,000 vehicles currently registered. **The new database can start with red license plates, then commercial license plates, and eventually all license plates, over the course of the normal renewal cycle.** This database would not be developed by the RFID license plate vendor, but by a third party, and is subject to additional purchase and user license agreements.

Weighing and Wayside Inspection Facilities

There are currently no weigh and inspection stations in operation along public roads. There is one that is used on a case basis within the Port of Beirut. Previous studies have identified the need for stations to the north, east (along Damascus Road corridor) and south of Beirut. There were also suggestions that these be supplemented with portable weigh scales that can be used for random enforcement, for loaning to shippers so that they can learn to visually recognize legal limits of bulk loads, and other practical uses. **We concur with the recommendations from previous studies that portable weighing equipment be acquired.**

There are at least three issues that affect the selection of appropriate technologies. One is that space is at a premium in the North Coastal Highway corridor. Another is that the availability of enforcement staffing is often minimal. The third is that there is currently very little experience with advanced technological systems.

The survey data reveals that over 70 percent of all truck movements are within the GBA. Thus, if there is to be an effective deterrent, there must be a weigh station that can't be avoided by trucks doing business within the GBA. On the other hand, the lack of space in the North Coastal Highway corridor makes a traditional fixed weigh station with multiple lines and long queues problematic. On the other hand, Weigh-in-Motion (WIM) technology saves space by pre-screening trucks, but is not as accurate unless a large database is developed and statistically analyzed. It will take time to hire analysts and to develop this database. Staffing levels for 100 percent checks at all times is also probably unrealistic. (Stopping of all trucks does happen on "Security Days." This could still be used in the future to check cargo, documentation, etc.)

Thus, as a compromise solution, **we recommend using WIM technology to pre-screen trucks in the North Corridor and at any other location in the South or East where space proves to be difficult or expensive to acquire.** The WIM would be accompanied by a fixed scale behind it for legally valid measurements for suspect vehicles. There is little value for WIM at the border stations, as vehicles must stop in any case.

Over the longer term, the weigh inspection stations should be upgraded to permit the reading of electronic manifests, electronic vehicle registrations, and other documents upon approach through a radio receiver mounted on a gantry ahead of the checkpoint. This allows screening for other violations in addition to weight. The timing should be coordinated with the eventual imposition of electronic documentation across the entire truck fleet. These stations could also be used to verify whether a vehicle has been inspected at a *Mecanique* facility within the last year and if not take appropriate measures to ensure that the vehicle is inspected and made road worthy.

Monitoring of Transit Trucks and Hazardous Materials (HazMat) Trucks

The Customs service has indicated a desire to be able to monitor transit traffic. There is also a need for stricter enforcement of vehicles carrying HazMats. Both of these can be addressed through the leveraging of technology that is recommended for monitoring of public transportation vehicles.

Automatic Vehicle Location (AVL)

AVL is a means of tracking vehicles. The predominant location technology is Global Positioning System (GPS), satellite fixes updated by wheel turns since the last location fix. It is now a mature technology that lends itself well to monitoring of fixed-route public transport operations. It allows one person in a control center to monitor the location of a large number of vehicles at once as icons move on a map on computer screen(s). The new TMO control center would be a logical location.

Enhanced ITS package specific to Transit trucks and Hazmat trucks

The AVL system forms the nucleus of a set of peripherals that can be added incrementally or all at once in a turnkey procurement to suit the needs of particular sub fleets. The position and time provided by the location technology are "stamped" on to all other data collected and transmitted from the vehicle. The same radio used to receive position and time from vehicles could receive additional data.

Security would be enhanced if trailers or containers were equipped with an electronic seal also bearing a GPS unit that would alert the dispatcher to a transit trailer or container that was opened within Lebanon. Another desirable feature would be an alert when a HazMat or transit vehicle deviates a present distance from a given itinerary. When a security even is triggered, rather than polling a vehicle periodically, when the alarm is triggered, position is reported almost continually.

Further benefit resides in the archived data. With the additional of a post-processing software package, detailed and accurate information showing the route actually used and the time duration can be made available for any particular vehicle since data from all runs are archived. This data is also of use for other traffic planning as well, as the public transport vehicles act as traffic probes.

It should also be noted that there are potential commercial benefits to the general trucking operators from advanced solutions such as the Global Intermodal Freight Transport System (GIFTS) that provide dispatching, documentation, tracking and other services. Thus, there is a significant possibility that much of the trucking industry moves voluntarily towards these technologies.

Truck Lanes

As of this writing, the traffic signals installed as part of the UTDP program have not been centrally connected and programmed. They operate only on fixed cycles and entirely independently. Nor have all details of road channelization and legal parking locations been finalized. These tasks will be performed at a later date with the specific intent to improve public transport speed and reliability.

It might be possible improve freight vehicle movement as well by letting these vehicles share the facilities at certain times of the day. This can be enforced through the same mechanisms selected to maintain reliable bus operations. It should be noted that there are some low technology self-enforcing solutions available, such as "car traps". These involve a hole at the beginning of the exclusive lane section that is too wide for autos to span, but not too wide for buses or trucks to span.

LEGISLATIVE IMPLICATIONS (ACTIVITY 32)

Preamble

In pursuit of expeditiously implementable revitalization initiatives of public transport and the associated improvement measures, we undertook to make maximum use of existing laws and regulations on one hand and to identify ongoing legislative efforts that support the revitalization initiatives on the other.

This section points out the basic legislative needs that support the main axes of the revitalization drive exemplified in the proposed institutional reform, regulatory improvements and enforcement improvements. A more specific presentation and detailing of legislative requirements could only be provided upon discussing and approval of a final road map for the agreed revitalization initiatives.

Draft Law of Land Transport Authority

The Land Transport Authority is the key governance organ of land transport services in the country. It satisfies all the criteria of institutional reform including sufficient autonomy, good governance, public interest and supervision of private sector service provision. It is recommended that the draft law of LTA be enacted immediately

Land Transport High Council

As indicated in Activity 25 – Institutional Reform, the current mandate of the Land Transport High Council has almost complete overlap with that of LTA. **It is recommended that the name of the Council be changed to "Transport High Council" with a different mandate that caters for inter modal policy coordination**, including:

- Review, coordination and conciliation of modal and inter modal transport policies.
- Monitoring and evaluation of transport sector performance and the achievement of social, economic, and environmental objectives.
- Advising on inter modal resource allocation based on competitiveness and level of service of various modes.

Red License Plates

Red license plates are now treated as a commercial asset which can be dealt with commercially, bought, sold, and inherited. It gives its "owner" the right to operate a commercial vehicle *anywhere* on the Lebanese soil. Many of the proposed reforms are impossible to implement under the prevailing legal regime. A recent attempt to limit the operation of trucks owned by industries for their own business and fitted with a white plate (not for hire) within a geographic area surrounding the production facility, in response to demands by truckers who claimed those trucks were illegally involved in commercial activities, faced a legal interpretation that it is unconstitutional to limit their geographic scope of operation. Building on this

interpretation, the DGLMT may not have the legal authority to limit the operation of some red license plates to a *Mohafaza* or region, if not protected by a clear legal justification that may require legislative action.

A more fundamental reform which goes farther than just permitting limiting the geographic area of operation of some red plates, is to abolish the concept of "ownership" of a red license plate, in favor of a timed a operator license, strictly regulated by DGLMT. That is a complete separation between giving a vehicle an ID (plate number) which certifies ownership of the vehicle (a function of the MOIM) and the license to provide a specific transport service (a function of DGLMT and LTA once established).

Amendment of Law 341 Dated 2001

Law 341-2001 addresses regulatory measures pertaining to passengers and goods transport. Substantial efforts and due diligence were undertaken to affect amendments of this law by the Public Works Parliamentary Committee (17/11/2003) and Environment Parliamentary Committee (9/12/2003) along with additional changes proposed in 2004.

We recommend a speedy enactment of the proposed amendments, in particular provision that having a red plate is not sufficient to operate a public transport or goods transport vehicle and that operations shall be subject to an operation license from a competent authority (the LTA).

Establishment of the Land Transport Fund

The argument for establishment of a Transport Fund has been continuously addressed at forums concerned with the reform of the transport sector. The recommendation for establishing a Transport Fund is well argued in proposed Transport Policy Statement proposed by this study.

The big hurdle against the establishment of a Transport Fund rests with the interpretation of the current public finance law, which directs all revenues to the general fund, and does not permit targeting some revenues to specific uses. The concept of 'user charges' does not have a legal pretext.

It is a priority to explore how best this issue can be approached. A legislative action in that direction is overdue.

Enforcement Legislation

Enforcement is critical to all transport sector services. Legislation texts pertaining to enforcement shall address empowerment of enforcement bodies through sufficient budgets, training and new technology. Particular areas of enforcement include:

- Truck weight regulations (e.g., overloading)
- Required inspections at *Mecanique* facilities
- Traffic flow and driver behaviour
- Parking restrictions

- Environmental related aspects.

Proposals for creating a special traffic division within ISF were presented by the UTDP Preparatory Study. The argument for that is two fold. Traffic Code enforcement requires specific expertise additional to that acquired from a purely anti-crime and security training received by Police Officers. On one hand, currently the rotation of officers takes away periodically officers who have gained on-the-job traffic experience to other police jobs and bring in as a replacement others with no previous formal traffic training nor on-the-job familiarity with traffic. On the other hand, traffic police duties –especially in urban areas – is mainly controlling circulation and enforcing parking restrictions. Traffic police duties require only modest military, arms and ordinance training (traffic police not involved, for example, in fighting organized crime, anti-narcotic or anti-terrorist activities), and it would be a misallocation of resources to have them trained for all security duties. Traffic management and parking enforcement can effectively be carried by female officers and parking attendants, an opportunity for a wider recruitment basket.