United Nations Development Programme

Country: Serbia

PROJECT DOCUMENT

Project Title	Support to Sustainable Transport in the City of Belgrade
UNDAF Outcome(s)/Indicator(s):	To promote sustainable development and increase capacity at municipal level
Expected Outcome(s)/Indicator(s):	Sustainable development plans/policies effectively respond to the need of stakeholders, as well as promote employment and environmental protection
Expected Output(s)/Indicator(s):	Reduced GHG emissions from ground transport in Belgrade through the promotion of a long-term modal shift to more efficient and less polluting forms of transport
Implementing partner:	Ministry of Environment and Spatial Planning

Brief Description

The goal of this project is to reduce national greenhouse gas (GHG) emissions in Serbia by meeting the project objective of improving access and sustainable transport modes in Belgrade. The project will achieve this by integrating land-use and transport planning to promote the use of bicycles and public transport modes, while rationalising parking tariffs and initiating social networking programmes to promote shared taxi and car use. Together, these activities are expected to reduce the growth of personal vehicle use and improve the transport management infrastructure to support the environmentally friendly development of Belgrade. They will result in direct energy savings of 285 kton CO_2/year; and, indirect savings from the increased share of energy efficient transport modes of 71 kton CO_2/year.

Programme Period: 2005 - 2009
Atlas Award ID: 00059575
Atlas Project ID: 00074551
PIMS: 3781
Start date: May, 2010
End Date: May, 2014
LPAC Meeting Date: 23 March 2010
Management Arrangements: NEX

Total budget:	US$7,451,951
Allocated resources:	
• GEF	US$ 950,000
In kind contributions:	
• City of Belgrade	US$ 4,242,915
• Land Dev't Agency	US$ 2,259,036

Agreed by the Ministry of Environment and Spatial Planning:

NAME	SIGNATURE	Date/Month/Year

Agreed by UNDP:

NAME	SIGNATURE	Date/Month/Year
		4-21-10

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ACRONYMS

APR	Annual Project Report
AWP	Annual Work Plan
BAU	Business as Usual
CCF	Country Cooperation Framework
COP	Conference of the Parties
CO	UNDP Country Office
CPAP	Country Programme Action Plan
DI	Designated Institution
EA	Executing Agency
EIA	Environnemental Impact Assessment
EU	European Union
EBRD	European Bank for Reconstruction and Development
GDP	Gross Domestic Product
GEF	Global Environment Facility
IA	Implementing Agency
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IR	(Project) Inception Report
IW	Inception Workshop
M&E	Monitoring and Evaluation
NEX	National Execution
NGO	Non-Government Organization
OECD	Organization for Economic Cooperation and Development
PIR	Project Implementation Review
PM	Project Manager
PMU	Project Management Unit
POC	Project Oversight Committee
PSC	Project Steering Committee
PTR	Project Technical Report
RCU	UNDP-GEF Regional Coordination Unit
RSD	Serbian Dinar
RTD	Research and Technological Development
SBAA	Standard Basic Assistance Agreement
SO	Strategic Objective
SWOT	Strengths, Weaknesses, Opportunities and Threats
TBD	To be determined
TBWP	Total Budget and Work Plan
TOR	Terms of Reference
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

PART I: SITUATION ANALYSIS

1.1. Context, global significance, environmental, institutional and policy background

Background

The troubled transition from the former Yugoslavia to the Federal Republic during the early 1990s left Belgrade, like the rest of the country, severely affected by civil war and an internationally imposed trade embargo. During 1993-1994, the Yugoslav dinar experienced worst case of hyperinflation in the world, with rates exceeding 5 × 1015 percent over a four month period. These factors caused the city's economy to crumble, with finances for infrastructure in particular in severe disarray. By the late 1990s, Serbia's economy recovered, following normalization of relations with the rest of the world, and its growth rates of GDP averaged about 6% in the period 2000-2008. Today, over 30% of Serbia's GDP is generated by the city, which also has over 30% of Serbia's employed population. The average monthly income per capita is 47,500 RSD (€572).

Greenhouse gas emissions were also affected by the economic downfall. Yet, while Serbia reduced its growth in CO2 emissions during 1990-2003 by 31%, CO2 emissions per capita are now estimated to about 6.2 metric tons per year, which is more than twice than the average in its income group.1 This level is higher than the average emission levels in the European Union, which have decreased over the same period, and it makes Serbia the fifth largest emitter of CO2 per capita of the 36 countries in Western, Central and Eastern Europe. Average emissions are also high by global standards. The transport sector, which accounted for 11% of total CO2 emissions in Serbia already in 1999, represents the fastest growing source of CO2 emissions in Serbia today.

With the combination of rising personal incomes, a liberal trade policy, the capital city, Belgrade, has lately experienced rapid expansion in the use of private motor vehicles. National statistics indicate that 73 percent of households in Serbia have a car, but 52 percent drive cars that are older than 15 years. The average age of cars is 14 years, although it is likely to be somewhat lower in the region of Vojvodina and in Belgrade2. In comparison, the average age of trucks is 15 years, public transport buses 4.5 years and taxis 13 years. This is in part because of a large number of used car imports from neighbouring countries, whereas bus fleets have recently been upgraded by the city in recent years3.

As a result of these various factors, air emissions from transport have been worsening in recent years even as problems of congestion and safety have started to become significant for the first time in the city's history. There are strong indications that current trends would not only cause greenhouse emissions to expand rapidly in coming years, but also produce other unsustainable outcomes for the local environment and economy. At the same time, given the fast-changing situation, there appears to be only a narrow window of opportunity for Belgrade to turn around its transport system and to emerge, in fact, as a model city of sustainable transport in Southeastern Europe.

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[1] Up-to date official information about the level of greenhouse gas (GHG) emissions in Serbia is not yet available and Serbia is preparing its First National Communication to the UNFCCC. The information shown here is based on an assessment by Anders Ekbom and Emelie Dahlberg at the Environmental Economics Unit (EEU), Department of Economics, Göteborg University, as part of Sida-EEU's institutional collaboration on environmental economics and strategic environmental assessment (http://www. handels.gu.se/eehelpdesk).

[2] Based on a 2008 national market survey conducted by the market research firm Synovate and the magazine *Hot Tires*. The survey also showed that the most popular make is Zastava (31 percent), followed by Volkswagen (18%) and Opel (16 percent), with smaller models like the Yugo, Golf and Cadet favoured among these makes.

[3] Used car imports are regulated as of 2005 by an ordinance that requires Euro 3 certification, which covers all vehicles produced and sold in the European Union after January 2001. However, several older vehicles were imported prior to the ordinance.

Figure 1. Location of Belgrade and Serbia

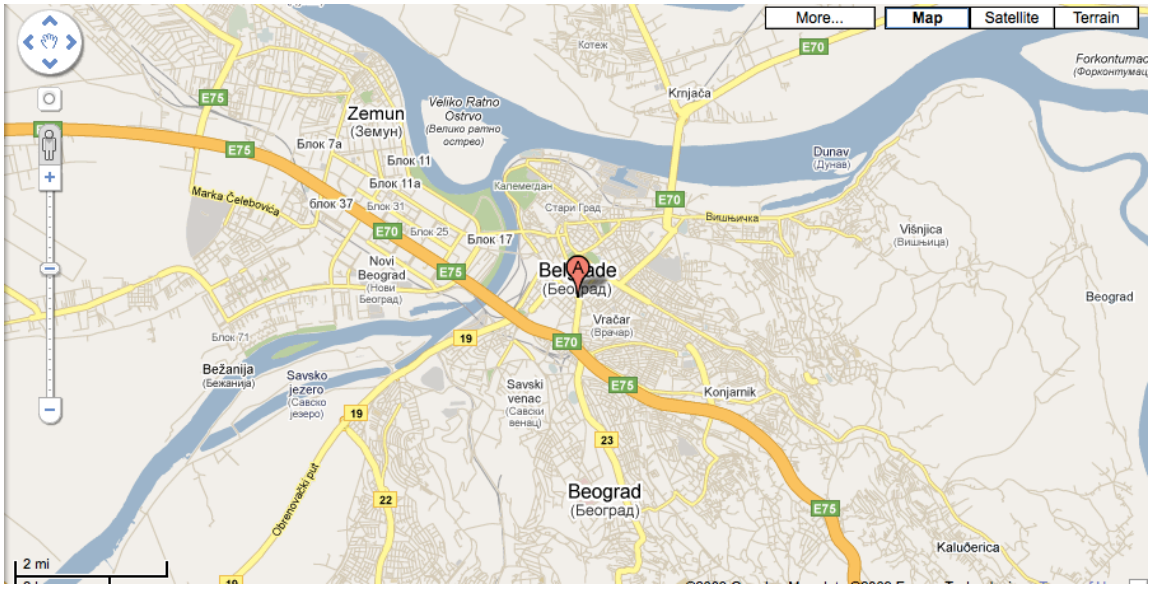


Figure 2. Map of Belgrade

1.2 Threats and root-causes

The major problems caused by these conditions are local air pollution and increase in greenhouse gases. Air pollution modelling has estimated the levels of local air emissions from passenger transport (Table 1). The main factors contributing to GHG emissions in the transport sector in Belgrade are: (1) The large number of vehicles registered and operating in Belgrade (more than 420,000 vehicles, or one third of all vehicles in the country); (2) a relatively high proportion of old cars, with an average car age of 13 years and corresponding high levels of gasoline consumption exceeding 10 litres/100 km (or about 0.23 kg CO2/km); and (3) increasing road congestion, which results in stop-and-go maneuvering and therefore poor fuel economy and higher emissions of GHGs.

Emissions (t/day)				
CO	HC	NO_x	SO_2	Total
19.80	3.70	9.10	0.40	33.0

Table 1. Air emissions from passenger transport (Transport Master Plan 2007).

Public transport in the city is heavily subsidised, since total annual costs exceed revenues from ticket sales by about 60 percent annually. Parking revenues are relatively low because paid parking is currently restricted to three relatively compact zones in the central business district. Of 12,000 parking places managed by the city, about 83% are on street fronts and are shared roughly equally between visitors and inhabitants. Parking prices are modest when compared with tariffs elsewhere in Europe, and also do not seem to reflect the true cost of parking spaces in the central city. Parking fines are, however, fairly stiff, at 20 euro for zones with time limits, while fines for parking illegally range from 65 to 90 euro. Nevertheless, since large parts of the city have free street parking outside the three zones, motorists have an incentive to circle through main streets till they find available spaces, thus adding to congestion, air pollution and greenhouse gas emissions.

prices for parking in euro	First hour	Every other started hour	
garages (average)	0.43	0.54	
parking spaces	0.55	0.7	
fast park garages	0.55	0.7	
I zone	0.48		
II zone	0.33	0.33	
III zone	0.27	0.27	
unlimited zone	0.3		

Table 2. Parking prices in 2008 in Belgrade.

Belgrade has a well-designed built environment and with density of about 1800 persons per square kilometer, both of which are conducive for improving public transport. However, as described above, the substantial recent decline in public transport infrastructure and road network capacity and quality, coupled with inadequate institutions to address vehicular and fuel standards, have led to the proliferation of unsustainable alternative modes and worsening air quality and greenhouse gas emissions. With the development of areas around Novi Belgrade and increased traffic movements into the central business district of Belgrade, GDP growth exceeding 7 percent per year, rising income inequality and inadequate regulations on the import of vehicles, there is already a significant increase in congestion and local air pollution, primarily associated with private vehicles, even as many ordinary residents have to endure longer commutes and crowded conditions in public transport modes.

Serbia has not yet conducted a full greenhouse gas inventory and is yet to submit its First National Communication under the UNFCCC. Based on vehicle inventories and estimates of fuel use and vehicle mode share, Table 1 provides an estimate of greenhouse gas emissions from Belgrade's passenger road transport in CO2 equivalent terms. The total GHG emissions in 2007 are estimated to be 449,490 tonnes.

Mode	Number of vehicles	Passenger-km (million)	Load factor	Vehicle-km (million)	Fuel	Average fuel efficiency (MJ/km)	CO2eq (tonnes)
Buses	846	3,039.46	20.00	151.97	Diesel	11.20	125,955
Trams	218	163.83	20.00	8.19	Electricity	14.80	23,992
Trolley buses	125	580.59	20.00	29.03	Electricity	11.20	64,343
Taxis	8,500	333.82	1.50	222.55	petrol/diesel/LPG	3.60	55,280
Cars	419,200	1,086.47	1.50	724.32	petrol/diesel/LPG	3.60	179,920
						Total	**449,490**

Table 3. Estimate of 2007 greenhouse gas emissions (in CO2eq) from passenger road transport in Belgrade4.

As is evident, emissions from the least sustainable mode, namely cars, dominate the carbon emissions associated with the transport sector, even though buses in particular are responsible for about three times the passenger-km and yet 30% fewer emissions. By all indications, the city is at a turning point with respect to its transport sector. Over the next decade, current trends indicate that sprawl, congestion and increasing car use may well overwhelm the efforts of city planners to improve access and quality of life for the majority of inhabitants. Emissions of greenhouse gases as well as local air pollutants are also poised to rise steeply in coming years, along with a growing current account burden for the country as a whole associated with oil imports.

Greenhouse gas emissions from transport are impacted by a number of factors, some of which are affected extraneously by regulation and technology, and others by personal decisions and community planning. Figure 3 shows the various drivers of CO2 emissions from transport. These include the carbon content (or intensity) of the fuel used, the fuel efficiency of vehicles, the load factor (defined here as the number of vehicle-km associated with each passenger-km), and behavioural factors like travel demand and activity planning. It is evident that there are a number of points of entry and also that using them could address other problems in the sector, such as congestion, local air pollution, access and fuel costs.

In Belgrade most, if not all, of these types of intervention are feasible. Fuel shifting towards low-carbon fuels is conceivable by increasing the attractiveness of trolleybuses and trams (which are powered by electricity); the increased use of bicycles and other forms of non-motorised transport will reduce fuel use; vehicle efficiencies of new vehicles sold in Belgrade can be improved; mode-shifting to higher capacity public transport options will improve the load factor; and better integration of land-use planning around transport corridors combined with improved parking management will improve access and reduce the average distance of trips.

[4] Data on vehicle inventories, and on vehicle and passenger-km for government vehicles (trolley-buses, buses and some taxis), were obtained from the Transportation Master Plan (2009). Emissions factors and load factors were taken from Kenworthy (2007) and IEA/SMP (2004).

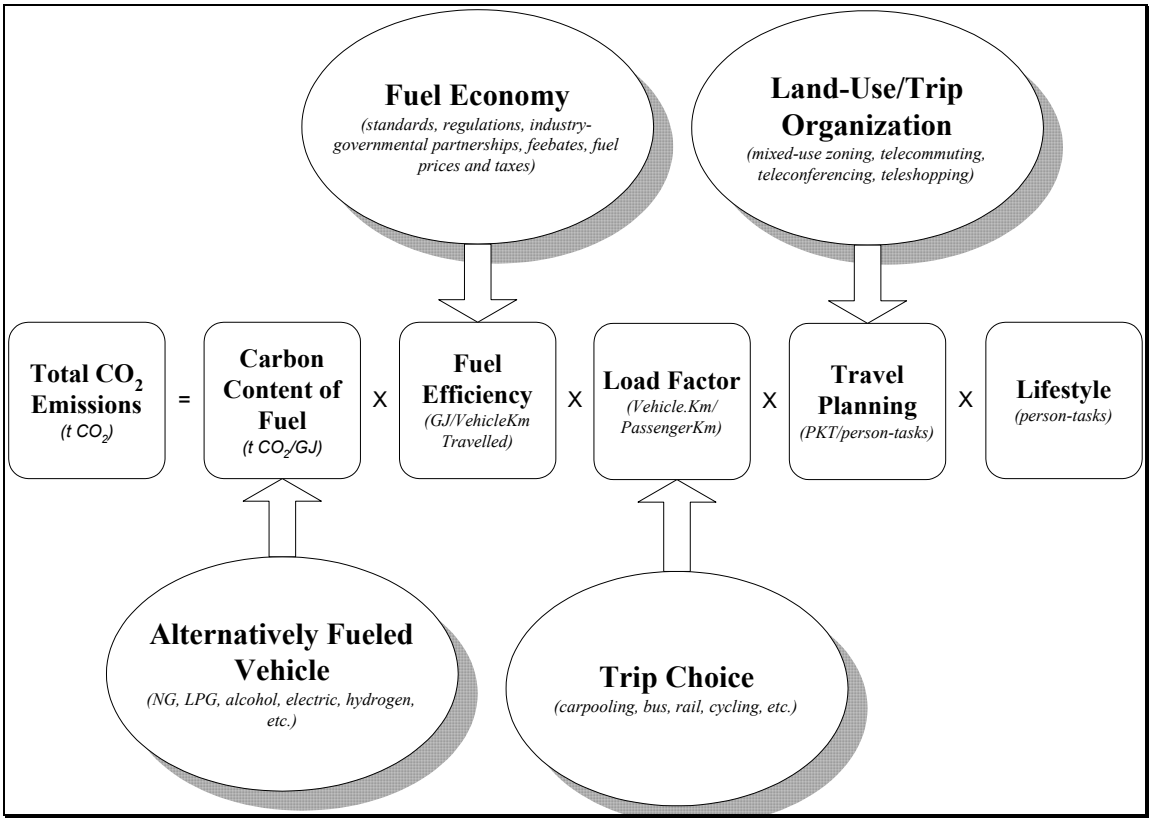


Figure 3. Drivers of CO2 emissions from transport (Source: Dougherty and Bernow, 1997).

As part of its Transportation Management Plan, the City of Belgrade has initiated various programmes such as Park and Ride facilities and increased bus lines to reduce congestion into Central Belgrade. Most of these programmes are designed from the standpoint of meeting the anticipated growth in travel demand and the corresponding difficulties in traffic management in already congested segments of the network. The responses to these challenges are proposed mainly in the form of increasing the capacity of the network, where possible, shifting demand centres to Novi Belgrade and elsewhere, and providing alternatives to private transport. As such, they are not informed primarily by a broader strategy of developing a long term sustainable land-use/transport vision, which would emphasise access rather than mobility per se as the objective function to be optimised. For instance, they do not include plans for integrated land-use and transport planning, rationalised parking tariffs, and focussed campaigns and measures to increase the use of non-motorised transport modes such as bicycles specifically for commuting. By introducing these elements and capacity building activities, the proposed project hopes to catalyse sustainable transport initiatives in the City's transport planning agenda and also develop a model framework for national level programmes for sustainable transport in urban development.

1.3 Desired long-term vision and barriers to achieving it

This project has been designed as a package of technical and institutional capacity building measures at the local level, leading to policies to improve service quality for public transport and develop integrated land-use/transport plans for the city.

These measures are derived directly from a log-frame analysis that was developed through extensive stakeholder consultations carried out in Belgrade. The log-frame matrix is shown in Part III.

A number of barriers to the proliferation of sustainable transport modes are in evidence, including regulatory, institutional and awareness barriers as outlined below.

Institutional barriers

Enforcement: Compliance with high-occupancy lanes for public transport and taxis is poorly monitored without effective mechanisms to ensure compliance in areas of the city where police vehicles do not routinely patrol the streets.
Coordination: The transport and urban planning departments do not routinely engage in integrated assessment of land-use and transport development. There are no long-term strategies for improving pedestrian, bicycle and public transport access in new areas of development, or for mixed used planning.

Awareness of sustainable transport

Residents in Belgrade are concerned primarily about access and congestion, but appear to have the mistaken idea that network expansion by itself will solve their problems, not recognizing the supply-demand dynamics of transport and the challenges of sustainability.

1.4 Stakeholder analysis

Table 4 below describes the major categories of stakeholders and their involvement in the project.

Table 4: Key stakeholders and roles and responsibilities

Stakeholder	Roles and Responsibilities
Ministry of Environment and Spatial Planning	Develops environmental strategy, policy and legislation, currently focused on the EU ascension process. Overseas climate change and mitigation activities from policy and legal standpoint.
The City of Belgrade	Transport Secretariat manages traffic in the City as well as systems for traffic management, traffic organization and its regimes, public parking regulation, public transport, oversees taxi services. Urban Planning Secretariat prepares and adopts planning documents and urban plans, issues planning permits. Environmental protection Secretariat performs systemic monitoring of air quality, measuring the presence and concentration of pollutants from stationary sources (furnaces and factories) and from motor vehicles. Establishes environmental protection restrictions and measures during the urban and spatial planning process and issuing approval with regard to strategic evaluations of the impact of specific plans and programs on the environment.
Belgrade Institute for Public Health	Monitors and analyses health conditions through statistics, maintenance of registries and research. It monitors air quality in the City of Belgrade and analyses impact assessment
Belgrade Land Development Public Agency	Prepares proposals for the construction land preparation and municipal infrastructure construction, including the financial plan. Maintains a data base on city building land, analyzes and proposes the elements to be used in determining the fee for the usage of building land. Also, manages the preparation and the construction of the Belgrade LRT, bridges and all capital assets of specific importance for the City.
Belgrade Parking Service	Manages and maintains public car parks and garages at 10 city municipalities.
Institute of Urbanism Belgrade	Develops spatial and urban plans, studies, analysis, projects and construction rules. An important part of urban plans is transportation
Ministry of Economy and Regional Development	Oversees economy and economical development
Ministry of Infrastructure	Oversees roads and other large infrastructures
NGOs	Relevant national environmental NGOs will be involved in achieving the project outcomes and will play important role in public campaigns, accountant system transparency and volunteers support programmes.

Academic and research Institutes	Relevant national and regional academic and research institutes will contribute to the project as appropriate
National and local press and media	The project will cooperate with the national and local media (TV, press, Internet and radio) on public awareness and legal reform issues.
Private sector	The project will promote the engagement of as many as possible private partners. At least one representative from the private sector will be member of the PSC.
UNDP-Serbia	The roles and responsibilities of UNDP-Serbia will include: Ensuring professional and timely implementation of the activities and delivery of the reports and other outputs identified in the project document; Coordination and supervision of the activities; Assisting and supporting the MESP in organizing coordinating and where necessary hosting all project meetings; Coordinate of all financial administration to realize the targets envisioned in consultation with MESP; supporting the establishing of an effective network between project stakeholders, specialized international organizations and the donor community. The UNDP will also be a member of the PSC.

1.5 Baseline analysis

Belgrade is the capital and largest city of Serbia. The city lies on two international waterways, at the confluence of the Sava and Danube rivers, where Central Europe's Pannonian Plain meets the Balkans. Likewise, the city is placed along the pan-European corridors X and VII. With a population of 1,630,000 (official estimate 2007), Belgrade is the third largest city in Southeastern Europe, after Istanbul and Athens, and among the largest in Danubian Europe. Belgrade has the status of a separate territorial unit in Serbia, with its own autonomous city government. Its territory is divided into 17 municipalities, each having its own local council. It covers 3.6% of the territory of Serbia, and 24% of the country's population lives in the city. Belgrade is the central economic hub of Serbia, and the capital of Serbian culture, education and science. In the course mentioned political and economical circumstances in the 1990s, the country as a whole underwent serious economic collapse leading to a major reduction in national income.

Since the majority of the cars and transport problems are concentrated in the capital city, Belgrade, the project strategy is to propose targeted interventions in the Belgrade road transport sector, with the main objective of shifting trips to more sustainable modes such as public transport (PT), car-pooling and non-motorised transport (NMT) while developing integrated land-use and transport strategies for the long term. Belgrade has a monocentric urban form, with a highly concentrated Central Business District (CBD), although the area of New Belgrade is increasingly becoming a commercial hub. Nevertheless, compared with many other European cities of similar size, the bulk of jobs in Belgrade are in the CBD (Figure 3). In addition, given the city’s geography, with the Sava and Danube flowing just beyond the edge of the city centre, traffic into the CBD faces bottlenecks at the 3 main bridges from New Belgrade.

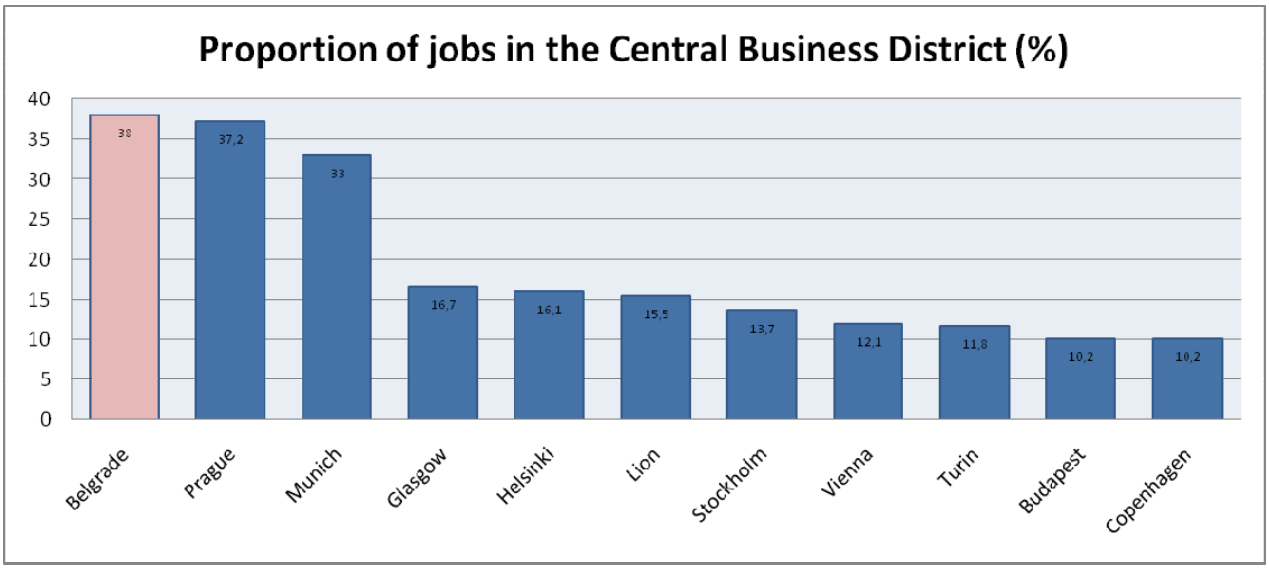


Figure 4. Fraction of jobs in the Central Business District in Belgrade, compared with other cities in Europe

The last decade was an extremely complex period in terms of the demographic development of Belgrade. The population did not grow naturally due to a low birth rate. However, significant immigration hase slowed down the decline of the Belgrade population to some extent. With the stabilization of the political situation and the economic improvements, it is expected that Belgrade will continue playing a significant role in attracting more migrants. As for the Statistical Year Book of Belgrade for the year 2004, the annual growth of immigrants is exceeding 10,000 individuals per year.

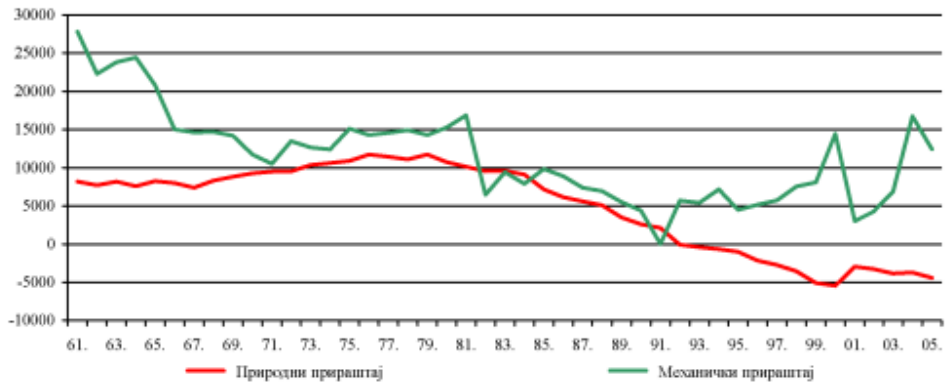


Figure 5. Natural population growth (red line) and population growth by inflow of newcomers (green line), years 1961-2005

In the transport sector, one of the major negative outcomes of the economical crisis was the decline of public transport and road infrastructure. During the 1990s number of vehicles in public transport was decreased by about 40% compared with about 1300 vehicles in the previous decade. The number of routes has remained about the same resulting in serious problems in operating with the decreased numbers of vehicles. Today Belgrade has an extensive public transport system based on buses (118 urban lines and more than 300 suburban lines), trams (12 lines), and trolleybuses (8 lines). It is run by GSP Beograd and SP Lasta, in cooperation with private companies on various bus routes. Belgrade also has a commuter rail network, Beovoz, now run by city government. The main railway station connects Belgrade with other European capitals and many towns in Serbia. Travel by coach is also popular, and the capital is well-served with daily connections to every town in the country.

The main modes of transport include buses (powered by diesel), trams (electricity), trolleybuses (electricity), taxis (petrol, diesel, LPG,) and automobiles (petrol, diesel, LPG). Crude oil is imported, but refined petroleum products (from the Pancevo refinery) and electricity are produced in Serbia. While many vehicles have been converted to using LPG because of their lower fuel costs, substandard conversions and haphazard safety standards have resulted in a few explosions and fires in the past few years. Government officials have therefore become increasingly concerned about the negative safety effects of these conversions, which have harmed the reputation of LPG vehicles, notwithstanding their positive environmental impacts. The weighted average fuel economy of all passenger vehicles can be estimated to be about 11 litres/100km5.

Growth in economic activity during the past decade has spurred a 32% increase in the ownership of private vehicles between 2000 and 2007 the majority of which are pre-owned and imported (Figure 5). In addition, there are also over 8000 taxis operating in the city. Overall, 420,000 cars were registered in the city in 2007. This situation has led to the significant increase in urban air pollution. It is estimated that over 60% percent of the total air emissions in Belgrade come directly frommobile sources, with private cars constituting a growing fraction of these emissions. Given the paucity of vehicle travel data especially for private vehicles, it is difficult to assess shares of passenger kilometers by each mode of travel and the associated emissions. But preliminary estimates suggest that buses, cars and taxis, in decreasing order, dominate the share of travel (see Figure 6). There is virtually no bicycle use in the city, primarily because of the absence of service infrastructure in the old part of the city and they are used for recreational purposes only.

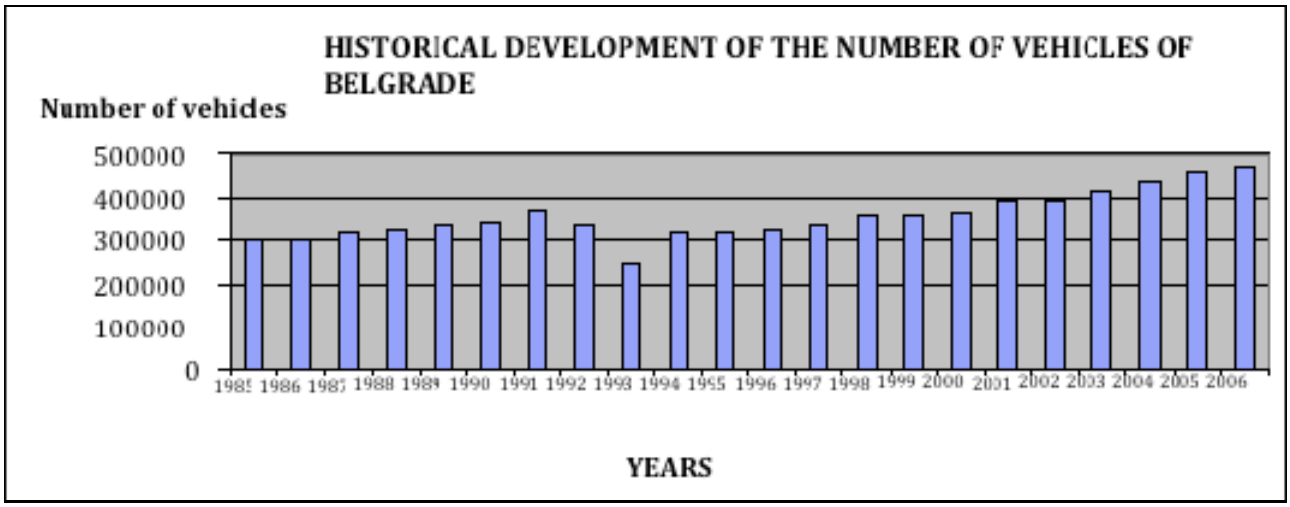


Figure 6. Growth in registered vehicles in Belgrade (based on data from Transport Master Plan of Belgrade, 2007).

[5] Assumed in the SMP/IEA model for the average light-duty vehicle fleet in Central Europe

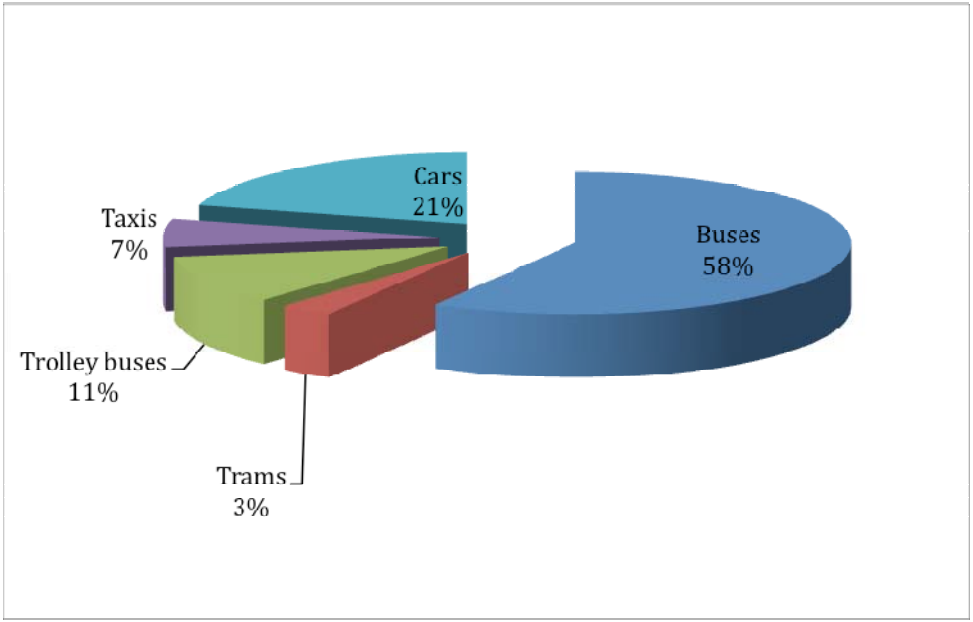


Figure 7. Estimated passenger-km shares of different motorised modes of travel in Belgrade (based on data from Transport Master Plan of Belgrade, 2007).

PART II: STRATEGY

2.1 Project Rationale and Conformity to GEF Policies and Strategic Objectives

The project is contributing to meet the targets of GEF Strategic Priority on Climate Change #6, "Modal Shifts in Urban Transport and Clean Vehicle/Fuel Technologies", under the Operational Program #11, "Promoting Environmentally Sustainable Transport". The established mechanisms of the (environmentally sustainable) transport management will be initially applied in the biggest city of Serbia and then may be replicated in all areas of Serbia for raising the effectiveness of all governmental and donor initiatives in the transport sector of Serbia.

The existing situation will provide a base for the development of the transport system in Belgrade. Presently, institutional and individual potential is essential to improve the situation of the transport sector in Serbia. However, there are some gaps in the infrastructure that should be addressed to improve the country's ability to meet its commitments towards the global conventions.

Without GEF's involvement the implementation of the actions on sustainable management for transport in Belgrade (and in Serbia) will be very restricted (at least in the near future) due to limited resources and low priority that is normally given to this sector by the Government and NGOs.

The project is intended to significantly improve the transport management infrastructure and to support the environment friendly development of Belgrade. The project will involve the civil sector and allow for a joint approach to the solution of the problems related to the sustainable management of transport. The project will allow Serbia to mainstream environmental issues into its transport management infrastructure and allow the country to meet its commitments to UNFCCC, since the project is expected to lead to the increased use of sustainable transport modes, as well as non-motorized modes such as walking and bicycling.

2.2 Country Ownership: Country Eligibility and Country Drivenness

The proposed project has been conceived to be in line with the national priorities as defined in the following action plans and reports:

National Environment Programme 1998-2008 (1997);
Programme of Ecological Management in Belgrade City (2005);
Report and Action Plan on Building National Capacity to Implement Commitments of the Republic of Serbia on Global Environmental Conventions (2005); and
Strategy on the Environmental Protection and Rational Use of Natural Resources in Republic of Serbia until 2015.

The project will also contribute in meeting the objectives of the national legislation on atmospheric air protection and energy development, including:

Environmental Protection Law (1993);
Law on the Protection of Atmospheric Air (1996);
Energy Act (2000); and
Energy Saving Law (2002).

The City of Belgrade as prepared an Urban Master Plan as well as a Transport Master Plan, which conform to many of the activities in this proposal. The City will upgrade its bus and trolley-bus fleet and also establish Park & Ride facilities in 3 different locations. There is also a plan to expand the area of paid parking in the Central Business District. The Urban Planning Department is already preparing plans for mixed-use development near the ring road and along the banks of the Sava river, which can be linked to public transport routes under the aegis of the current project. The Transport Plan includes expansion of bike lanes and infrastructure, which can be extended to the city centre. These activities will constitute both in-kind and cash co-financing for the current project.

2.3 Design principles and strategic considerations

The project will ensure active coordination and exchange of experience with other related initiatives in Belgrade, in particular with the following City of Belgrade funded projects:

Land Development Agency (LDA) of Belgrade “New bridge over Sava river” – under construction. The finalization (2012) of this important infrastructural project will ensure reduction of traffic congestion as well as reduction of CO2 emission in city centre and along the corridor of E75 highway section through Belgrade. This GEF project will work in partnership with LDA and will benefit from co-financing.

Land Development Agency of Belgrade “New Bridge over Danube river connecting Zemun and Borca” – realization period 2010-2013. The priority of this new link is to shift truck traffic, which now is going through the city, and to relocate of industrial activities from very dense city centre to peripheral areas. This GEF project will work in partnership with LDA to promote high-density development along the new transit corridor so as to increase the utilization of transit modes.

Belgrade railways “ Improvements of city rail BEOVOZ”- Belgrade will invest 109.9 million Euros. The European Bank for Reconstruction and Development (EBRD), make a decision on granting a loan of 35 million Euros for modernization of urban rail transport in Belgrade. Modernization of the Belgrade railway

traffic will include the transformation of the Belgrade railway operator Beovoza, owned by Serbian Railways, the joint venture majority-owned by the City of Belgrade. Within a year by rail should be connected Batajnica and Pancevo bridge over the station Prokop., and also other suburbs such as Grocka, Sopot and Barajevo. This will improve quality of public transport in Belgrade and will reduce usage of cars for trips with working purposes. This GEF project will work in partnership with this railway project in area of training on enterprise development for public transport operators.

Parking service of Belgrade –"Extension of time limited parking zones" – The Parking service in partnership with City Secretariat for traffic will introduce time limited zones in Vracar, area of Belgrade wider centre. Elements include designated on-street parking areas with full-cost recovery for capital and operations. The priority is to improve traffic conditions on the streets and to provide parking places for more costumers. This GEF project will work in partnership with this project in rationalising parking regulations.

Information sharing and learning through GTZ-sponsored forum. The project will reflect on international experiences in promoting Bus Rapid Transport and Non-Motorized Transport to help build both national and international knowledge networks on sustainable transport. For this purpose, The GTZ-sponsored forum on Sustainable Urban Transportation in Eastern Europe and Central Asia (www.sutp.org/suteca) provides a venue for dissemination and discussion of the results and for reflecting on specific experiences (in terms of challenges, barriers for implementation) in Serbia (and other projects Eastern Europe) to the international debate.

The Transport Management Plan of the City of Belgrade intends to expand road and parking infrastructure, bicycle lanes for recreational purposes and increase the rolling stock for public transport (including buses, trams and trolleybuses). The Plan will allow for growth in the transport system in Belgrade. Presently, institutional and individual capacity is essential to improve the situation of the transport sector in Serbia. These responses take mainly the form of increasing the capacity of the network, where possible, shifting demand centres to Novi Belgrade and elsewhere, and providing alternatives to private transport. However, there are some gaps in the planning that should be addressed to improve the country's ability to meet its commitments towards sustainable development in accordance with global conventions. Without GEF's involvement the implementation of the actions on sustainable management for transport in Belgrade (and in Serbia) are likely to be very restricted (at least in the near future) due to limited resources and low priority that is normally given to this sector by the Government and NGOs.

The project is intended to significantly improve the transport management infrastructure and to support the environment friendly development of Belgrade. The project will involve civil society organisations and allow for a joint approach to the solution of the problems related to the sustainable management of transport. The project will allow Serbia to mainstream environmental issues into its transport management infrastructure and allow the country to meet its commitments to UNFCCC, since the project is expected to lead to the increased use of sustainable transport modes, as well as nonmotorized modes such as walking and bicycling. In addition, public awareness campaigns as well as capacity building around sustainable transport and integrated transport-land use planning will likely lead to an institutional transformation towards sustainable practices across sectors.

Cost-effectiveness is embedded in the project design. It is anticipated that about 285,120 tonnes of CO2 per year will be reduced by the end of the project, which amounts to about $3.5 per tonne of CO2 reduced for the GEF contribution to the project.

2.4 Project Objective, Outcomes and Outputs/Activities

The proposed project aims to reduce greenhouse gas emissions associated with the passenger transport system in Belgrade by about 17% in 2020 relative to 2007 levels, compared to a 47% increase in these emissions

without any interventions. In doing so, it also expects to address problems of congestion, local air pollution, and oil use while improving access for all residents. There are several strategies that can serve to meet this objective. These include improving the service quality of public transport, increasing opportunities for non-motorised modes such as walking and bicycling, rationalizing parking regulations, and developing integrated land-use/transport plans to reduce demand for travel. This project will develop an integrated policy framework that includes all these elements.

<u>Outcome 1:</u> Integrated land use and urban transport planning at the metropolitan level

This is one of the central outcomes of the project. Several activities are envisioned:

1.1 Working group on transport and land-use planning, with external consultations on transit corridor planning

A working group will be formed with senior planning officials from the City Secretariats for traffic and urbanism, the City Transport and Communication Department, the Architecture Department and the Mayor's office, in consultation with outside experts on transit corridor planning, to develop a draft integrated land-use and transport plan, which will discussed in stakeholder workshops before being adopted into the planning process for the metropolitan region of Belgrade. The priority will be to promote high-density development along existing and planned transit corridors so as to increase the utilisation of transit modes and improve access for low-income residents.

The working group will review the results of modelling studies and oversee analyses of alternative urban forms in consultation with stakeholders to develop a structure plan for Belgrade. To reduce the burden on complex modelling studies, the group may also develop simplified analyses of urban form, by classifying different locations (e.g., markets, schools, businesses) and activity types (e.g., shopping, education, employment) in terms of their traffic-generating characteristics and according to their need for accessibility by public transport. These analyses will then form the basis for developing recommendations for prioritization of infrastructure, including parking regulations, to protect movements of public transport and non-motorised transport against unrestricted expansion of private motorised trips.

The working group will also provide recommendations for institutional remedies to avoid jurisdictional conflicts across different institutions, including the possibility of consolidating functions within a single body that will have jurisdictional authority for implementing integrated transport and land-use plans.

In addition, this task will upgrade travel survey and the use of a simplified model to develop a demand forecast for the city. The survey and forecast will provide the basis to develop a baseline, which will be used for monitoring and evaluation purposes.

1.2 Management of road space to maximise social gain through traffic management schemes that give priority to public transport vehicles and provide improved financial stability

1.2.1 System upgrades for trolley-bus and tram lines

Technical Assistance will be provided to the Public Transport Department to modernise trolley-bus and tram lines where necessary to improve system efficiency and reduce operating costs. Currently, the trolley bus and tram lines are running at under-capacity in part because of frequent power outages and because the power

supply system is unable to cope with greater loads. Simple, cost-effective means to improve the capacity of the lines will be considered and implemented where feasible.

1.2.2 *Implementation of exclusive public transport axes during peak hours*

The results of the travel demand analysis will be used to determine the optimum use of priority lanes for public transport modes (trolley-buses, buses and taxis) during peak hours. Recommendations will be made to the city government's transport commission on the timings and use of temporary barriers for exclusive transport axes. In addition, the possibility of physically segregating one tram and one trolley-bus route on a more permanent basis will be investigated and tested. While this will not constitute a full-fledged Bus Rapid Transit (BRT) system, limited pilot-testing of the concept will provide some opportunities for determining the potential for future conversion of the system into a BRT. This phase will include exploration of investment options for a trolley-bus based BRT. Initial estimates are that upgrading the existing trolley-bus lines to a BRT system would be in the range of USD 4-6 million per kilometre; further assessment of these costs will be carried out during the pilot-test, with investigations of possible investment models.

1.2.3 *Implementation of bicycle paths through Central Belgrade*

Bicycle paths currently primarily serve recreational needs and are along the Sava and in Ada Cignalija. Further recreational paths are planned from Belgrade to Obedska Bara, Avala and Umka as well as some additional lanes in New Belgrade. In this project we will recommend that bicycle lane markings be included on roads through Central Belgrade that are specially identified to provide safe passage for bicycle commuters and which avoid hills. The creation of these lanes will be accompanied by a media campaign promoting the use of bicycles. This will include a program to demonstrate the benefits of bicycle promotion through a road show to raise awareness and to leverage support, and training in riding and maintenance skills and safety. In combination with other incentives such as 'Bike and Ride' facilities (see below), it is expected that this activity will increase the vehicle mode share of bicycles from about 0.01% in 2007 to about 0.6% by 2020; or the vehicle kilometres travelled from about 100,000 km per year in 2007 to about 6.3 million km per year in 2020.

<u>Outcome 2:</u> Rationalising parking regulations

2.1 Modernising parking system based on parking demand and supply conditions and marginal cost pricing

An updated plan for priced parking of private vehicles, based on economic principles of marginal-cost pricing will be developed and implemented. Elements will include designated on-street and off-street parking areas with full-cost recovery for capital and operations as well as opportunity-costs. For instance, in multi-family residences and commercial buildings, parking will be unbundled from building rents, so that occupants only pay for the number of parking spaces they want. Similarly, in commercial buildings and offices, employees not using free or subsidised parking will be given parking 'cashouts'. Street parking along main public transport corridors will be moved to improve flows.

2.2 Park & Ride systems, with bicycling facilities

Park & Ride and Bike & Ride systems will be developed in strategic locations in the city, with easy access to public transport facilities and bicycle paths. Enhancements to these systems will be developed in the course of the project cycle based on the expected outcomes of transport demand in the land-use/transport model and the monitoring and evaluation. These facilities will have improved signage and markings and will be accompanied by a public awareness campaign. Park & Ride facilities will also have bicycle rack arrangements for safe storage of bicycles with easy transfers to public transport modes.

<u>Outcome 3:</u> Intelligent transport systems

3.1 A public transport management and information centre to direct schedules and dispatch

The central dispatching unit will be modernised and implemented to manage system-wide flow of public transport modes, manage peak-hour dispatch, monitor and improve intermodal transfers and manage corridor control during breakdowns and other problems. Dispatch is expected to take place according to pre-arranged schedules, which will be displayed at all bus-stops and in the vehicles. Pilot testing of GPS-based information systems on selected bus routes and bus stops will also be carried out.

3.2 Pilot programme to monitor and enforce high-occupancy vehicle (HOV) lane compliance using smart video

One or more of the HOV lanes in the central business district or bridges into the city will be equipped with smart video cameras and an optical system that will be able to detect non-compliance (e.g., private vehicles with only one occupant) and automatically generate and send SMS messages to offenders containing warnings/penalties. Penalty levels will be determined based on an evaluation of their deterrent effect, and will be complemented by public education campaigns on the value of HOV compliance.

3.3 *Pilot programme to encourage car-sharing and taxi sharing along high volume corridors using mobile telephony and social networking software*

A system similar to Goloco (www.goloco.org), Eride Share (www.erideshare.com), and Texxi (uk.texxi.com) will be implemented on a pilot scale using advanced mobile telephony and social networking software. This will be combined with special incentives to use HOV lanes along designated routes.

<u>Outcome 4</u>: Institutional transformation of government, businesses and general public to embrace sustainable transport

This outcome will entail a series of training programmes for different categories of stakeholders. It is expected that the training programmes will lay the foundation for changing the institutional culture towards sustainable transport. It is anticipated that the completion of the training will provide the basis for instituting new rules in the sector as well as investment mechanisms for sector improvement in specific areas. Three different types of training are envisaged:

4.1 Training on enterprise development for public transport operators.

Such training will focus on improved techniques for fleet operations, vehicle dispatch, fare collection, and revenue management. The advantages of coordinated scheduling, including timed intermodal transfers and signal prioritisation will be emphasised, along with training on new operational procedures for implementing these systems. Local transport consultants will carry out the training, with the assistance of international resource persons with expertise in transit planning, enterprise development and operations. It is expected that the trainees will include altogether about 30 or so managers, junior staff at the bus, trolleybus and tram companies, together with a select group of staff at the city transport department. The training is expected to take place through workshops, classroom exercises and field demonstrations, lasting about a week.

4.2 Training to improve and synchronise taxi and other paratransit operations

Given the continuing importance of taxis and other paratransit operations in the city, this training programme will emphasise regulation and operation of the taxi fleet. Training will also be provided to fleet operators and

drivers on coordinating new programmes such as a Guaranteed Ride Home and Shared Commuting services that could be supported by private and government employers. A workshop for staff the Transport department and select taxi and paratransit fleet operators is planned, followed by publicity campaigns to disseminate the information more widely. The workshop will emphasise the advantages of coordinated dispatch and shared taxi rides using advanced mobile phone technology. Local consultants will carry out the training, with the assistance of international resource persons with expertise in taxi and paratransit planning and operations.

4.3 Capacity building for regulatory development

This training programme will be meant specifically for government regulators and enforcement officials on developing new rules for the transport system as a whole under the constraints of local conditions, cost-control, public acceptability and sustainability. Likely participants will include career civil servants in the Urban Planning and Transport Departments, and senior police officers. , The training will emphasise ways to compute trade-offs in rule-development and enforcement and to create realistic expectations and meaningful standards in the sector. The training will also include stakeholder participation methods for building legitimacy in rule-making and explore the merits and demerits of developing and running high-level regional transport agencies to manage all metropolitan transport operations. It is expected that local legal scholars will be the main trainers, drawing upon experience from international consultants where needed.

In addition to the above, there will be informational campaigns on sustainable transport for the public, involving press releases and media kits, occasional public seminars by prominent international experts and informational booklets. These will be coordinated by the Chief Technical Advisor, who will call upon local consultants for preparing publicity materials and identify international experts as needed.

4.4 Case-study guide to aid replication of project elements

The approach to developing a sustainable transport framework in Belgrade will be reviewed and written up as a case study guide. The review will be specifically geared towards providing national level policy makers understand the value of specific sustainability elements for integrated land-use/transport planning, including bicycle lanes and parking facilities, intermodalism (to facilitate transfers), accessibility and so on. This activity will be combined with 4.3 above to provide capacity building for regulatory development. It is anticipated that the dissemination of these lessons will be valuable for catalyzing replication of the project in other parts of Serbia, and potentially elsewhere in the region.

2.5 Financial modality

The project will finance policy development, and the capacity building of sustainable transportation institutions to improve transportation system in the City of Belgrade thus reducing CO2 emissions and some pilot demonstration activities. No loan or revolving-fund mechanisms are considered appropriate.

2.6 Indicators, Risks and Assumptions

The project indicators are detailed in the Strategic Results framework – which is attached in section II of this document. The project risk and assumptions are described in the next table.

Table 5 Project Risks

Risk	Risk Rating	Mitigation Measures
Low political feasibility of implementing exclusive public transport axes, bicycle lanes, and economically priced parking	Moderate to High	- Staged approach for introducing exclusive public transport axes: starting with few selected priority routes, such as expanding tramways that are already grade-separated - Early capacity building and awareness campaigns to all stakeholders on benefits of similar approaches and to demonstrate that the goal is not to be "anti-car" but to improve access for all residents - Development of alternate, parallel corridors for private vehicle use - Development of Park and Ride facilities to reduce congestion in remaining road space
Lack of investment from government for system upgrade	Moderate	- Belgrade City government confirmed financial commitment to the project and investment in system upgrade (letter of co-financing available) provided GEF contribution is secured
Lack of coordination among different activities	Low	- Steering committee with members form key government and NGO groups - Close involvement of CTA and Project Manager in all activities
Climate change impacts include increased precipitation and flooding, resulting in poor use of non-motorized modes, particularly, bicycling	Low	- Capacity building and awareness campaigns showing how other cities like Copenhagen have high bicycle use even during inclement weather - Bicycle parking facilities and easy transfers to public transport modes at Park and Ride facilities

2.7 Cost Effectiveness

Cost-effectiveness is embedded in the project design. It is anticipated that about 285,120 tonnes of CO2 per year will be reduced by the end of the project, which amounts to about $3.5 per tonne of CO2 reduced for the GEF contribution to the project.

Sustainability

Sustainability underlies the project design:

- Development of integrated land-use/transport plans, with mixed use, high-density zoning along major transport corridors, will discourage low-density, automobile dependent development at the urban fringe and also reduce greenhouse gas emissions and oil dependence;
- Rationalised parking rates in the city centre will ensure that people are encouraged to use alternative modes;
- New bicycle lanes in the city's business centre and facilities for bicycle parking will encourage the use of bicycles for commuting;
- Use of mobile telephony and social networking tools to promote car and taxi sharing in high occupancy lanes will help make traffic smoother along major transport corridors;
- Public information campaign and training programmes for transit operators will generate broader awareness of the interconnectedness of the activities and their relevance for sustainable development of the city's transport system.

These complementary activities will help ensure that strategies to reduce congestion are recognised as being consistent with those needed to reduce local air pollution and global greenhouse emissions.

2.9 Replicability

The project's lessons environmentally sustainable transport management may be replicated in all areas of Serbia for raising the effectiveness of all governmental and donor initiatives in the transport sector of Serbia. One the main ways that replication will be enouraged will be through developing a Case Study guide for the City of Belgrade to assist with replication of the project approach through Serbia. The existing situation will provide a base for the development of the transport system in Belgrade. Presently, institutional and individual potential is essential to improve the situation of the transport sector in Serbia.

The project is intended to significantly improve the transport management infrastructure and its lessons are likely to be invaluable other cities in Southeastern Europe, which share many conditions relating to infrastructure and transport modes with Belgrade.

PART III: PROJECT RESULTS FRAMEWORK

Project Strategy	Objectively verifiable indicators				
Goal Create a sustainable transport system in Belgrade					
	Indicator	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
Objective					
Reduce local and greenhouse gas emissions associated with the transport system in Belgrade while improving access	Annual emissions from transport sector in the course of project period. Average daily commute time.	Greenhouse gas emissions from transport sector in Belgrade increase by about 3 percent per year. Average daily commute time increases by 10-20% during project period.	Annual emissions during project period stay nearly constant or decline slightly in each project year. Average daily commute time declines during project period. It is about 5% lower than 2007 levels by 2012 and about 10% lower by 2014.	Emissions inventory of transport modes and modelling. Travel demand surveys; customer satisfaction surveys.	Implementation of package of measures
Outcomes	**Indicator**	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
1. **Integrated land use and urban transport planning at the metropolitan level** Development of integrated land-use/transport plans, with mixed use, high-density zoning along major transport corridors, discouraging low-density, automobile dependent development at the urban fringe	Completion of integrated land-use/transport planning	Sprawl in Novi Belgrade and areas south of the central business district, leading to increased car-dependence, congestion, local air pollution and greenhouse gas emissions	Strategic planning to coordinate public transport access with mixed use zoning in brownfield and greenfield development as indicated by the existence of a strategic planning document by the end of the project.	Review of planning documents	Commitment by urban planning and transport planning agencies to work together Availability of expertise drawing on best-practices in integrated land-use/transport planning

1.1. Working group on transport and land-use planning, with external consultations on transit corridor planning.	Completion of review of modelling studies and analyses of alternative urban forms	Inadequate understanding of travel demand and demand growth	Improved understanding of travel demand, modal use, origins and destinations, travel demand growth. This means improved strategies for integrated land-use/transport planning as evidenced by an analysis of the recommendations of the working group on transport and the extent to which these recommendations have been implemented by the end of the project.	Data generation on travel demand, especially along main transport corridors.	Data and report quality

Outcomes	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
1.2. Management of road space to maximise social gain through traffic management schemes that give priority to public transport vehicles and provide improved financial stability 1.2.1. System upgrades for trolley-bus and tram lines 1.2.2. Implementation of exclusive public transport axes during peak hours, including the possible establishment of physically segregated bus lanes in major corridors. 1.2.3. Implementation of bicycle paths through Central Belgrade	Tram, trolley-bus technical analysis completed and investment commitments in place for upgrades Car population Public finances available for public transit Kilometres of bicycle lanes through Central Belgrade Bicycle ridership	Increased congestion, lack of control over private vehicle use, public transport modes slowed down Car population grows at about 6% per year Trolleybus lines at current level of maintenance Poor cost recovery of road use by private transport modes No marked bicycle lanes in Central Belgrade Bicycle use (kilometres travelled) rises to about 120,000 kilometres in 2014 compared with about 100,000 kilometres in 2007, but this is mostly for recreation	Reduced congestion, increased flow of public transport modes, reduced need for private vehicle purchases. Car population growth is less than 1% per year from the start date of the project to the end date of the project. Increased trams, trolleybuses, buses, and lines by at least 50km more of trolleybus, bus, and tram lines by the end of the project.Decline in operating losses during project period and operating revenues meet at least 70% of costs by 2012 and about 80% of costs in 2014. Gradual increase in km of bicycle lanes, especially in Central Belgrade. About 50 km of marked bicycle lanes, including about 10 km of grade-separated lanes, in Belgrade Bicycle use rises to about 250,000 kilometres travelled by 2012 and 550,000 kilometres travelled by 2014; the bulk of the increase can be attributed to commuting	Trolley-bus system technical analysis completed and investment commitments in place for upgrades Development of dispatch centre Completion of fare-collection study Implementation of fare-collection system Bicycle lane markings, including signage, and grade separation completed	Adequate investment for system upgrades from government and private sector Feasibility of implementing exclusive public transport axes. Political will to develop and implement rules to manage road space, including parking regulations Adequate road-space for implementing bicycle lanes Political will to develop bicycle lanes and adequate institutional motivation to promote bicycling for non-recreational trips

Outcomes	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
2. **Rationalised parking regulations** 2.1. Modernising parking system based on parking demand and supply conditions and marginal cost pricing 2.2. Park & Ride systems, with bicycling facilities	Level of spillover parking congestion outside parking zones; road congestion within and outside zones; illegal parking	Worsening congestion and longer commute times: peak travel times increase by 10-20% during project period. The difference between revenues and parking service costs increase through 2014.	Congestion levels begin to reduce in course of project. Compared to 2007 levels, average commute times are about 5% lower by 2012 and nearly 10% lower by the end of the project. The difference between parking revenues and costs remain roughly constant from 2007 through 2012 and decline slightly by 2014	Travel surveys, parking service audits	Political will to expand parking zones and to implement tariffs reflecting social cost
3. **Intelligent transport systems** 3.1. A public transport management and information centre to direct schedules and dispatch 3.2. Pilot programme to monitor and enforce high-occupancy vehicle lane (HOV) compliance using smart video 3.3. Pilot programme to encourage car-sharing and taxi sharing along high volume corridors using mobile telephony and social networking software	Mode share of public transport and non-motorised modes; increased use of carpooling	Mode share of all motorised public transport modes (including taxis) declines or remains about the same as 2007 levels. There is also virtually no change in biking and walking	Mode share of all motorised public transport modes (including taxis) increases to about 80% in 2012 and 82% in 2014. Vehicle km travelled by bicycles increases at an annual rate of about 50% during the project period.	Travel demand data Customer satisfaction surveys	Willingness to experiment with new technologies on pilot scale
4. Institutional transformation of government, businesses and general public to embrace sustainable transport	Attitudinal changes towards public transport and evidence of increased civic pride	As public transport share remains modest and private transport are on the rise, institutional mechanisms are unable to cope with	Measurement of air pollution in Belgrade at the end of the project is at least 10% lower than at the start of the project.	Review of project by evaluation team.	Adequate involvement of stakeholders from the start Sufficient commitment to institutional and attitudinal reform

Outcomes	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
		rising demand for access, clean environment and rising costs of imported fuel			
4.1. Targeted packages of technical and institutional training relating to sustainable transport measures 4.2. Training on enterprise development for trolleybus, bus and tram operators, including despatch and revenue management. 4.2.1. Training to improve maintenance and upgrades for trolleybus enterprise 4.2.2. Regulatory development to promote sustainable transport 4.2.3. Improved communication programmes for sustainable transport initiatives, including signage for Park and Ride systems 4.3. Capacity building for regulatory development **4.4.** Case-study guide to aid replication of project elements	Completion of training programmes Formation of new rules consonant with sustainable transport goals Completion of case study guide	No new capacity development among transport managers and planners No new understanding of sustainable transport among regulators	At least 200 trolleybus, bus, and tram operators trained in despatch and revenue management. All trolley bus enterprises have received at least one training on maintenance and upgrade. New and/or improved regulations which promote sustainable transport are put in place and implemented by the end of the project. At least one new effective communication programme developed by project end. Draft Case Study guide developed by the time of mid-term evaluation and final Case Study Guide developed and widely disseminated before the end of the project.	Reviews of capacity by project evaluation team Customer satisfaction surveys Assessment by Evaluation Team Assessment by regulators	Availability of skilled trainers. Willingness to change institutional culture Availability of skilled trainers. Willingness to change institutional culture

Outcomes	Indicator	Baseline	Target	Sources of Verification	Risks and Assumptions
	Completion of guide and adoption at national level	No case study and guidelines for wider adoption	Existence in Serbia of new indicators of transport effectiveness, based on sustainability have been developed by the end of the project At least two workshops held Belgrade and four workshops in other cities in Serbia on the outcomes and on lessons learned of this project before the end of the project At least two other cities in Serbia have adopted similar sustainable transport activities to the ones which are outlined in this project by the end of the project	Assessment by national-level policy makers	Availability of skilled analysts. Successful implementation of project Willingness to change institutional culture
5.1 Monitoring and evaluation	Successful execution of all elements of project	NA		Monitoring and evaluation plan	Implementation of M&E plan

TOTAL BUDGET AND WORKPLAN

Award ID:	00059575
Award Title:	PIMS 3781CC MSP: Support to Sustainable Transport in the City of Belgrade
Business Unit:	SRB10
Project Title:	PIMS 3781 CC MSP: Support to Sustainable Transport in the City of Belgrade
Project ID:	00074551
Implementing Partner (Executing Agency)	Ministry of Environment and Spatial Planning

GEF Outcome/Atlas Activity	Responsible Party	Fund ID	Donor Name	Atlas Budgetary Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	See budget note
Outcome 1				71200	International Consultants	20,000	20,000	15,000	15,000	70,000	1
				71300	Local Consultants	15,000	15,000	10,000	10,000	50,000	2
				71600	Travel	11,000	11,000	3,000	3,000	28,000	3
Integrated land use and urban transport planning at the metropolitan level				72100	Contractual services	10,000	10,000	0	0	20,000	4
				74100	Professional services	3,000	3,000	3,000	3,000	12,000	5
				74200	Audio, video and print production costs	0	0	4,000	4,000	8,000	6
				74500	Misc.	3,000	3,000	3,000	3,000	12,000	7
	UNDP	**62000**	**GEF**		**Total Outcome 1**	**62,000**	**62,000**	**38,000**	**38,000**	**200,000**	
Outcome 2				71200	International Consultants	15,000	15,000	10,000	10,000	50,000	8
				71300	Local Consultants	10,000	10,000	10,000	10,000	40,000	9
				72100	Contractual services	10,000	10,000	0	0	20,000	10
				71600	Travel	11,000	11,000	3,000	3,000	28,000	11
				72200	Equipment	20,000	12,000	10,000	0	42,000	12
				74100	Professional services	2,000	2,000	2,000	2,000	8,000	13
Rationalised parking regulations				74200	Audio, video and print production costs	2,000	2,000	2,000	2,000	8,000	14
				74500	Misc.	1,000	1,000	1000	1000	4,000	15
	UNDP	**62000**	**GEF**		**Total Outcome 2**	**71,000**	**63,000**	**38,000**	**28,000**	**200,000**	
Outcome 3				71200	International Consultants	15,000	15,000	15,000	9,000	54,000	16
				71300	Local Consultants	15,000	15,000	12,000	12,000	54,000	17
				72100	Contractual services	25,000	25,000	5000	5000	60,000	18
Intelligent transport systems	**UNDP**	**62000**	**GEF**	71600	Travel	11,000	11,000	3,500	3,500	29,000	19

				72200	Equipment	10,000	20,000	20,000	10,000	60,000	20
				74500	Misc.	2,000	2,000	2,000	2,000	8,000	21
					Total Outcome 3	**78,000**	**88,000**	**57,500**	**41,500**	**265,000**	
Outcome 4											
	UNDP	**62000**	**GEF**	71300	Local Consultants	5,000	10,000	10,000	5,000	30,000	22
				71600	Travel	1,000	2,000	2,000	2,000	7,000	23
				72100	Contractual services	15,000	20,000	20,000	15,000	70,000	24
				74200	Audio, video and print production costs	15,000	20,000	20,000	20,000	75,000	25
Institutional transformation of government, business and general public to embrace sustainable transport				74500	Misc.	2,000	2,000	2,000	2,000	8,000	26
					Total Outcome 4	**38,000**	**54,000**	**54,000**	**44,000**	**190,000**	
	UNDP	**62000**	**GEF**	71300	Local consultants	18,720	18,720	18,720	18,720	74,880	27
				71600	Travel	3,000	3,000	3,000	3,000	12,000	28
				72800	Information technology equipment	4,620	500	500	500	6,120	29
PROJECT MANAGEMENT				74500	Miscellaneous	500	500	500	500	2,000	30
					Total Management	**26,840**	**22,720**	**22,720**	**22,720**	**95,000**	
					PROJECT TOTAL	**275,840**	**289,720**	**210,220**	**174,220**	**950,000**	

Budget notes:

1. Costs of contractual appointment of ST CTA (4 weeks at the rate of $3,000), travel demand forecast expert (4 weeks at the rate of $3,000), integrated transport and land use specialist (6 weeks at the rate of $3,000) and additional percentage for short term consultants on an as-needed basis in the amount of $16,000. The calculation also includes 50% share of costs for evaluation (4 weeks at the rate of $3,000).
2. Costs of contractual appointment of local expert on road space management (30 weeks at the rate of $1,000 per week), integrated transport and land use specialist (15 weeks at the rate of $1,000 per week), and other short term consultants as needed (5 weeks at the rate of $1,000 per week).
3. Travel costs include – DSA for 45 days at $220 per day, in total $9,900, plus $9,600 for 8 international flight tickets at rate of around $1,200 per return ticket. The amount for local travel is $8,500 that includes gasoline/car rent/gasoline, DSA for local travel and miscellaneous travel expenses (visas, terminals, parking etc).
4. Contractual services to companies, institutes and other organizations for consulting services surrounding various aspects of component 1 ($20,000).
5. Professional services including translation services ($12,000).
6. Costs for preparation of communications on integrated land use and urban transport planning policy and regulatory work, printing and presentation materials, venue, catering, facilitation, etc.
7. This is a margin allowed for possible unexpected rises in costs associated with implementation.
8. Costs of contractual appointment of ST CTA (4 weeks at the rate of $3,000), travel demand forecast expert (4 weeks at the rate of $3,000), parking policy specialist (6 weeks at the rate of $3,000) and additional percentage for short term consultants on an as-needed basis in the amount of $8,000.
9. Costs of contractual appointment of local parking expert (34 weeks at the rate of $1,000 per week), transport GHG expert (2 weeks at the rate of $1,000 per week), and other short term consultants as needed (4 weeks at the rate of $1,000 per week).

10. Contractual services to companies, institutes and other organizations for consulting services for improved signage promoting bicycle use in Park&Ride locations ($20,000).
11. Travel costs include – DSA for 45 days at $220 per day, in total $9,900, plus $9,600 for 8 international flight tickets at rate of around $1,200 per return ticket. The amount for local travel is $8,500 that includes gasoline/car rent/gasoline, DSA for local travel and miscellaneous travel expenses (visas, terminals, parking etc).
12. Equipment for upgraded parking enforcement using GPS-equipped mobile telephony ($42,000).
13. Professional services including translation services ($8,000).
14. Costs for preparation of communications on parking regulations printing and presentation materials, etc. ($8,000).
15. This is a margin allowed for possible unexpected rises in costs associated with implementation.
16. Costs of contractual appointment of ST CTA (4 weeks at the rate of $3,000) and car/taxi sharing service mobile application expert (10 weeks at the rate of $3,000). The calculation also includes 50% share of costs for evaluation (4 weeks at the rate of $3,000).
17. Costs of contractual appointment of local specialist on bus system upgrades (34 weeks at the rate of $1,000 per week), local car/taxi sharing expert (12 weeks at the rate of $1,000 per week), transport GHG expert (2 weeks at the rate of $1,000 per week), and other short term consultants as needed (6 weeks at the rate of $1,000 per week).
18. Contractual services to companies, institutes and other organizations for consulting services for developing software for HOV enforcement, car and taxi sharing, and for support to public transport management and information centre ($60,000).
19. Travel costs include – DSA for 45 days at $220 per day, in total $9,900, plus $9,600 for 8 international flight tickets at rate of around $1,200 per return ticket. The amount for local travel is $9,500 that includes gasoline/car rent/gasoline, DSA for local travel and miscellaneous travel expenses (visas, terminals, parking etc).
20. Equipment for pilot programme to implement enforcement of HOV lanes, including smart video and optical surveillance systems and communications with control centre and also for facilitating car and taxi-sharing system and despatch ($60,000)
21. This is a margin allowed for possible unexpected rises in costs associated with implementation.
22. Costs of contractual appointment of local expert on road space management (4weeks at the rate of $1,000 per week), PR specialist (8 weeks at the rate of $1,000 per week), transport GHG expert (6 weeks at the rate of $1,000 per week), and other short term consultants as needed (12 weeks at the rate of $1,000 per week).
23. Travel costs include amount for local travel that is $7,000 and includes gasoline/car rent/gasoline, DSA for local travel and miscellaneous travel expenses (road tolls, parking etc).
24. Contractual services to companies and other organizations for consulting services for delivery of training packages to targeted groups and media campaigns ($70,000).
25. Cost or preparation of materials for training and communication, media campaigns, etc. ($75,000).
26. This is a margin allowed for possible unexpected rises in costs associated with implementation.
27. Project Manager and Project Assistant costs ($74,880) are calculated at 208 weeks for the PM in the amount of $230/week and the Project Assistant in the amount of $130/week.
28. National travel by project management team. The calculation for local travel includes gasoline/car rent and, DSA at UNDP rate for Belgrade and elsewhere.
29. IT equipment for the project manager and project assistant.
30. This is a small margin allowed for possible unexpected rises in costs associated with project management.

Summary of Funds: [6]

GEF		275,840	289,720	210,220	174,220	$950,000
Belgrade Land Development Public Agency		565,000	565,000	565,000	564,036	2,259,036
The City of Belgrade		950,000	1,650,000	1,100,000	542,915	4,242,915
TOTAL		1,790,840	2,504,720	1,875,220	1,281,171	7,451,951

[6] Summary table should include all financing of all kinds: GEF financing, cofinancing, cash, in-kind, etc.

PART IV: MANAGEMENT ARRANGEMENTS

A. INSTITUTIONAL ARRANGEMENT:

UNDP is the Implementing Agency for this project. The project is fully in compliance with the comparative advantages matrix approved by the GEF council. The project is also in line with two of the UNDP's priorities for Serbia: Sustainable Development and The Environment. Currently UNDP is supporting other projects in Europe and CIS, focused on supporting sustainable transportation, in Tajikistan and Slovakia. The proposed project is consistent with the UNDP's mandate on promoting environmental protection, while recognizing the need to sustainably manage resources through capacity building and encouraging broader multisectoral participation of all stakeholders. Given UNDP's recognized role in capacity development and based on the fact that UNDP is the implementing agency for a large portfolio of GEF – funded climate change projects, the Government of Serbia has requested UNDP's assistance in the design and implementation of this project.

B. PROJECT IMPLEMENTATION ARRANGEMENTS:

1. At the national level, the project will be executed by the Ministry of Environment and Spatial Planning. The MESP will appoint a senior official to be the National Project Director (NPD). The NPD will ensure full government support for the project.

A Project Implementation Unit (PIU) will be established comprising permanent staff including: a National Project Manager (NPM) and Project Team. The NPM will be recruited in accordance with UNDP's regulations to manage actual implementation of the project; and will be based in Belgrade. S/he will report to the UNDP Focal Point on Energy and Environment. The NPM will be responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. The NPM will also closely coordinate project activities with relevant Government institutions and hold regular consultations with other project stakeholders. The NPM will also closely coordinate project activities with relevant government institutions and hold regular consultations with other project stakeholders and partners, including UNDP's relevant projects.

Overall guidance will be provided by the Project Board (PB). Detailed PB structure is shown below. UNDP will also be represented on the PB. The PB will be balanced in terms of gender. The Project Board will be responsible for making management decisions for the project, in particular when guidance is required by the Project Manager. It will play a critical role in project monitoring and evaluations by assuring the quality of these processes and associated products, and by using evaluations for improving performance, accountability and learning. The Project Board will ensure that required resources are committed. It will also arbitrate on any conflicts within the project and negotiate solutions to any problems with external bodies. In addition, it will approve the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Project Board can also consider and approve the quarterly plans and also approve any essential deviations from the original plans.

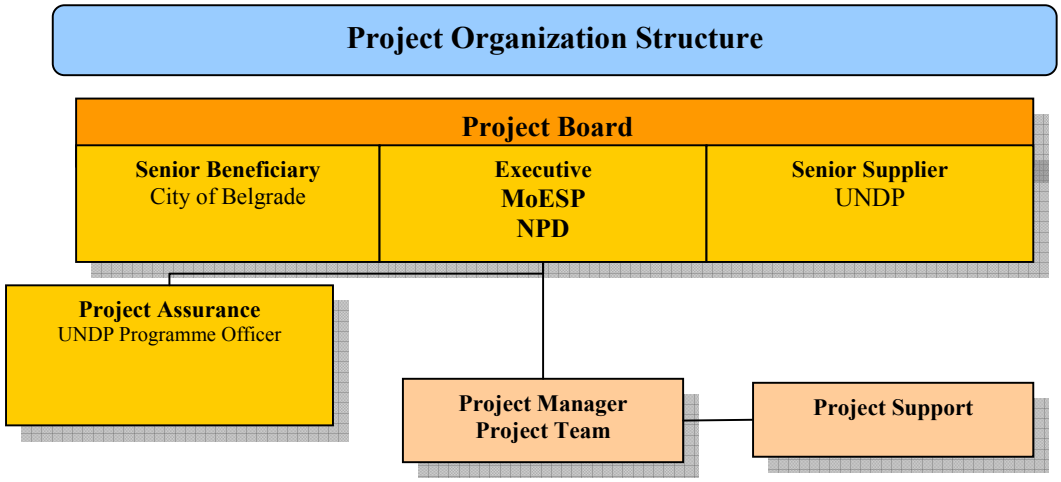
In order to ensure UNDP's ultimate accountability for project results, Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP Project Manager.

The Project Board will contain three distinct roles:

- *Executive Role*: This individual will represent the project "owners" and will chair the group. It is expected that the Ministry of Environment and Spatial Planning will appoint a senior official to this role who will ensure full government support of the project.

- *Senior Supplier Role*: This role requires the representation of the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Board will be to provide guidance regarding the technical feasibility of the project. This role will rest with UNDP-Serbia represented by the Resident Representative.

- *Senior Beneficiary Role*: This role requires representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board will be to ensure the realization of project results from the perspective of project beneficiaries. This role will rest with the City of Belgrade representative of the Project Board.



Project Assurance: The Project Assurance role supports the Project Board Executive by carrying out objective and independent project oversight and monitoring functions. The Project Assurance role will rest with the UNDP Serbia Environment Focal Point.

The permanent core technical staff of the project will be a Chief Expert on Sustainable Transport. S/he will supervise a team of national specialists, who will implement specific activities of the project at the local level.

The Project team will identify national experts and consultants, and international experts as appropriate to undertake technical work. The national and international companies may also be involved in project implementation. These consultants and companies will be hired under standard prevailing UNDP procedures on implementation of NIM projects. The UNDP Country Office will provide specific support services for project realization through the Administrative and Finance Units as required.

Audit Arrangements: The Audit will be conducted in accordance with the established UNDP procedures set out in the Programming and Finance manuals by the legally recognized auditor.

PART V: MONITORING FRAMEWORK AND EVALUATION

The project team and the UNDP Country Office (UNDP-CO) supported by the UNDP/GEF Regional Coordination Unit in Bratislava will be responsible for project monitoring and evaluation conducted in accordance with established UNDP and GEF procedures. The Logical Framework Matrix in Part III provides performance and impact indicators for project implementation along with their corresponding means of verification. The Tracking Tool will all be used as instruments to monitor progress in PA management effectiveness. The M&E plan includes: inception report, project implementation reviews, quarterly and annual review reports, a mid-term and final evaluation. The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized in the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

Monitoring and reporting

Project Inception Phase

A Project Inception Workshop will be conducted with the full project team, government counterparts, co-financing partners, the UNDP-CO, and representatives from the UNDP-GEF Regional Coordinating Unit (Bratislava). A fundamental objective of the Inception Workshop will be to help the project team to understand and take ownership of the project's goal and objective, and to prepare the project's first annual work plan based on the logframe matrix. Work will include reviewing the logframe (indicators, means of verification, assumptions and expected outcomes), providing additional detail as needed, and then finalizing the Annual Work Plan (AWP) with measurable performance indicators. The Inception Workshop (IW) will also: (i) introduce project staff to the UNDP-GEF team (the CO and responsible Regional Coordinating Unit staff) that will support project implementation; (ii) detail the responsibilities of UNDP-CO and RCU staff vis-à-vis the project team; (iii) detail the UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs), and mid-term and final evaluations. The IW will also inform the project team regarding UNDP project related budgetary planning, budget reviews, and mandatory budget re-phasing. An overall objective of the IW is that all parties understand their roles, functions, and responsibilities within the project's decision-making structures; and that reporting and communication lines and conflict resolution mechanisms are clear to all. Terms of Reference for project staff and decision-making structures will be again discussed to clarify each party's responsibilities during project implementation.

Monitoring responsibilities and events

Project management, project partners and stakeholder representatives will collaborate on the development of a detailed schedule of project review meetings to be incorporated in the Project Inception Report. The schedule will include: (i) tentative time frames for Project Board Meetings and (ii) project related Monitoring and Evaluation activities. The Project Manager will be responsible for day-to-day monitoring of implementation progress based on the Annual Work Plan and indicators. The Project Manager will inform the UNDP-CO of any delays or difficulties so that appropriate and timely corrective measures can be implemented. At the IW, the Project Manager, project team, UNDP-CO, and UNDP-GEF Regional Coordinating Unit will fine-tune the project's progress and performance/impact indicators and will develop specific targets and their means of verification for the first year's progress indicators. Every year the project team will define targets and indicators as part of the internal evaluation and planning processes.

The Project Board Meetings (PBM) will be responsible for twice a year project monitoring. The PBM will be the highest policy-level meeting of the partners involved in project implementation. The first such meeting will be held within the first six months of the start of full implementation.

The Project Manager in consultation with UNDP-CO and UNDP-GEF RCU will prepare a UNDP/GEF PIR/APR for submission to PBM members and the Project Board for review and comments and for discussion at the PB meeting. The Project Manager will highlight policy issues and recommendations and will inform participants of agreements reached by stakeholders during the PIR/ARR preparation on how to resolve operational issues. Separate reviews of each project

component will be conducted as necessary. Benchmarks will be developed at the Inception Workshop, based on delivery rates and on qualitative assessments of achievements of outputs. A terminal PBM will be held in the last month of project operations. The Project Manager will prepare a Terminal Report for submission to UNDP-CO and UNDP-GEF RCU at least two months in advance of the terminal PBM to allow for review and to serve as the basis for discussions in the PBM. The terminal meeting will consider project implementation, achievement of project objectives, contribution to broader environmental objectives, actions needed to sustain project results, and ways that lessons learnt can feed into other projects being developed or implemented.

UNDP Country Office, UNDP-GEF RCU, and any other members of the Project Board will annually assess (with detailed scheduling agreed upon at the project Inception Report/Annual Work Plan) progress at the project sites. No less than one month after the visit, the CO and UNDP-GEF RCU will prepare a Field Visit Report/BTOR to be circulated to the project team, all Project Board members, and UNDP-GEF.

Project Reporting

The Project Manager in conjunction with the UNDP-GEF extended team will prepare and submit reports that form part of the monitoring process. The first six reports are mandatory and strictly related to monitoring; while the last two have broader functions such that their frequency and nature are project specific to be defined throughout implementation.

A Project Inception Report will be prepared immediately after the Inception Workshop. It will include a detailed First Year / Annual Work Plan divided in quarterly timeframes detailing activities and progress indicators guiding first year project implementation. This Work Plan will include dates of specific field visits, support missions from the UNDP-CO, the Regional Coordinating Unit (RCU), or consultants, and scheduling of the project's decision-making structures. The Report will also include a detailed project budget for the first full year of implementation based on the Annual Work Plan and the monitoring and evaluation requirements for the first year. The Inception Report will also detail the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project partners. The IR will also discuss progress to date on project establishment, start-up activities, and an update of changed external conditions that may effect project implementation. The finalized report will be circulated to project counterparts who will be given one calendar month in which to respond with comments or queries. The UNDP Country Office and UNDP-GEF Regional Coordinating Unit will review the document prior to circulation of the IR.

An Annual Review Report will be prepared by the Project Manager and shared with the Project Board prior to each annual Project Board meeting and will consist of the following sections: (i) project risks and issues; (ii) project progress against pre-defined indicators and targets and (iii) outcome performance. As a self-assessment by project management, the report does not entail a cumbersome preparatory process. At a minimum the ARR will follow the Atlas standard format for the Project Progress Report (PPR, although the country office may modify the format, as necessary) and will include a summary of results achieved relative to pre-defined annual targets, progress in meeting the Annual Work Plan, and achievement of intended outcomes via project partnerships. The ARR can also be used to spur dialogue among Project Board and partners.

The Project Implementation Review (PIR) is an annual management and monitoring tool mandated by the GEF that has become the main vehicle for extracting lessons learned from ongoing projects. The CO and project team must provide the PIR generated using a participatory approach after one year of project implementation, with submission in July followed by discussion with the CO and the UNDP/GEF Regional Coordination Unit in August and final submission to the UNDP/GEF Headquarters in the first week of September.

Quarterly progress reports: The project team will provide short reports each quarter outlining main updates in project progress. Reports will be submitted to the local UNDP Country Office and the UNDP-GEF RCU.

UNDP ATLAS Monitoring Reports: A quarterly Combined Delivery Report (CDR) summarizing all project expenditures is mandatory and will be certified by the Implementing Partner. The following logs are to be maintained and updated throughout the project by the Project Manager: (i) The Issues Log captures and tracks the status of all project issues

throughout project implementation; (ii) the Risk Log (using Atlas) captures potential risks to the project and associated measures to manage risks; and (iii) the Lessons Learned Log captures insights and lessons based on good and bad experiences.

Project Terminal Report: The project team will prepare the Project Terminal Report in the last three months of the project. This comprehensive report will summarize all activities, achievements, and outputs of the Project, lessons learnt, objectives met or not achieved, and structures and systems implemented. The PTR will be the definitive statement of the Project's activities over its lifetime, recommending any further steps needed to ensure sustainability and replicability of the Project's activities.

Periodic Thematic Reports: The project team will prepare Specific Thematic Reports when called for by UNDP, UNDP-GEF, or the Implementing Partner. The written request by UNDP for a Thematic Report provided to the project team will clearly state the issue or activities that need to be reported on. These reports can deal with lessons learnt, specific oversight in key areas, or troubleshooting to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

Technical Reports are detailed documents covering specific areas of analysis or scientific issues in the project. As part of the Inception Report, the project team will prepare a draft Reports List that details which technical reports need to be prepared over the course of the Project and their tentative due dates. This Reports List will be revised and updated as necessary, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined research areas within the project framework. These technical reports will represent the project's substantive subject-matter contributions to be included in dissemination of results at local, national and international levels; and as such will be produced in a consistent and recognizable format.

Project Publications will crystallize and disseminate project results and achievements; can include scientific journal articles, informational texts, or multimedia publications; and can be based on selected Technical Reports or syntheses of a series of Technical Reports. The project team in consultation with UNDP, government partners and other stakeholders will determine if any of the Technical Reports merit formal publication and appropriate financial support.

Independent evaluations

The project will require at least two independent evaluations. A Mid-Term Evaluation will assess outcome achievements; will identify needed course corrections; will examine the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; will present initial lessons learned about project design, implementation and management; and will provide recommendations to improve implementation of the second and final half of the project. The UNDP CO in collaboration with the UNDP-GEF Regional Coordinating Unit will develop the organization, terms of reference, and timing of the mid-term evaluation

An independent external Final Evaluation will take place three months prior to the terminal Project Board meeting and will focus on the same issues as the mid-term evaluation as well as on the impact and sustainability of results, capacity building, achievement of global environmental goals, and recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

Learning and knowledge sharing

Project results will be disseminated within and beyond the project intervention zone via information sharing networks and forums including the UNDP/GEF networks that involve Senior Personnel of similar and related projects. UNDP/GEF Regional Unit has established an electronic platform for sharing lessons learned among project coordinators. The project will participate in relevant scientific, policy-based and other networks that can benefit project implementation via lessons

learned; and will share its own lessons learned with other similar projects. Identification and analyses of lessons learned will be provided and communicated annually. UNDP/GEF will provide a format and assist the project team in categorizing, documenting and reporting on lessons learned.

In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF.

Table 6 Project Monitoring and Evaluation Plan and Budget

Type of M&E activity	Responsible Parties	Budget US$	Time frame
Inception Workshop (IW)	Project Manager Ministry of Environment, UNDP, UNDP GEF	5,000	Within first two months of project start up
Inception Report	Project Team PBM, UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop. Cost to be covered by targeted survey funds.	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	Oversight by Project GEF Technical Advisor and Project Manager Measurements by regional field officers and local IAs	TBD as part of the Annual Work Plan's preparation. Cost to be covered by field survey budget.	Annually prior to APR/PIR and to the definition of annual work plans
PIR	Project Team PBM UNDP-GEF	None	Annually
Project Board meetings	Project Manager	None	Following IW and annually thereafter.
Technical and periodic status reports	Project team Hired consultants as needed	6,000	TBD by Project team and UNDP-CO
Mid-term External Evaluation	Project team PBM UNDP-GEF RCU External Consultants (evaluation team)	25,000	At the mid-point of project implementation.
Final External Evaluation	Project team, PBM, UNDP-GEF RCU External Consultants (evaluation team)	32,000	At the end of project implementation
Terminal Report	Project team PBM External Consultant	None	At least one month before the end of the project
Audit	UNDP-CO Project team	5,000	Yearly
Visits to field sites (UNDP staff travel	UNDP-CO, UNDP-GEF RCU Government representatives	None	Yearly average one visit per year

Type of M&E activity	Responsible Parties	Budget US$	Time frame
costs to be charged to IA fees)			
TOTAL indicative COST Excluding project and UNDP staff time costs		**73,000**	

PART VI: LEGAL CONTEXT

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Serbia and the United Nations Development Programme, signed by the parties. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement. The UNDP Resident Representative in Serbia is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

a) Revision of, or addition to, any of the annexes to the Project Document;
b) Revisions which do not involve significant changes in the immediate objective, outcomes, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
d) Inclusion of additional annexes and attachments only as set out here in this Project Document

PART VII: ANNEXES

Annex I: Risk Analysis

Risk	Risk Rating	**Mitigation Measures**
Low political feasibility of implementing exclusive public transport axes, bicycle lanes, and economically priced parking	Moderate to High	**- Staged approach for introducing exclusive public transport axes: starting with few selected priority routes, such as expanding tramways that are already grade-separated** **- Early capacity building and awareness campaigns to all stakeholders on benefits of similar approaches and to demonstrate that the goal is not to be "anti-car" but to improve access for all residents** **- Development of alternate, parallel corridors for private vehicle use** **- Development of Park and Ride facilities to reduce congestion in remaining road space**
Lack of investment from government for system upgrade	Moderate	**- Belgrade City government confirmed financial commitment to the project and investment in system upgrade (letter of co-financing available) provided GEF contribution is secured**
Lack of coordination among different activities	Low	**- Steering committee with members form key government and NGO groups** **- Close involvement of CTA and Project Manager in all activities**
Climate change impacts include increased precipitation and flooding, resulting in poor use of non-motorized modes, particularly, bicycling	Low	**- Capacity building and awareness campaigns showing how other cities like Copenhagen have high bicycle use even during inclement weather** **- Bicycle parking facilities and easy transfers to public transport modes at Park and Ride facilities**

Annex II: Terms of Reference for Key Project Positions

Position Titles	*$/ person week*	*Estimated person weeks*	*Tasks to be performed*
For Project Management (only local/no international consultants)			
National Project Manager (PM)	230	208	Supervise and coordinate the project to ensure its results are in accordance with the Project Document and the rules and procedures established in the UNDP Programming Manual; Assume primary responsibility for daily project management - both organizational and substantive matters – budgeting, planning and general monitoring of the project; Ensure adequate information flow, discussions and feedback among the various stakeholders of the project; Ensure adherence to the project's work plan, prepare revisions of the work plan, if required; Assume overall responsibility for the proper handling of logistics related to project workshops and events; Prepare, and agree with UNDP on, terms of reference for national and international consultants and subcontractors; Guide the work of consultants and subcontractors and oversee compliance with the agreed work plan; Maintain regular contact with UNDP Country Office and the National Project Director on project implementation issues of their respective competence; Monitor the expenditures, commitments and balance of funds under the project budget lines, and draft project budget revisions; Assume overall responsibility for the meeting financial delivery targets set out in the agreed annual work plans, reporting on project funds and related record keeping; Liaise with project partners to ensure their co-financing contributions are provided within the agreed terms; Assume overall responsibility for reporting on project progress vis-à-vis indicators in the logframe; Undertake any other actions related to the project as requested by UNDP or the National Project Director.
Project Assistant	130	208	Assist the PM in managing the project staff; Coordinate the project experts and ensure that their results are delivered on time; Prepare GEF quarterly project progress reports, as well as any other reports requested by the Executing Agency and UNDP; Assist the PM in managing the administrative and finance staff and ensure that all information is accurate; Act as PM in case of his/her absence; Overall, provide all necessary support to the PM in implementation of the project. Provide general administrative support to ensure the smooth running of the project management unit; Project logistical support to the PM and project consultants in conducting different project activities

			(trainings, workshops, stakeholder consultations, arrangements of study tour, etc.); During the visits of foreign experts, bear the responsibility for their visa support, transportation, hotel accommodation etc; Organize control of budget expenditures by preparing payment documents, and compiling financial reports; Maintain the project's disbursement ledger and journal; Control the usage non expendable equipment (record keeping, drawing up regular inventories); Arrange duty travel; Perform any other administrative/financial duties as requested by the Project Manager; Organize and coordinate the procurement of services and goods under the project. Under supervision of PM, responsible for all aspects of project financial management
For Technical Assistance			
Local			
Local specialist on updating parking analysis	1,000	34	Provide data and analytical support to the international experts and other team members for preparing economic analysis of parking demand and supply.
Local specialist on road space management	1,000	34	Provide engineering data and assessment of vehicle use in major corridors for other team members and international experts
Local specialist on bus system upgrades	1,000	34	Provide engineering data and assessment of bus system upgrades for other team members and international experts
Local Consultant on integrated transport and land-use planning	1,000	15	Compile available information on land-use and transport planning and to provide data and analytical support to the international experts and other team members for developing integrated plans.
Local expert to support preparation of feasibility study of car-sharing, taxi-sharing mobile-applications	1,000	12	Provide assistance on development and pilot-testing of software application in coordination with other team members and international experts
PR Specialist	1,000	8	Provide communications strategy and support to the team
Local GHG inventory expert for transport sector	1,000	10	Develop an integrated assessment of road transport-related GHG emissions and assist other team members and international experts in this effort
Other short term experts	1,000	27	Additional short term consultants will be hired for very specific tasks and their ToRs will be elaborated by the project staff in consultation with the CTA and other international consultants
International			
Chief Technical Advisor – Sustainable Transport Expert	3,000	12	Provide expert advisory services and technical assistance to the local experts in development of detailed designs for the pilot sustainable transport projects, development of proposals for an improvement of the policy, legal and regulatory framework for the development of sustainable transport, development of modules for capacity building and training measures on various aspects of sustainable transport development, design of delivery models and associated financing mechanisms for sustainable transport

			systems.
International Consultant for development of mobile-application for car-sharing and taxi-sharing service	3,000	10	Provide expert assistance concerning licensing of existing mobile application on a pilot scale (with Serbian translation) in conjunction with local consultants and other team members
IC for development of travel demand forecast,	3,000	8	Conduct travel demand surveys for different modes and to provide data and analytical support in conjunction with local consultants and other team members
International Consultant on integrated transport and land-use planning	3,000	6	Develop integrated transport and land-use analysis using available data and simplified models in conjunction with local consultants and other team members
IC/Advisor on parking policy	3,000	6	Assess parking analysis in conjunction with local consultants and other team members
Evaluation Expert	3,000	8	The international evaluation consultant will lead the mid-term and the final evaluations. He/she will work with the local evaluation consultant in order to assess the project progress, achievement of results and impacts. The project evaluation specialists will develop draft evaluation report, discuss it with the project team, government and UNDP, and as necessary participate in discussions to extract lessons for UNDP and GEF. The standard UNDP/GEF project evaluation TOR will be used.
Other short term consultants	3000	8	The international expertise will be utilized, as needed, to provide appropriate technical advice on issues that might arise as the project evolves. The international consultants will be involved in order to provide the ad hoc assistance on the narrow topics when required. The ToRs will be developed by the project personnel in consultation with the CTA and other international consultants working for the project.

Annex III: Stakeholder Involvement Plan

During the project preparation stage, a stakeholder analysis was undertaken in order to identify key stakeholders, assess their interests in the project and define their roles and responsibilities in project implementation. The table below describes the major categories of stakeholders identified, and the level of involvement envisaged in the project.

Key stakeholders and roles and responsibilities

Stakeholder	Roles and Responsibilities
Ministry of Environment and Spatial Planning	Develops environmental strategy, policy and legislation, currently focused on the EU ascension process. Overseas climate change and mitigation activities from policy and legal standpoint.
The City of Belgrade	Transport Secretariat manages traffic in the City as well as systems for traffic management, traffic organization and its regimes, public parking regulation, public transport, oversees taxi services. Urban Planning Secretariat prepares and adopts planning documents and urban plans, issues planning permits. Environmental protection Secretariat performs systemic monitoring of air quality, measuring the presence and concentration of pollutants from stationary sources (furnaces and factories) and from motor vehicles. Establishes environmental protection restrictions and measures during the urban and spatial planning process and issuing approval with regard to strategic evaluations of the impact of specific plans and programs on the environment.
Belgrade Institute for Public Health	Monitors and analyses health conditions through statistics, maintenance of registries and research. It monitors air quality in the City of Belgrade and analyses impact assessment
Belgrade Land Development Public Agency	Prepares proposals for the construction land preparation and municipal infrastructure construction, including the financial plan. Maintains a data base on city building land, analyzes and proposes the elements to be used in determining the fee for the usage of building land. Also, manages the preparation and the construction of the Belgrade LRT, bridges and all capital assets of specific importance for the City.
Belgrade Parking Service	Manages and maintains public car parks and garages at 10 city municipalities.
Institute of Urbanism Belgrade	Develops spatial and urban plans, studies, analysis, projects and construction rules. An important part of urban plans is transportation
Ministry of Economy and Regional Development	Oversees economy and economical development
Ministry of Infrastructure	Oversees roads and other large infrastructures
NGOs	Relevant national environmental NGOs will be involved in achieving the project outcomes and will play important role in public campaigns, accountant system transparency and volunteers support programmes.
Academic and research Institutes	Relevant national and regional academic and research institutes will contribute to the project as appropriate
National and local press and media	The project will cooperate with the national and local media (TV, press, Internet and radio) on public awareness and legal reform issues.
Private sector	The project will promote the engagement of as many as possible private partners. At least one representative from the private sector will be member of the PSC.
UNDP Serbia	The roles and responsibilities of UNDP-Serbia will include: Ensuring professional and timely implementation of the activities and delivery of the reports and other outputs identified in the

	project document; Coordination and supervision of the activities; Assisting and supporting the MESP in organizing coordinating and where necessary hosting all project meetings; Coordinate of all financial administration to realize the targets envisioned in consultation with MESP; supporting the establishing of an effective network between project stakeholders, specialized international organizations and the donor community. The UNDP will also be a member of the Project Board.

Throughout the project's development, very close contact was maintained with all stakeholders at the national and local levels. All affected national government institutions were directly involved in project development, as well as research and academic institutions and NGOs. Numerous consultations occurred with all of the above stakeholders to discuss different aspects of project design. In addition, bilateral discussions and permanent electronic communications were part of the project preparation.

The projects approach to stakeholder involvement is illustrated in the next table.

Stakeholder participation principles

Principle	**Stakeholder Participation will:**
Value Adding	be an essential means of adding value to the project
Inclusivity	include all relevant stakeholders
Accessibility and Access	be accessible and promote access to the process
Transparency	be based on transparency and fair access to information; main provisions of the project's plans and results will be published in local mass-media
Fairness	ensure that all stakeholders are treated in a fair and unbiased way
Accountability	be based on a commitment to accountability by all stakeholders
Constructive	seek to manage conflict and promote the public interest
Redressing	seek to redress inequity and injustice
Capacitating	seek to develop the capacity of all stakeholders
Needs Based	be based on the needs of all stakeholders
Flexible	be flexibly designed and implemented
Rational and Coordinated	be rationally planned and coordinated, and not be ad hoc
Excellence	be subject to ongoing reflection and improvement

The project's design incorporates several features to ensure effective stakeholder participation in the project's implementation:

1. Project inception workshop
The project will be launched by a multi-stakeholder workshop. This workshop will provide an opportunity to provide all stakeholders with the most updated information on the project, the work plan, and will establish a basis for further consultation as the project's implementation commences.

2. Constitution of Project Steering Committee
A Project Steering Committee's constituency will be constituted to ensure broad representation of all key interests throughout the project's implementation. The representation, and broad terms of reference, of the PSC are described in the Management Arrangements in Part III of the Project Document.

3. Establishment of the Project Management Unit
The Project Management Unit will take direct operational responsibility for facilitating stakeholder involvement and ensuring increased local ownership of the project and its results. The PMU will be located in Belgrade to ensure coordination among key stakeholder organizations at the national level during the project period.

5. Project communications
The project will develop, implement and maintain a communications strategy to ensure that all stakeholders are informed on an ongoing basis about: the project's objectives; the projects activities; overall project progress; and the opportunities for involvement in various aspects of the project's implementation.

6. Implementation arrangements
A number of project activities have specifically been designed to directly involve local stakeholders in the implementation of these activities..

Annex IV: Greenhouse Gas Emissions Calculations

This Annex calculates the CO_2 emission reduction[7] associated with the implementation of the present GEF project. The Annex includes the calculation methodology, description of the direct emission reductions of the project as well as the emission reductions achievable through the country-wide replication effect.

A. Overall methodology for calculation of GHG emission reductions

The methodology for calculation of CO_2 emission reductions relies on the GEF Manual for Calculating GHG Benefits of GEF Projects. The main steps of the procedure are presented in Figure F-1 below.

[7] The only greenhouse gas associated with energy services covered by the GEF project is carbon dioxide.

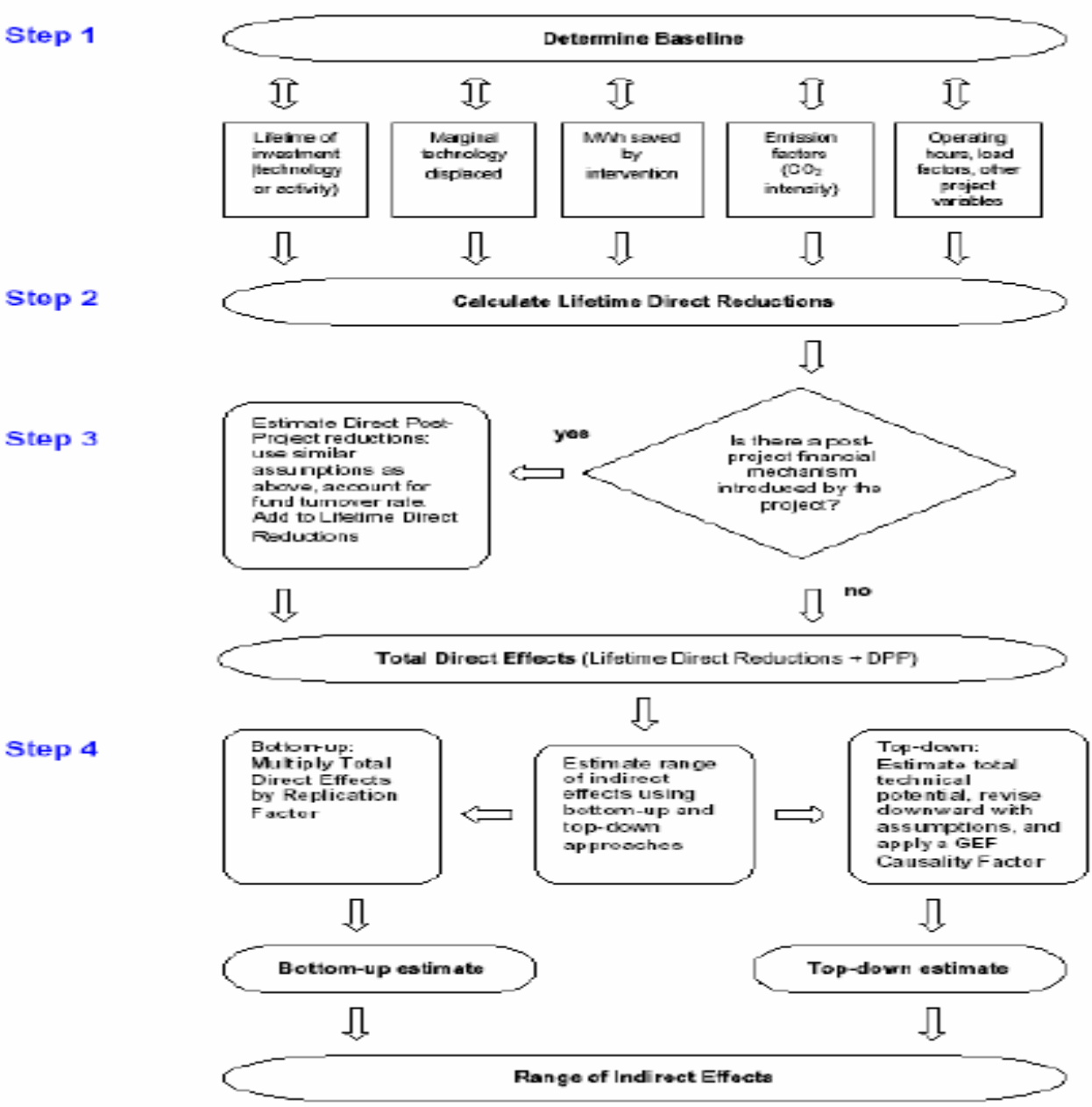


Figure A-1 Four steps to calculate GHG impacts

B. Project Baseline Emissions

Baseline GHG emissions from road passenger transport in Belgrade total ***449,490 tCO2e/year***. Estimates were made based on official data about the number of registered vehicles, passenger-km by various transport modes, load factor, fleet and fuel efficiency. Input data and results are presented in Table F-1

Mode	Number of vehicles	Passenger-km (million)	Load factor	Vehicle-km (million)	Fuel	Average fuel efficiency (MJ/km)	CO2eq (tonnes)
Buses	846	3,039.46	20.00	151.97	Diesel	11.20	125,955
Trams	218	163.83	20.00	8.19	Electricity	14.80	23,992
Trolley buses	125	580.59	20.00	29.03	Electricity	11.20	64,343
Taxis	8,500	333.82	1.50	222.55	petrol/diesel/LPG	3.60	55,280
Cars	419,200	1,086.47	1.50	724.32	petrol/diesel/LPG	3.60	179,920
		5,204.17				Total	**449,490**

Table F-1: Baseline GHG Emissions from Transport Sector in Belgrade

C. Project direct emission reductions

Project will result in direct GHG emissions of ***285,120 tCO2e/year*** by the end of the project as a result of increased use of public and non-motorized transport promoted by the project (i.e. bus, tram and trolleybus use and bicycles routes). Project direct energy saving impact (MJ) was calculated following the Formula (1) based on input data and assumption presented in Table F-2 (passenger-km by public transport in BAU and Project Scenario). Conversion into GHG emission is provided in Table F-3.

$$E = \frac{PKT_{\text{Pr}oject} - PKT_{BAU}}{LF} * VE \qquad (1)$$

Where:

PKT – passenger-km traveled by alternative mode in BAU and project scenario
LF – Car Load Factor (1.5 persons/vehicle)
VE – Vehicle Efficiency (3.6 MJ/km)

Table F-2: Current and Projected Passenger-km by Public and Non-motorised Transport

		Project Start	Project End (Direct Impact)	Assumptions
Bicycles	PKT BAU, mln	0.1	0.15	3%
	PKT Project, mln	0.1	6.3	50%
Buses	PKT BAU, mln	151.97	196.59	2%
	PKT Project, mln	151.97	262.7	5%
Trolleybuses	PKT BAU, mln	8.19	9.32	1%
	PKT Project, mln	8.19	12.49	4%
Trams	PKT BAU, mln	29.03	33.04	1%
	PKT Project, mln	29.03	44.27	4%

Table F-3: Project Direct GHG Emission Reduction

Activity (from logframe)	Displaced (marginal) technology	Annual fuel or energy saved (GJ)	Average lifetime of technology (years)	CO2 intensity of displaced fuel (kg/litre)	Efficiency of displaced fuel (litre/MJ)	Direct Lifetime CO2 Reduction (metric tons)
		A	*B*	*C*	*D*	*A*B*C*D*
Integrated land use and urban transport planning at the	Private cars	1,612,782	14	2.4785	.0327	1,829,955

metropolitan level	

D. Replication and indirect impact according to the Bottom-Up Approach

As recommended by the GEF Manual, the bottom-up approach was used to calculate the GHG emission reductions. The GEF bottom-up approach implies the replication of the project methodology based on the formula (2); final results and key assumptions are summarized in Table F-4. *Indirect* annual emissions reductions were estimated to be 2,744,932 tonnes (*bottom-up approach*).

$$CO_{2\ \text{indirect BU}} = CO_{2\ \text{direct}} * RF \qquad (2)$$

where
CO_2 direct = estimate for total direct emission reductions
RF = replication factor

Table F-4: Project Indirect GHG Emission Reduction (Bottom-up approach)

Activity (from logframe)	Direct Reductions (See Table F-4)	Replication Factor (cumulative growth in alternative transport mode over 10-year influence period)	Indirect annual CO2 Reduction during 10-year influence period (metric tons)
	A	*B*	*A*B*
Integrated land use and urban transport planning at the metropolitan level	1,829,955	1.5	2,744,932
Total replication via bottom-up approach			

E. Replication and indirect impact according to the Top-Down Approach

As recommended by the GEF Manual, the indirect impact of the project was also estimated using the Top-Down Approach and will amount to ***71,467 tCO2/y***r by the end of 10-year project influencing period.

Table F-5: Project Indirect GHG Emission Reduction (Top-down approach)

Activity (from logframe)	Total technical potential (tCO2)	Total economic potential (tCO2)	Best-case replication (tCO2)	Causality Factor (0.2 - 1.0)	Indirect annual CO2 Reduction (tCO2)
	A	*B*	*C*	*D*	*C*D*
All project components	1,786,690	357,338	71,467	1	71,467
assumptions, remarks, sources:	Modal share dominated by public transport modes (70%) and bicycles (30%)	20% of total technical potential	30% of economic potential	GEF impact substantial	
Total replication via top-down approach					

Table F-6: Calculations for GHG Emission Reduction

Baseline	2007						2010						2015						2020			
	VKT (million)	Vehicle mode share (VKT fraction)	Load Factor	Average fuel efficiency (MJ/km)	CO2 (tonnes)	PKT (million)	VKT (million)	Vehicle mode share (VKT fraction)	Average fuel efficiency (MJ/km)	CO2 (tonnes)	PKT (million)	Load Factor	VKT (million)	Vehicle mode share (VKT fraction)	Average fuel efficiency (MJ/km)	CO2 (tonnes)	PKT (million)	Load Factor	VKT (million)	Vehicle mode share (VKT fraction)	Average fuel efficiency (MJ/km)	CO2 (tonnes)
Buses	151.97	13%	20.00	11.20	125,955.22	3,225.50	161.27	12%	10.87	129,733.63	3,561.21	20.00	178.06	10%	10.34	136,284.53	3,931.87	20.00	196.59	9%	9.84	143,166.22
Trolleybuses	8.19	1%	20.00	14.80	23,992.02	168.79	8.44	1%	14.36	23,992.02	177.40	20.00	8.87	1%	13.67	23,992.02	186.45	20.00	9.32	0%	13.00	23,992.02
Trams	29.03	3%	20.00	11.20	64,342.70	598.18	29.91	2%	10.87	64,342.70	628.70	20.00	31.43	2%	10.34	64,342.70	660.77	20.00	33.04	1%	9.84	64,342.70
Taxis	222.55	20%	1.50	3.60	55,280.29	386.44	257.62	20%	3.49	62,111.80	493.20	1.50	328.80	19%	3.32	75,424.72	629.46	1.50	419.64	19%	3.16	91,591.12
Cars	724.32	64%	1.50	3.60	179,919.98	1,294.01	862.67	65%	3.49	207,985.41	1,731.67	1.50	1,154.45	68%	3.32	264,822.78	2,317.37	1.50	1,544.91	70%	3.16	337,192.41
Bicycles	0.1	0%	1.00		0.00	0.11	0.11	0%		0.00	0.13	1.00	0.13	0%		0.00	0.15	1.00	0.15	0.01%	0.00	0.00
	1,136.16				449,490.23	5,673.03	1,320.03			488,165.57	6,592.31		1,701.74			564,866.76	7,726.07		2,203.66			660,284.47

Policy	2007						2010						2015						2020			
	VKT (million)	Vehicle mode share (VKT fraction)	Load Factor	Average fuel efficiency (MJ/km)	CO2 (tonnes)	PKT (million)	VKT (million)	Vehicle mode share (VKT fraction)	Average fuel efficiency (MJ/km)	CO2 (tonnes)	PKT (million)	Load Factor	VKT (million)	Vehicle mode share (VKT fraction)	Average fuel efficiency (MJ/km)	CO2 (tonnes)	PKT (million)	Load Factor	VKT (million)	Vehicle mode share (VKT fraction)	Average fuel efficiency (MJ/km)	CO2 (tonnes)
Buses	151.97	13%	20.00	11.20	125,955.22	3,225.50	161.27	12%	10.87	129,733.63	4,116.65	20.00	205.83	18%	10.34	157,540.49	5,254.00	20.00	262.70	25%	9.84	191,307.42
Trolleybuses	8.19	1%	20.00	14.80	23,992.02	168.79	8.44	1%	14.36	23,992.02	205.36	20.00	10.27	1%	13.67	27,773.25	249.86	20.00	12.49	1%	13.00	-
Trams	29.03	3%	20.00	11.20	64,342.70	598.18	29.91	2%	10.87	64,342.70	727.78	20.00	36.39	3%	10.34	74,483.34	885.46	20.00	44.27	4%	9.84	29,539.76
Taxis	222.55	20%	1.50	3.60	55,280.29	386.44	257.62	20%	3.49	62,111.80	447.99	1.80	248.88	21%	3.32	57,091.59	519.34	1.89	274.78	26%	3.16	58,930.84
Cars	724.32	64%	1.50	3.60	179,919.98	1,294.01	862.67	65%	3.49	207,985.41	1,093.71	1.65	662.85	57%	3.32	152,054.16	770.56	1.73	444.77	43%	3.16	95,386.55
Bicycles	0.10	0.01%	1.00		0.00	0.11	0.11	0%		0.00	0.83	1	0.83	0.07%		0.00	6.30	1	6.30	0.60%		0.00
	1,136.16				449,490.23	5,673.03	1,320.03			488,165.57	6,592.31		1,165.05			468,942.82	7,685.51		1,045.32			375,164.57

Annex V: Agreements

The letters of co-financing are attached in a separate file.