



Government of Botswana
and the
United Nations Development Programme (UNDP)
Global Environment Facility (GEF)

Incorporating Non-Motorized Transport Facilities in the City of Gaborone

Brief Description:

The project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport modes for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region.

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Acronyms

BOCONGO	Botswana Council of Non-Governmental Organizations
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ eq.	Carbon Dioxide Equivalent
CSO	Central Statistics Office
DEA	Department of Environmental Affairs (formerly National Conservation Strategy Agency (NCSA))
DMS	Department of Meteorological Services
DRTS	Department of Road Transport and Safety
DTRP	Department of Town and Regional Planning
EECG	Energy, Environment, Computer and Geophysical Applications
EQ	Equivalent
GCC	Gaborone City Council
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas Emissions
Kg	Kilograms
Km	Kilometres
LDV	Light Delivery Vehicle
M&E	Monitoring and Evaluation
MEWT	Ministry of Environment, Wildlife and Tourism
MFDP	Ministry of Finance and Development Planning
MLG	Ministry of Local Government
MT	Motorised Transport
MWT	Ministry of Works and Transport
N ₂ O	Nitrous Oxide
NO _x	Nitrogen Oxides
NDP	National Development Plan
NPD	National Programme Director
NGO	Non-Governmental Organisation
NMT	Non-Motorized Transport
PSC	Project Steering Committee
PDF	Project Development Facility
p-km	Passenger-kilometre
RTA	Road Traffic Act
SCG	Stakeholder Consultative Forum
SO _x	Sulphur Oxides
TAG	Technical Advisory Group
TSP	Total Suspended Particles
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
US\$	United States Dollar

SECTION 1: Brief Narrative

PART I: SITUATION ANALYSIS

The transport sector in Botswana is one of the fastest growing sectors of the economy, with motorized vehicle use rapidly increasing, particularly in urban areas. The sector is already a significant source of GHG emissions. Continued growth in the use of MT vehicles has consequences that include associated increases in GHG emissions and related negative social and environmental impacts such as traffic congestion, accidents, and air pollution. It is envisaged that facilitating much greater use of NMT as a modal alternative to MT for some people and purposes would reduce growth in transport-related greenhouse gas (GHG) emissions. For this to occur there must be an acceptable, attractive, safe, and sustainable NMT alternative that is widely available

This project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport modes for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region. The data collected during the course of implementing this project will be employed to evaluate the economics of GHG mitigation in the transport sector using the NMT option

PART II: STRATEGY

The objectives of the project will be achieved by way of implementing a demonstration bicycle/pedestrian path system with essential features such as traffic controls; lighting, and appropriate signage, and related infrastructure that include bicycles supply (selling depots, renting, possibly manufacture) and maintenance (repairs) plus bicycle parks, public toilets showers etc.. To the extent possible, cyclists and pedestrians will be physically separated, to minimize the dangers of both sharing the same pathways. The infrastructure will connect residential areas to socio-economic hubs of Gaborone such as schools, university, shopping malls, commercial business district, employment centres and location of inter-modal facilities such as bus and rail stations. The demonstration project will also include the completion of 'missing links' in the existing but limited bicycle/pedestrian network. This new infrastructure will make NMT a safe, convenient and attractive transport mode in the city and will encourage motorists to shift some of their trips to NMT. Public awareness campaigns will be conducted through appropriate media to promote NMT to the various stakeholders and beneficiary communities, including local authorities and environmental agencies. This will be strengthened by a review of the current policy, legal and institutional framework to accommodate and promote the uptake of cycling on a wide scale in the city. Promotional campaigns will also involve tackling barriers to wide usage such as cultural perceptions and financial limitations

PART III: MANAGEMENT ARRANGEMENTS

The project will be carried out by three major groups: (1) those involved in NMT Facility design (GCC, Department of Roads, DTRP, contractors) (2) Promotion and Communication (DRTS, NGOs, Media, other private sector sponsors) and (3) Policy and legal framework reviews (DRTS, Police, MFDP, DEA, DMS). UNDP will be involved in guiding project implementation and evaluation reviews. It is anticipated that GCC, MFDP, DEA, DMS and UNDP will form the Project Performance Evaluation Team.

GCC: is responsible for the design, bidding procedures, construction, monitoring and commissioning of the infrastructure. The design will be approved in partnership with other stakeholders such as Department of

Roads, DTRP, contractors and NGOs. GCC financial involvement has been approved by both its line Ministry of Local Government and Ministry of Finance and Development Planning. This will include approval of co-financing pledged by other sponsors (bilateral, multilateral and private funds. GCC will also monitor the project performance and provide maintenance for the infrastructure.

DRTS: which is already involved in safety campaigns, will contribute to the promotion and communication strategy and implementation, assisted by NGOs and the media houses.

DMS, DEA and MFDP: are responsible for endorsing the project and will also be responsible for negotiating similar follow-up investment projects with other urban centers. They will also constitute an important part of the project review and reference team.

Technical experts, NGOS, media and the private sector: will contribute to production of promotional materials (pamphlets, websites, electronic media, etc.), activities (e.g. cycling events, and t-shirts, caps, drinks, etc.) and other dissemination activities. Among the technical experts is Energy, Environment, Computer and Geophysical Applications (EECG) that produced the project concept and was the consultant in the project design.

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. The UNDP logo should be more prominent -- and separated from the GEF logo if possible, as UN visibility is important for security purposes.

PART IV. MONITORING AND EVALUATION

1.1. Monitoring responsibilities and events

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF. The Logical Framework Matrix in Annex 1 provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built.

A detailed monitoring and evaluation plan is provided in Annex A.

PART V. 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 Botswana and the United Nations Development Programme. 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 Botswana 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 GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes: Revision of, or addition to, any of the annexes to the Project Document; revisions that do not involve significant changes in the immediate objectives, 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; 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 inclusion of additional annexes and attachments only as set out here in this Project Document

Audit

The Executing Agent will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor agreed to by the Government.

SECTION II: Results and Resource Framework

PART I: LOGICAL FRAMEWORK ANALYSIS

Sector Related Goal	Indicators	Verification	Assumptions
To contribute to sustainable transport in urban cities of Botswana & other regional countries	Participation of urban authorities & potential beneficiaries in adopting sustainable transport measures	Country & regional transport planning that incorporates sustainable transport measures	Governments support & involvement of other stakeholders
Project Development Objective	Indicators	Verification	Assumptions
Promote incorporation of Non-motorized transport modes in urban areas of Botswana & the region.	Plans, policies & legal framework, NMT designs and standards for adoption of NMT modes of transport for Botswana & region. More urban authorities involved in the initiative in Botswana and region	Government and urban NMT plan and ACT reports	Resource allocations for NMT planning & development Urban authorities will use results of the GEF demonstration project to replicate similar projects.
Global Objective	Indicators	Verification	Assumptions
Reduce GHG emissions & demonstrate environmental benefits & cost-effectiveness of non motorized transport	Baseline GHG emissions & Reduction potential	Pre-project GHG estimates & continual inventories	Modal shift from MT to NMT
Outputs	Indicators	Verification	Assumptions
1. Transport based greenhouse gas emissions Reduced	GHG reduction at a minimum of 13.5kt/year from shifting MT trips to NMT trips	Reports on Pre project calculated estimates & those from evaluations	Modal shift due to this NMT project can be distinguished

<p>2. A well designed and constructed NMT Network of cycle/walk ways and bicycle facilities that include bicycle supply, repairs, renting and parking facilities Increased ownership of bicycles & use</p>	<p>45 km of combined cycle and pedestrian pathway Increased bicycle dealers, bicycle parks, rest rooms established in Gaborone. many bicycles on NMT routes Bicycle SMEs established</p>	<p>Maps & signage Project Reports Bicycle supplier & repair businesses registered or upgraded Trip counts by M & E team Survey Reports Operating bicycle SMEs</p>	<p>Timely provision of co-financing & network maintenance Leverage funds and SMEs willing to engage in bicycle industry</p>
<p>3. Increased uptake of NMT (cycling & walking) as means of transport</p>	<p>Evaluation shows more users of or trips by NMT particularly cycling from current 1% to a minimum of 15% and trips by walking increasing by a minimum of 5% from current 30%. Increase in number of cycling and walking clubs. NMT events held Batswana in international cycling events. Student and important persons involvement in promotional events</p>	<p>Survey Reports reflecting positive attitudes towards use of NMT Registered NMT clubs under the project. Operating bicycle SMEs Office for NMT at GCC</p>	<p>Motorists will respect NMT users</p>
<p>4. Informed and equipped institutional framework for NMT through Partnership of key stakeholders to implement NMT and dedicated NMT Unit</p>	<p>Stakeholder network for promoting NMT-involving public and private representation Dedicated NMT Unit at GCC</p>	<p>Membership of network NMT Office for NMT at GCC</p>	<p>Adequate stakeholders involvement</p>
<p>5. Conducive Policy & legal framework for NMT</p>	<p>Allocation of resources and revised Road Traffic legal framework defined with NMT focus.</p>	<p>Revised Road Traffic legal framework report NMT norms & standards for NMT</p>	

<p>6. Improved quality of life Through employment creation in the transport sector and reduced pollution, accidents and Improved transport mobility</p>	<p>New or upgraded Small and medium enterprises bicycle suppliers, renting, repair services, NMT infrastructure providers; and local bicycle manufacture Reduced traffic congestion, fewer pedestrian/cyclist accidents and pollution</p>	<p>Bicycle parks, renting & repair services, manufacturing & NMT infrastructure providers Traffic counts reports National statistics on accidents, pollution</p>	<p>Market grows for NMT facilities Results attributable to this specific project</p>
<p>Activities</p>	<p>Indicators</p>	<p>Verification</p>	<p>Assumptions</p>
<p>Activity 1: NMT facility design and construction, bicycle supply and parks</p> <ul style="list-style-type: none"> • Demand Surveys • Construction of Network • 	<p>Study done and demand established Design and widened 35 km of existing pathway; 10km new pathway built; (with signage at junctions/intersections) and traffic controlled crossing (20 pelican lights and 90 signed controls)</p>	<p>Reports on Survey Observed network with signage and NMT pathway maps</p>	

<p><u>Activity 2: Promotion and communication</u></p> <ul style="list-style-type: none"> • Information Dissemination • Targeted initiatives, events and groups • Enterprise building in NMT • Training • Developing Resource Material • NMT Unit 	<p>Workshops (10), education materials (newsletter (5), pamphlets (50000), manuals (2)) and facilities (e.g. website (91), media adverts and BTV (20); Bicycle businesses established, NMT clubs formed; sponsored events (5), exchange programmes 2 visits/year; manual for planners. School adopted for NMT training, Study tours.</p>	<p>Workshop Receipts, materials & Advertising clips being distributed/promoted Tickets & DSA allocation for travel Manual reports Name of School Office for NMT at GCC</p>	
<p><u>Activity 3: Strengthening Institutional, Policy and Legal framework and Capacity Building</u></p> <ul style="list-style-type: none"> • Strengthening Institutional, Policy and Legal framework • Capacity Building 	<p>Workshops of (5); study done, Norms and standards for NMT established; network enforcement agents and policy makers, Technical assistance provided in revision of Road Traffic legislation that incorporates NMT</p>	<p>Workshop costs and venue and attendants list; workshop report Reports on study Network members</p>	<p>Appropriate Technical Assistance identified</p>
<p><u>Activity 4: Monitoring</u></p> <p>Installing M & E Systems</p>	<p>System of data collection in place for monitoring indicators at GCC</p>	<p>Data collected List of variables being monitored</p>	

<p>Activity 5: Evaluation.</p> <p>Undertaking evaluations</p>	<p>Four evaluations done</p>	<p>Reports</p>	
<p>Activity 6: Replication</p> <ul style="list-style-type: none"> • Consultation & finalization of the Replication Plan 	<p>Project reports compilation and dissemination to other cities; (workshops same as in c) and d))</p>	<p>Reports compiled and distribution lists</p>	<p>Adequate participation of stakeholders from other cities</p>

SECTION III: Total Budget and Work Plan

(See page 78 for Total Budget and Work plan).

SECTION IV: Letter Of Endorsement

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**National Conservation Strategy
Coordinating Agency**

NCS/BOD 7/9 XIV (45)

*All Correspondence to be addressed to the
Executive Secretary*

2nd July, 2004

The Resident Representative
United Nations Development Programme
P.O Box 54
Gaborone

**ENDORSEMENT LETTER FOR GEF SUPPORTED MEDIUM SIZED
PROJECT: INCORPORATING NON MOTORISED TRANSPORT IN
GABORONE.**

As per the request of Gaborone City Council in their letter dated 4 June 2004, addressed to National Conservation Strategy Agency to give support to the subject alluded to above.

NCSA is in support for the provision of such facilities in Gaborone precisely because the project promotes environmentally sustainable transport with low green house gas emissions. Furthermore such a transport system seeks to meet transport needs of the majority of the city's population in an environmentally sound fashion.

Therefore by copy of this letter NCSA on behalf of government endorses the proposal for this project and that it should go ahead.

Thank you

Yours Faithfully

A handwritten signature in black ink, appearing to read 'Mushanana L. Nchunga'.

Mushanana L. Nchunga
Executive Secretary

cc: The City Clerk
Gaborone City Council

Appendix A: Approved MSP Proposal

PART I - PROJECT CONCEPT

A – SUMMARY

The transport sector in Botswana is one of the fastest growing sectors of the economy, with motorized vehicle use rapidly increasing, particularly in urban areas. The sector is already a significant source of GHG emissions. Continued growth in the use of MT vehicles has consequences that include associated increases in GHG emissions and related negative social and environmental impacts such as traffic congestion, accidents, and air pollution. It is envisaged that facilitating much greater use of NMT as a modal alternative to MT for some people and purposes would reduce growth in transport-related greenhouse gas (GHG) emissions. For this to occur there must be an acceptable, attractive, safe, and sustainable NMT alternative that is widely available.

The proposed project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone. It is also the intention of the proposed project to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport modes for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region. The data collected during the course of implementing this project will be employed to evaluate the economics of GHG mitigation in the transport sector using the NMT option.

The aims enumerated above will be achieved by way of implementing a demonstration bicycle/pedestrian path system with essential features such as traffic controls; lighting, and appropriate signage, and related infrastructure that include bicycles supply (selling depots, renting, possibly manufacture) and maintenance (repairs) plus bicycle parks, public toilets showers etc.. To the extent possible, cyclists and pedestrians will be physically separated, to minimize the dangers of both sharing the same pathways. The infrastructure will connect residential areas to socio-economic hubs of Gaborone such as schools, university, shopping malls, commercial business district, employment centers and location of inter-modal facilities such as bus and rail stations. The demonstration project will also include the completion of 'missing links' in the existing but limited bicycle/pedestrian network. This new infrastructure will make NMT a safe, convenient and attractive transport mode in the city and will encourage motorists to shift some of their trips to NMT. Public awareness campaigns will be conducted through appropriate media to promote NMT to the various stakeholders and beneficiary communities, including local authorities and environmental agencies. This will be strengthened by a review of the current policy, legal and institutional framework to accommodate and promote the uptake of cycling on a wide scale in the city. Promotional campaigns will also involve tackling barriers to wide usage such as cultural perceptions and financial limitations.

Promoting NMT modes as viable means of urban transport to heighten widespread social acceptance of these modes of transport particularly cycling as legitimate and viable transport modes, is a critical element of the project. Promotional campaigns would include supporting the establishment and operation of bicycle clubs and biking events, and information dissemination to locals and local and international visitors on the opportunities to use bicycles in Gaborone and in the country at large. The project team is evaluating the potential, for example, of organizing a Botswana AIDS ride, similar to those undertaken for other purposes such as to raise awareness of HIV/AIDS and to raise funds for treatment. Such events, if carefully planned

and managed, can attract people from other parts of Africa and, indeed, other parts of the world, thereby raising the profile of NMT modes in the country.

The experience of other countries both developed e.g. the Netherlands, Canada, United States, and Japan and developing e.g. Poland, South Africa and Ghana, where applicable, will enrich the implementation of the project. In this regard, links with international NMT experts will be established as part of this project.

The project will build on the current popularity of walking (30% of trips at peak times are by walking) in the city but will seek to significantly stimulate interest for cycling (1% of trips at peak times). The lack of infrastructure (safe pathways and bicycles etc.) was cited by commuters as the largest barrier to cycling in Gaborone.

In the same commuter survey the interest to shift some motorized trips to NMT was expressed by 48.9% and 13.3% who are already using some form of NMT would like to continue using the NMT modes. Once safe cycling along the new pathways is the norm in Gaborone, even those who indicated unwillingness to cycle could be persuaded to join the trendsetters. It is known that in cities with well-developed bicycle infrastructure (largely separated from both motorized vehicles and from pedestrians), a very high percentage of the population will use bicycles part of the time, including for business commuting (e.g. in Toronto, Canada).

The other reason why some Gaborone commuters do not currently use NMT modes is that commuters perceived cycling and walking as unfashionable or backward. Others view cycling or walking in the urban environment as risky given the current state of facilities available. Experience in Gaborone supports this view.

Of those who indicated that they would like to shift to NMT, the majority surveyed (34%) said that they would like to cycle compared to those who would like to walk (15%) or a combination of cycling and walking (1.1%), among them both males (39%) and females (30%) for cycling. More females (18%) preferred to walk than males (12%).

In terms of cycling, the major barrier was understood to be the lack of access to bicycles (14%), weather (6%) and unsuitable pathways (5%). This suggests that developing cycle pathways should be accompanied by programs to render bicycles more easily available. Several approaches can be combined to accomplish this, including:

- Importing and reconditioning used bicycles from abroad, as is already done in some African states
- Arranging for bulk purchase of sturdy relatively affordable bicycles from South Africa, and
- Offering short-term finance (e.g. 20% down payment, and the rest financed over three years) for bicycle purchase.

B - Country ownership

Country Eligibility

Botswana ratified the UNFCCC on 24th January 1994 and seeks to contribute to reduction of rate of GHG emissions by applying mitigation options in its economic sectors including the transport sector. National endorsement by the national GEF Focal Point and commitment by Government to co-finance the project have been secured.

Country Drivenness

Vision 2016, which forms the basis of National Development Plans of Botswana, supports incorporation of road safety features in all road designs and to that end, the design and building of roads are to include provision of pedestrian and cycle tracks to reduce the danger of road users other than motorists.

The country, in its First National Communication (NC) to the UNFCCC is seeking opportunities to implement environmentally sound measures that can be of benefit to both national development, and the local and global environments. According to the NC, the transport sector is the second largest emitter of GHG emissions, resulting from motorised vehicles in the energy system. The vehicle fleet is also increasing rapidly with the potential to increase GHG emissions, local air pollution, traffic congestion, accidents, and demand for resources to expand the infrastructure for motorised transport (MT). This project aims to promote non-motorised transport (NMT) as a sustainable transport alternative whose widespread use would reduce growth in GHG emissions from the transport sector

The project has been presented to key stakeholders including at several fora of the National Committee on Climate Change since 1999 and has received useful inputs and positive response to go ahead

C – Program and Policy Conformity

Program Designation and Conformity

The NMT mode of transport replacing motorised transport will result in reduction of transport energy demand thus limiting greenhouse gas emissions and air pollution from the transport sector. The size of the project being proposed is consistent with the GEF Operational Programme 11- Sustainable Transport that also covers the NMT option.

UNDP, the implementing agency of GEF has supported *enabling activities* for Botswana to fulfill its commitment to the UNFCCC under the project BOT/95/G31. Among these activities, was the support of projects that supported development of Botswana's first National Communication.

UNDP is also supporting various climate change related projects involving Renewable Energy, technology needs assessment and projects under the Small Grants Program.

In addition to the climate change activities, UNDP also support an Environment Support Program in the country.

Project Design

Baseline Situation: Country Background

Geography

Botswana is an upper middle income, landlocked country of about 582,000 square kilometres with a population of 1,680,863 (annual growth rate of 2.4%; 55% live in urban centers – CSO, 2001¹). It is situated to the north of South Africa, bordered on the north and west by Namibia, on the north and east by Zimbabwe,

¹ In the case of Botswana urban includes cities, towns and urban villages (villages with >5000 people with less than 25% engaged in agriculture)

and is connected by a narrow strip of land on the northern border to Zambia. It is made up almost entirely of a flat, arid subtropical plateau, though there are hills in the eastern part of the country with a mean altitude of 1,000 m above sea level. National parks cover 17% of the country and the rest of the country is semi arid to arid terrain. The economic status of the country allows government to support such an initiative and the topography is conducive for cycling. The large urban population growth requires that the country provide sustainable transport systems in the cities.

Climate

Botswana's climate is subtropical and dry. However, due to its altitude and distance from the oceans, the climate is more temperate than tropical. Summer stretches from November through March and has very hot days and nights, but rain and thunderstorms are also frequent and cool off after rain spells. Days are hot while nights are cooler in autumn (April – June). Winter days from July to August are dry, sunny and hot but the nights are very cold. Spring during the months of September to November is the beginning of dry hot days and hot nights. Although very hot in summer, there are opportunities to cycle/walk in early and evening hours (well suited to commuting to jobs and school) and during the other seasons.

Energy sector

The energy sector greenhouse emissions in 1994 were about 3.6 million (mt) and were dominated by coal-based power generation (1.75 mt) followed by transport (0.9 mt) (refer to Table 1). The per capita CO₂ equivalent from the energy sector translates to about 2.1 tones/yr and with respect to GDP in that year to 0.8 tones/ 1000 Pula². The transport energy intensity of GDP is much higher at 4.4 tonnes/1000 Pula as most of the energy in transport is not directly linked to enhancing GDP. It is also recognized that the transport sector is one of the fastest growing in the economy and will thus result in a higher rate of GHG emissions in the country.

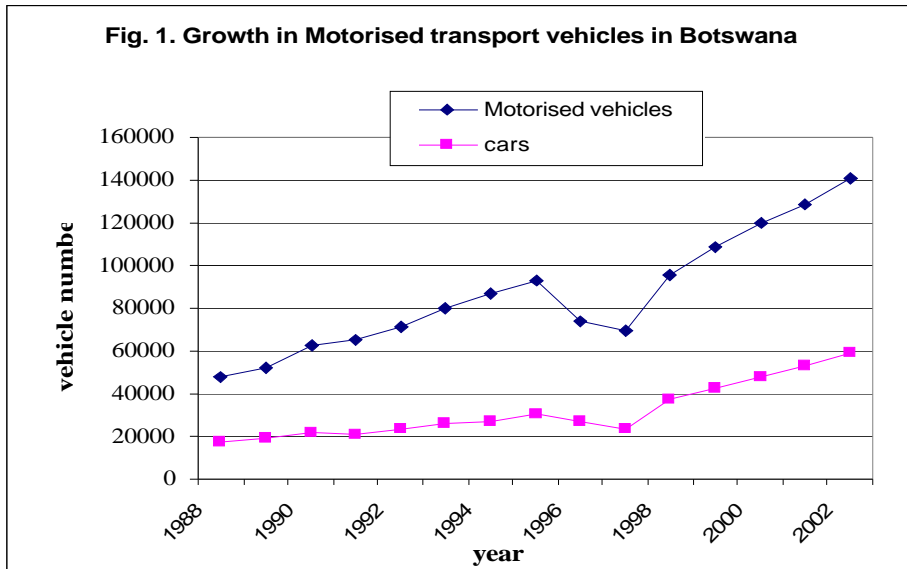
Botswana is characterized by a rapid growth in motorized transport (MT) (see Figure 1 below). Since 1988 MT modes (cars, light delivery vehicles, trucks and buses) have grown 3 fold and this is largely due to the growth in private cars. In 2002, there were 84 motorized vehicles/1000³ in Botswana of which 35 /1000 people were private cars. A stable and sound economy and government policies that provide easy access to vehicle finance underpin the growth in car ownership.

Energy Sub-sector	CO ₂	CH ₄	N ₂ O	CO ₂ eq.	% CO ₂ eq
Power Generation	1605488.7	214.9	446.8	1748509.6	48.7
Households	69983.0	11790.7	89.6	345363.7	9.6
Agriculture	36064.8	2.6	12.7	40056.4	1.1
Industry	473684.0	63.8	139.6	518299.8	14.4
Trade and Hotels	3919.9	1.2	1.5	4410.1	0.1
Transport	803314.0	768.6	266.4	902038.6	25.1
Social and Private services	633.0	90.0	0.8	2771.0	0.1
Government	21410.0	182.7	7.2	27478.7	0.8
TOTAL	3014497.4	13114.5	964.6	3588927.9	100.0

Source: Botswana First National Communication. Ministry of Works, Transport and Communications, 2001

² In 1994 1 Pula =0.25 US\$

³ World average is around 100/1000 people (S.H. Erikson, 1995, A Climate for Development Climate Change Policy Options for Africa, ACTS Nairobi)



Source: CSO, 2002

High growth in motorized vehicles demands a huge oil import bill that does not translate proportionally to growth in the economy as reflected in the energy intensity of GDP for transport. The huge fleet causes congestion on roads and results in accidents and air pollution. In particular, accidents are of a major concern to Botswana and *compete with HIV/AIDS in killing the growing and most productive age groups of the country*. Accidents rose from 48/1000 people in 1988 to 107/1000 people in 2002 and fatalities rose from 22/100,000 people to 30/100,000 people in the same period (CSO, 2002). In 2002 nearly half of the recorded accident victims were in the age group 20-34 years. It is envisaged that the project will seek to mitigate the current accident situation.

Transport sector energy consumption

Transport energy consumption is dominated by the road sector that consumes petrol and diesel, the main fuels used in the transport sector in Botswana. According to Energy Statistics (2000), the two fuels account for 92% of petroleum products used in Botswana. The transport sector consumes nearly all of the petrol and 65% of diesel and the road sub-sector consumes 99% of the petrol and 87% of diesel (EECG, 2004a). Most of the fuel consumption is in urban areas where vehicle ownership is concentrated.

Air pollution

Private cars are currently the most significant source of noxious local air pollution in cities, and their share in urban modal split is rising more rapidly, compared to public transport use.

Table 2: Emission factors for air pollutants (tones/TJ)				
CO	Hydrocarbons	NOx	SOx	TSP
5	0.37	0.71	0.05	0.05

Based on CSO, 2000

Based on Table 2 above, air pollutants from cars and light delivery vehicles (LDVs⁴) in the country were calculated as presented in Table 3 below.

Year	CO	Hydrocarbons	NOx	SOx	TSP
1992	37348.4	2763.8	5303.5	373	373.5
1993	39103.5	2669.4	5552.7	391	391.0
1997	45878.2	3395.0	6514.7	459	458.8
1999	69413.0	5136.6	9856.6	694	694.1
2000	66414.0	4914.6	9430.8	664	664.1
2002	77699.9	5749.8	11033.4	777	777.0

The air pollutants more than doubled between 1992 and 2002 due to the increasing number of cars and LDV fleets. These are the types of vehicles with the largest share in the country. The largest potential for avoiding/reducing air pollutants is therefore in replacing some of the trips made by cars and LDV. Some small changes in bus emissions are however possible, as increased bicycle use displaces some of the trips made by public transport. The modal shift to non-motorized transport proposed by the project would go a significant way to reducing these air pollutants complementing other transport efficiency measures.

Costs and benefits of various transport modes

The role of all transport modes should be assessed according to the highest performance/cost ratio, i.e. lowest unit cost of travel (financial costs + time costs + indirect costs per passenger km). From a technology/economy point of view the ranking reported in the World Bank report on Sub-Saharan Transport (2000) are:

- Bicycle (costing about US\$0.02/passenger km)
- Walking (costing about US\$0.03/passenger km)
- Bus transport (costing about US\$0.04/passenger km)
- Car (costing about US\$0.30/passenger km)

Cycling and walking are clearly the most cost-effective modes of transport, although they are often not the preferred modes.

Link to national policies and plans

The provision of NMT facilities is in line with the City’s Actions and Programs, the current National Development Plan (NDP9), and Vision 2016, and therefore has the support of the Government of Botswana. Reducing vehicular emissions is in line with efforts embodied in the National Conservation Strategy and the Atmospheric Pollution Act that aim to reduce air pollution resulting from various economic activities inclusive of transport and industrial activities.

In spite of the policy, the government has not yet done much to moderate energy demand in transport. There is still work to be done to develop an integrated National Transport Policy where these issues can be addressed in an integrated manner. This proposed project will act as a powerful demonstration to influence other cities and towns to undertake similar initiatives.

⁴ In Botswana LDVs are used for commuting to work (apart from carrying some goods) and the majority are owned by individuals rather than companies.

Baseline Situation: Gaborone City

City socio-economic characteristics

Gaborone has a population of 186,007, up from 133,468 in 1991 (CSO, 2001). Gaborone as the capital city is experiencing continued rapid population growth (3.4% compared to 2.4% for the country in the same period). The inevitable shift to an urban planet is seen in Botswana as elsewhere in Africa and worldwide. The city's population density increased from 790/km² in 1991 to 1,100 people/km² in 2001 compared to 2 persons/km² and 3 persons/km² for the whole country in the same period (CSO, 2001a).

The city has a mix of low-, medium-, and high-income commuters and hence different categories of commuters who make trips for different reasons. These various commuters have different means of transport. The high income and some of the middle income groups have cars and drive for most of their trips that include going to work, shopping, school, leisure, etc. The majority of low-income population largely depends on public transport and walking. It is recognized that over 50% of vehicles on the roads in the early part of the morning are ferrying children to school. The well-to-do/high-income groups who own cars would also like to walk or cycle as part of leisure or exercising. These are the target groups in the project design.

Infrastructure and vehicle numbers

As of 2002 Gaborone had a road network of 815 km (CSO, 2002). Gaborone City Council (GCC) is already investing in sidewalks/pedestrian/cycle paths and the current sidewalk network now reaches about 38 km⁵ (see map in Annex 1). However, some of these paths have missing links, are not properly marked, and do not have safe or user-friendly cross-over points, especially for persons with disabilities, cyclists, pedestrians, pregnant women, the elderly and those pedestrians carrying loads.

Although there are large improvements with respect to the widening of road network in the city, roads are still congested at peak hours due to the ever-increasing volumes of traffic and the growth in population density in the city exacerbated by vehicles that come from the dormitory⁶ villages around Gaborone. Based on the CSO (2002) data, there are about 350 motorized vehicles/1000⁷ people in Gaborone (compared to 175 cars/1000 people in Botswana). What this means is that Gaborone hosts 46% of national motorized vehicles and 55% of national private cars.

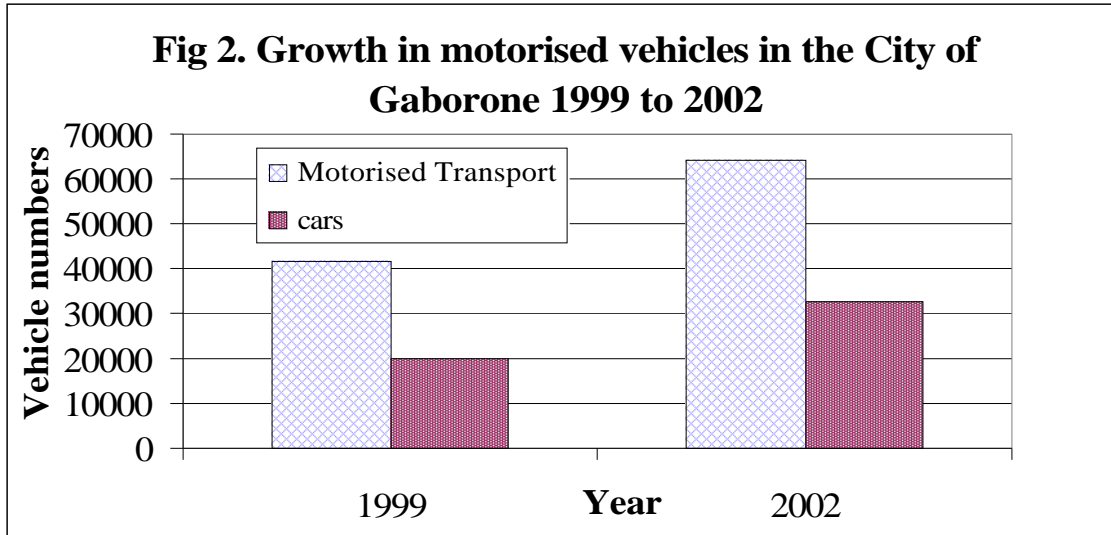
As a result roads in Gaborone experience saturation⁸ of more than 90% (Lesedi and Africon, 2003) and this will continue in spite of continued upgrading of the city roads due to the fast growth in city vehicles. Figure 2 below shows that in the last 5 years (1999 – 2002), motorized vehicles rose by 60% from 41000 to 65000 within the city (CSO, 1999 & 2002)

⁵ estimated from GCC information

⁶ Some of the people who work in Gaborone stay in neighbouring villages

⁷ translates to double times the national figure

⁸ i.e. traffic volume/capacity- the maximum traffic flow possible for a given speed and a specific safety regime.



Sources: CSO, 1999 and 2002

Transportation modal systems

Gaborone city traffic is dominated by motorized transport as reflected by the fact that 70% of the trips are made using motorized vehicles compared to 30% made by NMT, mostly walking (see Table 4 below).

The latest traffic study (Lesedi and Africon, 2003) did not register any trips made by cyclists. However, a previous study (Gaborone City Council, 1995) found out that only 1% of commuting was by cycling and the main reason was attributed to lack of safe and convenient bikeways. The sometimes inclement weather also plays a part. Table 4 below indicates that even for walking, more trips are undertaken in the morning peak times than in the afternoon peak hours.

Although new and rehabilitated/expanded motorways (e.g. the western bypass) are now constructed with sidewalks, cyclists and pedestrians are still unprotected from motorists particularly at cross-over (intersections/junctions) points and the pathways/tracks are not safe and convenient or fully designed for both cycling and pedestrians. Such tracks are also just confined to upgraded road networks in the city and would thus not cater for the majority of the population who may have to walk. *Separation of MT from NMT is also essential to minimize direct exposure of NMT users to the exhaust fumes from motorized transport as well as reduce conflict situations that could result in accidents.* Within the NMT infrastructure, pedestrians and cyclists need to be separated physically, wherever possible. Otherwise there will be pedestrian / cyclist collisions, and neither walking nor cycling will be efficient.

Mode	% Share of mode in Gaborone traffic at peak hours	Morning Peak Person Trips	Afternoon Peak Person Trips
Mini bus/Taxi	26.22	29061	21374
Bus	1.6	4879	7040
Walking	30.72	49053	8791
Car	36.74	45120	51452
Heavy vehicles	4.72		

Source: Lesedi & Africon, 2003

GHG emissions

Table 5 below shows the energy required to travel a passenger-kilometre and the equivalent CO₂ emissions using different modes of transport.

Mode of Transport	Energy Used (MJ/p-km)	GHG equivalent (kg of CO ₂ emissions/p-km)*
Bus	2.1	0.16
Private bus	1.2	0.09
Car (petrol)	3	0.21
Car (diesel)	3.3	0.24
Bicycle	0.3	none

* Calculated using IPCC emission factors for diesel and petrol of 74 kgCO₂/GJ and 69kg CO₂/GJ

Source: www.vtpi.org/tm/tm59.htm

Based on these data and the passenger-km that a car can travel per year (average annual km x average car occupancy) and previous studies (Zhou, 1997) established that the average distance a car travels per year is about 25000 km and the car occupancy in Gaborone is low at 1.5 people. This is the case for sedan cars and LDVs. These modes are the targets for trip substitution by NMT. Although public transport has a low energy intensity/passenger-km, it will be also be a legitimate target for the modal shift especially for those who ride minibuses.

The CO₂ emissions determined for the past decade based on the above calculations are presented in Table 6. The CO₂ from cars and LDVs nearly doubled in the last 10 years from 0.5 mt to 1.1 mt showing a significant rate of increase of these types of vehicles and hence their GHG emissions.

Year	Gaborone cars & LDVs CO ₂	Rest of Urban centres cars & LDVs CO ₂	Total- Cars & LDVs Total CO ₂
1992	175,348.1	358,200.0	533,548.1
1993	258,415.3	300,206.3	558,621.6
1997	244,215.0	411,187.5	655,402.5
1999	386,184.4	605,430.0	991,614.4
2000	343,971.6	604,800.0	948,771.6
2002	405,556.9	704,441.3	1,109,998.1

Note: The level of detail in the above figures is an artifact of the calculation process and does not imply six-figure precision in the annual CO₂ emissions.

Accidents

Traffic accidents, which are a concern in the city, will also be addressed through the increased use of safe NMT in addition to other traffic demand management measures. In both 1999 and 2002, 44% of national accidents involving pedestrians and motorized vehicles occurred in Gaborone and 38% of accidents involving cyclists in 2002 also occurred in Gaborone up from 33% in 1999 (refer to Table 7 below). This highlights the importance of providing safe pathways for pedestrians and cyclists in the city, as well as promoting safe riding practices, courtesy, and the use of high-quality bicycle helmets.

Year	Region	Accidents involving pedestrians	Accidents involving cyclists
2002	Gaborone	647	48
	National	1,486	125
	Percentage	44	38
1999	Gaborone	662	54
	National	1,479	165
	Percentage	45	33

Source: CSO, 1999 and 2002

PROJECT OBJECTIVES

The overall objective of the proposed project is to mitigate greenhouse gas emissions in the urban transport sector by enhancing a modal shift from motorized transport to non-motorized transport. This shift will be brought about through the construction of safe and convenient network of pedestrian and cycling pathways and related infrastructure for bicycles, promotion and communication/public awareness campaign and review of the policy and legal framework.

The project will also address institutional and information/awareness barriers that currently limit the use of NMT modes of transport, particularly cycling, which is not widely used in the cities/towns of Botswana. Other barriers to be addressed include cultural perceptions and financial barriers (related to access to bicycles) that prevent greater use of NMT modes of transport in cities/towns. The proposed safe and convenient infrastructure, apart from inducing interest to walk and cycle, will:

- § Increase safety for all road users
- § Improve accessibility to transport particularly for the low income, school children⁹ and disadvantaged groups.
- § Reduce traffic congestion in cities
- § Reduce environmental costs (air, noise and lead pollution) of transport in cities.

The project will take advantage to enhance existing popularity for walking in the city but will have to induce interest for cycling that is hardly used currently.

Project Outputs

The proposed project will deliver the following outcomes:

Transport-based greenhouse gas emissions reduced.

⁹ Considering that most of the trips made in the AM peak times include those to schools, safe cycling facilities could reduce these trips when school going children could cycle to school

Implementing the proposed project will give motorists an opportunity to shift some of their trips from motorized transport to NMT (cars, minibuses). It is estimated that this project will offset CO₂ emissions by 21,675 tons annually. If the infrastructure lasts for 10 years, then the estimated GHG reduction will be 216,750 tons (Calculations of approximate CO₂ emissions that can be avoided in the city of Gaborone are derived from the commuter survey referred to above-see Annex 2 for details on the calculations).

Well designed and constructed NMT Network and Other Facilities

Gaborone will have well designed newly constructed cycle and pedestrian paths of 10 km and existing cycle/pedestrian network of 35 km improved to similar design and standard. Auxiliary facilities in form of bicycle supply and repair/maintenance, bicycle renting and parks will also be available. Gaborone becomes an exemplary NMT-friendly city creating positive publicity for the city and attracting cycling tourism.

Acceptance of NMT (largely cycling and walking) as cost-effective and environmentally-sound complementary means of transport among stakeholders and beneficiary communities in Gaborone and other cities and villages.-This will be done through a vigorous public awareness campaign employing various information dissemination avenues including the media, publications and workshops, promotional events and clubs.

Informed and equipped Institutional Framework for NMT

Partnership of key stakeholders to implement NMT involving relevant Government departments, city authorities, NGOs and the private sector promoting NMT modes of transport and further replication and sustainability of such projects. A dedicated NMT Unit is established at the GCC

Conducive Policy and legal Framework

Policies and the legal framework reviewed to allow NMT modes to be widely accommodated in the cities and towns of Botswana with budget allocations for NMT infrastructure provided by the government.

Improvement to quality of Life

Employment creation in the sector through provision of infrastructure (pathways and bicycle parks), bicycles supply (selling and renting and even manufacturing) and repair services.

Other outcomes include reduced traffic congestion in the cities, improved mobility for commuters and improvement of safety through reduction in accidents and pollution

Proposed Activities

Activity 1: NMT facility design and construction (Total US\$1,281 300; GEF component US\$180 000)

The project focuses on the following activities, namely:

a) *Supporting Demand Surveys (Total US\$80 000; GEF component US\$0)*

Although a predetermined route for implementing the NMT demonstration project has been identified, a detailed commuter survey will be conducted to provide planning data and guide pathway design through established demand and further barriers to NMT use. The study will provide the 'before intervention profile' to facilitate monitoring and evaluation. It will also augment previous studies that have been carried out for the GCC on transport development and planning (e.g. Lesedi and Africon, 2003; Stewart Scott, 1996) and the commuter survey carried out as part of this project development exercise with the view to providing GCC with adequate information to facilitate its planning.

No GEF funding is being requested for this activity. This task will be funded by the GCC as part of their usual data collection which is integral to the GCC's routine activities and thus part of the baseline.

b) Construction of network, safety features and maintenance (US\$1,201 300; GEF US\$180 000)

The demonstration project will involve completing missing links in the current GCC network of pedestrian/cycle paths (including widening existing pathways); improve safety at cross-over points and intersections, spot improvements to accommodate all NMT users such as persons with disabilities in wheelchairs. As far as practicable, the NMT route will be aligned to Gaborone City construction activities to leverage GCC resources allocated for development of pathways. It will also involve constructing new pedestrian/cycle paths connecting residential areas and socio-economic opportunities.

GCC will work with its transport infrastructure providers (contractors) and Government departments responsible for road network development such as the Department of Roads, particularly with regard to designing, installing and maintenance of the NMT infrastructure. In consultation with a wide variety of stakeholders, NMT infrastructure standards will be generated and improvements will be made to the Department of Roads' road network and NMT pathway plan designs¹⁰.

The proposed route connects residential areas with socio-economic activity areas mainly, the major shopping centres in the city, the University and colleges, major hotels, bus ranks and the main mall, which is the centre of the city. It will also be possible to reach the planned Commercial Business District on the demonstration NMT route.

Existing sidewalks (35 km) and a new one (10km) will be developed to accommodate both cycling and walking with widths of ± 3 metres, clearly marked lanes and appropriate signage. Busy cross-over points will be equipped with pelican lights while the less busy could have clearly marked flat-topped humps as control devices. Proposed route for the demonstration project will be largely along well light roads to allow night use of the modes.

The GCC has annual budgets to engage local contractors to maintain road networks in the city and this will be extended to the maintenance of the demonstration pathway.

The government through GCC will fund the bulk of this task and GEF is only requested to pay for pelican lights that will be imperative to make the planned cycle/pedestrian pathways safe to NMT users at busy traffic crossover points. Under the business- as -usual scenario, the required quantity of pelican lights would not have been provided through GCC budgets.

Activity 2: Promotion and communication. (Total US\$695 630; GEF component US\$431 630)

GEF funds are requested to pay for the bulk of this activity, which includes measures such as information dissemination and awareness building, outreach, capacity building, institutional strengthening and training.

¹⁰ For instance the stipulated design for pathways now is 2m wide-which will not be sufficient for combined walk/cycle ways.

These are mainly barrier removal activities and thus are incremental by definition. The Government of Botswana will fund the establishment and operation of the NMT office at GCC, which can be regarded as part of the baseline.

Promotional activities will be largely targeted at business communities and commuters.

a) Information Dissemination (Total US\$ 97 630; GEF component US\$97 630)

At business community level, promotion will present opportunities for business in the NMT transport system so that private sector becomes a partner in the promotion of NMT modes of transport. Involvement of the business community will ensure sustainability of the impacts of the project.

Commuters would also need to be informed of steps/measures the Government (in this case GCC) is taking to cater for NMT users so that they reconsider use of the facilities. Information will be distributed in form of maps, pamphlets and flyers and signage along roads indicating where the NMT routes are located in the city.

At the beneficiary community level, promotion will be required to increase acceptance of NMT as a sustainable complementary mode of transport with respect to its cost-effectiveness, environmentally friendliness and potential income generating opportunities. In addition, commuters (both NMT and MT users) need to be educated about safe road use and how to observe road rules and regulations. This will be done mainly through media (newspapers¹¹, Botswana Televisions and Radio¹²) and a website on NMT in both English and Setswana languages. Targeted participatory meetings and workshops will also be used involving NGO community that is more experienced in community outreach. Penalties for road offenders will be drawn and publicized to ensure safety of NMT users in particular.

The GEF fund under this task will be used for technical assistance to develop media tools and to support the NGOs that will carry out awareness meetings and workshops and to pay for these meetings and workshops.

b) Targeted Initiatives, Events and Specific Groups (Total US\$ 194 000; GEF component US\$194 000)

Study tours will be undertaken to other cities that have implemented NMT projects to learn from their experiences and their infrastructure designs. A team of 5 NMT planners/technical staff will visit 5 cities that have displayed best practice in this regard.

Organized and sponsored promotional events such as group cycling and drama will be undertaken. For example cycle events will be planned to coincide with important national/international days such as the HIV/AIDS day, or Water day, or May Day.

Allocation of resources has also been made for sponsoring five Botswana to participate in international cycle events annually during the course of the project e.g. in Cape Town and for exchange programmes with promoters of NMT e.g. Afribike in South Africa.

The University of Botswana in Gaborone has over 10,000 full-time students and some 700 faculty members. There are also over 1000 primary and secondary schools in the country with over 400 000 pupils and over 20 thousand teachers (Gaborone with the highest density of these populations). The university and school communities are seen as natural allies in the promotion of safe and efficient NMT in Gaborone and in the country at large and will therefore be specifically targeted to champion this drive. This constituency is also

¹¹ There are free newspapers, one produced by the Government that are widely distributed and are printed in both Setswana and English.

¹² Radio is accessible to the majority of households and motorists in the country and can widely reach a wide audience

being targeted because it is from its ranks that decision makers and commuters of tomorrow will be come from.

Another important aspect is for commuters to see some of their peers (including the well-off and powerful personalities in business and politics) using this mode of transport.

A budget has also been allocated for supporting initiation of NMT clubs and those interested in cycling and walking can be assisted to form clubs by providing advisory/technical assistance.

The private sector will also be “lobbied” to provide facilities for their workers who may want to cycle to and from work, such as showers, changing rooms, and secure bicycle parks, and to provide loans for bicycle purchase. This can be done by government appeal and sensitization in terms of benefits to the workers and country at large. A similar approach has worked well when government appealed to companies to educate their workers on dangers of HIV/AIDS and provide antiretroviral drugs to the infected. This will start as a workshop and further enhanced through continued Government pronouncements.

In all this activity, co-operation with local NGOs will be maintained as NGOs are well versed with community outreach and involvement. Specifically, the project will work with the Botswana Council of Non-Governmental Organizations (BOCONGO), the national umbrella body for non-governmental organizations in Botswana with such partners as UNDP and other international organizations, as well as bilateral institutions from Europe and North America. The NGO community will be invited to assist in the promotion of NMT infrastructure in Gaborone, educating the public on NMT as a sustainable mode of transport and in linking with appropriate groups in other countries.

UNDP, through its convening resources, will be asked to assist the project in bringing together relevant bilateral organizations and NGOs to workshops to dialogue and help support the NMT initiative.

The GEF fund allocated to this task will pay for travel and subsistence of technical assistance experts, NGO support, study tours, workshops and establishment of NMT stakeholder networks.

c) Bicycle SMEs- Enterprise Building (Total US\$50 000; GEF component US\$50 000)

An important element of the project is to create bicycle supply, repair and renting entrepreneurs to ensure that NMT users have access to bicycles as this is one of the current major barriers to cycling in addition to unsafe cycle ways.

The target group to be groomed as entrepreneurs in this case will be SMEs and the potential SMEs will be identified and provided with the necessary information on where to procure bicycles, strategic locations for their businesses, market survey for their services and mentoring them. This will be done in consultation with The Citizen Entrepreneur Development Agency that sponsors Batswana who want to venture into business.

There are bicycle clubs and organizations in Africa, Europe, and North America that can contribute valuable information on experiences and practices, and potential collaboration in procuring bicycles. Examples of relevant organizations include:

- International Bicycle Fund (IBF), headquartered in the USA but connected with initiatives throughout Africa and world-wide
- Pan-African Bicycle Information Network (PABIN) – Uganda
- Afribike – Soweto, South Africa, and

- Bicycling Empowerment Network (BEN) – Cape Town, South Africa.

These organizations will be consulted with regard to sourcing of bicycles and their experience with mentoring bicycle supply, repair and renting enterprises

The GEF fund will be used to provide public awareness on the potential business opportunity in providing bicycles, repairs, and renting; providing bicycle parks etc.

d) Dedicated NMT Unit established at GCC (Total US\$284 000; GEF component US\$20 000)

In order to sustain NMT implementation, a dedicated NMT Unit is required at the GCC to undertake planning, design and development of NMT transport system in the city and to share their experiences with other cities/towns. The GCC will provide an office and staff. The GEF fund will be used to provide facilities such as furniture, computers, and software and some technical assistance to utilize these facilities for NMT planning, designs, implementation and monitoring.

e) Training (Total US\$50 000; GEF component US\$50 000)

There is the realization that if use of NMT is inculcated at an early age, it will be easier for the nation to eventually embrace NMT as a complementary mode of transport. In this regard, the project will target school going children¹³ to train on how to ride a bicycle and safe use of roads. This will be integrated with the initiative of the Department of Roads, Transport and Safety that already has a training centre for that. A budget has been allocated in this project to adopt a school and ensure that the school becomes a model for such training.

The GEF fund will be used for preparation of training materials and facilities and training of trainers.

e) Developing resource material (Total US\$20 000; GEF US\$20 000)

The importance of incorporating NMT in general planning and allocation of resources and development of a good practice manual for planners will be emphasized to the decision makers as part of the promotional activities.

GEF funds will pay for technical assistance to develop such a manual and pay for the materials and consultations related to the development of the manual for planners.

Activity 3: Strengthening Institutional, Policy and Legal framework and Capacity Building (US\$120 000; GEF US\$120 000)

GEF funding will wholly support this activity, as it is a barrier removal measure involving capacity strengthening of NMT policy and legal institutions to support NMT systems in the country.

a) Strengthening Institutional, Policy and Legal framework (US\$40 000; GEF US\$40 000)

The central aspect of this activity is to seek to understand the institutional, policy and legal frameworks of cities with successful NMT infrastructure. The challenge is to draw from the most suitable of these to help establish a simple and clear set of guidelines for NMT in Botswana. This will be coupled with reviews and

¹³ Other commuters who may want to learn cycling will be accommodated.

revision of Botswana policies and legislation to accommodate the use of NMT in the cities. The activity will involve:

Technical assistance will be provided for sharing good practices from other cities and guiding policy and law enforcement dialogue e.g. on introduction of new laws, practices and technologies. This will focus on experiences of cities with similar development status and environment, after further research-directed at transport planners and infrastructure developers.

The Police involvement will be important in ensuring that motorists¹⁴ respect NMT users. Marshals (selected members of the public) will also be trained and deployed to assist people crossing streets at busy intersections/sections of roads and together with the public will be empowered to monitor offenders of traffic rules in support of the police force. The police force will also undergo orientation training to deal with the changed shared transport system and to implement the emerging legislation.

Resources have been allocated for technical assistance and travel to Gaborone by invited resource persons from those cities that have experience in implementing NMT projects, among them Accra in Ghana, Gdansk¹⁵ in Poland, Toronto in Canada, Amsterdam, in the Netherlands, and Madison, Wisconsin in the USA, Cape Town in South Africa, etc.

The GEF budget allocation will cater for technical assistance that will provide best practice, travel and subsistence for TA experts, training of marshals and reorientation training of the police force.

b) Capacity Building (US\$80 000; GEF US\$80 000)

This will involve:

- Building of partnerships and capacity on policy and legal matters for policy-making and law enforcement institutions through consultative process and workshops.
- Conducting a road safety strategy study to inform law enforcement and law making institutions
- Translating the design standards into policy and regulation and producing a standards manual
- Forming a network of law enforcement and law making institutions for regular dialogue on the current status of policy and legal framework with respect to NMT and to define information that needs to be updated regularly.

The GEF allocation will pay for consultation meetings/workshops, studies, and technical assistance for translating design standards into policy and legislation and establishment of NMT stakeholder network.

Activity 4: Monitoring (Total US\$60 000; GEF component US\$60 000)

Monitoring will entail verifying if the project activities and related outcomes are accomplished according to the set schedule and this will be achieved through installation of a monitoring and evaluation system at GCC and creating a feedback loop with other stakeholders/interested parties. Monitoring will entail collecting data that can be translated into indicators for achieved activities and outcomes.

¹⁴ This is critical in Gaborone to ensure that buses do not encroach on sidewalk/cycle paths

¹⁵ This city was granted GEF OP 11 Medium Scale Grant.

The GEF budget allocation will fully support this activity as it is directly related to the project and would not have been necessary in the absence of the project.

Activity 5: Evaluation (Total US\$50 000; GEF component US\$50 000)

Evaluations will be carried out at four specified intervals to determine if milestones have been achieved as presented in the indicators column in the LOGFRAME (Table 10). The Implementation plan indicates when the evaluations will be carried out and objectives of the evaluations.

GEF funds are requested to fully fund this activity as it is directly related to the project and would not have been necessary in the absence of the project.

Activity 6: Replication (Total US\$50 000; GEF component US\$50 000)

The purpose of the Medium Sized project is to generate interest for replication of projects that enhance NMT modes of transport in the cities of Botswana and SADC region. The draft replication plan that is presented in this brief will be finalized through consultation with other stakeholders and implemented as part of the project. The resources provided will be used to involve stakeholders from other towns/cities in Botswana, building capacity on project development, packaging GEF project materials/information, printing of reports and distribution of such compiled information/reports to stakeholders in Gaborone and other cities/towns. Stakeholders from other cities will also be participants at the scheduled workshops under ***Promotion and Communication***; and ***Review policies, institutional and legal framework***.

Replication is related to propagating impacts of the project and hence is an activity related to the project that would have been unnecessary in the absence of the project..

The GEF fund are being requested to pay for:

Stakeholders from other towns/cities in Botswana to participate in capacity building for NMT project design and development;

Compiling GEF project materials/information that will be shared;

Printing of reports and distribution of reports to NMT stakeholders in Gaborone and other cities/towns.

1. SUSTAINABILITY (INCLUDING FINANCIAL SUSTAINABILITY)

The essential factors to ensure sustainability of the proposed project and its impacts are summarized as follows

- Infrastructure design will be done in consultation with potential users in order to incorporate features that will be attractive to users. The infrastructure is to be installed on a timely basis and maintained in a good serviceable and usable condition for users to continue using NMT. The GCC, which is the executing agency, has experience in developing transport infrastructure and its maintenance (and there is evidence of good maintenance on the existing network) and in addition will have an office dedicated to implementation of NMT.
- Adequate budgets for implementation and maintaining NMT infrastructure will be necessary to sustain the impacts of the project. GCC is allocated annually with budgets (recurrent and capital

expenditure) for both development and maintenance of road networks . GCC has also decided to ensure that with any road upgrades or newly constructed roads, NMT pathways and facilities will be incorporated. This will sustain the impacts of this project, especially that the appropriate designs and institutional framework will be in place. The GEF support to promoting public acceptance of NMT will also help to strengthen GCC’s ability to secure continuous government funding for future development and maintenance of NMT infrastructure in the budgets.

- Demand for NMT use and facilities/equipment created by the promotional activities is maintained or increased. The project is designed on the premise that motorists will not abandon their vehicles but shift some of their trips to NMT and this will be so if NMT facilities exist as an attractive alternative for short distances. . Providing both MT and NMT facilities, commuters will have a choice to use either whenever it is convenient rather than expect total shift to one or the other.
- The policy and legal framework created for NMT will persist and enforced beyond the life of the project. Implementation of policies on NMT in the Vision 2016 and NDP9 will leverage those policies and laws to be established as part of this GEF supported project. Enforcement agents will also be reoriented and empowered to ensure that legislation developed in this project will be sustained.
- Other infrastructure provision e.g. bicycles supply and maintenance will be sustained through involvement of the private sector. This project is designed to create a market for NMT equipment such as bicycles and when the market is there private sector will always strive to get a market share thus ensuring sustainable supply of NMT equipment in the long run.
- On the effectiveness of the GCC as the executive agency and related key stakeholders who will be implementing these measures. There is already registered commitment by these key stakeholders to make NMT a success story in Botswana.
- Active involvement of beneficiary community and key stakeholders and adequate forum for interaction and opportunity to contribute to the project have been catered for in the project in form of stakeholder fora and networks.

Risk Assessment

Some risks that may affect sustainability of the project impacts and how they are mitigated are provided below.

The potential risks, their rating and potential solutions are provided in Table 8 below:

Table 8: Risk Assessment		
Potential Risk	Risk Rating	Risk Minimization Measure
1. Timely leveraging of funds to provide ancillary facilities by private sector e.g. bicycle supplies, parks etc. local manufacture	Low	There is an assumption that while providing a revolving fund for procurement of bicycles, the potential buyers will like the bicycles already on the market and how to secure them around town. Botswana is within reach of South Africa where there is more variety of supply and Botswana has a low crime rate such that bicycles may not be targets for theft while proper parks are

		being put in place.
2. Infrastructure maintenance	Medium	Maintenance of road infrastructure poses a challenge to most municipalities. In the case of GCC which will be in charge of the NMT development and maintenance, adequate budget allocations are available for that purpose. There are a number of service contractors used by GCC for road maintenance that can be redirected to maintain NMT pathways as well
3. Lack of GCC experience in managing GEF funded projects	Medium	Technical Assistance, consultant and UNDP support are catered for in the project
4. GCC limited experience in managing revolving funds	Medium	The Fund management by GCC will be closely monitored failure of which the fund management will be weaned to a financial institution that has experience in disbursement of loans and collection. A 25% fund management fee has been catered for in the project budget should a financial institution be engaged.
5. Motorists may not take time to respect NMT users hence safety issues delaying NMT adoption	Medium	Education of both MT and NMT users provided in the project and law enforcement aspects of the project.
6. Delays in development of the bicycle market	Medium	Revolving fund and cycle events are expected to be incentives. When demand is established through detailed commuter survey and government commitment to promote NMT is realized, private sector will market bicycles aggressively.
7. Replication depends on success of this Gaborone NMT project	Medium	There is GCC and Government commitment to make the project a success and there is provision for learning from best practice through study tours, exchange programmes and Technical Assistance.
Overall Risk rating	Medium	

The project will monitor all the above risks and make adjustments where possible and necessary.

REPLICABILITY

Through promotional and communication activities, and stakeholder interactions, the project will generate interest to replicate NMT projects in other parts of Gaborone and in other urban centers. Among the urban centres suggested by the stakeholders in a workshop group discussion are Francistown (city), Palapye (town) and Molepolole (urban village). The experience gained in Gaborone will be used to prepare similar key stakeholders to implement activities in those urban centres. The City Engineer of Francistown, who was at the Stakeholder workshop expressed direct interest to initiate similar NMT activities in his city and dissemination of project experiences will assist replication of NMT practices in other cities/towns.

Replication will entail packaging information on lessons of this project for other urban projects to learn from. The replication plan will, in addition to a consultative process that will be undertaken to share experiences on the project design and implementation, include the dissemination of the following information packs.

- The NMT facility planning manual and design standards
- Results and lessons learned in the Gaborone project and other cities to transport planners in other cities/towns in Botswana. This will be done through workshops and distribution of project reports.

The same lessons will be communicated to GEF/UNDP and other donors for adoption in future similar projects in other cities and countries.

The plan will also provide for:

- Building the required capacity for implementation of national strategies on NMT. This will be done through participation of staff from other cities in the Gaborone NMT project.
- Inviting other key stakeholders – government departments, private sector and NGOs in the other cities/towns to be part of the NMT network and this will be incorporated as part of the promotion and communication strategy.

Stakeholders that will participate in the NMT project e.g., from other cities/towns will be equipped through review/evaluation of project evolution, project workshops and sharing of experiences to reinforce and enforce appropriate bye-laws that will facilitate the up-scaling of NMT. A proposal put forward by the traffic police is to empower municipal police to enforce relevant laws including those affecting transport modes of transport.

2. STAKEHOLDER INVOLVEMENT

The project enjoys strong support among stakeholders including the Department of Meteorological Services (the National Focal Point for Climate Change), which have nurtured the project idea since 1999 when it was presented to them by EECG Consultants. Many key stakeholders have come to embrace the project idea as both noble and practical, among them the Department of Environmental Affairs(GEF Focal Point), the Ministry of Finance and Development Planning that endorsed Government support for the project. GCC itself has special interest and would like through this project to go beyond their current level of NMT provision in terms of length and quality of the NMT network. The officials of Francis town (the 2nd largest city) have expressed interest to replicate the project. Some of the key stakeholders in the implementation process will include, but will not be limited to:

- Gaborone City Council (GCC) – Ministry of Local Government-) Project owner and implementer)
- Department of Roads – Ministry of Works and Transport- (co project implementer)
- Department of Road, Transport and Safety (DRTS) – Ministry of Works and Transport (road safety issues)
- Department of Meteorological Services (DMS) – Ministry of Environment, Wild Life and Tourism (UNFCCC Focal Point)
- Ministry of Finance and Development Planning (MFDP)- (National plans and financing)
- Department of Environmental Affairs(DEA) – Ministry of Environment, Wild Life and Tourism (Environmental Agency and GEF focal Point)
- Department of Town and Regional Planning (DTRP) – Ministry of Local Government (Town planning)
- Private sector (bicycle suppliers, sponsors, contractors, technical experts, media)
- University of Botswana (and other academic Institutions), (technical and research inputs)
- NGOs (community awareness and social and environmental watchdogs)
- Communities and community-based organizations (needs assessment and public monitoring).

The public has been involved in previous activities leading to the development/design of this project through a commuter survey that sought to establish demand for NMT facilities and assessed commuter needs with regard to the design of the NMT facilities. The public community also participated in the stakeholder workshop that contributed to the design of this project. Further public involvement will be

ensured in the implementation of the project through their inputs in the design (routes, safety features of pathways etc) of the NMT infrastructure as part of the commuter demand survey (Activity 1a). Members of the public will also participate in promotional events including cycling (Activity 2b) and will be part of public policing in relation to safety of NMT users particularly at cross-over points with roads (Activity 3a). All these aspects of public involvement are provided for in the project design.

3. MONITORING AND EVALUATION

Project Implementation Schedule

The project implementation schedule has been set at 4 years to cater for the time often required to set structures for implementation of the project. There is a study to be done at the beginning to inform design of the infrastructure and the tenders for designs and construction may take up to 6-12 months before the infrastructure construction commences. A complete proper construction, procurement of equipment (pelican lights) and markings and commissioning for use could be realized after 2 years. The promotion and communication activities and revision of legal system, although undertaken parallel may still need to be amended as the project progresses and changing the mindset takes a while hence final evaluations have to be taken after 4 years to properly assess impact of the project.

The proposed project timeline is presented in Table 9 below:

Project Activities/months	6	12	18	24	30	36	42	48
1. NMT Facility Design and Construction, bicycle supply and parks	xx	xxxx	xxxxx	xxxx	xxx	xx		
4. Promotion and Communication	xx	Xx	xxx	xxxx	xxxxx	xxxxx	xxxx	xxx
5. Strengthening Institutional, Policy and Legal framework and Capacity Building	xx	Xx	xxx	xxxx	xxx	xx	xx	x
6. Replication		X	x	x	x	xx	xx	xxx
7. Monitoring	x	Xx	xx	xxx	xx	xx	x	xxx
8. Evaluation		X		xx		x		xxx

The study, setting up of project structures, infrastructure designs and construction have been allocated up to 2.5 years including procurement of equipment. Promotion and Communication will continue for another 1.5 years to ensure sustainability in project impacts, which will also be monitored every year. Review of policies and legal framework will also continue being informed by monitoring and evaluation results for any further adjustments that may be required.

Monitoring and evaluation plans are taken for the 4 years to indicate any medium to long term impact on uptake of NMT and also GHG reduction.

The implementation of the project will be closely monitored in accordance with the monitoring procedures established by UNDP. The project will be subject to midterm (presenting data for 24 months and final evaluation (48 months). The first evaluation takes place within the first 12 months of the

implementation plan. There will be another evaluation after the mid term one in 36 months and then the final evaluation in 48 months. Submission of the Evaluations will coincide with the required reviews by the representatives of the Government of Botswana and UNDP.

The evaluation reports will be prepared by an independent reviewer in consultation with the project manager and outcomes of the project will be evaluated against the indicators of the project objectives and outcomes. The results of the evaluation are to be used to implement changes in the project, if necessary and as applicable. If necessary, additional evaluations may be requested during the implementation of project.

The Government represented by GCC will provide UNDP with certified periodic financial statements relating to the status of UNDP/GEF funds, including an annual audit of these financial statements, according to the procedures set out in relevant documents. The audit will be conducted by a legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

*Project Monitoring Plan
Monitoring Emission Reductions due to NMT uptake*

Emission reduction relative to the baseline is of immediate interest to GEF projects related to climate change, so monitoring and evaluation ought to verify if any reduction is achieved through the project and beyond. For the other associated impacts such as infrastructural improvements, acceptance of NMT, increased market for bicycles etc, a number of indicators are provided to guide the monitoring and evaluation of the project impacts. Continued monitoring will assist to steer the project and re-direct emphasis as seen fit.

Key performance indicators

Once the project is approved, the project team in consultation with stakeholders and beneficiary communities will finalize key performance indicators that will be monitored and reported on and these will constitute terms of reference of the monitoring and evaluation team. Some of the indicators that will be included are shown in Table 10 below:

There will be four major progress evaluations as presented under the Implementation Plan. To reduce the costs of evaluation, a system of regular monitoring, such as regular traffic counts on the NMT routes will become the responsibility of GCC. There will also be a mechanism for feedback to obtain views of the public on the performance of the project. Additional commuter surveys will then be required to fill the gaps in information to evaluate the performance of specific project elements. The surveys will include extent of use by commuters, user satisfaction analysis and other types of user feedback including consultations with key stakeholders in the project.

TABLE10: LOGICAL FRAMEWORK				
Sector Related Goal	Indicators		Verification	Assumptions
To contribute to sustainable transport in urban cities of Botswana & other regional countries	Participation of urban authorities & potential beneficiaries in adopting sustainable transport measures		Country & regional transport planning that incorporates sustainable transport measures	Governments support & involvement of other stakeholders
Project Development Objective	Indicators		Verification	Assumptions

Promote incorporation of Non-motorized transport modes in urban areas of Botswana & the region.	Plans, policies & legal framework, NMT designs and standards for adoption of NMT modes of transport for Botswana & region. More urban authorities involved in the initiative in Botswana and region	Government and urban NMT plan and ACT reports	Resource allocations for NMT planning & development Urban authorities will use results of the GEF demonstration project to replicate similar projects.
Global Objective	Indicators	Verification	Assumptions
Reduce GHG emissions & demonstrate environmental benefits & cost-effectiveness of non motorized transport	Baseline GHG emissions & Reduction potential	Pre-project GHG estimates & continual inventories	Modal shift from MT to NMT
Outputs	Indicators	Verification	Assumptions
1. Transport based greenhouse gas emissions Reduced	GHG reduction at a minimum of 13.5kt/year from shifting MT trips to NMT trips	Reports on Pre project calculated estimates & those from evaluations	Modal shift due to this NMT project can be distinguished
2. A well designed and constructed NMT Network of cycle/walk ways and bicycle facilities that include bicycle supply, repairs, renting and parking facilities Increased ownership of bicycles & use	45 km of combined cycle and pedestrian pathway Increased bicycle dealers, bicycle parks, rest rooms established in Gaborone. ny bicycles on NMT routes Bicycle SMEs established	Maps & signage Project Reports Bicycle supplier & repair businesses registered or upgraded Trip counts by M & E team Survey Reports Operating bicycle SMEs	Timely provision of co-financing & network maintenance Leverage funds and SMEs willing to engage in bicycle industry
4. Increased uptake of NMT (cycling & walking) as means of transport	Evaluation shows more users of or trips by NMT particularly cycling from current 1% to a minimum of 15% and trips by walking increasing by a minimum of 5% from current 30%. Increase in number of cycling and walking clubs. NMT events held Batswana in international cycling events. Student and important persons involvement in promotional events	Survey Reports reflecting positive attitudes towards use of NMT Registered NMT clubs under the project. Operating bicycle SMEs Office for NMT at GCC	Motorists will respect NMT users

5. Informed and equipped institutional framework for NMT through Partnership of key stakeholders to implement NMT and dedicated NMT Unit	Stakeholder network for promoting NMT-involving public and private representation Dedicated NMT Unit at GCC	Membership of network NMT Office for NMT at GCC	Adequate stakeholders involvement
6. Conducive Policy & legal framework for NMT	Allocation of resources and revised Road Traffic legal framework defined with NMT focus.	Revised Road Traffic legal framework report NMT norms & standards for NMT	
7. Improved quality of life Through employment creation in the transport sector and reduced pollution, accidents and Improved transport mobility	New or upgraded Small and medium enterprises bicycle suppliers, renting, repair services, NMT infrastructure providers; and local bicycle manufacture Reduced traffic congestion, fewer pedestrian/cyclist accidents and pollution	Bicycle parks, renting & repair services, manufacturing & NMT infrastructure providers Traffic counts reports National statistics on accidents, pollution	Market grows for NMT facilities Results attributable to this specific project
Activities	Indicators	Verification	Assumptions
Activity 1: NMT facility design and construction, bicycle supply and parks <ul style="list-style-type: none"> • Demand Surveys • Construction of Network • 	Study done and demand established Design and widened 35 km of existing pathway; 10km new pathway built; (with signage at junctions/intersections) and traffic controlled crossing (20 pelican lights and 90 signed controls)	Reports on Survey Observed network with signage and NMT pathway maps	

<p>Promotion and communication.</p> <ul style="list-style-type: none"> • Information Dissemination • Targeted initiatives, events and groups • Enterprise building in NMT • Training • Developing Resource Material • NMT Unit 	<p>Workshops (10), education materials (newsletter (5), pamphlets (50000), manuals (2)) and facilities (e.g. website (91), media adverts and BTV (20); Bicycle businesses established, NMT clubs formed; sponsored events (5), exchange programmes 2 visits/year; manual for planners. School adopted for NMT training, Study tours.</p>	<p>Workshop Receipts, materials & Advertising clips being distributed/promoted Tickets & DSA allocation for travel Manual reports Name of School Office for NMT at GCC</p>	
<p>Strengthening Institutional, Policy and Legal framework and Capacity Building</p> <ul style="list-style-type: none"> • Strengthening Institutional, Policy and Legal framework • Capacity Building 	<p>Workshops of (5); study done, Norms and standards for NMT established; network enforcement agents and policy makers, Technical assistance provided in revision of Road Traffic legislation that incorporates NMT</p>	<p>Workshop costs and venue and attendants list; workshop report Reports on study Network members</p>	<p>Appropriate Technical Assistance identified</p>
<p>Monitoring</p> <p>Installing M & E Systems</p>	<p>System of data collection in place for monitoring indicators at GCC</p>	<p>Data collected List of variables being monitored</p>	
<p>Evaluation.</p> <p>Undertaking evaluations</p>	<p>Four evaluations done</p>	<p>Reports</p>	
<p>Replication</p> <ul style="list-style-type: none"> • Consultation & finalization of the Replication Plan 	<p>Project reports compilation and dissemination to other cities; (workshops same as in c) and d))</p>	<p>Reports compiled and distribution lists</p>	<p>Adequate participation of stakeholders from other cities</p>

D – Financing

1. Financing Plan

Incremental Cost Rationale

This project seeks to avoid greenhouse gas emissions from vehicles, particularly private vehicles by providing infrastructure solutions that promote non-motorized transport. The baseline course of action is the current state of affairs, with too few side walk ways that are not properly designed for cycling and are not safe and convenient particularly at junctions and intersections. Although the City of Gaborone is installing sidewalks whenever there is an upgrade of city roads from 2 lanes to 4 or 6 lanes, the sidewalks still do not meet the standard being proposed for this project.

Without GEF funding to pave the way for adoption and removal of institutional and perception barriers, the current state of affairs of motor vehicle dominated modal composition will not change for the foreseeable future. At the current growth rate of vehicle fleet, greenhouse gas emissions and other pollutants will correspondingly increase.

The incremental cost is then based on the widening and construction of new footpaths and bicycle tracks to accommodate both cyclist and pedestrians and this network is about 35km. Without this project, the GCC would not be considering putting them in the budget. The project has included some 10 km route along the banks of Segoditsane River away from roads for motorized transport to separate NMT users from fumes and noise of cars. The route will provide links to shops as well and cuts across the city. This is where such space is available to construct pathways that would not be along roads.

The incremental costs for the infrastructure include pelican (traffic light) and calming flat-topped humps at crossover points that are not currently being installed for sidewalk ways.

Table 11 summarizes the baseline and alternative scenarios and the financial plan for funding the activities in the Alternative scenario are presented in Tables 12. The Detailed Analysis of Incremental Cost is provided in Annex 3.

TABLE 11: Baseline, Alternative Scenarios & Incremental Costing			
Benefits	BASELINE	ALTERNATIVE	Increment (Alternative-Baseline)
Global Environmental Benefits	Minimal use of NMT use particularly cycling & increased use of Motorized transport in urban cities of Botswana Increasing rate of CO ₂ emissions from the transport sector	Increased use of non-motorized transport particularly cycling CO ₂ emissions reductions as a result of increased non-motorized transport	Increased use of non-motorized transport modes that result in CO ₂ reductions from the transport sector. Offset of CO ₂ emissions as a direct result of the project (21675 tons of CO ₂ reduced annually)
Domestic Benefits	Unsafe for cyclists on streets that are not properly designed for that purpose Negative perception of using NMT particularly for commuting to work Increasing traffic congestion in the city Deteriorating local air quality resulting from vehicle pollutants Increased accidents resulting from increased use of motorized vehicles	Properly designed cycle & pedestrian paths & traffic controlling facilities improve safety & convenience of NMT users Improved awareness on NMT as an alternative sustainable mode of transport Improved access to affordable transportation, Improved transport systems & environment	Improved access to convenient & safe NMT transportation Affordable mode of transport for the lowly paid Environmentally friendly in terms of global warming. Reduced traffic congestion ¹⁶ on roads & reduced resource allocation for infrastructure forever increasing motor vehicles. Offset in air & lead pollutants Reduced accidents rate involving NMT users

¹⁶ A further potential benefit of reduced MT congestion would be reduced GHG emissions per km of MT travel as well as somewhat increased fuel efficiency. The driving cycle has a major impact on both fuel consumption (efficiency) and emissions.

Table 12: Financial Plan for funding Activities under the Alternative Scenario					
Activities	Baseline Costs (US\$)	Alternative Costs (US\$)	Incremental Costs (US\$)		
			TOTAL	Of that: GEF Funds (US\$)	Of that: Co-financing (US\$)
Activity 1: NMT Facility Design & Construction, Bicycle supply & Parks ¹⁷	410,000	1,691,300	1,281,300	180,000	1,101,300
Activity 2: Promotion & Communication	0	675,630	695,630	431,630	264,000
Activity 3: Strengthening Institutional, Policy and Legal framework and Capacity Building	0	120,000	120,000	120,000	0
Activity 4 Monitoring	0	60,000	60,000	60,000	0
Activity 5: & Evaluation	0	50,000	50,000	50,000	0
Activity 6: Replication	0	50,000	50,000	50,000	0
TOTAL FOR ALL ACTIVITIES	410,000	2,666,930	2,256,930	891,630	1,365,300
RATIO COFINANCING: GEF				1.53: 1	

¹⁷ Bicycle parks will come from leverage funds which are not included here

GHG Potential Reduction System-Boundary and Cost effectiveness

GHG Potential Reduction

The system boundary for the calculations of the anticipated emission reductions is based on the various commuters who currently use motorized transport as their principal means of transport in the city of Gaborone who may shift some of their trips to NMT-cycling/walking. It is important to consider that commuters will not abandon their vehicles but will also have bicycles for some trips and walk at times depending on length of trips, time available and destination and purpose of trip.

Some of the commuter survey respondents gave the number of trips, number of days they would use NMT and the length of their trips. For feasible analysis, the maximum walking distance of 2 km and cycling of 5 km were assumed. In each case a maximum of 4 trips per day for 5 day-week was taken as the upper limit of passenger trips that can be done on NMT transport mode. From the number of trips and distances, the p-kms shifted from MT to NMT are calculated and figures in Table 5 used to calculate kg of CO₂ emissions that will be reduced based on what type of MT is principal mode at present. To get the potential reduction in Gaborone, the per capita emissions/year is translated to the population of Gaborone taking into account the proportion of commuter survey responds that could shift some of their trips to NMT.

The GHG estimate derived is considered conservative and indicative of the potential GHG reduction as a result of the project but ignores N₂O and CH₄ from combustion of fuel and air conditioning gases, which also cause global warming. The actual GHG reduction potential should be considered to be more than estimated here; hence a larger global benefit than specified will be achieved.

2) COST EFFECTIVENESS

Considering the GHG reduction potential in 10 years (period the infrastructure will last) and the total incremental cost of US\$256930.00) above, this translates to a mitigation cost of US\$ 16.7/ton. This figure falls within the acceptable range for GEF for such projects of <US\$20/ton.

3) CO-FINANCING

Co-financing will be largely provided by the Gaborone City Council in collaboration with other Government Departments, namely the Department of Roads that is also involved in construction of roads and NMT pathways, and the Department of Road Transport and Safety that is involved in some awareness campaigns (Table 13).

Table 13. Co-financing breakdown				
Name of Co-financier	Classification	Type	Amount (US\$)	Status*
Government	Initial	cash (infrastructure subcontractors;	1101300.00	Available through Government

		manuals)		budget lines
Government	Initial	In-kind (planning, designs, supervision, administration monitoring)-NMT Unit	264000.00	Using GCC facilities and resources
Sub-Total Co-financing			1 365 300.00	

E - INSTITUTIONAL COORDINATION AND SUPPORT

CORE COMMITMENTS AND LINKAGES

Roles and responsibilities of key stakeholders

GCC: is responsible for the design, bidding procedures, construction, monitoring and commissioning of the infrastructure. The design will be approved in partnership with other stakeholders such as Department of Roads, DTRP, contractors and NGOs. GCC financial involvement has been approved by both its line Ministry of Local Government and Ministry of Finance and Development Planning. This will include approval of co-financing pledged by other sponsors (bilateral, multilateral and private funds. GCC will also monitor the project performance and provide maintenance for the infrastructure.

DRTS: which is already involved in safety campaigns, will contribute to the promotion and communication strategy and implementation, assisted by NGOs and the media houses.

DMS, DEA and MFDP: are responsible for endorsing the project and will also be responsible for negotiating similar follow-up investment projects with other urban centers. They will also constitute an important part of the project review and reference team.

Technical experts, NGOS, media and the private sector: will contribute to production of promotional materials (pamphlets, websites, electronic media, etc.), activities (e.g. cycling events, and t-shirts, caps, drinks, etc.) and other dissemination activities. Among the technical experts is Energy, Environment, Computer and Geophysical Applications (EECG) that produced the project concept and was the consultant in the project design.

CONSULTATION, COORDINATION AND COLLABORATION BETWEEN AND AMONG IMPLEMENTING AGENCIES, EXECUTING AGENCIES, AND THE GEF SECRETARIAT, IF APPROPRIATE.

This project will be carried out by three major groups: (1) those involved in NMT Facility design (GCC, Department of Roads, DTRP, contractors) (2) Promotion and Communication (DRTS, NGOs, Media, other private sector sponsors) and (3) Policy and legal framework reviews (DRTS, Police, MFDP, DEA, DMS). UNDP will be involved in guiding project implementation and evaluation reviews. It is anticipated that GCC, MFDP, DEA, DMS and UNDP will form the Project Performance Evaluation Team.

(a) Core Commitments and Linkages

Energy and Environment has been identified in the UNDP Country Cooperation Framework (CCF) as a practice area. The Non-Motorised Transport project falls under the UNDP's 3rd Goal (Energy and environment for sustainable development) and more specifically, Service Line 3.3 (Access to sustainable energy services) with linkages to Service Line 3.1 (Frameworks and strategies for sustainable development). These result areas (Service Lines) form the basis for the country Strategy and are therefore an integral part of the Country Office operations. A Unit of Energy & Environment exists to deliver on this 3rd Goal. The project will link with the Environment Support Programme on (i) Public Education on Energy Conservation and Greenhouse Gases (GHG) Management and (ii) Capacity Building for GHG Mitigation policy and systems. This project fits in well with this programme since its objective is related to GHG mitigation in the transport sector. Further linkages through policy and systems will take place through UNDP's support to Government (through a Poverty Programme Support) for piloting economic diversification and increasing business opportunities (piloting initially in the government sector). Policy revisions stemming from this pilot will benefit other SMEs including the bicycle sales and repair industry.

b) Consultation, Coordination, Collaboration between IAs and EAs if appropriate.

No initiatives from the World Bank, UNEP, and any of EAs have been planned for design and/ or implementation in Botswana in the broad area of transportation or sustainable transportation.

The United Nations Environment Programme (UNEP) is supporting a regional programme on Capacity Building for Environmental Law. The Botswana component is being managed jointly by the Government of Botswana and UNDP-CO. Linkages with the NMT Project will be on the area of legal support to pollution-related regulations and translation of regulation and laws into simpler version for general consumption. This project will closely follow possible future activities of the IAs and EAs and will seek active collaboration in the event that related activities are being designed or implemented.

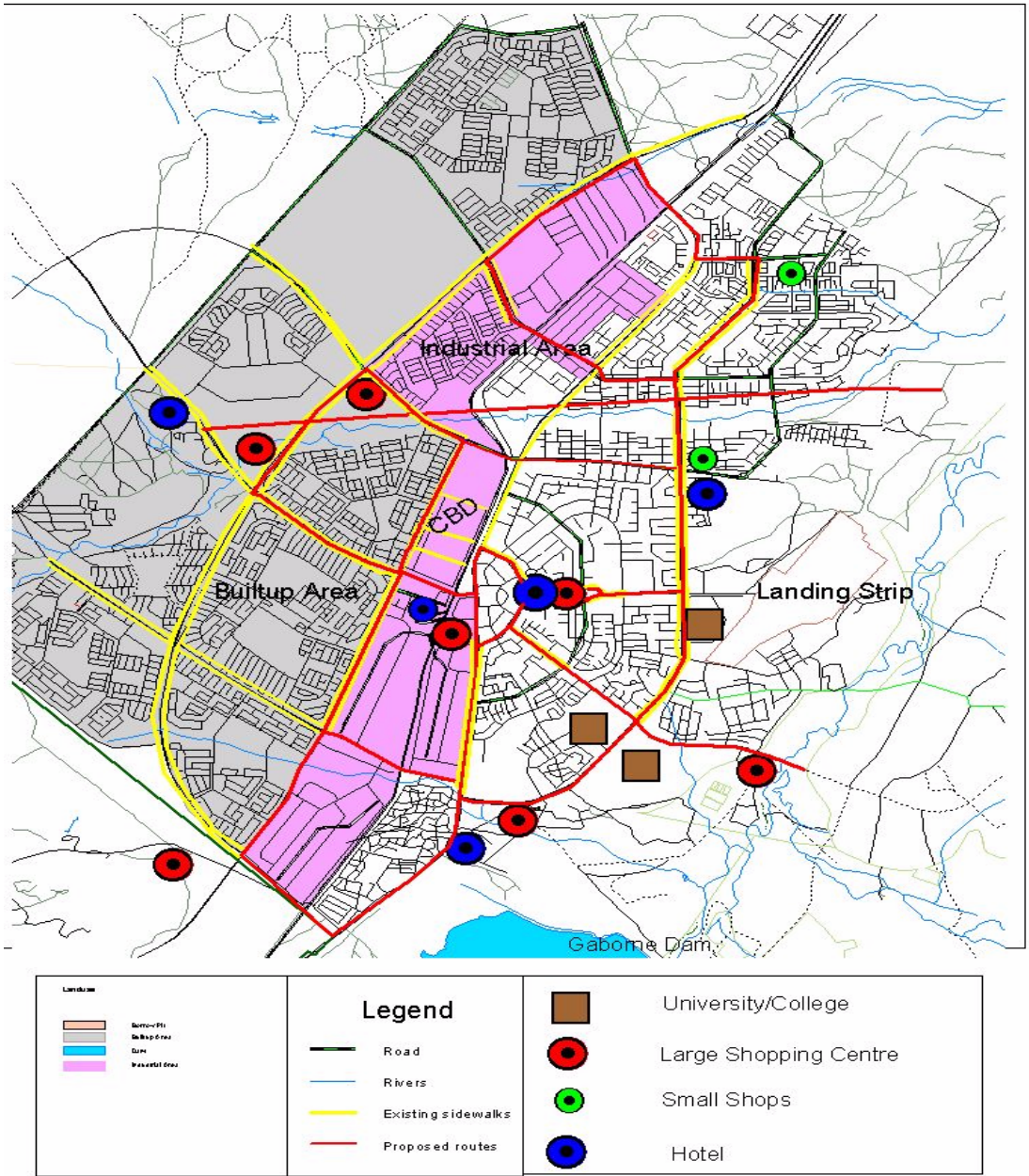
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List of Abbreviations

CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ eq.	Carbon Dioxide Equivalent
CSO	Central Statistics Office
DMS	Department of Meteorological Services
DRTS	Department of Road Transport and Safety
DTRP	Department of Town and Regional Planning
eq.	equivalent
GCC	Gaborone City Council
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse gas emissions
Kg	kilograms
km	kilometres
LDV	Light Delivery Vehicle
M&E	Monitoring and Evaluation
MFDP	Ministry of Finance and Development Planning
MLG	Ministry of Local Government
MT	Motorized Transport
MWT	Ministry of Works and Transport
N ₂ O	Nitrous oxide
NO _x	Nitrogen Oxides
NDP	National Development Plan
NGO	Non-Governmental Organization
NMT	Non-Motorized Transport
PDF	Project development Fund
PDFA	Project Development Fund Type A
p-km	passenger-kilometre
RTA	Road Traffic Act
SO _x	Sulphur Oxides
TSP	Total suspended particles
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
US\$	United States dollar
%	Percent

ANNEX 1: MAP SHOWING PROPOSED ROUTE FOR DEMONSTRATION PROJECT



PROPOSED/EXISTING GABORONE CYCLE TRACK MAP

ANNEX 2: GHG POTENTIAL REDUCTION CALCULATIONS

The calculations of the anticipated emission reductions are based on the commuter survey results (EECG, 2004). In the survey, commuters were asked to specify their current principal mode of transport and how many trips per week they would want to shift to NMT- either cycling or walking. For those who indicated interest to shift some of their MT trips to NMT, they also indicated approximate distance, where possible. Where it was not possible a maximum walking distance of 2 km and cycling of 5 km were assumed. However a maximum of 4 trips per day of 5-day week was the upper limit for trips that could be made on NMT transport mode. From the number of trips and distances, the p-kms shifted from MT to NMT were calculated and figures in Table 5 used to calculate kg of CO₂ emissions that will be reduced based on what type of MT is principal mode at present. The emissions were summed up for those who indicated interest but reduced to per capita for all commuters that would shift to NMT. To get the potential reduction in Gaborone, the per capita emissions/year were multiplied by the population of Gaborone and proportion of the Commuter sample that could shift to NMT. Growth in population over the life of the project were ignored since part of the city population consists of infants who cannot walk /cycle alone. The GHG estimate derived is considered conservative and indicative of the potential GHG reduction as a result of the project.

COMMUTER NO.	C1CURRENT PINCIPAL MODE	D1 NMT INTEREST	D3-NMT OPTION	D5-SUB TRIPS P-KM Days x trips x dist	CO2/YEAR- KG
1	Bus	Yes	Cycling	70	327.6
2	Car/bus	No			0
3	Bus	Yes	Cycling	50	234
4	Car/walking	No			0
5	Car	No			0
6	Car	No			0
7	Bus	No			0
8	Bus	Yes	Cycling	70	327.6
9	Bus	Yes	Cycling	40	187.2
10	Bus/walking	No			0
11	Bus/walking	No			0
12	Car	Yes	Cycling	25	312
13	Car	No			0
14	Car	Yes	Waking	84	1048.32
15	Car	No			0
16	Car	Yes	Cycling		0
17	Bus	No			0
18	Walking	No			0
19	Bus/walking	Yes	Cycling	70	327.6
20	Car	No			0
21	Walking	Yes	Waking	35	0
22	Bus	Yes	Cycling	6	28.08
23	Walking	No			0
24	Bus	No			0
25	Car	Yes	Waking	4	49.92
26	Bus	No			0
27	Bus/walking	Already using	Waking		0
28	Bus/walking	No	Walking	8	37.44
29	Bus/walking	Yes	Walking	8	37.44
30	Bus/walking	No			0
31	Bus/walking	No			0
32	Bus	Yes	Cycling	30	140.4
33	Walking	Yes	Cycling	50	0
34	Car	No			0
35	Bus	No			0
36	Car/walking	Yes	Cycling		0
37	Bus	Yes	Cycling		0
38	Bus/walking	Yes	Walking		0
39	Bus	No			0
40	Bus/cycling	Already using			0
41	Car/cycling	Already using			0
42	Car	Yes	Waking		0

43	Car	Yes	Cycling	14	174.72
44	Walking	No			0
45	Walking	Yes	Cycling		0
46	Walking	Yes	Waking		0
47	Bus/walking	No/already using			0
48	Car/bus	No			0
49	Walking	No/already using			0
50	Car/walking	Yes	Cycling		0
51	Bus	Yes	Waking	3	14.04
52	Bus	Yes	Cycling		0
53	Walking	Already using	Cycling		0
54	Bus/walking	Yes/already using	Cycling		0
55	Bus	No			0
56					0
57					0
58					0
59	Bus/lift in car	Yes	Cycling	20	93.6
60					0
61					0
62	Car/walking	Yes	Cycling/walking	160	1996.8
63	Walking	Yes	Cycling	20	0
64	5-SCOOTER	Yes	Cycling	40	187.2
65	Car/bus	No			0
66	Car/bus	No			0
67	Car	No			0
68	Bus/walking	Yes	Waking	28	131.04
69	Car	No			0
70	Bus	Yes	Cycling	20	93.6
71	Car	No			0
72	Car	Yes	Cycling	85	1060.8
73	Car	No			0
74	Walking	No			0
75	Bus/walking	Yes	Waking	4	18.72
76	Bus/walking	Yes	Walking	14	65.52
77	Bus				0
78	Car/walking	Already using			0
79	Bus/walking	Yes	Cycling		0
80	Bus/walking	Yes	Cycling		0
81	Bus/walking	Yes	Cycling		0
82	Walking/cycling	Already using	Cycling		0
83	Bus/walking	Yes	Cycling		0
84	Car/walking	Already using			0
85	Car/walking	No			0
86	Bus/walking	Already using			0
87	Bus/walking	Yes	Cycling		0
88	Car/bus	No			0

89	Car/bus/cycling	Already using	Cycling		0
90	Car	Yes	Cycling		0
TOTAL					6893.64
Per capita					313.3
Proportion of population that are willing to change trips					0.2
Annual GHG emissions Reduction					13537.1
Over ten years GHG Reduction					135371.3
Cost effectiveness					16.7

ANNEX 3: INCREMENTAL COSTING MATRIX

	Activity	Activity	QTY	BASELINE			ALTERNATIVE COSTS			INCREMENTAL COSTS (US\$)		
				Unit	UNIT PRICE	TOTAL COSTS	UNIT PRICE-BWP	TOTAL-BWP	TOTAL/US\$	TOTAL	GEF	CO-financing
Activity 0	PROJECT PREPARATION	Stakeholder, define activities+ data collection+ workshop	1	Project development	0	0	125000	125000	25000	25000	25000	25000
										25000	25000	
Activity 1	NMT FACILITY IMPLEMENTATION	Commuter study-demand-urban centres	1x 1000 respondents		0	0	400000	400000	80000	80000		80000
		Widen+construction	45	35 km old +10km new	50000	400000	150000	6750000	1350000	950000	0	950000
		Markings-linesx3 longitudinal	120	Km	0	0	75	9000	1800	1800		1800
		Traffic control-major Intersections/circles	20	No.	0	0	45000	900000	180000	180000	180000	
		Traffic control-minor roads	90	Sq m	0	0	300	27000	5400	5400		5400

		junctions										
		Signs	110	No.	0	0	300	33000	6600	6600		6600
		Maintenance	45	Km	125 0	10000	7500	337500	67500	57500		57500
						410000			1691300	1281300	180000	1101300
Activity 2	NMT PROMOTION AND COMMUNIC ATION (awareness building)	Workshops- high level+other	5	No	0	0	7500	37500	7500	7500	7500	
		Setting up NMT clubs							15000	15000	15000	
		Exchange programmes- e.g. with Afrbike	10	2 exchan ge visits/y r for 5 people each			18250	182500	36500	36500	36500	
		Newsletter- bimonthly	24	No	0	0	750	18000	3600	3600	3600	
		Media adverts-hard copy	10		0	0	12000	120000	24000	24000	24000	
		BTV	10		0	0	1265	12650	2530	2530	2530	
		Website +	1	No					10000	10000	10000	

		management										
		Pamphlets	50000	No	0	0	5	250000	50000	50000	50000	
		Promotional events	5	No x 200 people	0	0	300	300000	60000	60000	60000	
		Manual for Planners	1	No	0	0	100000	100000	20000	20000	20000	
		Adopt school Training cycling etc. at DRTS/Shell school	500	Course-pupil	0	0	500	250000	50000	50000	50000	
		Bicycle SME Enterprise development-identification, mentoring, technical and financial assistance							50000	50000	50000	
		Study tours+ travel	5	People +5 cities	0	0	60000	300000	60000	60000	60000	
		Establish NMT Unit at GCC+infrastructural facilities	96	Person-months + facilities			14795	1420320	284000	284000	20000	264000
		Travel to international	5	People	0	0	22500	112500	22500	22500	22500	

		events										
						0			695630	695630	431630	264000
Activity 3	REVIEW OF INSTITUTIONAL, POLICY AND LEGAL FRAMEWORK	Capacity-dialogue +workshop	5	Annually	0	0	15000	75000	15000	15000	15000	
		Design stds-manual	1	No	0	0	100000	100000	20000	20000	20000	
		Road safety strategy-study for revision of Road Traffic Act.	1	No.	0	0	200000	200000	40000	40000	40000	
		Network of Enforcement agents	1	No	0	0	25000	25000	5000	5000	5000	
		Technical assistance	2	Man-months	0	0	50000	100000	20000	20000	20000	
		Travel of Technical assistance	2	People	0	0	50000	100000	20000	20000	20000	
						0			120000	120000	120000	0
	MONITORING											

		Data collection for monitoring indicators feedback	1		0	0	300000	300000	60000	60000	60000	
Activity 5	EVALUATION											
		12months, 2 yrs, 3 yrs and 4 yrs	4	2 + 2	0	0	62500	250000	50000	50000	50000	
Activity 4	REPLICATION		1		0	0	250000	250000	50000	50000	50000	
TOTAL						410000			2666930	2256930	891630	1365300

Technical Review by Expert

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Botswana: Incorporating Non-Motorized Transport Facilities In The City Of Gaborone

Summary: Rising vehicle ownership and use in Gaborone, Botswana, has brought about environmental problems such as worsening local air pollution, rising global greenhouse gas emissions and traffic injury and fatality rates. Experience shows that facilitating greater use of non-motorized modes of transport (NMT) modes can reverse or slow these trends.

The project proposal to the GEF, Botswana: Incorporating Non-Motorized Transport Facilities In The City Of Gaborone (the Project) seeks to promote the NMT use in Gaborone. The proposal includes provisions for infrastructure design and construction, promotional and organizational activities, policy and institutional development, an ongoing monitoring and evaluation program and a plan for dissemination of the lessons learned in Gaborone. It is the author's opinion that the Project, in an overall sense as formulated, will most likely achieve all of its goals and should be further explored. This document reviews the proposal in light of the review criteria for GEF Medium- Sized Projects. The author makes some recommendations that could strengthen certain aspects of the proposal in order to further its goals and those of the GEF.

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Appendix 1: Terms of reference for this evaluation

Appendix 2: Costing Matrix with circled values mentioned in section 10.

Introduction

A desk review was performed on the proposal to the GEF entitled Incorporating Non- Motorized Transport Facilities In The City Of Gaborone, Botswana (herein, the Project). The following sections analyze the proposal for each of the criteria for review of such medium-sized projects. Where there are comments or criticisms of the proposal, a comments section will be found within the sections. The part that follows these criteria gives some conclusions regarding the evaluation and some recommendations for improving the proposal.

1. Country Eligibility: Botswana ratified the UNFCCC, according to item #4 in the project summary.

- 1. Country Drivenness:** According to items #7 and #18 in the project summary, the goals of the proposal correspond with the spirit of the First Nation Communication to the UNFCCC. National development plans, embodied in the Vision 2016 National Development Plan, indicate roadway safety and environmentally sound development (both local and global) as important components of the national development strategy. The project proposal falls entirely in line with these goals. The proposal has identified other nearby cities that could benefit from similar development, showing how the project satisfies more regional needs outside of Gaborone. No other communications or feedback from other intergovernmental meetings were mentioned in the report.

Response: A full description is provided on pp. 21-22 of the various stakeholders's inputs and support from the development of the project idea in 1999 and roles in the implementation process.

3. Endorsement: According to items #8, the proposal was submitted the National Conservation Strategy Agency, the GEF National Focal Point for endorsement in June 2004. Results from their review of the proposal were not included in the documents reviewed.

Response: An endorsement letter from the GEF Focal Point is attached to the brief.

4. Program Designation & Conformity: The project embodies the spirit of OP11 very well. The project balances technical solutions with non-technical institutional, commercial and even cultural approaches. The infrastructure developments are arguably technical approaches, though their access by both pedestrians and bicycle users lessens the dependence on any certain minimum technology by users. The creation and support of the NMT planning function in the City of Gaborone (NMT unit) is an institutional approach compatible with the goals of OP11. Promotion of bicycle use as well as the development of bicycle related retail and repair industry will serve to create both a cultural and commercial shift that are wholly in line with the goals of OP11. The outcomes of this project are long term, sustainable, cost effective and develop capacity (both technical and non-technical, such as marketing and education) and social change as much as purely technical investments in infrastructure. OP11's desire to support local initiatives in capacity development will also be met by this project as the proposal was proposed by, will be implemented by, and will support and develop capacity in, a broad group of local agencies, NGOs, and consultants.

Response: No response is required.

- 2. Project Design:** The project appropriately addresses rising greenhouse gas emissions from the transport sector by attempting to create new, safer and more attractive options for travel by non-motorized means. This will cause some trips to be diverted from motorized modes and reduce fuel use and the emission of greenhouse gases. The logical framework covers all needed aspects of the project - provisions

for initial survey work, infrastructure design and construction, promotional and organizational activities, policy and institutional development, an ongoing monitoring and evaluation program and a plan for dissemination of the lessons learned in Gaborone and the region. Experiences in other cities show that improved infrastructure can yield great increases in NMT use depending upon other factors such as city size and access to bicycles. Given the compact size of the city and barriers to use as discovered in the initial survey work cited on pages one and two of the proposal, the city should expect significant increases in bicycle use. Access to bicycles was cited as a problem but can be remedied by the loan and importation approach included in the proposal and with careful collaboration with NGOs with experience in this area of development. Indeed, several international NGOs have extensive experience with developing bicycle repair and retail business and cooperatives and facilitating the importation of bicycles.

The author assumes that many of the important details regarding these programs can be worked out with those groups. The logical framework developed the needed multi-pronged approach to the development plan in a clear and simple way.

Comments

The logical framework includes measure of GHG emissions before and after the project as an indicator of the success of the project. Because GHG emissions models for a before and after case to estimate GHG emissions reductions will be prone to fluctuations in some cases greater than the change in emissions one is hoping to measure, perhaps additional indicators should be used to measure the impact of the project. This is addressed more in the comments in section nine, Monitoring and Evaluation, below.

***Response:** GHG potential reduction is quite a challenge for transport sector but the initial comprehensive survey to be undertaken by the project will help in providing an estimate of emission reduction that can be achieved.*

3. **Sustainability (including financial sustainability):** The list on page 17 of the proposal describes the key reasons for the sustainability of the project. Picking out a few key ideas from the proposal to comment on, perhaps the most important component to the sustainability of a project such as the one proposed is buy-in by local officials, public works departments and traffic engineering and management departments. The participation by key city agencies such as Gaborone City Council (GCC), the Department of Roads and the Department of Road, Transport and Safety (DRTS) in the implementation of the project is important, and is indicated in the proposal. Most important, is the creation of a dedicated NMT at the GCC, which will be helped by GEF component of funding. The GCC will provide an office and staff while the GEF component will provide planning facilities, computers and technical assistance. Finally, it is claimed in the report that the road maintenance budget can be extended to include the cycleways. This will also be important to the longevity of the infrastructure. The work with creation and training of small enterprises, and the extensive involvement of the civil society, NGOs, etc. is important for the sustainability of the project, and is indicated in the proposal.

Finally, the work on policy and the creation of a manual for design and operating standards for NMT planning will leave a permanent framework for future projects of this kind in Gaborone and other cities in the region. There seems to be enough local interest in the project to remain confident in this proposal.

Comments

To further address the sustainability of the project, Activity 3, should address some way of permanently funding the maintenance of the NMT network and the NMT unit at GCC. Permanent funding mechanisms for NMT in other countries, such as from general budgets or dedicated gasoline or sales taxes, should be studied for application to the Gaborone case. Additional mention should be made of how the police will adopt and enforce new laws pertaining to the NMT facilities. The police are mentioned on page 19, but they need to be included more integrally in the operation and planning of the new facilities.

Response: The GCC has agreed to continuing support for the NMT Unit after its establishment. The potential of raising additional revenues through fiscal measures such as gasoline taxes to support GCC NMT Unit will also be considered.

7. Replicability: The proposal effectively addresses the replicability of the project. The manual on NMT planning and the tours, working groups and visits to and from other cities as stated in the proposal should serve to facilitate the adoption of similar projects in other cities in the region. The proposal mentions specific cities which would be interested.

Comments

Where it is possible, it could be helpful to involve representatives from other cities, such as those mentioned on page 18 of the proposal, and from national level offices, in early review or evaluation presentations or other events, so that they can experience the process, not only learn about the project from the manuals after the project is implemented.

Response: Stakeholders from other cities have now been added as suggested to be involved in early review and as part of the evaluation of the project implementation.

8. Stakeholder Involvement/ Intended Beneficiaries: The list of stakeholders seems encompassing and sufficient to insure the success of the project. Most seem to have been involved adequately in the project planning to date or will be involved in the implementation and execution of the plans.

Comments

As mentioned before, the police should be included more in the adoption, planning and operation of the cycleways. There was no clear mechanism for the involvement of commuters and the general public. They are mentioned in the list of stakeholders, but it is not clear in what way they can be organized to participate in the design and implementation of the cycleways. Also, the project should allow the participation of citizens wherever possible, whether in planning meetings, or presentations regarding the evaluation or monitoring of the project. The greater and broader the political constituency and ownership for the project, the more pressure which will exist on local implementing agencies to carry out the project as proposed.

Response: There is no more emphasis on NGO and public monitoring in the brief and the commuter survey that would be undertaken at the commencement of the project will also give a chance to commuters to influence infrastructure designs and how they could be part of the monitoring process.

9. Monitoring & Evaluation: The project proposal includes provisions for monitoring and evaluation that seem adequate to insure and measure the success of the project. The schedule of yearly project evaluations in coordination with the UNDP seems sufficient while the process proposed for monitoring of impacts could be expanded. Comments below address issues related to monitoring of impacts.

Comments

The proposal leaves fairly undefined the process of how to monitor the impact of the cycle way on key indicators important to the project goals such as GHG emissions, safety, etc. It is understood that these indicators will be decided upon during the project planning. Some things should be clarified, however, before proceeding in order to create realistic and useful measures of impacts. For one, GHG emissions models for a before and after case to estimate GHG emissions reductions will be prone to fluctuations in some cases greater than the change in emissions one is hoping to measure. That is, fuel sales by month used to estimate GHG emissions might have fluctuations of perhaps 10% or more, while the effects of the cycleway in initial years will be on the order of a few percent. It will be difficult to tease out the effects of

the cycleway from such models. Instead, the project should rely as well on other data which can be gathered with more accuracy and consistency. For one, traffic counts of bike use on the facility, as mentioned in the report, is the most direct measure of its impact.

Furthermore, pertaining to the use of the facilities the team could make counts of parked bikes, gather data on bike sales, repair work, bike accidents, and surveys of the general population with respect to knowledge about NMT issues and the new facility. Over time, however, with greater NMT use, perhaps on the order of 10% of all trips, careful modeling of GNG emissions should show some impact from the facility. Substantial problems existed with the GNG emissions calculations presented in the proposal and these are discussed in the section #11 on cost effectiveness. Finally, data gathering should begin as soon as the project is funded so the pre-project base case is well documented for later comparison with the post-project case.

One final issue that could be important to monitoring and evaluation is the involvement of a local NGO or citizens or bike commuters with the monitoring process. It seems that an organization outside of the city staff might have fewer conflicts of interest in the proper execution and maintenance of the project and could serve the UNDP as excellent outside monitors of the project.

Response: The issue of GHG emission potential reduction will be addressed and improved in the next larger commuter survey to be undertaken during project implementation. NMT user counts are part of the indicators in the M&E already. However, it should be mentioned that in transport GHG emission reduction would not be straightforward (unless if there was direct fuel substitution project). It is believed that there would be adequate data from the commuter survey and M&E to arrive at some reasonable GHG emission reduction from the project.

The estimate of the current GHG emission reduction potential of the project has been slightly revised to put limits of NMT trips, distances per 5 day week and this had eliminated one odd figure estimated from the survey. We however do not favor the approach where assumptions are made about percentage of motorists that may shift to NMT since most people may not just get rid of their cars but simply use NMT for some trips. Public transport is not well established for long journeys and even certain urban errands. Monitoring data collection is inbuilt with the GCC NMT but evaluation will be done by an entity outside of GCC.

10. Financing Plan: A review of the financing plan revealed that for the most part, the budgets seemed reasonable for the tasks proposed, though a few inconsistencies were found and are commented on in the comments below. No letters of commitments from co-financiers were found with the proposal.

Comments

Several items had what seemed like small errors in unit costs or number of units for what was specified in the task. Perhaps there was just some missing information making it difficult to completely understand the figures given. The comments refer to specific items in the budget that are circled in the budget matrix in Appendix 2.

Under Activity #2, NMT PROMOTION AND COMMUNICATION, item “promotional events” considers a unit cost of 300 BWP, about \$60 US, but it is unclear what that unit is. In the budget as stated, the unit is each attendee, for an estimated five events with 200 people per event, equals 60,000 dollars. This per-attendee cost seems high for a promotional event with so many attendees. It almost seems that for this sum, all attendees could be given a bicycle!

Under Activity #2, NMT PROMOTION AND COMMUNICATION, item “Adopt school training cycling, etc...” considers a unit cost of 100 BWP per pupil, for 500 pupils, which should amount to 50,000 BWP, or \$10,000 US. Instead, an amount of 250,000 BWP (\$50,000 US) is figured.

Under Activity #2, NMT PROMOTION AND COMMUNICATION, item “Establish NMT

Unit.” the total cost of 1,320,000 BWP was converted to \$284,000, though using the same conversion of the rest of the matrix of 5 BWP to the dollar, this figure should read \$264,000.

Under Activities #4, 5 and 6, a budget is estimated but items are not specified. In future proposals the team should attempt to estimate with more detail some of the items and costs involved in these activities.

Response: All the figures have been reconciled in the budget calculations. For activity #2 Promotion & Communication, the US\$ 60.00 per candidate is good enough to cater for t-shirts, caps, preparations and promotions around the event.

The BWP 100/ per pupil was for 1 year but the exercise would run for 5 years. BWP is approximately 4 (and not 5) to the US dollar. Nevertheless, the budget for this activity has been corrected.

11. Cost-effectiveness: The calculation of GHG emissions savings as presented in the proposal should be taken as a very rough first order estimate of GHG emissions savings from the project. Comments on the methodology used will be made in the comments section to follow. The calculation of cost effectiveness, as shown on page 24, however, is unclear. After copying the calculations into a spreadsheet to verify, the author was unable to reproduce the estimation of tons of CO₂ saved because the population or number of trips used in the calculations were not supplied in the proposal. A 10-year estimate of 216,000 tons CO₂ savings and an incremental cost of 2.256 million US\$ gives an incremental cost of 10.40 dollars per ton, instead of 8 dollars as presented in the proposal. It was unclear which cost numbers were being used to arrive at that number.

Possibly a more straightforward and realistic estimate of CO₂ savings would be to estimate a mode share change from motorized modes to NMT after the facility’s completion. A similar cycleway plan in Bogotá, Colombia increased bicycle usage from 0.5% to around 5% of all trips after the first phase, roughly 100kms in length, was completed (the author was not certain of increases in pedestrian travel with that project). That bicycle usage should grow over time to perhaps 8%. (Estimates are a 15% mode share for the fully built cycleway network).

Given that Gaborone is much smaller, it is conceivable that the smaller project being proposed compared to Bogotá could have a similar, or even greater impact on bicycle use, because of the much smaller city size and presumably short trip lengths. This could mean a 5% bicycle mode share after the project completion, rising to 10%, 10 years later. (This is a conservative estimate given the very promising results from initial survey work regarding potential bike use cited on pages one and two of the proposal.)

If, supposing, one-third of new bicycle users are former automobile drivers, then we can assume a reduction in GHG emissions of 1/3 of 5% of 405,000 tons of CO₂ (year 2002 estimate of cars and light-duty vehicle emissions from Table 6), equaling 6,700 tons in the first year, and 1/3 of 10% of 625,000 tons of CO₂ (year 2014 CO₂ estimate extrapolating from data from Table 6), equaling 20,800 tons in the 10th year.

Summing the linear progression of rising tonnage over 10 years equals 137,500 tons. For a ten-year project lifetime, therefore, the incremental cost would be 16.40 dollars per ton using the total incremental costs of 2.356 million US\$ or 6.50 dollars per ton using the GEF funds of 0.891 million US\$.

Comments

The methodology used to estimate the CO₂ savings in the proposal has some problems which further research and survey work should attempt to fix. In the first place, it is difficult to assume a person’s response to a questionnaire will reflect their actual future behavior, but it does serve as a good first estimate. Secondly, the marginal fuel usage by a public transit rider is very small, and not equal to the average fuel usage per person-km, but much less. Furthermore, the fuel savings from a private car user could be higher

than just the average fuel consumption per person-km because of congestion effects – travel during the congested peak hour uses much more fuel than during the off-peak hours. The model presented is a good rough estimate, but one error was found which seemed to overwhelm the whole calculation. One person interviewed, person #62, indicated that they would divert 448 person-kms per week from car/walking to cycling/walking. It is hard to believe that a new bicyclist would be able to travel 448 kms each week by bicycle. Even if this were so, this one person accounted for over 50% of all the CO2 savings from the 90 people interviewed. A more basic first-order approach should be taken at this stage, such as the one presented above, to calculate CO2 savings. Refinements of this methodology with more survey data and more detailed modal emissions, looking at specific trip types by distance and time of day, should be made at a later time.

Response: The calculation has been revised using the suggested estimated GHG emission reduction potential and total cost of the project (not just GEF contribution) and is now estimated at US\$ 16.7/ton for the ten years of infrastructure life.

12. Co-financing: Co-financing will be provided by the Gaborone City Council and other Government Departments, namely the Department of Roads and the Department of Road Transport and Safety. Co-financing comes in the form of both cash for infrastructure planning and construction, and in-kind services for developing and hosting the new NMT unit in the Gaborone City Council. No official letter of commitment concerning these funds was attached.

Response: The official letter of commitment from Botswana Government has now been attached.

13. Core commitments & Linkages: The reduction of local emissions, improved traffic safety, and providing for cheaper transport options form central goals of the national development plan, Vision 2016, and the First Nation Communication to the UNFCCC. More specifically, the development and maintenance of sidewalks in Gaborone is already programmed by the city, and the proposal to expand these projects to make them more compatible with bicycling fits well with the original goals of the sidewalk development. The original project proposal came from the Department of Meteorological Services (the National Focal Point for Climate Change). Many key stakeholders have come to support the proposal, including the Department of Environmental Affairs (GEF Focal Point), the Ministry of Finance and Development Planning. The project has been submitted to the GEF National Focal Point for endorsement in June 2004. As stated earlier, no letters of endorsement were included with the proposal.

Response: Letter of endorsement by GEF National Focal Point has now been attached.

14. Consultation, Coordination and Collaboration between IAs, and IAs and ExAs.

Since most of the implementing and executing agencies are parts of the Gaborone City Government, it can be assumed that there has been collaboration between the IAs and ExAs. Co-financing, some in cash, and some in-kind, will be provided jointly by the Gaborone City Council, the Department of Roads and the Department of Road Transport and Safety. Page 20 discusses stakeholder participation and describes coordination among GCC units, where the GCC is responsible for the design, bidding procedures, construction, monitoring and commissioning of the infrastructure. The design will be approved in partnership with the Department of Roads, DTRP, contractors and NGOs. GCC's financial involvement has been approved by both the Ministry of Local Government and Ministry of Finance and Development Planning.

Response: No response required.

15. Implementation/execution arrangements: The project implementation schedule presented on page 25 appears to be a logical approach to executing the various tasks of the project. It is difficult to comment further about the schedule until more detail about the timing of subtasks are worked out in later proposals.

Response: No response required.

Conclusions: The proposal shows great promise in reducing local and global emissions, improving traffic safety, and providing for cheaper transport options for residents of Gaborone. Given the efforts built into the project to involve a broad range of stakeholders, local buy-in should be sufficient to guarantee vigorous involvement and interest in the success of the project. Perhaps additional efforts could be made to involve the police in planning and implementation of the system and creating educational materials. As well, commuters or citizens, if not already organized into local NGOs should be involved in the project where possible, and can serve as allies to the UNDP for monitoring and evaluation purposes. The plans to improve access to bicycles will serve as one of the key challenges of the proposal.

The plan did not provide sufficient details with regard to how this will be carried out, but several international NGOs have extensive experience with fostering bicycle repair and retail enterprises and facilitating the importation of bicycles. The author assumes that many of the important details regarding these programs can be worked out with those groups. Additional aspects of the project, such as promotion and marketing, creation of the NMT manual, training and formation of the NMT unit can also be assisted greatly with international experience and help. Because of the quality and experience of these NGOs and consultants, the author feels the project has only the smallest risk of not meeting its goals. If travel patterns and trip lengths prove to be even shorter than assumed, and an even greater share of travel can be shifted to NMT means, it would not be surprising for bicycle use to explode after the project is completed and for project goals to be exceeded. Plans for replication seem to be sufficient to guarantee the spread of lessons and techniques learned to other cities in the region, though perhaps greater involvement of other cities during the actual planning and evaluation can add to that process beyond a simple planning manual.

The OP11 goals of institutional development and capacization are met through the development of the NMT unit the City of Gaborone, through the work on policy and legal frameworks, and the development of local enterprises and promotional efforts. The project will involve dozens of local engineers, students, officials, workers, businesses and citizens and provide a dynamic, well-formulated forum for learning, creativity and development. Travel experiences by local engineers and officials as well as visits to Gaborone by international consultants should add an important element of interchange and learning for all those involved. The GEF should go ahead with plans to support the further development of the project.

The author wishes to thank the UNDP for giving the opportunity to comment on the project.

Additional (minor) Technical Comment:

The SO_x emissions of 233,000 tons presented in Table 3 seems extremely high. The other emissions levels for CO, etc seem reasonable without going into more detail. More typical SO_x emissions rates for diesel and gasoline vehicles are on the order of 0.05 tons/TJ [Source:

Assessing Pollution Abatement Policies with a Case Study of Ankara. November 1995, Oil and Gas Division Industry and Energy Department The World Bank]. For example, in two other studies worked on by the author, yearly emissions of SO_x were 8 ktons (Rio de Janeiro, population 10 million) and 30 ktons (Sao Paulo, population 18 million). For heavier fuels like coal, a SO_x emissions factor of 15 tons/TJ might be remotely reasonable as quoted in the table, but it is still on the high side compared to other values found in the literature. 1.2 tons/TJ for coal is typical. The author suspects that emissions rates calculated for the entire country, which might consist of burning heavy fuels and coals, were used to calculate the emissions for the transport sector. This approach should be modified so that the emissions rates better represent the emissions from the sector being studied.

Response: SO_x emissions have been estimated using the suggested emission factor.

List of Annexes

ANNEX A **DETAILED MONITORING & EVALUATION**

ANNEX B **TERMS OF REFERENCES**

ANNEX C **TOTAL BUDGET AND WORKPLAN**

ANNEX A: DETAILED MONITORING AND 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 at 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.

1. MONITORING AND REPORTING

1.1. Project Inception Phase

A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate.

A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's log frame matrix. This will include reviewing the log frame (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff with the UNDP-GEF *expanded team* which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings.

The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase.

1.2. Monitoring responsibilities and events

A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, Steering Committee Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

Day to day monitoring of implementation progress will be the responsibility of the Project Coordinator, Director or CTA (depending on the established project structure) based on the project's Annual Work Plan and its indicators. The Project Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

The Project Coordinator and the Project GEF Technical Advisor will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local implementing agencies will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop and tentatively outlined in the indicative Impact Measurement Template at the end of this Annex. The measurement, of these will be undertaken through subcontracts or retainers with relevant institutions (e.g. vegetation cover via analysis of satellite imagery, or populations of key species through inventories) or through specific studies that are to form part of the projects activities (e.g. measurement carbon benefits from improved efficiency of ovens or through surveys for capacity building efforts) or periodic sampling such as with sedimentation.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

UNDP Country Offices and UNDP-GEF RCUs as appropriate, will conduct yearly visits to projects that have field sites, or more often based on an agreed upon schedule to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Steering Committee can also accompany, as decided by the SC. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all SC members, and UNDP-GEF.

Annual Monitoring will occur through the ***Tripartite Review (TPR)***. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to Tripartite Review (TPR) at least once every year. The first such meeting will be held within the first twelve months of the start of full implementation. The project proponent will prepare an Annual Project Report (APR) and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the TPR for review and comments.

The APR will be used as one of the basic documents for discussions in the TPR meeting. The project proponent will present the APR to the TPR, highlighting policy issues and recommendations for the decision of the TPR participants. The project proponent also informs the participants of any agreement reached by stakeholders during the APR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary.

Terminal Tripartite Review (TTR)

The terminal tripartite review is held in the last month of project operations. The project proponent is responsible for preparing the Terminal Report and submitting it to UNDP-CO and LAC-GEF's Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks are provided in Annex .../will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

1.3. Project Monitoring Reporting

The Project Coordinator in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function and the frequency and nature is project specific to be defined throughout implementation.

(a) ***Inception Report (IR)***

A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/ Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the UNDP-CO or the Regional Coordinating Unit (RCU) or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

(b) **Annual Project Report (APR)**

The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring and project management. It is a self -assessment report by project management to the CO and provides input to the country office reporting process and the (acronym not in list)ROAR, as well as forming a key input to the Tripartite Project Review. An APR will be prepared on an annual basis prior to the Tripartite Project Review, to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

The format of the APR is flexible but should include the following:

- § An analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome
- § The constraints experienced in the progress towards results and the reasons for these
- § The three (at most) major constraints to achievement of results
- § AWP, CAE and other expenditure reports (ERP generated)
- § Lessons learned

§ Clear recommendations for future orientation in addressing key problems in lack of progress

(c) *Project Implementation Review (PIR)*

The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by the project, the executing agency, UNDP CO and the concerned RC.

The individual PIRs are collected, reviewed and analysed by the RCs prior to sending them to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit analyse the PIRs by focal area, theme and region for common issues/results and lessons. The TAs and PTAs play a key role in this consolidating analysis.

The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP/GEF has prepared a harmonized format for reference.

(d) *Quarterly Progress Reports*

Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF regional office by the project team. See format attached.

(e) *Periodic Thematic Reports*

As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises 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.

(f) *Project Terminal Report*

During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

(g) *Technical Reports* (project specific- optional)

Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List,

detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports may also be prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research within the framework of the project and its sites. These technical reports will represent, as appropriate, the project's substantive contribution to specific areas, and will be used in efforts to disseminate relevant information and best practices at local, national and international levels.

(h) ***Project Publications*** (project specific- optional)

Project Publications will form a key method of crystallizing and disseminating the results and achievements of the Project. These publications may be scientific or informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports, depending upon the relevance, scientific worth, etc. of these Reports, or may be summaries or compilations of a series of Technical Reports and other research. The project team will determine if any of the Technical Reports merit formal publication, and will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

2. INDEPENDENT EVALUATION

The project will be subjected to at least two independent external evaluations as follows:-

(i) ***Mid-term Evaluation***

An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

(ii) ***Final Evaluation***

An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

Audit Clause

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be

conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

3. LEARNING AND KNOWLEDGE SHARING

Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- ◆ The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Transport Management, that will largely function on the basis of an electronic platform.
- ◆ The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned.

The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on-going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

ANNEX B: TERMS OF REFERENCES

The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for each party's responsibilities during the project's implementation phase.

1. TERMS OF REFERENCE - PROJECT STEERING COMMITTEE (PSC)

Background

This project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport modes for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region.

The project will be directed by a Project Steering Committee (PSC) chaired by the National Programme Director (an employee of Gaborone City Council, with technical advice from a Technical Advisory Group (TAG)). The primary task of the PSC is to set the policies and provide guidance (institutional, political and operational) and direction for the Project to ensure that it remains within the agreed framework. The PSC also provides an oversight for all the components of the project and facilitates communication to the Project from throughout the public and private sectors and the donor community and vice-versa. With these main objectives in mind, the PSC regulates its own procedures as guided by the Chairperson (Gaborone City Council). It achieves its aims through the Project Manager who will attend meetings but who will not have a vote. The Project Manager will be responsible for the implementation of PSC policy and direction and for reporting back to the PSC on progress with all aspects of the Project. Membership of the PSC will be on an honorary basis and no fees will be paid. However, any actual and reasonable expenses incurred by PSC members will be reimbursed.

Observers, advisors and other participants will attend on the invitation and at the discretion of the Chair. Secretarial support will be provided by the PIU. PSC business is conducted on a consensus basis.

The PSC will meet every six months, or more frequently if required. A small Executive Group comprising the GCC, UNDP and Ministry of Finance and Development Planning, with the Project manager in attendance, may be established to attend to salient matters which require attention between meetings.

Responsibilities

The responsibilities of the Steering Committee will be to:

- ? Review and approve the project annual work plan and budget for each operational year.
- ? Set the policies and provide institutional, political and operational guidance and direction for the project to ensure that it remains within the agreed framework.
- ? Provide an oversight for all the components of the project and review project progress with respect to objectives, outputs, work plan and budget.
- ? Review and provide feedback on progress and financial reports prepared by the Project Manager.

Composition

- ? Gaborone City Council, Ministry of Local Government (Project owner and implementer)
- ? Department of Road, Transport and Safety, Ministry of Works and Transport

- ? Department of Meteorological Services, Ministry of Environment, Wildlife and Tourism
- ? Ministry of Finance and Development Planning
- ? Department of Town and Regional Planning, Ministry of Local Government
- ? A representative of the Private sector
- ? A representative of the Academia
- ? A representative of NGOs – with links to the wider community of Gaborone City
- ? United Nations Development Programme

2. TERMS OF REFERENCE – NATIONAL PROGRAMME DIRECTOR (NPD)

Background

This project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region.

The National Programme Director (NPD) is the focal point for responsibility and accountability in the implementing partner, which is the Gaborone City Council, Ministry of Local Government, and assumes overall responsibility for the successful execution and implementation of the project support towards achieving the outcomes and outputs. The NPD is an internally appointed person and works on the project on a part time basis and should be able to devote a reasonable amount of time to project activities. The NPD is the chair of the Project Steering Committee (PSC) and is the approving officer for the project.

- ? Supervise the Project Manager and facilitate the work of the Project Manager and NMT unit staff.
- ? Ensure that the required project annual work plan is prepared and updated in consultation and agreement with major stakeholders.
- ? Authorize commitments of resources for inputs including staff, consultants, goods and services and training, and ensure the proper use of project resources.
- ? Ensure that the government inputs for the project are available and monitor the co-financing contribution of the government to the project.
- ? Lead efforts to build partnerships for the support of outcomes and outputs indicated in the Project Document.
- ? Ensure the preparation and submission of the reports in accordance with the UNDP-GEF reporting and monitoring and evaluation (M&E) requirements.
- ? Support resource mobilization efforts to increase resources as and when necessary.

3. TERMS OF REFERENCE - PROJECT MANAGER

Background

This project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region.

Gaborone City Council (GCC) is the project owner and implementer of the project. In order to sustain the project implementation, a dedicated NMT Unit is established at the GCC to undertake planning, design and development of NMT transport system in the city and to share their experiences with other cities/towns. The GCC will provide staff for the Project Manager and the NMT unit.

The overall responsibilities of the Project Manger will be to ensure the effective and timely implementation of the project, provide the administrative and technical assistance required by the Project Steering Committee (PSC) and other parties involved in the project and facilitate and coordinate any activities taking place in the project. The Project Manager is responsible for the implementation of PSC policy and direction, fully accountable to the PSC and, through the PSC, to the government, UNDP and other stakeholders.

Responsibilities

The Project Manager will work closely with the National Programme Director (a staff member of GCC) and the UNDP Country Office. The responsibilities of the Project Manager will be to:

- ? Finalize key performance indicators in the log frame in consultation with stakeholders and beneficiary communities.
- ? Develop the project annual work plan on the basis of the project's log frame matrix. The annual work plan will include detailed activities with timeframe and budgets.
- ? Conduct the day-to-day programme administration and management to ensure the timely implementation of planned activities as identified in the annual work plan.
- ? Facilitate coordination among agencies that undertake activities under each component and ensure that the agencies mobilize and deliver inputs in accordance with agreements.
- ? Develop Terms of Reference for consultants, and supervise, review the work done by the consultants and advise the Project Steering Committee (PSC) as appropriate.
- ? Assist the NPD to maintain high-level national support for the project by developing a strategy for enlisting support among influential organisations, including international development partners and the private sector.
- ? Arrange meetings of the PSC and provide written records of all meetings.
- ? Prepare reports in accordance with UNDP-GEF reporting and monitoring and evaluation (M&E) requirement, including Inception Report, Quarterly Progress Report, Annual Project Report and Project Implementation Review.
- ? Ensure that financial procedures for National Execution (NEX) are followed and prepare periodic financial reports.
- ? Liaise with UNDP on financial management of the project fund and manage the project resources, e.g. vehicles, office equipment.
- ? Prepare briefing documents and develop and update information materials to enable the stakeholders have a common understanding of the project.

Qualifications and experience

- ? At least a Bachelor's degree in a field related to environmental management.
- ? A good understanding of development and environmental issues in Botswana.
- ? At least five years of work experience (including in project management).
- ? Excellent communication (written and oral) skills.
- ? Excellent inter-personal skills and the ability to work with teams.
- ? Familiarity with UNDP and Botswana Government procedures would be an advantage.

4. TERMS OF REFERENCE – TECHNICAL ADVISORY GROUP (TAG)

Background

This project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from motorized transport (MT) to non-motorized transport modes for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region.

The Technical Advisory Group (TAG) ensures the quality control for the products which are to arise from the Project and it serves as a source of objective technical advice to all those involved at the policy, planning, management and implementation levels. Members will be appointed by the Project Steering Committee according to the required technical expertise and sit in their personal capacity. They will be accountable to the Chairperson of the SC but will be accessible to all SC members, the Project Manager and others involved with the Project and requiring technical advice.

In the interest of effectiveness, the maximum number of core members should be no more than 8 and it is preferable if they are local experts. However, the prime objective is to get the best, most reliable and most objective advice. The core members may be augmented from time to time through temporary appointments to reflect current issues in hand. The TAG will conduct most of its business electronically, but will meet at least every six months, to formulate advice before the PSC meeting. The Chair of the TAG will be appointed by the SC and in addition to the duties of all members of the TAG he/she will also be required to provide an independent assessment of progress with implementation of the Project to the PSC meeting, with a particular emphasis on the technical and scientific quality of the products. Membership of the TAG will be on an honorary basis and no fees will be paid. However, any actual and reasonable expenses incurred by TAG members will be reimbursed.

The availability of a Technical Advisory Group to the decision-makers' forum is a mechanism that is also found in the Global Environment Facility, wherein it is referred to as the Scientific and Technical Advisory Panel (STAP).

5. TERMS OF REFERENCE - STAKEHOLDER CONSULTATIVE FORUM (SCF)

Background

This project seeks to promote the significant use of substantially cheaper non-motorized modes of transport (NMT) particularly walking and cycling in Gaborone and to encourage and facilitate a modal shift from

motorized transport (MT) to non-motorized transport modes for relatively short distances that can be covered by such modes. The project also seeks to demonstrate and record the many benefits as well as the efficacy of a modal shift to NMT with a view not only to increasing the modal share of NMT in Gaborone, but also to widely disseminating the lessons and encouraging the replication of the project across cities and towns of Botswana and the region.

The Stakeholder Consultative Forum (SCF) ensures the highly consultative and participatory process of the implementation of the 4-year project. This is a permanent institution and will meet at least every year before PSC to serve as a mechanism for active involvement of a wide variety of stakeholders including commuters and general public to the project through inputs in the NMT facility design and standard, awareness raising and information sharing activities. It allows the participation of the main beneficiaries of the project, citizens and commuters who will be supplied with affordable and reliable services by means of NMT, in planning and monitoring process of the project. The Chair of the SCF will be appointed by the PSC and the Project Manager will be required to summarize the feedback of the SCF, report to the PSC meeting, and ensure that the inputs is reflected on the project implementation.

A list of SCF should be encompassing and sufficient to insure the success of the project. It is not static and will be assessed by the PSC during project implementation with the view to include additional stakeholders as considered appropriate. It will include:

Gaborone City Council(MLG), Department of Road, Transport and Safety(MWT), Department of Meteorological Services(MEWT), MFDP, Department of Town and Regional Planning(MLG), Department of Environmental Affairs(MEWT), Police, BOCONGO and NGOs, University of Botswana and other academic institutions, private sector, constructors, bicycle suppliers, EECG and other technical experts, UNDP, bilateral and private donors, media(newspaper, Botswana Televisions and Radio), bicycle clubs and organization, officials of local authority, and public community.

ANNEX C: TOTAL BUDGET AND WORK PLAN (Atlas Format) for GEF Funds

Award: tbd

Project title: PIMS 2841 CC MSP: Botswana NMT

Executing Agency: NEX: Department of Environmental Affairs

GEF Outcome/ ATLAS Activity	Respon- sible party	Source of funds	Donor	ERP/ ATLAS Budget		Amount (USD)				Total
				Account	Description	2005	2006	2007	2008	
OUTCOME 1. Transport based GHG emissions reduced	GCC	62000	10003	71200	Intl Consultants	0	15,000	0	23,000	38,000
	GCC	62000	10003	71300	Local Consultants	9,000	9,000	9,000	9,000	36,000
	GCC	62000	10003	71600	Travel	6,000	9,000	7,000	10,000	32,000
	GCC	62000	10003	72500	Supplies	1,000	1,000	1,000	1,000	4,000
					Sub-total	16,000	34,000	17,000	43,000	110,000
OUTCOME 2. Well designed and constructed NMT network	GCC	62000	10003	72200	Equipment	12,000	82,000	78,000	0	172,000
	GCC	62000	10003	74500	Miscellaneous	2,000	2,000	2,000	2,000	8,000
					Sub-total	14,000	84,000	80,000	2,000	180,000
OUTCOME 3. Increased uptake of NMT as means of transport	GCC	62000	10003	71300	Local Consultant	20,000	20,000	20,000	5,000	65,000
	GCC	62000	10003	71600	Travel	2,000	17,000	7,000	2,000	28,000
	GCC	62000	10003	72100	Cont.Serv. – Comp.	35,000	40,000	40,000	25,000	140,000
	GCC	62000	10003	72200	Equipment	7,500	1,630	1,000	1,000	11,130
	GCC	62000	10003	72800	IT Equipment	7,500	3,000	1,000	1,000	12,500
	GCC	62000	10003	74200	AV & Print Prod Costs	8,000	18,000	32,000	17,000	75,000
				Sub-total	80,000	99,630	101,000	51,000	331,630	
OUTCOME 4. Informed and equipped institutional framework for NMT	GCC	62000	10003	71300	Local Consultant	20,000	25,000	20,000	10,000	75,000
	GCC	62000	10003	71600	Travel	1,000	2,000	2,000	10,000	15,000
	GCC	62000	10003	74200	AV & Print Prod Costs	500	2,000	7,000	30,500	40,000
					Sub-total	21,500	29,000	29,000	50,500	130,000
OUTCOME 5. Conducive policy & legal framework for NMT	GCC	62000	10003	71600	Travel	5,000	7,000	6,000	4,500	22,500
	GCC	62000	10003	72100	Cont.Serv. – Comp.	0	3,000	3,000	0	6,000
	GCC	62000	10003	74200	AV & Print Prod Costs	1,000	4,000	4,000	2,500	11,500
					Sub-total	6,000	14,000	13,000	7,000	40,000

OUTCOME 6. Employment creation and reduced pollution & accidents	GCC	62000	10003	71600	Travel	2,000	3,000	3,000	2,000	10,000
	GCC	62000	10003	72100	Cont.Serv. – Comp.	10,000	10,000	10,000	10,000	40,000
	GCC	62000	10003	74200	AV & Print Prod Costs	12,000	12,000	13,000	13,000	50,000
					Sub-total	24,000	25,000	26,000	25,000	100,000
Grand Total					161,500	285,630	266,000	178,500	891,630	

**United Nations Development Programme
Global Environmental Facility**

SIGNATURE PAGE

Country: Botswana

UNDAF Outcome(s): To assist Botswana fulfil its obligations under the global and regional commitments and goals that it has signed.

Expected Outcome(s): Global environmental concerns and commitments integrated in national planning and policy (Country Programme Outcome). The project is aligned to MYFF Service Line 3.3 “Access to sustainable energy services”, and its Core Result of “Low emissions energy technologies including renewable energy, energy efficiency and/or advanced fossil fuel technologies introduced.”

Indicator (s): Capacity for the development of strategies, action plans, systems and national communications for various conventions developed in government (Country Programme Indicator).

Expected Output(s): National capacity building of key government institutions, NGOs and private sector strengthened and improved (Country Programme Output).

Implementing partner: Gaborone City Council, Ministry of Local Government

Government Coordinating Authority: Ministry of Finance and Development Planning

GEF Implementing Agency: UNDP

GEF Focal Area: Climate Change

Project Title: Incorporating Non-Motorized Transport Facilities in the City of Gaborone
Project ID: PIMS 2841
Project Duration: 4 years
Management Arrangement: National Execution

Total budget: USD 2,256,930
Allocated resources:
GEF: USD 891,630
Government: USD 1,365,300

Agreed by:

<u>On behalf of:</u>	<u>Signature</u>	<u>Date</u>	<u>Name/ Title</u>
Implementing Partner	S. Rathedi Permanent Secretary Ministry of Local Government
Government Coordinating Authority	S.S.G. Tumelo Permanent Secretary Ministry of Finance and Development Planning
UNDP	B. Foerde Resident Representative