**NAMAs Proposal – NAMA Seeking Support for Preparation**

**1.0. Title of Mitigation Action**

Fuel Efficiency in Motor Vehicles

**2.0 Description of Mitigation Action**

***Rationale for NAMA* -** The rapidly growing consumption of fossil fuels due to increases in vehicle ownership is changing Uganda’s carbon dioxide trajectory in the transport sector. Uganda lacks an official “approved” national transport policy, meaning that growth of vehicles is occurring in a mainly unregulated and unplanned manner. A lack of capacity within government and among potential partners to undertake the required analysis to support development of a sound policy framework further limits progress in this area. A lack of public acceptance can limit government action in this sector, indicating the need for awareness campaigns.

Uganda potentially could benefit from the GFEI, accessing best practices and expertise to guide policy and regulatory development. Uganda might consider positioning itself to be a GFEI pilot country.

***Purpose of NAMA*** – The purpose of this NAMA is to reduce greenhouse gas emissions and promote sustainable development in the transport sector through the implementation of a Fuel Efficiency Initiative that includes the development of policies and regulations that will promote the use of more efficient vehicles. The NAMA will help to address the government’s goal of meeting the energy needs of Uganda’s population for social and economic development in an environmentally sustainable manner.

***Sector*** – Energy and Transport

***Type of NAMA*** – This is a policy and research NAMA that will be internationally supported.

The NAMA would reduce emissions on a per vehicle basis through a Fuel Efficiency Initiative designed to increase fuel efficiency in light- and heavy-duty vehicles. The actions could include development of a fuel efficiency policy; development of a regulatory framework for vehicle age, vehicle emissions, and fuel standards; vehicle inspection and maintenance; tax incentives to encourage acquisition of more fuel efficient vehicles; fiscal incentives for a vehicle replacement scheme; and a public information campaign. Reductions in fuel consumption per vehicle will lead to emission reductions from a business as usual (BAU) baseline.

This NAMA is linked to another NAMA, *Periodic vehicle inspection for emissions and roadworthiness*, which describes in greater detail the: i) pre-Shipment inspection for vehicles imported into Uganda and ii) periodic inspection and certification for roadworthiness for vehicles in Uganda. The vehicle inspection NAMA is a subcomponent of the fuel efficiency NAMA, which could be delivered as a standalone action or as part of this broader fuel efficiency NAMA. The two actions can be implemented simultaneously.

**3.0 National Implementing Agency**

The Ministry of Energy and Mineral Development will be the lead agency in this NAMA, working with the Department of Transport Regulation and Quality Assurance, Ministry of Works and Transport.

Other important stakeholders include the Ministry of Finance Planning and Economic Development, Uganda Revenue Authority, Uganda National Bureau of Standards, National Planning Authority, Kampala Capital City Authority, Uganda Police, Transport Licensing Board, National Environment Management Authority and Civic Society. Policy support, research and analysis could potentially be supported by the Global Fuel Economy Initiative (GFEI), particularly through the United Nations Environment Programme (UNEP).

The Climate Change Unit (CCU) in the Ministry of Water and Environment would provide overall oversight on emissions monitoring reporting and verification (MRV).

**Proposed activities of the NAMA**

The Fuel Efficiency Initiative focuses on adoption of strategies, policies and regulations to promote ownership and use of cleaner and more fuel-efficient vehicle. The use of modern fuel-effective vehicle technologies is intended to reduce CO2 emissions per vehicle. This will be achieved through the development of fuel efficiency policies, along with information dissemination, capacity development and awareness creation that promotes behavioural change and supports markets for fuel-efficient technologies. It will involve also developing a national fuel and vehicle database and toolset.

A phased approach will be used, where initial information gathering and analysis will contribute to the development of the emissions baseline and reference case, and more accurate measurement of GHG emission in the sector and the impact of the NAMA. Data will have to be generated, gathered and updated. IT is important to note that this data will have a value beyond the measurement, reporting and verification (MRV) requirements of the NAMA: detailed and reliable data on transport issues is the key for all kinds of transport policies, regulations and strategies, such as road safety and air quality enhancements. The data and analysis will contribute to the development of the regulatory framework, helping to identify effective and enforceable regulations, as well as and planning in the sector, this analysis would allow the NAMA to strengthen the technical and institutional capacity to develop national greenhouse gas inventories.

A national database on fuel consumption and efficiency is to be developed which will lead to better planning for emissions reduction and achievements of emissions target.

The information requirements include a database of the current vehicle stock in Uganda by region (vehicle type, make, model, transmission type, weight, production year, registration year, fuel type, engine size, rated fuel economy per model and test cycle basis). A significant sample of vehicles would be tested to determine emissions of greenhouse gases and air pollutants based on a standard test drive cycle.

To facilitate collection of information, regulations could require development of fleet management systems by companies with a significant vehicle fleet (number defined) and an incentive be given to encourage companies to adopt these systems. This is an effective way to generate vehicle information including vehicle details, consumption, maintenance records, etc. in addition to reducing the company’s expenditure. Customized fleet management software for different companies can be developed with the help of the incubator at the College of Computing and Information Sciences, Makerere University. Likewise, inspection of these vehicles for emissions can be done within the same management system. The government agencies can lead by example by adopting sound energy efficiency practices with their own fleet of vehicles and sharing the knowledge gained with other fleet owners.

**Geographic coverage**

The Initial phase will take place in the district of Kampala; and the NAMA will eventually cover the entire country. The initial campaign will be in urban centres, which account for more than 90 per cent of travel hence fuel consumption.[[1]](#footnote-1) The impact of the programme is national since the imported vehicles and fuel are used in all regions of the country.

The NAMA first will concentrate on light-duty vehicles in Metropolitan Kampala. In subsequent phases, the initiative will be extended to other parts of the country, mainly urban centres, and other types of vehicles.

An important component of this NAMA is two types of inspection of motor vehicles, which are described in greater detail in another NAMA concept note, *Periodic vehicle inspection for emissions and roadworthiness.* The first is the Pre-Shipment Vehicle Inspection (PVOC) undertaken in collaboration with agencies of the exporting countries. The second is the periodic inspection and certification for roadworthiness undertaken in Uganda. Both inspection points will be based on indicators such as: vehicle age, engine type, fuel capacity, and year of manufacture. The PVOC methodology can be utilized by different agencies, both public and private. An annual inspection requirement for vehicles operating in the country is another strategy for this policy NAMA. The NAMA will initially require investment by Government and other agencies involved in inspection but will gradually become self-financing since vehicle users will be charged. As part of the suite of strategies, vehicle write-off at inspection is the targeted measure to put highly emitting vehicles off the road. The NAMA will also promote technologies that enable reduction of emissions as vehicles age.

The NAMA will develop capacities of Government, specifically, in the Energy and Transport sectors to develop regulations, and improve compliance and enforcement of regulations in the sector. The NAMA will involve stakeholders like the vehicle importers, manufacturers and the general public through an awareness raising campaign that promotes attitudinal change and increased acceptance of the need for new regulations.

The key activities of the NAMA are thus:

* Development of a national database on vehicle fleet, fuel consumption and efficiency (set up to eventually include inspection data)
* Development of fuel efficiency policy and standards have benchmark/target consumption for light, medium and heavy duty vehicles being imported into the country
* Development of fuel standards for sulphur. In addition, standards should specify grades of motor oil appropriate for the weather. Use of appropriate oil makes the engine more fuel efficient.
* Development of testing facilities and inspection programme for oil products (as another strategy to promote fuel efficiency): testing quality of oil, fuel once it is already at respective storage facilities to curb cases of adulteration.
* Development of a regulation limiting the age of imported vehicles (compliance linked to pre-shipment inspection)
* Promotion of cleaner fuels and setting of fuel standards
* Design of a vehicle inspection and maintenance system, including certification programme, standards for inspections and establishment of vehicle inspection centres.
* Development of tax incentives to encourage acquisition of more fuel efficient vehicles
* Establishment of a financial incentives scheme for vehicle replacement
* Public information and awareness campaign

Table 1 shows the Implementation Plan.

**4.0 Expected Time frame for the Preparation of the Mitigation Plan**

12 months

**5.0 Estimated Full Costs of Preparation**

*Baseline Studies (250,000)*

Surveys will be conducted to estimate the GHG emissions of the vehicle fleet and build on the Second National Communication. This will provide the BAU scenario and from this provide the basis of monitoring during the implementation of the NAMA.

*Policy and Regulatory Analysis (150,000)*

Studies will be conducted to develop appropriate policies that will facilitate the implementation of the NAMA. Special reference will be made to the UNEP Fuel Efficiency Initiative and other countries implementing similar programmes.

*Capacity Building (30,000)*

*Stakeholder Consultations (30,000)*

*Developing a Monitoring Reporting and Verification Framework (30,000)*

**Table 1 Implementation Plan**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Timeline in years | | | | |
|  | 1 | 2 | 3 | 4 | 5 |
| Development of a national database on vehicle fleet, fuel consumption and efficiency |  |  |  |  |  |
| Development of fuel efficiency policy and standards |  |  |  |  |  |
| Development of fuel standards for sulphur |  |  |  |  |  |
| Development of a regulation limiting the age of imported vehicles |  |  |  |  |  |
| Promotion of cleaner fuels and setting of fuel standards |  |  |  |  |  |
| Development of tax incentives to encourage acquisition of more fuel efficient vehicles |  |  |  |  |  |
| Establishment of a financial incentives scheme for vehicle replacement |  |  |  |  |  |
| Public information and awareness campaign |  |  |  |  |  |
| Conduct annual & biennial MRV reporting and monitoring and evaluation |  |  |  |  |  |

**6. Support required to prepare the Mitigation Action**

***6.1 Financial Support***

Grant Funds required: $ 490,000

***6.2 Capacity Building Support***

An international consultant supported by two local consultants will take part in the preparatory work

***6.3 Costs of NAMA***

The NAMA is estimated to cost US$ 5 million, with the actual cost to be determined through the development of a full proposal. US$2 million is for the development of policies, regulations and standards, and promotion and awareness raising. US$3 million is for vehicle inspections, which is a subcomponent of this larger NAMA and elaborated in greater detail in the NAMA for Periodic vehicle inspection for emissions and roadworthiness.

**7. Outcomes of NAMA**

**Sector details**

Transport plays a major role in economic activities, supporting productivity in the agricultural and industrial sectors, trade and tourism, and social and administrative services, and ultimately promoting integration for overall economic growth. There is a heavy dependence on roads for freight and cargo transport, and a limited number of buses operating in urban centres.

Uganda is experiencing high rates of growth of vehicle ownership, with the number of newly registered vehicles having increased by 18.2 per cent in 2011 from 2010 levels.[[2]](#footnote-2) Approximately 50 per cent of the vehicle fleet is registered in the Kampala District, which is experiencing traffic congestion, high fuel consumption and high GHG emissions.[[3]](#footnote-3)

**GHG emissions and sources in the sector**

Uganda’s first national communication to the UNFCCC included emissions data from 1994. Uganda is in the process of developing an updated inventory; and very limited information is currently available on emissions in the transport sector. The first national communication noted that the transport sector was the major consumer of fossil fuels and accounted for about 75 per cent of the fossil fuel import bill.[[4]](#footnote-4)

The 2013 Climate Change Policy reports that the transport sector has the highest GHG emissions of all sectors in Uganda, followed by the energy sector. Oil products, which comprise 9.2 per cent of the country’s energy needs, are mainly used in the transport sector and generate a considerable amount of greenhouse gasses.[[5]](#footnote-5) Imports of automotive gas oil were between 750,000 and 800,000 cubic metres in 2010 and 2011.[[6]](#footnote-6)

The NAMA will address carbon dioxide emissions produced through the use of light and heavy-duty vehicles. The source of these emissions is automotive gas oil (AGO)/diesel and premium motor spirit (PMS)/petrol. The 2013 Climate Change Policy reports that the transport sector has the highest GHG emissions of all sectors in Uganda, and the growth in vehicle ownership is causing GHG emissions in this sector to increase.

**Emission data sets / emissions information**

The cubic meters of automotive gas oil imported and sold are tracked by the Uganda Bureau of Statistics, with this information available from 2007 to 2011. Factors influencing future emissions include rates of vehicle ownership. The Bureau of Statistics publishes information on newly registered motor vehicles that is collected by the Uganda Roads Authority.

There is very little baseline data. Information gaps include total number of registered vehicles and the types of vehicles (e.g., light-duty, heavy-duty). In addition, there is no study of the tailpipe emissions from vehicles in Uganda.

***Beneficiaries***

* Owners and mechanics of local vehicle maintenance and repair shops; and
* Vehicle owners including private, public and large fleet owners.

***Estimated emission reductions resulting from the activities***

According to a recent Kampala GHG inventory, the total emissions are *Mt 2,229* for the base year 2012.[[7]](#footnote-7) With an estimated 40 per cent of total national vehicles in Kampala region, the estimated emissions from transportation are *Mt 4,903*. Global estimates of GHG reduction from improved vehicles are between 14-22%. The NAMA can aim at +10% given the current national vehicle fleet. The estimated annual average emission reductions encouraged through the NAMA (MtCO2 / year) would be Mt 882.5 MtCO2 annually assuming 2012 base year estimated on the information available in regard to the Kampala city region and adjusted to the national vehicle fleet.

The reduction in GHG emissions due to the NAMA would be determined by using a CO2e emission factor for transport fuels; applying default values from Chapter 2 of Volume 2, 2006 IPCC Guidelines for Greenhouse Gas Inventories to calculate the CO2 equivalent emissions from CO2, methane and nitrous oxides.

The Fuel Efficiency Initiative will result in improved vehicle fuel efficiency which will lead to reduced emissions of greenhouse gases per vehicle, and reductions overall compared to project BAU emissions. Vehicle fuel efficiency addresses GHG mitigation concerns by reducing fuel consumption and hence emissions from burning fuel. In addition, reducing the demand for fuel promotes sustainable utilization of fuel as an energy source while improving productivity for individuals/organizations

***How the NAMA is transformational*:** The NAMA contributes to the climate change plan’s goal of promoting a long-term national transport policy and plan that accounts for GHG mitigation concerns. The NAMA will contribute to structural change in the Energy and Transport sectors, which will result in energy savings and a more efficient transport system.

Vehicle fuel efficiency addresses GHG mitigation concerns by reducing fuel consumption and hence emissions from burning fuel. In addition, reducing the demand for fuel promotes sustainable utilization of fuel as an energy source while improving productivity for individuals/organizations.

**Co-benefits of the NAMA**

The NAMA will result in significant co-benefits, categorized below using the three pillars of sustainable development: economic, social and environmental impacts. Co-benefits will be accounted for using a qualitative assessment, with a full proposal examining what statistics are readily available to measure and monitor sustainable development impacts.

***Economic Impacts***

* Foreign exchange savings and lower oil import bills – Reduced national expenditure on fuel imports on a per vehicle basis.
* Improves energy security – Uganda is a net fuel importer and vulnerable to volatile oil prices in international markets; reducing the size of oil import bill relative to GDP lessons future price shocks.
* Household / Business fuel savings – Reduce expenditure on fuel on a per vehicle basis (although this may be offset by more expensive vehicles or higher total fuel expenditure because of increases in fuel prices). The inspection and maintenance programme may lead to lower vehicle operating costs, but this may be offset by increased expenditure on maintenance and repair.
* Employment creation – Inspection agencies and depending on the method used for certification such as stickers, will offer jobs and possibly generate products that private sector can engage in.

***Social Impacts***

* Improved health – Reduction in number of cases of ill health from diseases related to fuel emission reductions.
* Reduced expenditure on health – Reduced expenditure on treatment for illnesses resulting from fuel emissions-related diseases.
* Reduced number of accidents – the inspection and maintenance programme will lead to better maintained and safer vehicles, which implies improved road safety through reduction in vehicle accidents.

***Environmental Impact***

* Improved local air quality – improving vehicle efficiency is one of the cost effective interventions to reduce transport-related emissions per kilometre (such as nitrogen dioxide, sulphur oxide, carbon monoxide and particulate matter). It is important to measure these improvements, which reinforces the need for a monitoring system.

**Measuring, Reporting and Verification**

The MRV framework for NAMAs aims to provide assurance to stakeholders that projects and programmes meet certain requirements; that their implementation is carefully monitored, and that progress is reported and the results verified. Estimating the mitigation impact of transport policies and measures is difficult compared to other energy consuming sectors. This stems from the lack of (solid) data of implemented transport policies and the complexity of the transport sector as a system. This complexity can be explained by the high number and diversity of mobile sources that are subject to millions of individual decisions, the high number of stakeholders involved, and the technical challenges related to energy efficiency and alternative fuels.

It is important that the NAMA MRV system be integrated within existing institutions that will be able to collect the necessary data and coordinate and manage the NAMA. Clear institutional arrangements that establish who is the lead agency and what institutions they will partner with and their specific roles and responsibilities will be important.

The proposed MRV framework is presented in Table 2 and is intended to ensure that the necessary information is provided in a timely, transparent and cost-effective manner. The framework identifies methods and procedures for baseline setting and monitoring, as well as the institutions that could be responsible for monitoring, reporting and verification. Adjustments to the framework will likely be required to reflect the specific demands of NAMA funders.

The data to undertake MRV will be gathered in the initial phase of the project because there is no existing baseline data. The objectives and information requirements for MRV are included in the Table 2

**Table 2: Proposed MRV framework for Fuel Efficiency in Motor Vehicles NAMA**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Indicators** | **Emissions factors/Activity data** | **Data Owners & Accessibility** | **Information** | **Institution Responsible for collecting Information** | **Procedure** | **Reporting** | **Verification** | **Leadership** |
| Emission Factors  Activity Data (fleet, stock, fuel) | Fuel efficiency and consumption in motor vehicles  Vehicle type  Engine capacity  Vehicle fleet  Vehicle stock | MoWT/Medium  MoWT/High  URA/High  MoWT/medium  URA, MoWT, UBOS/Medium | Number of cars imported and reported annually to UBOS  taxes levied; reported annually  number of cars imported  fuel consumption, sales, quality of fuel | URA  URA  UBOS  Fuel companies | Measurement done on a periodic basis by data providers (sometimes in response to requests or for publications) | MEMD aggregates data on a periodic basis (sometimes in response to requests) | QA/QC by GHG INV team;  NEMA to do Environmental Impact Assessments/external regulatory authority (to check emissions profile of energy suppliers)  External auditor as 3rd party verifier of fuel marking | MEMD |
|  |  |  | Set standard and policy for imported vehicles (fuel efficiency)  Set policy for imported vehicles (vehicle age)  maintained vehicle fleet database that draws from URA data as part of national MRV system | MEMD, UNBS  MoWT  MoWT |  |
|  | | | | | | | | |
| **Resources, capacities, staff** | | | Have staff but need capacities enhanced & financing to conduct energy GHG inventory on an annual basis.  Other recommendations are:  - level of autonomy (independent institution)  - ensure regulations that require involvement of data providers to Ministry (as incentive to be responsible) | | | | | |
| **Long-term costs** | | | National budget allocation that is sufficient for the purpose of data collection, compilation and analysis | | | | | |

**8.0 Links to National Policies and other NAMAs**

**8.1 Links to National Development Plan:**  The NAMA responds to *Objective 4 – Promotion of Energy Efficiency* in the Energy sector, which is considered one of the Complementary Sectors in the National Development Plan. This NAMA will operationalize the draft Transportation policy that recognizes the importation of old vehicles into the country as a concern for pollution and long-term reduction in value for money. The NAMA also relates directly to the National Transport policy and the Non-Motorized Transport Policy, both of which have strategies for nationwide improvement of sustainable transportation. This NAMA is in line with the Energy Policy of Uganda (2002), the Renewable Energy Policy of Uganda (2007), the Energy Efficiency Strategy and Plan 2009*.*

**8.2 Links to Climate Change Policy:** The NAMA supports *Policy Priority No 9* – *Energy*, which seeks *to promote sustainable energy access and utilisation as a means of sustainable development in the face of uncertainties of climate change.* This NAMA also links with the climate change policy transport sector strategies particularly the promotion of modes of transport that take GHG emission reduction into account.

This NAMA is closely linked to the *Periodic Vehicle Maintenance NAMA*

**8.3 Supporting Information**

**Policies**

* + - * Energy Policy for Uganda, 2002
* Recognizes the significant potential for energy efficiency in the transport sector
* <http://energyandminerals.go.ug/downloads/EnergyPolicy.pdf>
* Renewable Energy Policy of Uganda, 2007
* Energy Efficiency Strategy and Plan, 2009
* Draft Transportation policy
* Recognizes the importation of old vehicles into the country as a concern for pollution and long-term reduction in value for money.
* Uganda National Climate Change Policy, 2013

Specific strategies for the transport sector include: i) Promote and encourage reduction of greenhouse emissions from the transport sector; and ii) Establish national standards for emissions and implement strict vehicular emissions standards in tandem with measures to gradually phase out old, inefficient motor vehicles, while encouraging the importation of efficient ones.

**Regulations**

**Pre-Export Verification of Conformity** (PVoC).

Section 3(e) of UNBS Act Cap 327 mandates UNBS to “Require certain products to comply with certain standards in manufacture, composition, treatment or performance and to prohibit substandard goods where necessary.”

The categories of high-risk goods to be inspected before shipment include: Group III Automotive products and inputs. From the 3rd December 2012 all shipments of products falling under the categories above will have to be accompanied by a *Certificate of Compliance.*

**8.4 Current Activities**

* **Bus Rapid Transport BRT -** The Ministry signed a contract with consultants to carry out a feasibility study and detailed engineering design and contract preparation for the Pilot BRT system in Greater Kampala Metropolitan Area. This is a World Bank funded project estimated to cost approximately U$ 3.2 million. The contract duration is 12 months and was expected to be concluded by end of July 2013.
* **Metropolitan Area Transport Authority -** The Government is in the process of establishing a Metropolitan Area transport Authority (MATA) to act as a single-purpose urban transport authority for better management of the public system in the GKMA including BRT. The responsibility of MATA will be planning, procurement and licensing of private transport operation.
* **Non-Motorised Transport (NMT) -** The Ministry prepared a Non–Motorised Transport (NMT) Policy aimed at promoting, guiding and ensuring that all the urban transport and infrastructure designs accommodate and plan for cycling and walking. The Non-Motorised Transport network in GKMA will complement BRT system and act as feeder and distributor to the system. KCCA has already developed plans for pilot NMT corridor.

1. Wepener,D.A., Kruger,P., Botha, W.J., Tulya Muhika, S. (2001*). Road Management and Financing- The Uganda Experience in the Implementation of Road User Charges.* 20th South African Transport Conference, South Africa. [↑](#footnote-ref-1)
2. Uganda Bureau of Statistics (2012), *2012 Statistical Abstract,* page 52. [↑](#footnote-ref-2)
3. Ministry of Water and Environment (2013), *National Climate Change Policy*, page 33. [↑](#footnote-ref-3)
4. Ministry of Environment (2002), *First National Communication of Uganda to the Conference of the Parties to the United Nations Framework Convention on Climate Change*, page 9. [↑](#footnote-ref-4)
5. Ministry of Water and Environment, page 31. [↑](#footnote-ref-5)
6. Uganda Bureau of Statistics, page 49. [↑](#footnote-ref-6)
7. Lwasa, S. (2013). *Greenhouse Gas Emissions Inventory for Kampala City and Metropolitan Region*, UNEP Habitat. [↑](#footnote-ref-7)