Progress made by Rwanda to implement cleaner vehicle Standards

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1. Introduction

➢ Transport sector in Rwanda is rapidly growing;
➢ Transportation is mostly dominated by traditional internal combustion engine (ICE) vehicles.
➢ ICE vehicles have negative environmental impact: air pollution hazardous to health, noise pollution, emission of greenhouse gases........
➢ Vehicle growth results into increasing dependency on fuel imports that negatively impact trade balance.
2. Current situation

2.1. Vehicle statistics

- As of April 2019 number of motor vehicles countrywide was 221,000 excluding security organs vehicles
- whereby 52% represent motorcycles and 38% passenger vehicles
- RRA statistics show that on average vehicle registration grow by 12% annually
## 2.2. Vehicle age

<table>
<thead>
<tr>
<th>Type</th>
<th>1-5 yrs (%)</th>
<th>6-10 yrs (%)</th>
<th>11-15 yrs (%)</th>
<th>&gt;15 yrs (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>72.9</td>
<td>3.9</td>
<td>9.5</td>
<td>13.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Car</td>
<td>4.7</td>
<td>3.5</td>
<td>18.4</td>
<td>73.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Caterpillar</td>
<td>19.4</td>
<td>39.6</td>
<td>27.6</td>
<td>13.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Half-Trailer</td>
<td>85.1</td>
<td>1.8</td>
<td>5.3</td>
<td>7.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Jeep</td>
<td>26.2</td>
<td>14.6</td>
<td>41.0</td>
<td>18.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Microbus</td>
<td>4.6</td>
<td>0.6</td>
<td>20.4</td>
<td>74.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Minibus</td>
<td>24.6</td>
<td>25.6</td>
<td>22.5</td>
<td>27.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Pick-up</td>
<td>46.4</td>
<td>20.7</td>
<td>13.1</td>
<td>19.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Special veh</td>
<td>50.4</td>
<td>23.4</td>
<td>15.5</td>
<td>10.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Trailer</td>
<td>65.8</td>
<td>11.4</td>
<td>10.1</td>
<td>12.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Truck</td>
<td>34.7</td>
<td>22.6</td>
<td>10.6</td>
<td>32.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>
2.2. Vehicle age cont...

- Overall fleet of Passenger Service Vehicles (PSVs) is 5,724 out of which close to 60% are minibuses:
  - 3,895 are above 15 yrs old.
  - 2,788 are above 20 yrs old.
  - 1,482 are above 30 yrs old.
2.3. Emissions

➢ The study conducted by REMA in 2018 on Sources of Air Pollution in Rwanda revealed that, unlike other areas, locations adjacent to busy roads, vehicle emissions are the biggest contributor to poor air quality.

➢ It further indicates that the majority of transport related Greenhouse Gas (GHG) emissions are generated from burning fuel in combustion engines.
2.3. Emissions (cnt’d)

➢ Third National Communication under the United Nations Framework Convention on climate change report also indicated that Transport sector is among the main contributors to GHG emissions

(Figure 1) GHG emissions from selected sectors in Rwanda between 2006 and 2015 GoR (2018) (1,000 tons CO$_{2}$eq per annum)
2.4. Overdependence on oil

➢ Rwanda strongly depends on imported petrol and diesel for transportation services.

➢ In 2018, fuel products were the largest single import product category into Rwanda, accounting to 12% of all imported goods equivalent to € 260 million according to BNR.

➢ This is not sustainable, and at the macroeconomic level this has a strong effect on widening the trade deficit.
3. Current practice and initiatives

- Adoption of stringent vehicles emission standards
- Introduction of electric mobility
- Inspection as usual
3.1. introduction of stringent vehicle emission standards

Upon request of the Ministry of Environment and UNEP support, the *RS 407-1:2019 Emission limits — Performance evaluation Part 1: Road vehicles* was developed and currently enforcement tool is being developed to ensure adherence to them by all sector players.
3.1. Introduction of stringent vehicle emission standards

Vehicle air emissions have been categorized according to the category of vehicle,

- Passenger Cars, Class M,
- Light Duty Commercial Vehicles (LDV),
- Medium Duty Vehicles (MDV) \((2700 \leq \text{GVW} < 3500 \text{ kg})\)
- Heavy Duty Vehicles (HDV)

New Vehicle and imported used vehicles are required to meet EURO IV while in use Vehicles have to meet other set requirements. Euro IV gives different requirements to Passenger cars, LDV, MDV and HDV.

Mainly limits are set on \text{CO, Nox, HC+Nox, PM}
3.2. Introduction of electric mobility

A number of practical initiatives of electric mobility are undertaken by different stakeholders:

➢ Ampersand is conducting trials using electric motorcycles assembled in Rwanda;

➢ Safi, the green transport company, launched the use of their public transport electric motorcycles and charging points in Rwanda on 8th October 2019;

➢ Volkswagen launched an Electric vehicle pilot for its Rwanda mobility business model on 29th October 2019 with e-golf;

➢ ISCO (a private company in logistics, security, fleet management, etc.) is piloting electric motorcycles with possibility of wider rollout in its operations;
3.2. introduction of electric mobility...

➢ IFC/World Bank expressed its interest to partner with Rwanda to introduce Electric buses in the City of Kigali. It is expected to have some electric buses as pilot in January 2020;

➢ Some companies have expressed interest to introduce electric buses in CoK for public transport. The proposals were submitted to the transport regulator (RURA) for review of financial viability;

➢ A company expressed interest to invest in bus assembly and manufacturing plant. Negotiations are ongoing with Rwanda Development Board (RDB).
3.2 Introduction of electric mobility...

In reference to the earlier mentioned issues, Rwanda is conducting a feasibility study to investigate the introduction of electric vehicles in Rwanda;

**Study Findings**

- Assessment was done on different vehicle categories including buses for urban transportation, private and taxi cars, taxi motorcycles and light trucks.

- Compared to petrol or diesel vehicles, electric vehicles have a high upfront cost, while the running cost (operational expenditure) is lower.
The total transport GHG emissions in Rwanda are expected to reach **1,467 kt** by 2030 showing an increase of 122 % in comparison to 2017 (762kt) with the share of freight transport of 20 % in 2017; 33 % in 2030.
Electric mobility scenario’s GHG emissions

- GHG emissions will increase until 2030 up to 1,397 kt CO$_2$e
- 17% points less than the increase in the BAU scenario both passenger and freight
- Motorcycle taxis have the highest relative reduction with 47% or 47,000 t CO$_2$eq.
Fuel consumption in BAU- and in the electric mobility scenario in 2030

**Bar Chart**

- **BAU scenario**
  - Gasoline: 8,839,048 TJ
  - Diesel: 6,958 TJ
  - Electricity: 0 TJ

- **Electric mobility scenario**
  - Gasoline: 8,252 TJ
  - Diesel: 6,958 TJ
  - Electricity: 477 TJ

**Reduction**

- Reduction of 21% Gasoline
- 9% Diesel
- Total demand for oil products reduced by 15% (-2,676 TJ)
3.2. Study recommendations:

The study recommended the following:

A. 2030 targets:
   ➢ 30% of electric motorcycle
   ➢ 8% of electric car (including jeeps)
   ➢ 20% electric buses
   ➢ 25% for electric taxi and mini/microbuses

B. Incentives:
   ➢ Import tax reduction and VAT exemption
   ➢ Apply industrial electricity tariff to charging stations

The recommendations are currently under discussion at policy level for adoption and implementation
3.3. Benefits of introducing electric vehicles

➢ Low maintenance cost;
➢ Reduce environmental impact related to climate change;
➢ Reduce dependency of fossil products (oil imports);
➢ Decreased Greenhouse Gas (GHG) emissions by 17% (182 kt CO$_{2eq}$) to only 1397 kt CO$_{2eq}$ until 2030 as compared to the Business as usual scenario;
➢ Reduce heavy Importation on oil products by 15% (gasoline 21% and diesel 9%) annually to stabilise balance of payment;
➢ Cost savings of € 59 million on oil importation annually;
THANK YOU!