



KIIRA MOTORS

— CORPORATION —

MISSION VEHICLES MADE IN UGANDA

Building the Indigenous Motor Vehicle Industry in Uganda



People, Product, Plant, Mobility Infrastructure + Policy

Presentation at CEDAT HEPSSA Project Training

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1. INTRODUCTION

Industrialisation is one of Government's top priorities to transform Uganda's into a middle-income economy through import substitution and export-oriented production to enhance household incomes and improve the quality of life of all Ugandans. This economic strategy is conceptualised around harnessing Uganda's demographic dividend, the second youngest nation in the world. Streamlined skilling and upskilling of the youth coupled with opening domestic and regional markets to guarantee demand is key to deepening value addition, and supporting the mineral-led industrialisation agenda for import substitution and export promotion. The target is to increase the contribution of industry to GDP from 18.6% to 28.6%; increase the rate of growth of the industrial sector from 6.1% to 8.1%; reduced youth unemployment from 13.3% to 9.7% with 513,000 jobs created annually; increase the value of manufactured exports in total exports from 12.3% to 19.8%; increase the ratio of merchandise exports to GDP from 12.7% to 16.5%; increase the share of intermediate goods (inputs for manufacturing) in total import bill from 18.6% to 25.5%; and ultimately reduce the percentage of household outside the money economy from 68.9% to 55% by 2026.

The COVID-19 pandemic has stressed the need to re-emphasize the role of Government in steering the economy to turn the resultant misfortunes into opportunity for boosting the domestic manufacturing capacity of the nation. Uganda should take advantage of opportunities created by the COVID-19 pandemic to accelerate the industrialisation agenda to create more jobs and wealth. This necessitated addressing the bottlenecks to investment and doing business such as high cost of credit, high cost and unreliability of electricity, high transport costs, and inadequate demand. This will go a long way in increasing the competitiveness of products made in Uganda, which is key to export promotion in the growing regional markets.

Building the indigenous Motor Vehicle Industry has great potential to contribute towards the desired economic and social transformation. It provides an unprecedented opportunity for promoting value addition to Uganda's mineral and other natural resources with the view of import substitution and export promotion of vehicles, parts, components and systems. Uganda is endowed with minerals, which can be used for vehicle parts manufacturing including iron ore for automotive steel; silica sand for glass; rare earth elements for glass glazing, catalytic converters, batteries, & electronics; graphite for brake pads; oil for plastics; cobalt & lithium for batteries; kaolin, marble and vermiculite for paint; tungsten, columbite, tantalite, chromite and titanium for metal alloys; copper for auto electric conductors and motors, among others.

The subsequent sections of the background paper shapes the conversation around the colonial and post-colonial history, progress and prospects of the indigenous Motor Vehicle Industry. The Paper draws on the rich cocktail of national development policies, Vision 2040, NDP III and the NRM Manifesto 2021-2026 reflecting on the problem(s) in the nascent industry along with the instructive stakeholder consultations to postulate the fit for purpose strategy and Five-Year Offtake Plan 2021-20206 for building the indigenous motor vehicle industry in Uganda.

2. PROBLEM STATEMENT

To attract the desired investments for deepening automotive value addition and import substitution through supply chain localization, and ultimately export promotion while enhancing environmental stewardship, the following attendant issues need to be holistically addressed:

(i) **High and Growing Import Value of Predominantly Outmoded Automotive Technology:** The demand for motor vehicles is growing at a rate of 11.8% and is expected to reach 630,000 motor vehicles annually by 2030 in the EAC. Vehicles imports are worth of over USD 450 million annually, the second highest value on Uganda's import bill. Despite the high and growing demand, vehicles are imported predominantly fully built 85% used with an average age of 16 years at first registration on the backdrop on importation of auto-parts for maintenance and repair. Government is the main consumer of brand new vehicles with purchases of imported Motor Vehicles averaging at 1,629 units in the period 2010 to 2018, 70% being pickups.

The consumerism perspective in the vehicle market not only undermines the prospects of domestic value addition, but also contributes to the undesired growing trade deficit. Market forces without strategic interventions for harnessing such opportunities to drive industrialization serves to escalate the challenges of unemployment and under employment.

(ii) **Unsustainable Transport Model in the Urban Centres:** Road Transport accounts for 95% of passenger traffic and 96.5% of the freight cargo. The motorization rate (i.e. number of vehicles per 1000 persons) for Uganda is 14, below 44 for Africa, 174 global average and 200 for developing countries. Studies have established that 82% of the passengers use public transport, 9% private cars & 9% Boda-Bodas with 50% of Personal annual income spent on Transport. Uganda has a motorization rate of 14 vehicles per 1000 persons below 44 for Africa, 174 global average and 200 for developing countries. In the absence of a well-structured public system, 65% of the vehicles on the road are private passenger vehicles, mainly carrying the driver, resulting into heavy traffic and road congestion especially in Kampala City.

Traffic and road congestion in Kampala City results into loss of 24,000 person-hours daily equivalent to UGX 3.2 trillion annually. This is on the backdrop of UGX 500 million worth of extra expense on fuel daily due to traffic congestion in Kampala City. The average fuel efficiency in Uganda as of 2014 was 13.7L/100km with 500g/km transport-based carbon emissions. Kampala ranks 2nd most polluted city in Africa and top 15 in globally. The United Nations Economic Commission for Europe set the target for transport-based carbon emissions for 2016 – 2021 at 130g/km for passenger vehicles and 175g/km for light commercial vehicles resulting into a measured average fuel efficiency of 5.1L/100km and 7.2L/100km respectively in 2016. It is also imperative to note that the importation of end-of-life vehicle technology has resulted into low fuel efficiency and high hazardous transport-based carbon emissions contributing to climate change. The economic costs of climate change in Africa could equal an annual loss in GDP of 1.5% - 3.0% by 2030 under a business-as-usual scenario due to noncompliance.

There is need for a shift to high volume public transport vehicles along with a clear roadmap for progressive transition to a fully electric bus transit system to address the issues of congestion, pollution and energy economy.

(iii) **Low Agricultural Mechanization Leading to Low Productivity:** Uganda has the lowest number of tractors at 0.4 tractors per 1,000 hectares while Kenya and Tanzania are at 2.7 & 1.5 respectively. It takes sixty days to cultivate a hectare of land using a hand hoe, compared to three days with draught animal power while a sound tractor can plough five hectares in a day. The Food and Agricultural Organization (FAO) recommended Tractor: Arable Land ratio is 1:40 hectares. This implies that Uganda needs 172,500 tractors to maximize its potential. Mechanization means timelier operations, and minimal losses.

(iv) **Proliferation of Counterfeit and Substandard Motor Vehicle Parts:** Cheap, substandard, defective and counterfeit auto parts and components have infiltrated and dominated the local vehicle spare parts market. Vehicle owners, drivers, and technicians are often unable to distinguish between genuine and counterfeit parts. Counterfeit and substandard auto-parts result into high vehicle downtime, road accidents, compromised productivity and loss of revenue, undermine innovation and impairs the reputation of genuine auto parts and components brands.

(v) **Inadequate Automotive Industrial and Technology Infrastructure:** Government embarked on the development of 22 industrial and business parks across Uganda. However, there is inadequate infrastructure to support the establishment of industries in these parks (connection to national grid, railway sidings, roads, water, waste treatment plants etc.). Furthermore, there is limited investment in charging infrastructure to support the shift to electric vehicles. Uganda is yet to put in place facilities for vehicle testing, vehicle homologation protocols, and automotive technology research and development centers to support the utilization of the abundant minerals and plant materials for developing a wide range of auto parts and systems.

(vi) **Low and Isolated Automotive Value Addition Investment:** The efforts in the informal sector to build vehicles, vehicle bodies and parts is not strengthened with engineering input due to dismal operations in silos. The linkage between industry and academia to facilitate industry specific research and technology development, transfer and diffusion is weak and lacking in several areas. Without synergies to deliver complimentary value, attainment of economies of scale remains elusive.

(vii) **Insufficient Human Capital Development:** Vehicle owners, drivers, and fleet managers often rely on '*juakali*' for the supply of spare parts and vehicle maintenance. This has resulted into high vehicle downtime, road accidents and loss of revenue. Higher Institutions of Learning have paid limited attention to courses for developing the human resource required by the motor vehicle industry. Most programs that exist are in technical institutes focusing on vehicle maintenance and repair. Skilled labour across the entire automotive industry value chain is a critical input in driving industrialization.

3. STATE OF THE MOTOR VEHICLE INDUSTRY IN UGANDA

3.1 HISTORY OF THE MOTOR VEHICLE INDUSTRY IN UGANDA

3.1.1 The Colonial Era 1900-1962

The first car in Uganda was imported by Sir Hesketh Bell – the Governor of Uganda Protectorate (1905 -1913), and arrived in Uganda on 20th April 1908. The car was a 1906 Albion powered by a vertical-twin 16 horse power (16HP engine car, 3141 cc), manufactured by Albion Motors – a Scottish automobile and commercial vehicle manufacturer founded in 1899. Ssekabaka Daudi Chwa II the 34th Kabaka of Buganda is said to be the first Ugandan to privately own a car in 1909, a gift from Sir Hesketh Bell on his 12th Birthday.

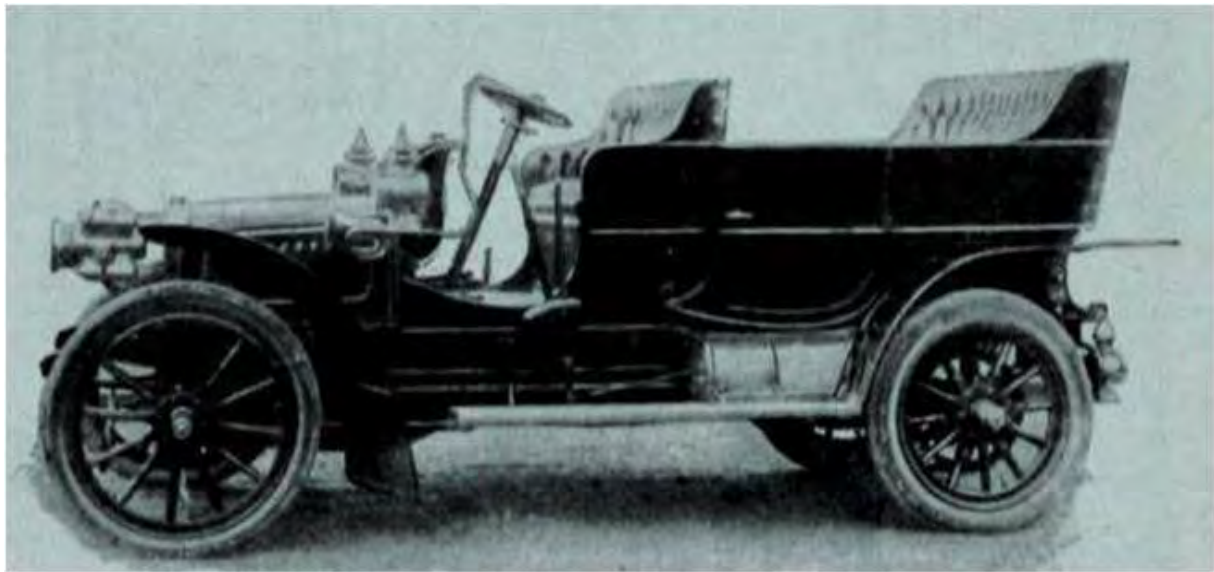


Figure 3.1: The Albion 16-HP Car

The colonial era transport needs and governance structures resulted into growth of a nuclear automotive market with hubs in major regional cities at the time for purposes of administration and resource extraction. The nuclear industry developed in the post-independence era with the emergence of six Semi-Knocked Down (SKD) assembly facilities all located in Kampala. The Andrew Cohen regime bookmarked by the establishment of Uganda Development Corporation (UDC) also saw the setting up of Uganda Batteries Limited in 1958. The Ugandan market was mainly served with new vehicles imported mainly from European Vehicle Manufacturers.

3.1.2 The Post-Colonial Era 1962-1980

In the early 1960s, out of the 1,176 factories in Uganda, 233 were in the metal and engineering sub-sector (dominated by motor vehicle and plant repairing, with 148 firms).¹ The cars were mainly owned by ‘white’ people or government officials.

The ‘*Kabandole*’ buses of the early 60’s and 70’s helped ease transportation of city commuters (Business people, students travelling to school and others). They were called ‘*Kabandole*’ (a Rutooro word) for “let them see me” ... because the Batoro passengers typically chose to seat on the upper deck to show-off. The double decker bus, Albion by make, also plied different

¹ Walter Elkan, 1961 – The Economic Development of Uganda

parts of the country and had a capacity of 100 passengers both seated and standing. The upper decker allowed only seated patrons because of the low ceiling and vehicle sway while braking or going around bends. The Kabandole was 4.45m high and 12m long with two axles and its two decks were connected by one or two stairways.



Figure 3.2: Kabandole Bus of the 1960's & 1970's

The 1970's gross mismanagement of the economy and rapid deterioration of the wider Ugandan Manufacturing Sector resulted into backtracking on earlier interventions for local automotive value addition. The 1970's gross mismanagement of the economy also affected mechanization of agriculture. For example in 1972, the Madhvanis (owners of Kakira Sugar Factory) were using a fleet of 120 tractors, which they abandoned on being expelled and upon return in 1983, they found only four (4) functional tractors.²

3.1.3 The 1980's -2000's Era

The 1980's saw a total market shift to used vehicles imported as Fully Built Units mainly from Japan with a significantly low acquisition cost. Subsequently, the market shifted to used-vehicle imports representing 85% of the annual new registrations at an average age of 16 years. Government was the main consumer of brand-new vehicles

3.2 Motor Vehicle Market Performance 2010-2020

Road Transport accounts for 95% of passenger traffic and 96.5% of the freight cargo. The motorisation rate (i.e number of vehicles per 1000 persons) for Uganda is 14, below 44 for Africa, 174 global average and 200 for developing countries. The Uganda vehicle import value

² Bigsten and Kayizzi-Mugerwa, 1999 Crisis Adjustment and Growth in Uganda

grew to over US\$ 450 million per annum at a compound annual growth rate of 11.8% representing approximately 10% of the national gross import value. For the same period, vehicles were the second highest valued imported goods after petroleum products. It is further worth noting that the vehicle market size in the EAC grew from 158,000 in 2011 to 257,000 in 2015, projected to reach over 630,000 by 2030.

Table 3.1: Vehicle Registrations in Uganda 2010 – 2019 (Sources: UMIA, UBOS)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All Vehicles Sales	35,529	36,422	39,147	40,448	45,550	44,573	33,750	41,997	46,399	47,956
Buses and Coaches	645	225	590	620	649	663	976	997	597	770
Pickups	2,345	3,485	1,934	1,697	1,759	2,059	2,604	2,633	2,507	2,496
Lorries and Trucks	5,187	5,231	6,026	6,529	7,031	7,116	9,040	9,147	6,140	6,129
SUVs	16,470	15,590	17,397	19,133	20,869	21,362	26,804	27,059	18,356	17,996

Government purchases of Motor Vehicles averaged at 1,629 units in the period 2010 to 2018, 70% of these being Pickups. Table 32 shows the government motor vehicles purchases 2010-2018.

Table 3.2: Government of Uganda Motor Vehicle Registered from 2010-2018 (Source: UMIA, UBOS)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gov't Purchases	2,203	2,855	957	730	653	1,014	1,936	2,507	1,808

Motor vehicles imports are predominantly Fully Built Units 85% used at an average of 16 years at first registration. 65% of vehicles imports are passenger vehicles. The growth of the passenger vehicle sales is attributed to the rise of the middle class in the absence of a functional public transport system.

3.3 Vehicle Research & Development, Assembly and Parts Manufacturing 2010-2020

The Presidential Initiative for Science and Technology Innovations at Makerere University supported the Kiira EV Project in the development of three (3) concept vehicles: Kiira EV (2011), Kiira EV SMACK (2014), and Kayoola Solar Bus (2016).



Figure 3.3: Kiira EV



Figure 3.4.: Kayoola Solar Bus



Figure 3.5: Kiira EVS

Other Vehicle development initiatives included MV Mulimi Walking Tractor by Prof. Noble Banada, at Makerere University; Bio-Ethanol Conversion by Kyambogo University; Uganda 1: a Diesel Car by Bakayiira Diesel Garage; and three (3) Diesel Engine Prototypes by Kevoton Motion Engineering.



Figure 3.6: Guest Inspect the MV Mulimi at the Makerere University Agricultural Research Institute Kabanyoro in January 2016



Figure 3.7: Uganda 1 and Uganda 2 by Bakayiira Diesel Garage



Figure 3.8: Two Single Piston Diesel Engine Prototype by Kevoton Motion Engineering

The UPDF established a facility for assembly of the Nyoka Armored Vehicle at Magamaga, Jinja in 2018.



Figure 3.9: Nyoka Vehicle at Magamaga

Metu-Zhongtong Bus Industries located in Namanve Industrial Park was established in 2017 for the production of buses.



Figure 3.10: Diesel Bus Assembled by Metu-Zhongtong Bus Industries

There are several SME's involved in Assembly and remanufacture of bus and truck bodies carried out on small scale including Rubaga Bus Body Builders, Kamoga Body Builders, Master Coach Builders, Godfrey Namunye's Body Modification Workshop, Jussy Coaches,

Pro-Ride, and Malva Bus Body Builder. Several companies are involved in the Manufacturing Vehicle Parts mainly for spares and maintenance. Uganda Batteries Limited, the local market leader in auxiliary battery production, Nile Batteries Limited, GM Tumpeco, Henkel Fibre Glass Body Panels, Electric Controls & Switch Gear Limited, Plascon Paints, Victoria Cable Limited in Mbale Industrial Park, etc.

3.4 FARASI AGRICULTURAL MACHINERY

Farasi Agricultural Machinery Company Limited is a Ugandan owned entity established to assemble tractors and run parish-based Service Centres to provide countrywide tractor use and sustainable, affordable, agricultural mechanization. This company has developed the Farasi (Horse) Tractor designed and built for Uganda with the prospect of using parts sourced locally. The company is already piloting the parish model in Gulu.

The Farasi Tractor Assembly Plant is premised on Job creation; Skills and Technology Transfer; BUBU (Rise of Ancillary industries); Import Substitution; Export growth of both tractors and produce (EAC, COMESA, AfCFTA, etc); and Economic growth and development through increased production. Upon establishment, up to 7% of the tractor components are to be sourced locally. This will grow to over 15% within 6-12 months and 35% after 1-3 years, saving the country millions in foreign currency and creating more jobs in Uganda. Local content for ploughs, harrows and planters, will be between 80-90% within 6-12 months.



Figure 3.10: The Farasi Tractor Tilling Land in Gulu

3.5 KIIRA MOTORS CORPORATION

Government approved a Roadmap along with a Seed Fund of UGX 143.7 Billion (July 2018-June 2022) and allocated 100 Acres of land at the Jinja Industrial and Business Park for setting up the Kiira Vehicle Plant. The Kiira Vehicle Plant Phase I is designed for production of up to 22 vehicles (buses, trucks and pickups) a day/ 5,000 vehicles a year. The Kiira Vehicle Plant will also provide contract manufacturing/assembly services for players in the regional market. This investment is expected to create over 14,000 jobs and catalyze investment by small and medium enterprises in the manufacture of vehicle parts, components and autonomy systems (Brake pads, seats, bolts and nuts, bumpers, vehicle electronics, navigation system, digital mobility solutions such as ticketing and cashless payments management, among others).



Figure 3.11: Kiira Vehicle Plant Roadmap Approved by Cabinet 09.04.2018

3.5.1 Construction of the Kiira Vehicle Plant Start-up Facilities

Construction of the Kiira Vehicle Plant, which is undertaken by the UPDF through National Enterprise Corporation, stood at 60% as of September 2020. Technology Consults CEDAT, Makerere University, are the Design, Engineering and Supervising Consultants for the construction of the Kiira Vehicle Plant. The Kiira Vehicle Plant will also provide contract manufacturing/assembly services for players in the regional market. Figure 3.12 is an illustration of the Kiira Vehicle Plant Start Up Facilities Layout Plan. Figure 3.13 & 3.14 show the 3D renders of the assembly building and the building housing the Bodyshop, electrophoresis shop, paint shop and Chassis Assembly Line. Figure 3.15 is an image of the status of works on the assembly building as of September 2020.

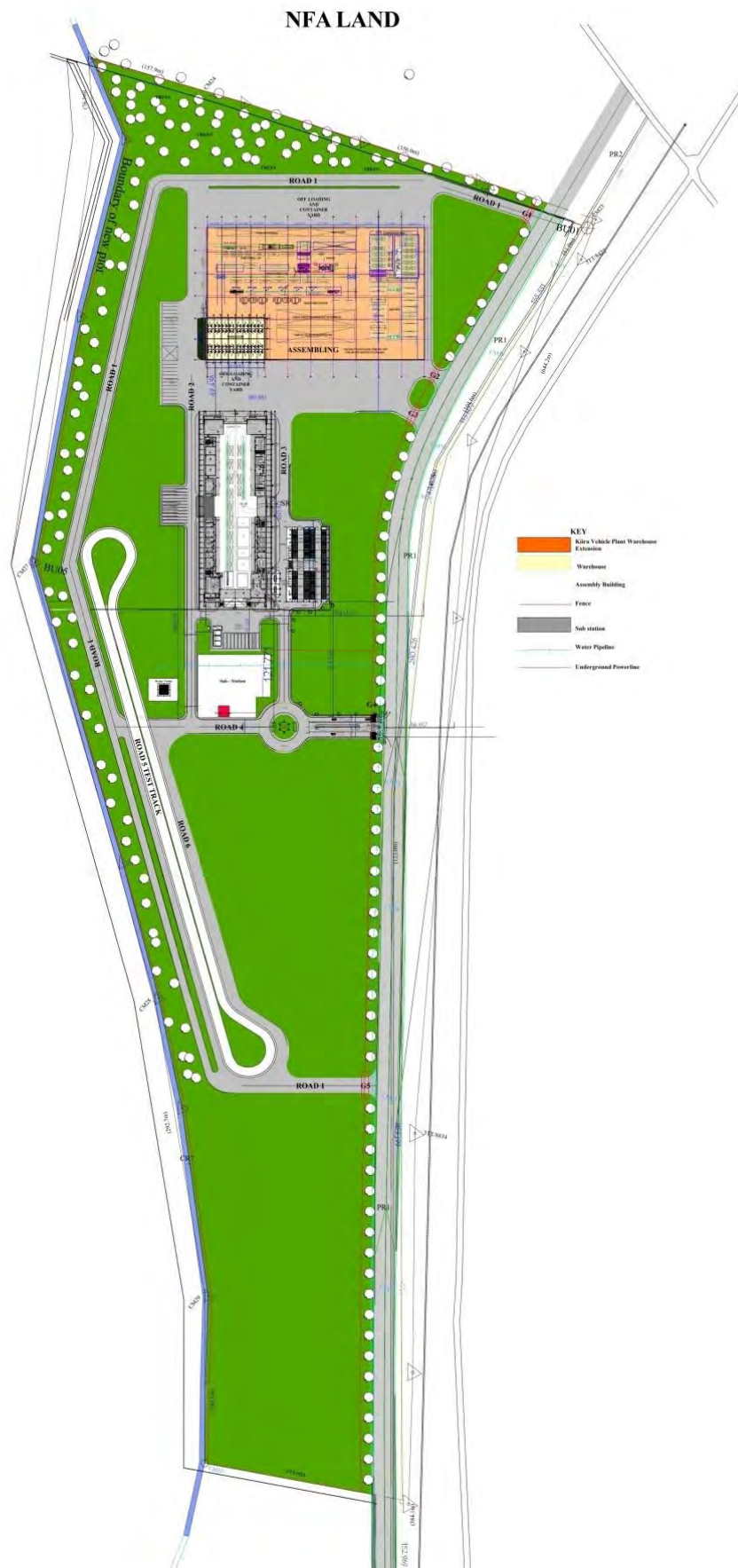


Figure 3.1'2: Kiira Vehicle Plant Start-Up Facilities Layout Plan



Figure 5.13: 3D Computer Model of the Kiira Vehicle Plant Assembly Building



Figure 5.14: 3D Computer Model of the Body Shop, Electrophoresis Shop, Paint Shop and Chassis Line Production Facility



Figure 3.15: Status of Construction of Phase I Kiira Vehicle Plant Facilities September 2020

3.5.2 The Kayoola EVS Bus

Through technology transfer with China and utilizing production facilities at the Luweero Industries in Nakasongola, the Kayoola EVS, a premium zero-emissions City Bus with a range of 300km was developed and two (2) units built and are currently providing shuttle services for Uganda Civil Aviation Authority Staff between Kampala and Entebbe. The Kayoola EVS speaks to improved public transport, operational and fuel efficiency within our cities coupled with enhanced environmental stewardship. It costs UGX 32,000 per 100km to charge the Kayoola EVS as compared to the Diesel Bus equivalent at UGX 167,000 in fuel per 100km. The Kayoola EVS parts such as bamboo floor, interior parts made of plastics & aluminum; and steel superstructure and body panels will ultimately be manufactured in Uganda. This provides an unprecedented opportunity for investment in the automotive industry - an industry of industries, to deepen value addition engendering supply chain localization and import substitution.



Figure 3.16: Kayoola EVS on the Road at Entebbe

The shift to Electric Vehicles will have a profound impact on the motor vehicle industry supply chain. The Economist (May 2020), an international publication estimated that by 2040, there will be two (2) billion electric vehicles in the world accounting for 90% of the world's vehicle population; and saving eleven (11) billion barrels of oil a year and 4.7 billion tons of carbon dioxide. Batteries are one of an electric vehicle's most expensive components, accounting for between a quarter and a third of the car's value. Driving down their cost is key to profitability. There are 336 Battery Cells in the Kayoola EVs, each of 280 AH which provides a range of 300KM on a single charge. Production of 856 Electric Buses in 2025/26 as forecasted by Kiira Motors Corporation implies demand for 287,616 Lithium Ion Battery Cells. The cost for a Lithium Ion Battery is estimated at USD 1.2/AH. There is therefore need to work on a bankable business case for establishing EV battery manufacturing capabilities in Uganda

Government through UNBS secured a World Manufacturers' Identifier (WMI) for vehicles from the International Society of Automotive Engineers (SAE). This implies that Vehicles assembled in Uganda can now be uniquely identified in the international market paving way for export of vehicles made in Uganda.

3.5.3 Prospects for Contract Assembly of Pick ups

Kiira Motors Corporation and Victoria Motors Ltd are collaborating to utilise the Kiira Vehicle Plant to assemble the Mitsubishi Pickup and later the Plug-in Hybrid Electric Vehicle Outlander SUV. Government purchases over 1,000 pickups annually representing 70% of the brand new pickup bought annually in Uganda. There is also export opportunity for vehicles within the region (Kenya, Tanzania, Seychelles, Mauritius, Southern African countries) given similar vehicle requirements especially for pickups. This is expected to reduce the cost of the pickup by 30%; promote multi-sectoral backward, forward and lateral linkages along the automotive industry value chain; promote automotive technology transfer with global industry players; and stimulate access to favorable financing for investment in automotive parts and component manufacturing.

3.5.4 The Automotive Industrial and Technology Park

The Automotive Industrial & Technology Park is one of the Strategic program projects in the Third National Development Plan (NDPIII) 2020/21 – 2024/25 in line with the overall theme of Sustainable Industrialization for inclusive growth, employment and sustainable wealth creation. Government has allocated funds to Kira Motors Corporation to purchase two (2) square miles for setting up the Automotive Industrial & Technology Park to support a wide range of investments in motor vehicle parts manufacturing, vehicle testing and automotive technology innovation enterprises.

The park is conceptualized to host a Vehicle Plant; Key Auto Parts Supplier Plants; Vehicle Testing Facilities; Automotive Technology Innovation Centre; Waste Management Facilities and Social Amenities for Workers in the Automotive Park.

- (i) The vehicle plant will be built with a capacity of 100,000 Vehicles per year for both Pick-ups and SUVs;

- (ii) The park will house the first ever Vehicle Proving Grounds in Sub-Saharan Africa with capabilities for crash testing, emissions testing, dynamic and durability testing, and whole vehicle validation;
- (iii) The park will host at least 10 Auto Parts Manufacturing Plants. These are envisaged to include plants for: Auto Glass, Brake Pads, Fibre Glass Panels, Nuts and Bolts, Rubber Bushes, Filters(Air, Fuel and Oil), Vehicle Electronic Control Units, Vehicle Seats, Bamboo Boards, Vehicle Fibre Carpets, among others;
- (iv) The Park will host the iconic Kiira Towers housing Kiira Motors Corporation International Head Quarters with a Convention Centre, Hotel and related Business Amenities;
- (v) The Park will host the Kiira Motors Corporation Technology Centre which will be the official workplace for the Product Development and Engineering Teams;
- (vi) The park will be designed to host social amenities including staff accommodation, banks and financial institutions, places of worship, hospitals, sports complex, logistics, warehousing & transport, post office services, restaurants, supermarkets, etc.

3.6 The Automotive Industry Policy

The Government of Uganda is working on a policy to promote the emerging indigenous motor vehicle industry. The policy, termed as the, “*Automotive Industry Policy*” aims at promoting value addition to Uganda’s mineral and other natural resources with the view of import substitution and export promotion of vehicles and vehicle parts. The draft Automotive Industry Policy is currently at the stakeholder consultation stage.

3.7 Recycling/Remanufacturing End-of-Life Vehicles and Parts

The existing legal and regulatory framework does not address the treatment of end-of-life vehicles and recycling of vehicle parts, components and systems. It is worth noting that end of a vehicle's life does not mark the end of its environmental impact. Plastics, toxic battery acids, and other products may stay in the environment. The dismantled and abandoned vehicles seen in many yards and garages around the country could be shredded into pieces by a machine shredder and divided into iron, nonferrous-metal, and dust, etc. using a magnetic selector or any other appropriate technology. Scrap metal could be supplied to steel manufacturers; nonferrous metal could be reused as raw material for making other vehicle parts, components and systems.

In Japan, where Uganda imports most of the vehicles, the Automobile Recycling Law was promulgated in July 2002 and put into effect in April 2005. It stipulates that every end-of-life vehicle must be dismantled and recycled in an eco-friendly manner. Since the implementation of the law, there have been numerous changes in the industry, such as the obligation for every company to be granted permission to dismantle or shred end-of-life vehicles. With this law in place, Japan has created over 77,635 dealers and companies hence creating more job opportunities.

The Ministry of Works and Transport and other key players in the Works and Transport sector continuously import a huge number of road construction and earth–moving equipment from

Original Equipment Manufacturers (OEM) overseas. The Government vehicle registry (MoWT)/Database indicates that Central Government has a stock of 1,474-road equipment i.e. “excluding those under the management of UNRA and KCCA. This number might triple if equipment under the management of UNRA, KCCA and the private sector are included. Preliminary assessment of Government’s equipment (equipment which is greater than 10 years old) indicates that 354 units are suitable candidates for remanufacturing i.e. 101 motor- graders, 34 bull- dozers, 29 wheel-loaders, 56 Vibro/pneumatic rollers, 9 excavators, and 21 traxcavators. One way of reversing this trend is to undertake remanufacturing and restore the values and functionalities of these assets.

3.8 Motor Vehicle Demand Projections 2021-2030

The projection model focused on the Buses, Pickups, Trucks, SUVs and Tractor segments that have great potential for address the passenger and cargo mobility needs of Uganda. The historical performance data for Pick Ups, Trucks and SUVs for the period 2010 to 2019 provided the baseline data to inform the market demand-forecasting model - Holt-Winters Model. The key observed characteristics of the baseline data included seasonality, trend and level. The demand projections take into consideration the population growth rate of 3.2% per year, urbanization rate of 5.7% and GDP growth rate of 6.5% and dynamics of the financial markets.

The demand for buses is projected based on the estimated needed for mass transport for public transport in the cities, school buses, hostel and staff shuttles for tertiary institutions, sports clubs, firms employing over 1,000 personnel like UCAA, URA, commuter buses between Cities and Trans border mobility by road, etc.

Table 3.3: Uganda Motor Vehicle Projections 2021 - 2030

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Buses and Coaches	5,530	5,755	6,466	5,443	5,695	2,639	2,693	2,669	8,891	9,702
Pickups	4,534	3,428	3,815	3,983	4,577	5,048	3,773	4,203	4,382	5,044
Lorries and Trucks	7,111	9,088	9,701	10,296	13,141	9,217	10,197	10,857	11,494	14,635
SUVs	20,869	22,671	23,934	25,586	33,243	23,256	25,205	26,551	28,324	36,725
Tractors	7,768	7,782	9,987	8,795	8,782	8,036	8,040	10,784	9,269	9,231

3.8.1 Pickup Market Segment

The administrative units countrywide need to be reinforced with Pickups to ease service delivery, including security through patrol units, movement of agricultural and health officers, and field monitoring services by other Institutions – Ministries, Departments and Agencies. Uganda is stratified into administrative units namely; Districts, Counties, Sub-Counties, Parishes and Villages to bring services closer to the people. As of 1st January 2019, there were 135 districts, 309 counties 1,544 sub-counties, and 7,553 parishes. The demand forecast assume that between 2021-2030, each district should be supported with a minimum of 20 Pickups and each of the 42 border districts supported with an additional four patrol Pickups for security reinforcement, as well as a minimum of four patrol pickups for each of the 10 National Game Parks. It is worth noting here that Uganda has over 3,133 Government owned Health Centers and 1,009 Private Not-for Profit health centers.

3.8.2 Tractor Market Segment

Uganda has 6,900,000 ha, Arable land (hectares) according to the World Bank. Arable land is land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land that is temporarily fallow according to the Food and Agriculture Organization of the United Nations (FAO).

The Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) reported that in 2014, over 90% of the farm, production-to-market transactions were done using rudimentary, inefficient and labour intensive hand tools with household labour, 8% manage to use animal traction, and less than 2% use of tractors for basic farming. This has kept the agriculture production levels very poor.

The Food and Agriculture Organization recommended Tractor: Arable Land ratio is 1:40. This implies that Uganda requires a minimum of 172,500 tractors for improved agriculture production. Uganda currently has 2,420 functional tractors, implying a deficit of 170,080 tractors. At least 52% of the required tractors should be availed in the next ten (10) years. Of these, 50,000 tractors can potentially be made domestically.

3.8.3 Bus Requirements for Greater Kampala Metropolitan Area

- (i) Public transport passengers within Kampala mainly use 14-seater minibus services locally called taxis. KCCA estimated that in 2003, there were nearly 7,000 minibuses based in the GKMA. Of these, approximately 5,000 were used for providing transport services within the city while the remainder for inter-urban services throughout the country. This number had now grown to over 14,000 taxis by 2016.
- (ii) Kampala City has an estimated resident population of 1.6 million people and the larger Greater Kampala Metropolitan Area, large swathes of which have grown organically without proper planning, has a combined population of about 6.7 million people according to the Uganda Bureau of Statistics (UBoS).
- (iii) The policy direction is to replace the low volume vehicles with high volume carrying vehicles (buses) to address the issues of traffic congestion, poor fuel efficiency and air pollution.
- (iv) Nine bus routes were earmarked in the Kampala Development Plan; namely: Jinja Road-Bombo road corridor; Entebbe Road; Entebbe/Kampala; Bwaise-Kampala; Kampala-Jinja Road; Kampala-Gayaza Road; Kampala-Kawempe; Kampala-Hoima Road; Kampala-Gaba Salaama Road.
- (v) It is estimated that the Kampala Metropolitan Bus Transit System requires over 7,000 Buses in the short-term with a replacement cycle of 8 years.
- (vi) The shift to buses should be undertaken progressively for example considering a pilot on two (2) routes in the short-term (1st year) and rolling out to all nine routes in the medium term (by 5th year). This will provide for the much needed stakeholder buy-in and taking into account lessons learnt from the pilot at the rollout phase.

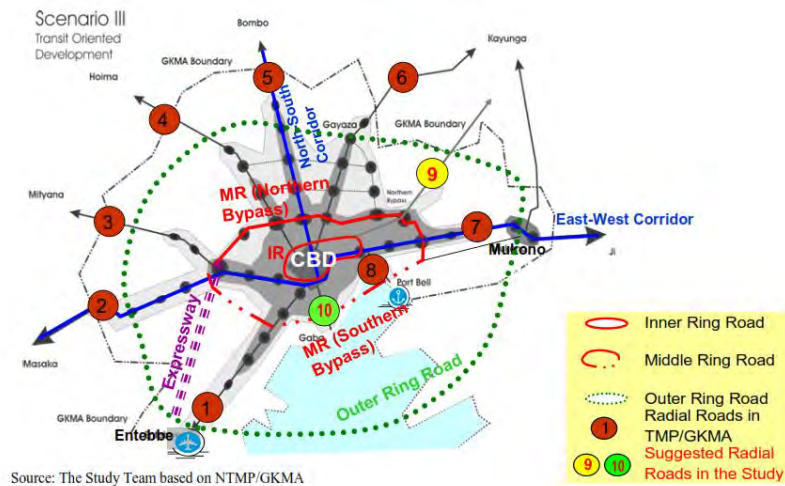


Figure 3.17: GKMA Trunk Road Network System

- (vii) The high capacity bus of 12m is estimated to carry a total of 115 passengers per trip per direction. On average, a trip in each of the identified bus corridors in the GKMA is estimated to take 1.5 hours per direction, and thus one bus can make up to a maximum of six trips a day, carrying 690 passengers.
- (viii) The GKMA shall require about 10,965 buses by 2025, while all the other districts will require a combined 11,559 buses by 2025 (See Table 3.4).

3.8.4 Bus Requirements for Other Cities

Cabinet approved fifteen (15) municipalities for upgrade to city status over the NDP III period and vital infrastructure including broadband internet, roads and high voltage electricity grid are being extended to strategic secondary cities identified in Vision 2040. These cities include Arua, Gulu, Lira, Moroto, Soroti to serve the Northern regions; Fort Portal, Hoima, Kabaale and Mbarara to serve the West, Mbale and Jinja cities to serve the East; and Masaka, Nakasongola, Wakiso and Entebbe city in the central region.

3.8.5 Bus Requirements for Schools and Learning Institutions

The UBOS Statistical abstract documented 30,740 (2017) institutions of learning in Uganda, with a population of over 11 million students. Twenty one percent (21%) of the primary schools are reported to be located in urban settings, and sixty percent (60%) Government owned.

The growing number of schools and tertiary institutions in Uganda mainly driven by investments in private sector presents a business opportunity in this sector. Private companies that operate shuttle services (School Bus) continue to increase, providing transport for primary and pre-primary pupils using mainly minibuses. Secondary schools and tertiary institutions have an increasing need for buses to transport students and staff to and from study trips, conferences, seminars, tourism, hostels, etc. in different parts of the country.

The small carrying capacity vehicles such as minibuses should be replaced with large carrying capacity buses to reduce congestion in the urban centers.

3.9 Vehicle Parts Manufacturing Plan

Establishment of a robust indigenous motor vehicle industry presents an opportunity in the wider Vehicle Parts, Components and Systems Tiers of the Industry where 85% of the opportunity is resident. It is imperative to note that there is already a nucleus manufacturing base for some motor vehicle parts, components and systems like auxiliary batteries and automotive paints, U-Bolts, Leaf Springs, Fiber Glass Panels, electric wires, 3D printed components, etc. in Uganda. *Figure 14* presents the plan for the local manufacture of Vehicle Parts, Components and Systems highlighting the synergies between Kiira Motors Corporation, Farasi Agricultural Machinery Company Limited and other suppliers that may be hosted at the Automotive Industrial and Technology Park.

The first year of the plan is premised on utilizing the capabilities at the Kiira Vehicle Plant body shop, paint shop and electrophoresis shop for manufacturing and fabrication processes for the Kayoola Bus chassis, webframe, roof frame, roof and body panels and contract manufacturing of Farasi tractor steel frames.

The second year is premised on utilizing the capacity in the local industry base to manufacture aluminum parts, fiberglass components and those parts that have minimal application of plastic. These parts include both Kayoola Bus and tractor seats, Kayoola Bus door aluminum frames, Kayoola Bus fiberglass front and rear panels and other aluminum profiles.

The third year of the plan is brings on board manufacture of plastic components (such as radiator fans, Interior Rails and Handholds) and Factories at the automotive industrial and technology park for manufacture of oil, air and fuel filters; rubber mountings and bushes as well as wiring harnesses.

The fourth year of the plan focuses on automotive glass components like wind shields, window glass panels, side mirrors, driving mirrors. Manufacture of components like shock absorbers and bamboo floors are also earmarked for the fourth year of the plan.

The fifth year of the plan focusses on hi-tech vehicle parts, components and systems including vehicle electronics based mainly on the printed circuit board technology; machine tools such as frame welding jigs, drill bits, tool cutters, etc.; steering system components; lithium ion batteries and among others.



Figure 10: The Plan for Bus and Tractor Supply Chain Localization

4. KEY ACTION AREAS

- (i) Mobilise funding required to complete the construction and operationalization of the Kiira Vehicle Plant for the production of 5,000 Vehicles a Year with facilities to support manufacturing operations including Bodyshop for chassis and webframe fabrication; Electrophoresis Shop for corrosion protection of chassis and webframe; Paint Shop for vehicle painting; assembly shop for final integration for all parts; whole vehicle quality inspection and testing facilities; and waste water treatment plant(for biological and industrial waste water). Provide a dedicated 33KV Powerline and 6MW Distribution Sub-Station to support the Kiira Vehicle Plant Operations. Explore installation of 4MW solar power plant on a build, operate and transfer arrangement;
- (ii) Establish charging infrastructure for Electric Vehicles within the Cities, Tourism Site and Entebbe International Airport along with an incentivized e-Mobility energy tariff to promote the shift to electric vehicles;
- (iii) Stimulate the commercialisation of vehicles made in Uganda (Buses, Trucks, SUVs, Pickups, Tractors etc.) by providing the offtake market e.g. for the Kayoola Buses in public transport for cities in Uganda, starting with Kampala Capital City, to address the issues of traffic congestion, poor fuel efficiency and air pollution as well as schools. Government should explore a comprehensive facilitative fiscal package necessary to realize economies of scale in the domestic motor vehicle industry. Similar to fiscal packages negotiated for strategic sectors such as oil and gas, manufacturing in industrial parks, tourism, hospitals and as was done for educational institutions, etc.

- (iv) Support the establishment of the Automotive Industrial & Technology Park on two (2) square miles to support a wide range of investments in motor vehicle parts manufacturing, vehicle testing and automotive technology innovation enterprises.
- (v) Set emission standards in consonance with the UNECE targets to improved energy and operational economy in the transport sector while enhancing environment stewardship. In addition to the adoption of emission standards, greener public transport solutions to promote energy and operational efficiency of public transport should be institutionalized to address both traffic and pollution problems in Uganda's cities;
- (vi) Establish guidelines and standards for Electric Vehicles with the view of moving toward a common charging protocol to support investments in charging points compatible with a wide range of Electric Vehicle;
- (vii) Establish protocols for recycling, repurposing and disposal of Electric Vehicle Batteries at end of Life and institute relevant regulations;
- (viii) Streamline the vehicle registration process to cater for electric vehicles. Currently, motor vehicle registration under the Traffic and Road Safety Act focuses on vehicles with Internal Combustion Engines (requires engine number, fuel type, engine size, etc.). This will require updates in the existing statutory regime and registration templates to provide for registration of the powertrain type of vehicle (ice, electric, hybrid etc.) and the country where vehicle was assembled.
- (ix) Mobilise viable investments in the development of key minerals resources such as iron ore for automotive steel; silica sand for glass; rare earth elements for glass glazing, catalytic converters, batteries, & electronics; graphite for brake pads; oil for plastics; cobalt & lithium for batteries; kaolin, marble and vermiculite for paint; tungsten, columbite, chromite and titanium for metal alloys; copper for auto electric conductors and motors etc. Batteries are one of an electric vehicle's most expensive components, accounting for between a quarter and a third of the car's value. Driving down their cost is key to profitability. Uganda is endowed with deposits of cobalt, lithium, graphite etc., which are key materials for manufacturing batteries. Work on a bankable business case for establishing EV battery manufacturing capabilities in Uganda.
- (x) Support Human Capital Development Programs across the Motor Vehicle Industry Value Chain. The realization of a competitive indigenous Motor Vehicle Industry is underpinned by the attraction and retention of high performance teams with technical and leadership competence to drive continuous improvement of business value and success as well as the requisite Professional Credentials. Innovative policies, procedures, standards and systems should be developed and implemented to support the development of staff in the fields of Manufacturing; Engineering; Procurement and Logistics; Legal, Quality Management, Marketing & Sales; Human Resource Management; Financial Management; Information Technology Management; etc.