Study for the promotion of the African automotive industry

- Post-COVID 19 supply chain and mobility reform -

Final Report

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Japan International Cooperation Agency (JICA)

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List of Abbreviations

AAAM	Association of African Automotive Manufacturers
AfCFTA	Africa Continental Free Trade Area
AICO	ASEAN Industrial Cooperation scheme
AIS	South Africa Automotive investment scheme
APDP	South Africa Automotive Production and Development Programme
ASEAN	Association of South East Asian Nations
AVA	Kenya Associated Vehicle Assemblers
BBC	ASEAN Brand to Brand Complementation scheme
BEV	Battery Electric Vehicles (BEV)
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CASE	Connected, Autonomous, Shared, and Electric vehicles
CBAM	EU Carbon Border Adjustment Mechanism
CBU	Completely Built-Up vehicle
CKD	Completely Knocked-Down
COVID-19	Coronavirus disease 2019
CV	Commercial Vehicle
CVC	Corporate Venture Capital
DKD	Disassembled Knocked-Down
DTIC	South Africa Department of Trade, Industry and Competition
EAC	East African Community
ECOWAS	Economic Community of West African States
EIC	Ethiopia Investment Commission
ETB	Ethiopian Birr
EU	European Union
FBU	Fully Built Unit
FCDO	UK Foreign, Commonwealth, & Development Office
FCEV	Fuel Cell Electric Vehicles (FCEV)
FDI	Foreign Direct Investment
FGN	Federal Government of Nigeria
FTA	Free Trade Agreement
FX	Foreign exchange
GADP	Ghana Automotive Development Policy
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GM	General Motors
GoE	Government of Ethiopia
GoG	Government of Ghana
GTP	Ethiopia Growth Transformation Plan
HEV	Hybrid Electric Vehicles
ICE	Internal Combustion Engine
IMF	International Monetary Fund
IMV	Innovative International Multi-purpose Vehicle
JICA	Japan International Cooperation Agency

JIT	Just-In-Time
JPY	Japanese Yen
JV	Joint Venture
KVM	Kenya Vehicle Manufacturers
LCV	Light Commercial Vehicle
LSSA	Left-driving Sub-Saharan Africa
MaaS	Mobility as a Service
MFN	Most Favoured Nation
MIDI	Ethiopia Metal Industry Development Institute
MIDP	South Africa Motor Industry Development Plan
MM	Man Month(s)
MOTI	Ethiopia Ministry of Trade and Industry
NAB	North African Belt
NADDC	Nigeria National Automotive Design and Development Council
NAIDP	Nigeria National Automotive Industrial Development Plan
NAP	Kenya National Automotive Policy
NEV	New Energy Vehicle (including HEV, PHEV, BEV and FCEV)
NTB	Non-Tariff Barrier
OEM	Original Equipment Manufacturer
OES	Original Equipment Supplier
OICA	International Organization of Motor Vehicle Manufacturers
PHEV	Plug-in Hybrid Electric Vehicles (PHEV)
PSA	Peugeot S.A.
PV	Passenger Vehicle
R&D	Research and Development
REC	Regional Economic Community
ROO	Rules of Origin
RoRo	Roll on/roll off ships
RSSA	Right-driving Sub-Saharan Africa
SA	South Africa
SAAM	South Africa Automotive Masterplan
SADC	Southern African Development Community
SEZ	Special Economic Zone
SKD	Semi Knocked-Down
SSA	Sub-Saharan Africa
SUV	Sports Utility Vehicle
TICAD	Tokyo International Conference on African Development
TOR	Terms of Reference
TVET	Technical and Vocational Education and Training
UK	United Kingdom
US	United States
USD	United States Dollar
VW	Volkswagen

Executive Summary

Objectives of the study

This study reviews the status of the African automotive industry – at a continental level, and for five priority countries (Ethiopia, Kenya, Ghana, Nigeria, South Africa)[1]. It assesses the industry's current state, key emerging trends (local, regional, and global), and future potential, while also taking learnings from global case studies of automotive industry development (ASEAN and Morocco). Based on the key findings from this assessment, the study proposes an integrated set of recommendations for JICA support to the African automotive industry at both a regional and priority country-specific level.

Key findings

Africa's automotive industry is highly nascent today, with some of the lowest motorization rates in the world and a limited new vehicle sales market. In 2019, 1.4M new vehicles were sold across Africa – the same as Spain ($1/30^{th}$ of Africa's population). New sales are limited by low levels of income and are concentrated in a few countries (South Africa, Morocco, Algeria and Egypt). The prevalence of cheaper imported used vehicles further suppresses new sales. There is, therefore, significant latent potential if the right conditions, such as future income and population growth, are met – leading some to describe Africa as the "next frontier" in automotive globally.

On the supply side, large-scale manufacturing activity in Africa remains limited to South Africa and Morocco, relying on exporting the majority of production to gain scale. Across the rest of Sub-Saharan Africa, excluding South Africa regional new vehicle demand is currently below the scale required for value-added manufacturing. As a result, production is limited to small-scale assembly of imported kits, with limited local sourcing. There has, however, been recent investment in new assembly facilities in countries such as Ghana and Ethiopia, following new policy initiatives. Further downstream, the distribution, sales and aftersales channels in most countries are characterised by high levels of informal activity and a significant reliance on imported goods.

At the same time, several emerging trends present opportunities and challenges for the region:

- **The COVID-19 pandemic** has had a significant short-term impact on vehicle sales, but recovery is expected in most African markets by 2022 or 2023. Short-term supply-side disruptions have also subsided, although there are several long-term implications with OEMs increasingly prioritising regional resilience and cost efficiency, and governments facing mounting budget constraints
- **The Pan-African Africa Continental Free Trade Area (AfCFTA)** agreement has raised hopes of a regionally integrated market. However, automotive sector liberalisation will be gradual and with exceptions unless significant coordinated action is taken. Currently, protectionism by aspiring producer countries is likely, while draft Rules of Origin (ROO) requirements (in current form) will be prohibitively high for all except Morocco and South Africa. Intra-continental trade is further constrained by large distances between major markets, transport infrastructure limitations and non-tariff barriers, although progress has been made within several Regional Economic Communities (RECs).
- **Connected, Autonomous, Shared, and Electric vehicles (CASE)** trends are gaining traction and will be increasingly ubiquitous globally by 2035. In Africa, key enablers for Shared mobility are

[1] In addition, the automotive market in three North African countries (Egypt, Morocco, Tunisia) are also studied through a lighter-touch assessment

in place, having gained traction in the past five years (i.e., ride-hailing and last mile delivery), as well as some potential for Connected services, including business to business (B2B) telematics and fleet management. Electric vehicle penetration is challenged by infrastructural constraints but some presence is expected by 2035, and major exporters (Morocco, South Africa) will need to adapt as their key markets (namely Europe) become increasingly electric. Finally, it is unlikely that autonomous driving will become widespread by 2035.

- **Planned carbon neutrality regulations in key export markets** (e.g., in the EU and United States) will have ramifications for the global automotive supply chain, with South African exporters facing challenges given the country's fossil fuel heavy energy mix.

This study looks in detail at the cases of (i) the ASEAN region, and (ii) Morocco in order to consider the future of the African automotive industry. Key learnings include the importance of fostering local market demand in the initial stages of sector development, taking a phased approach to production sophistication by starting with assembly and basic component manufacturing, regional integration as a longer-term catalyst for development, and the importance of strong and consistent policy to ensure stability and instil investor confidence.

Looking to the future, Africa's new vehicle sales market growth will depend on national and regional policy measures to improve affordability and drive a mix shift to new vehicle sales. Growing new vehicle sales from 1.4M today to 3-5M or above by 2035 will require a transformation of demand through a unique combination of significant interventions and investment by key stakeholders in the sector.

Given this, new subregional assembly hubs can emerge if policy and regional integration efforts progress. With rising demand and greater REC integration, new subregional markets (e.g., EAC, ECOWAS, SADC) can support growing levels of vehicle assembly, this being highly dependent on national policy (in particular, used import restrictions). Further automotive trade beyond REC borders, for example through the AfCFTA, is likely to be a longer-term aspiration.

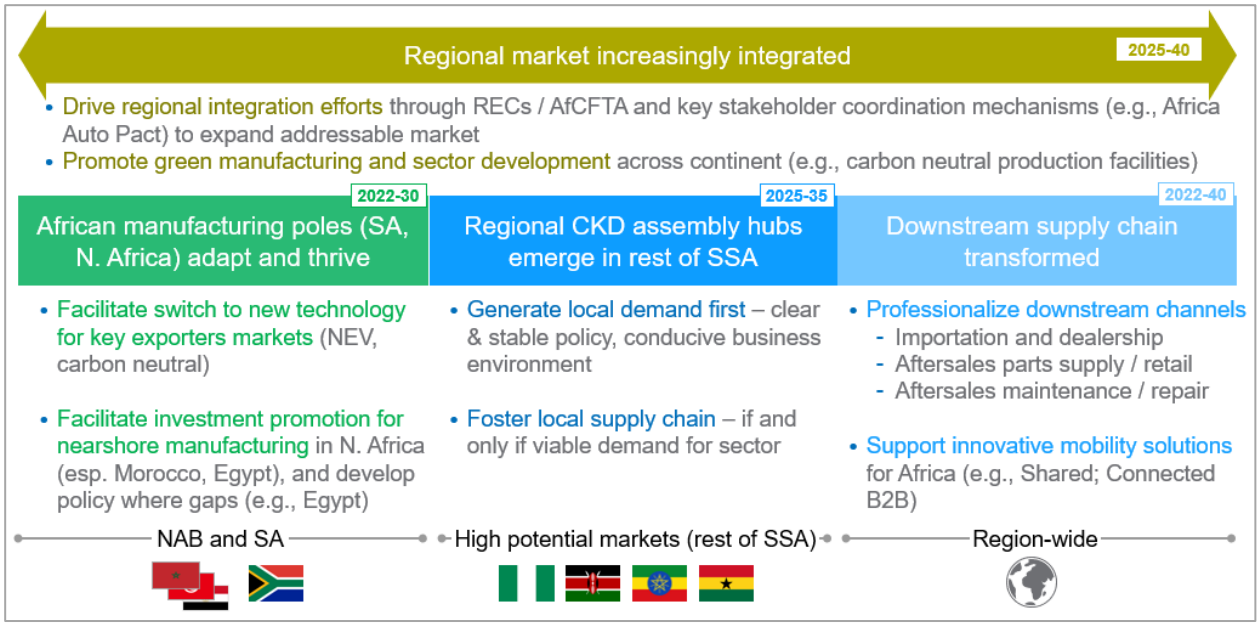
At the same time, Morocco and South Africa will continue to grow if they successfully adapt to export market trends – namely the rise of New Energy Vehicles (NEV) and carbon neutrality regulations. Finally, new North African nearshore exporters (Egypt, Tunisia) could emerge, with Egypt best placed given a large local market and strong trade ties with Europe and the Middle East. However, this is likely a long-term play given current competitiveness challenges vs. imports (e.g., from Turkey).

Component manufacturing can develop as emerging assembly hubs grow – but at low levels until sufficient scale is reached. Aspiring hubs will also face cost competitiveness challenges versus cheap imports. As such, content localisation levels are unlikely to exceed 20-35% by 2035. Aftersales parts manufacturing is constrained by scale for most product groups, but larger markets (e.g., Nigeria) may have longer-term potential. Finally, broader supply chain regionalisation (e.g., outsourcing to neighbouring countries) is not expected to reach meaningful scale by 2035.

Additionally, there are considerable opportunities in the downstream supply chain (distribution, sales and aftersales). Limited quality standards, vehicle inspections and technical training across the continent create an opportunity to drive commercialisation and formalisation.

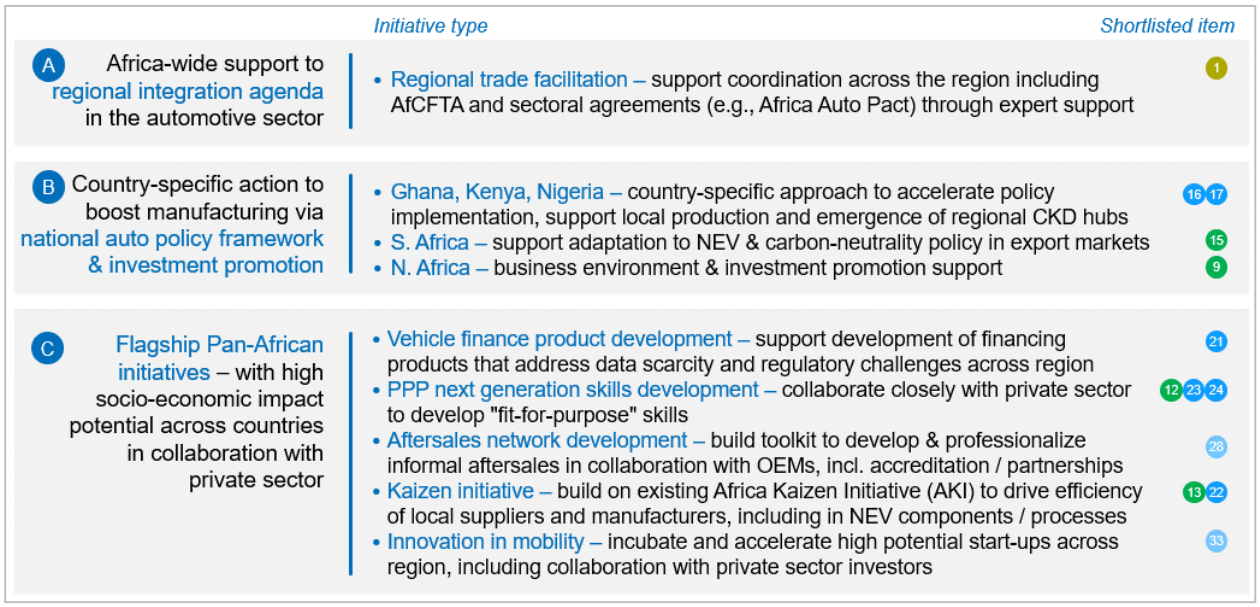
Based on the above, a four-pillar vision for the African automotive industry by 2035 is defined in which (i) the regional market becomes increasingly integrated, (ii) African manufacturing poles (SA, N. Africa) adapt and thrive to meet NEV demand and carbon neutrality regulations in export markets, (iii) regional CKD assembly hubs emerge in rest of SSA, and (iv) the downstream supply chain is transformed with channels professionalised, with improved quality standards and large private investment. Innovative

solutions scale to rapidly improve access, affordability and quality. To achieve the above, several critical enablers have been identified, as illustrated in the below figure:



Recommendations

Finally, the broad vision and enablers identified above have been built upon to identify potential areas of JICA support. Specifically, initiatives with the highest potential impact and feasibility of being successfully implemented have been developed and shortlisted for each priority country, and for the region as a whole. The result is a set of potential Pan-African initiatives and country-specific support measures that have the potential to advance the African automotive industry as a whole towards the 2035 future vision:



Section 5 of this Report provides a detailed view of the shortlisting process, the proposed design of each initiative, and country-level priorities and recommendations.

1 Introduction

1.1 Project background and objective

Africa's automotive industry is highly nascent today. With a rapidly growing population of over 1.3B people (set to double by 2050[2]) but some of the lowest motorization rates in the world, there is significant latent potential if the right conditions are met. This has led some to describe the continent as the "next frontier[3]" for growth in the industry.

Rising incomes, growing populations, and a new wave of government support, among other factors, are expected to drive demand for vehicles across the continent. On the supply side, large-scale manufacturing activity in Africa remains limited to South Africa and Morocco today, along with much smaller assembly operations in a handful of other economies. In many countries, the dependency on used car imports is high and the supply chain is characterised by high levels of informal activity.

Further development of the automotive industry in Africa has the potential to drive significant economic impact on the continent, particularly if manufacturers and service providers locate their operations regionally and develop local supply chains (both upstream and downstream). A robust sector increases GDP and employment (direct and indirect), raise revenues for the government and improve the trade balance significantly.

Additionally, there have been dramatic changes in the global automotive industry in recent years that have potentially large implications for Africa. Technological advancements such as Connected, Autonomous, Shared, and Electric vehicles (CASE) as well as Mobility as a Service (MaaS) are gaining traction and are expected to become ubiquitous in the global market by 2035. In addition, planned carbon neutrality regulations (e.g., in the EU and United States) will have ramifications for the global automotive supply chain.

In Africa specifically, the introduction of the Pan-African Africa Continental Free Trade Area (AfCFTA) agreement has raised hopes of a regionally integrated market that can open trade in the African auto industry and beyond. Finally, the COVID-19 pandemic has significantly impacted automotive sales and production in most regions of the world as well as creating disruptions to the supply chain.

Given the above, it is an important time for key stakeholders of the African automotive industry. Several governments are developing or implementing dedicated automotive policies and programs. Private sector players including global Original Equipment Manufacturers (OEMs), are actively investing or planning further involvement in the region.

As such, there is an increasing role for development partners such as the Japan International Cooperation Agency (JICA) in supporting the promotion and development of the African automotive industry. In that regard, this study comes at an opportune moment, ahead of the eighth Tokyo International Conference on African Development[4] (TICAD8) that is planned to take place in Tunisia in 2022.

[2] Source: The Economist
[3] Sources: Bloomberg News, The National News
[4] TICAD is a multilateral conference with the objective of promoting high-level policy dialogue and collaboration between African leaders and development partners

1.2 Project objectives

The objective of the project is to propose an integrated and effective set of recommendations for JICA support to the African automotive industry. It aims to do so by grounding recommendations in a deep understanding of the industry's status, key trends (local, regional, and global), and future potential. It proposes overarching recommendations for Africa as a whole, and detailed recommendations for five priority countries (discussed below).

The project focuses on the conventional Internal Combustion Engine (ICE) automobile industry while also considering the possibility of developing innovative paths such as CASE/MaaS. It is intended to consider the perspectives and roles of a wide range of stakeholders, covering innovative and impactful ways in which the development of Africa's automotive ecosystem can be supported.

1.3 Project framework

a) Methodology and project activities

The project spans five main modules of activities across three phases. This report is structured to provide a detailed review of findings under each of these:

- **Baseline assessment:** Chapters 2 and 3 of this Report
  - Module 1: analysis of African automotive industry and regional trends
  - Module 2: global trends and case studies of automotive industry development
- **Future state:** Chapter 4 of this Report
  - Module 3: Definition of the future of the African automotive industry
  - Module 4: Role of / collaboration with private sector and other key stakeholders
- **Development of strategic recommendations:** Draft Final and Final Report
  - Module 5: Vision and detailed recommendations for JICA support

See Figure 1-1 for a detailed overview of the project methodology and core activities.

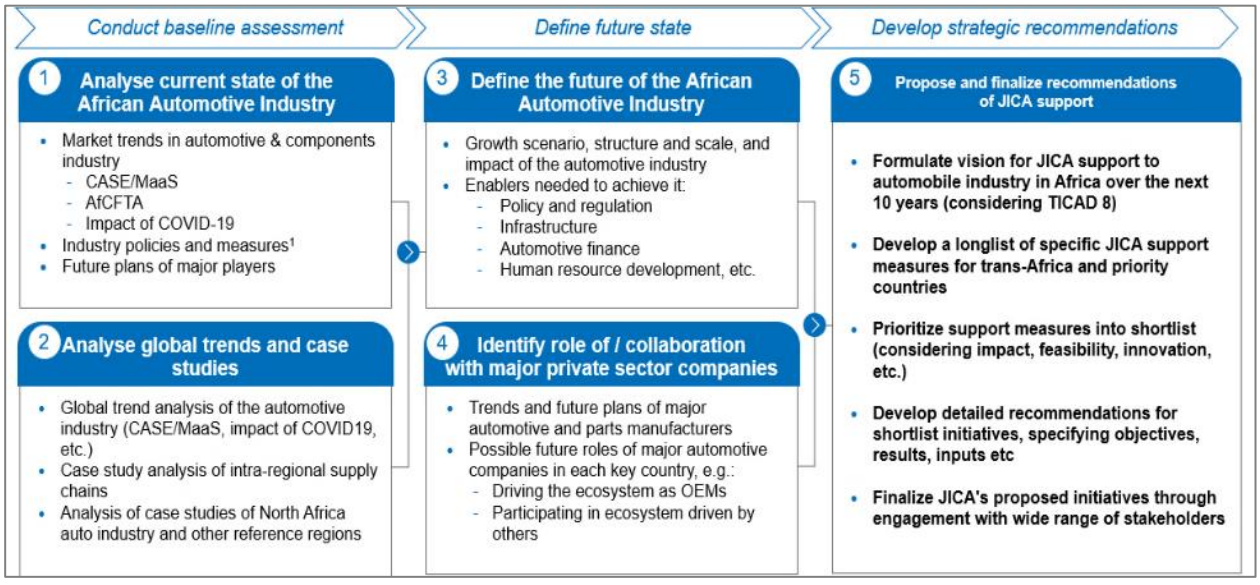


Figure 1-1: Project approach and logical framework

b) Geographic coverage

The project studies and develops recommendations for JICA support at the continent-wide level, as well as specific analysis and recommendations for five priorities countries: South Africa, Nigeria, Ghana, Kenya, and Ethiopia. In addition, analysis is conducted for three North African countries (Morocco, Tunisia, Egypt) at a sub-priority level of detail.

c) Study period

From mid-May 2021 to mid-January 2022 (8 months).

d) Activity plan and schedule

The project activities described above (see Section a) were delivered across five phases over the full study period, following the work process and implementation schedule stipulated in the Terms of Reference (TOR) by JICA, and as follows (*deliverables <u>underlined</u>*):

- **Baselining, investigation preparation, and desk research**
  - <u>Inception Report</u> delivered in May 2021
- **Field investigation 1** (stakeholder interviews & research): South Africa, Kenya, Nigeria
  - Definition of future state for focus countries conducted in parallel
- **Field investigation 2** (stakeholder interviews & research): Ghana, Ethiopia
  - Definition of future state for focus countries conducted in parallel
  - Identification of potential roles of / collaboration with private sector companies including Japanese companies and other key stakeholders conducted during this phase
  - <u>Interim Report</u> delivered after Field investigation 2 in October 2021
- **Formulation of proposals for JICA support** included formulation of a longlist of proposals and shortlisting of those proposals, culminating in a <u>Draft Final Report</u> delivered in December 2021
- **Finalization of proposals** involved sharing shortlisted proposals with and engagement of stakeholders, with feedback incorporated into a <u>Final Report</u> delivered in January 2022.

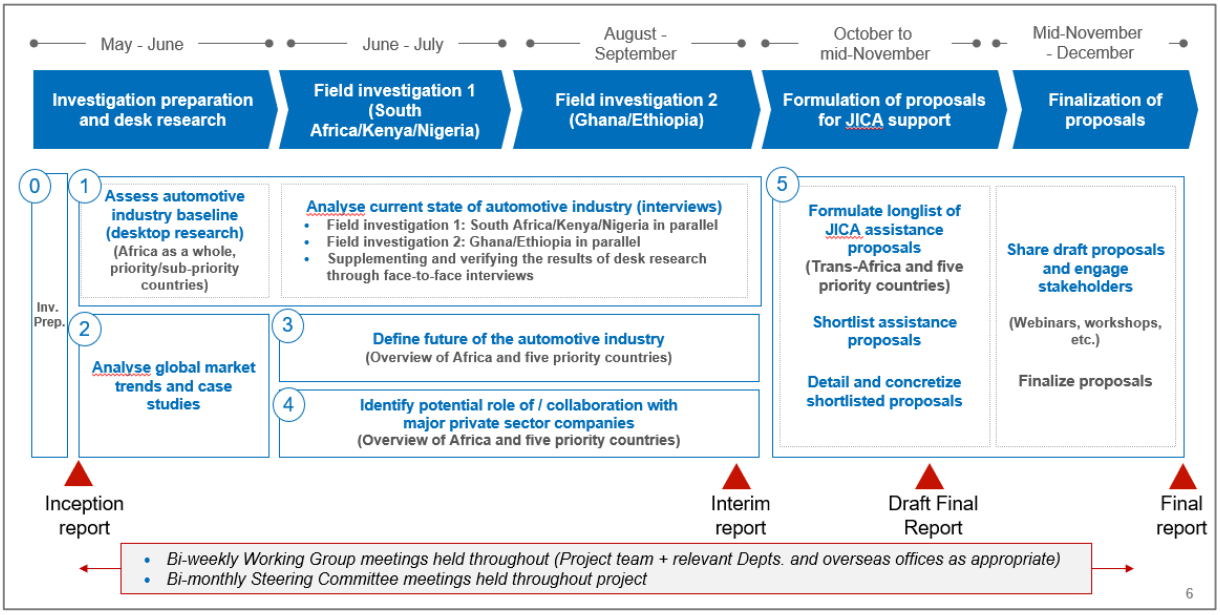


Figure 1-2: Project timeline of activities

Over the course of the field investigation phases more than 100 interviews were conducted with key stakeholders across Africa and beyond. Stakeholders across six core groups were covered: government institutions; private sector organisations; OEMs and local assemblers; dealers and distributors; component suppliers and service providers; and development partners.

Due to travel restrictions following COVID-19 regulations, most of these interviews were held virtually. However, in-person interviews were conducted in Ethiopia and Kenya, including auto assembly plant visits in Nairobi.

In addition, Working Group meetings to review progress were held on a bi-weekly basis up to the submission of the Draft Final Report. These meetings included representatives from the Project Team (JICA Private Sector Development Group and Consultant Team) and other relevant JICA Departments and Overseas Offices.

A detailed view of the work plan is provided in the Appendix (Figure B1).

e) Manning plan

The project activities were carried out in 41-man months (MM).

2 Africa automotive industry diagnostic & emerging trends

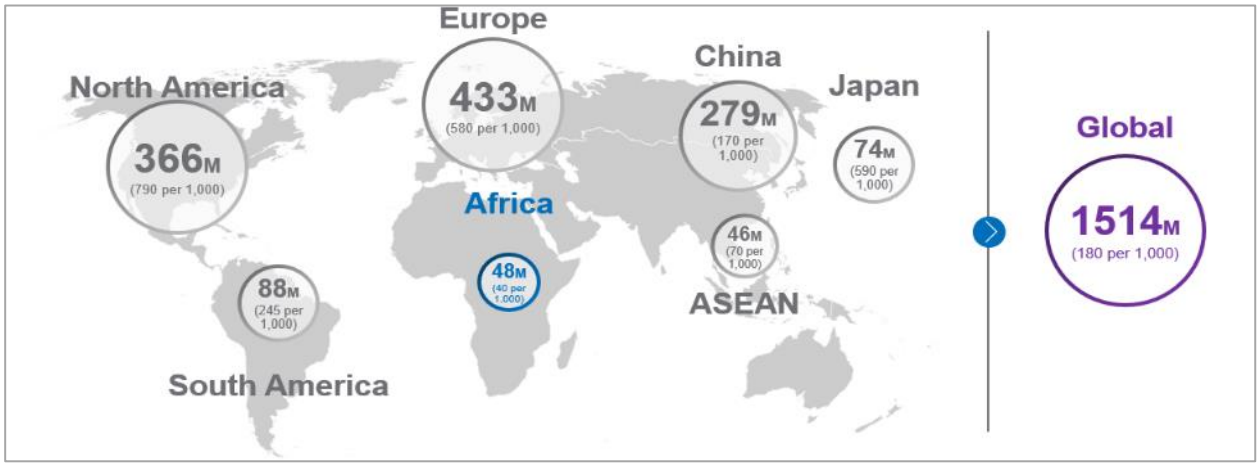
2.1 Current state of African automotive industry

This section will first cover automobile demand, supply, and external trade at a pan-African level, then provide an overview of sub-regional markets. Further analysis within each sub-region is provided in Sections 2.3 and 2.4 (priority and sub-priority country deep dives).

2.1.1 Demand-side: vehicle parc and sales

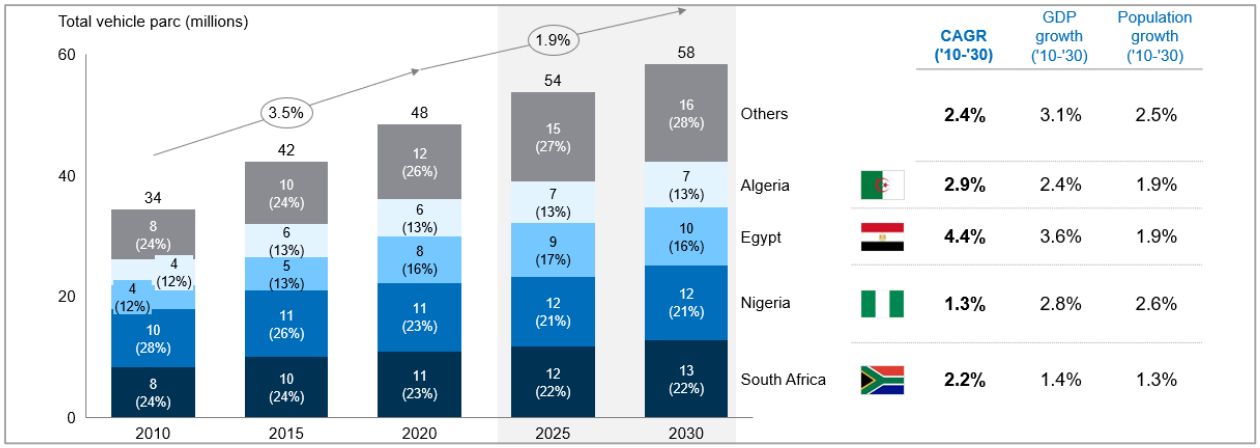
a) Vehicle parc – limited at 48M with steady growth but low motorisation

Africa had an estimated 48M vehicles[1] on the road in 2020, equating to a tenth of Europe while having almost double the population. This translates to some of the lowest motorisation rates globally at 40 cars per thousand population, four times lower than China (Figure 2-1). Vehicle parc concentration is high, with two-thirds in just four countries – South Africa, Nigeria, Egypt and Algeria (Figure 2-2).



Sources: IHS Markit, ASEAN

Figure 2-1: Global vehicle parc by region (M), 2020



Sources: IHS Markit, International Monetary Fund (IMF)

Figure 2-2: Africa vehicle parc by country, 2010-2030e

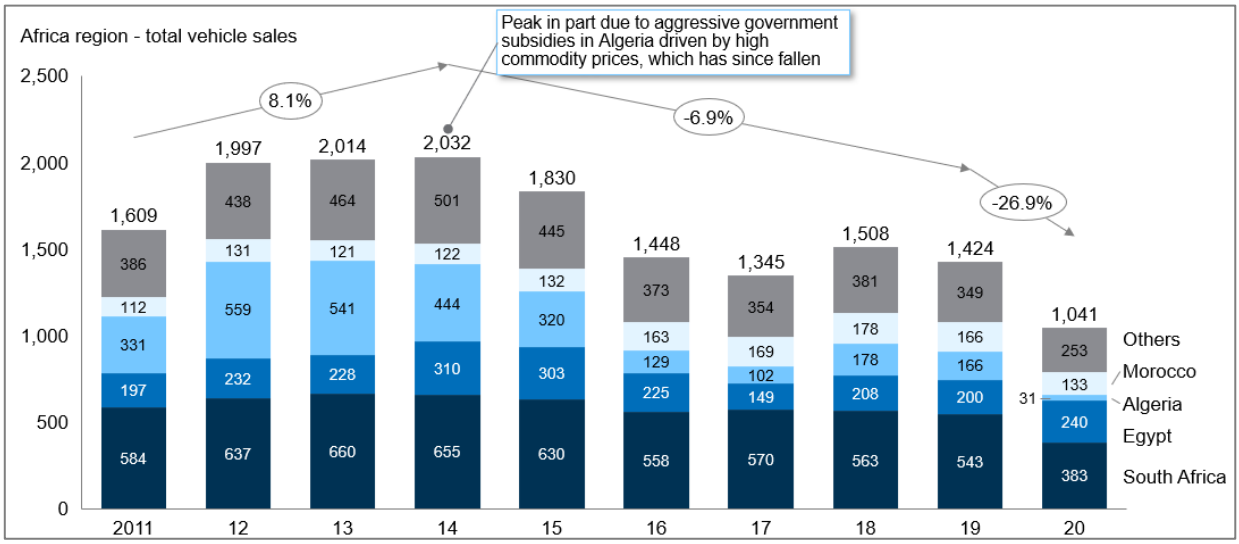
[1] Source: IHS Markit

Vehicle parc has grown at 3.5% per annum over the past ten years according to IHS Markit, who forecast the vehicle parc to grow at 1.9% between 2020 and 2030. The growth forecast largely mirrors the growth of gross domestic product (GDP) and population at a pan-African level. This growth would add an additional 10M vehicles to the road by 2030.

b) Sales – limited new vehicle sales at 1.4M, with larger used import market in most countries

The new vehicle sales market in Africa is currently very limited; in 2019, just 1.4M new vehicles were sold[2], a figure that equates to less than 2% of annual sales globally. In most countries in the region, new vehicles are unaffordable for a large majority of African consumers. As a result, sales of new vehicles are geographically concentrated in just a few higher-income markets. Approximately 75% of new vehicles sales are found in South Africa, Egypt, Algeria, and Morocco (Figure 2-3).

New vehicle sales have declined in recent years. Annual sales rose from 1.6M in 2011 to reach a peak of 2.0M in 2014, supported by strong government subsidies for consumers to purchase vehicles in Algeria and other northern African countries. However, declining commodity prices in recent years have led to a reduction in subsidies. As a result, new vehicle sales fell to 1.4M in 2019. COVID-19 has had a significant impact on new vehicle demand since 2019, with sales dropping 27% in 2020 due to supply chain disruptions, declining incomes, and deferral of consumer spending on large purchases (Figure 2-3).



Sources: IHS Markit, International Organization of Motor Vehicle Manufacturers (OICA)

Figure 2-3: Africa new vehicle sales (thousand units), 2011-20

Demand for vehicles in most African countries is fulfilled by significant importation of used vehicles, which are typically bought at much lower prices than new vehicles. Used imports often comprise greater than 80% of all annual vehicle registrations across Sub-Saharan Africa (excluding South Africa), with vehicles arriving from Europe, Japan, and the United States, depending on the region.

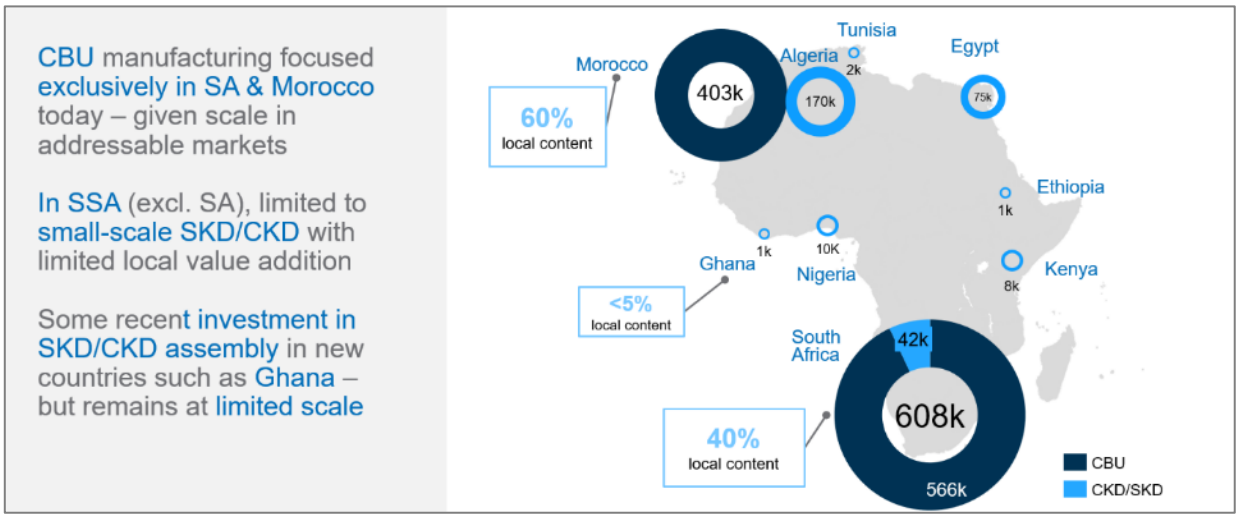
[2] Source: IHS Markit

2.1.2 Supply-side: production and assembly

In Africa today, integrated manufacturing of Completely Built Up (CBU) vehicles is concentrated entirely in South Africa and Morocco. South Africa's industry has a long history and is home to major European, American, and Asian OEMs. OEMs in South Africa target both domestic and export markets, facilitated by attractive government incentives as well as free trade agreements with key export markets.

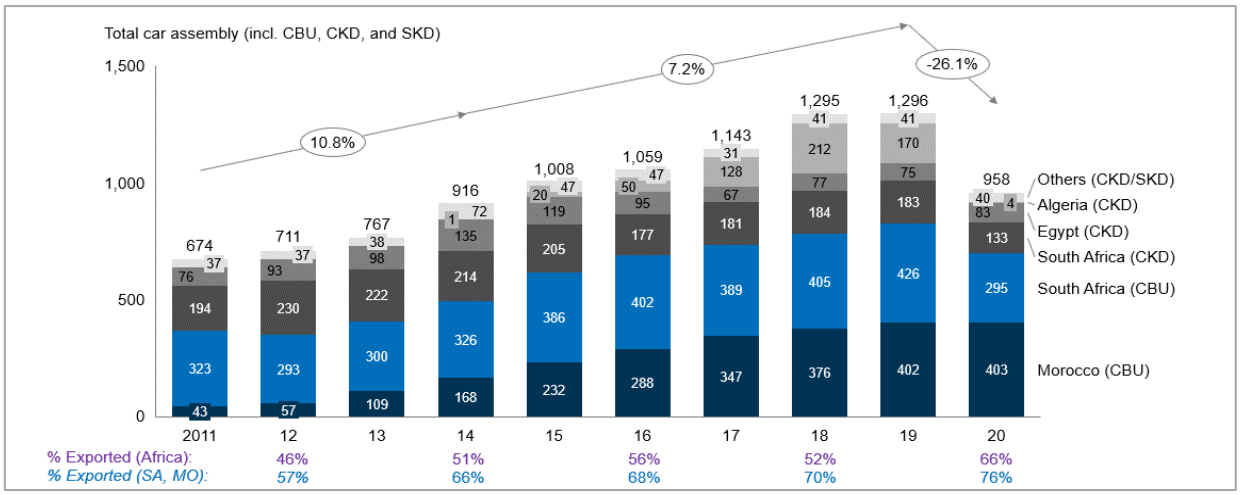
Morocco's OEM presence is relatively recent with the first CBU plant (Renault plant in Tangier) opening in 2012. Morocco's CBU production has grown rapidly over the past 10 years. Due to the small domestic market, Morocco acts as a nearshoring base for European OEMs exporting to Europe, with approximately 80% of units produced exported.

In Sub-Saharan Africa (excluding South Africa), production is limited to small scale assembly of imported Semi Knocked-Down (SKD) and Completely Knocked-Down (CKD) vehicle kits, which have lower levels of local value addition in comparison to CBU production. There has been recent investment in new SKD/CKD assembly capacity in countries such as Ghana and Ethiopia. However, scale remains small and underutilised, with limited local value-addition.



Sources: IHS Markit; AfDB; Press search

Figure 2-4: Africa production by country (units per year), 2019



Sources: IHS Markit, OICA, press search, stakeholder interviews, BCG analysis

Figure 2-5: Africa total car production (incl. SKD, CKD, CBU) by country, 2011-20

2.1.3 Supply-side: aftersales

Downstream from production, the automotive aftersales market in Africa is large but typically highly informal, particularly in Sub-Saharan Africa (excluding S. Africa). In Ghana for example, the aftersales market is estimated to be roughly twice the size of the new vehicles market by revenue, but with 70-80% of activity concentrated in informal SMEs (see Appendix A: Ghana aftersales market deep dive).

This is predominantly driven by low purchasing power in the market, with no more than 5% of the population typically able to afford more premium aftersales services (characterised by use of original genuine OEM parts) in Sub-Saharan African markets. As a result, informal sector aftersales providers target more price sensitive vehicle owners with cheap parts – predominantly used parts and generic brands (with prevalence also of counterfeit products). Informal sector players target the majority of consumers and small businesses, who often drive ageing vehicles (10 years old and above) originally imported as used.

On the other end of the market, OEMs are active in the aftersales market through their own subsidiary dealerships (where market size and share are sufficient) or through authorised / franchise dealerships (single- or multi-brand). They sell new vehicles predominantly for large corporate and government fleets and provide aftersales services to these same customers (and vehicles) under warranty and beyond, although retention beyond warranty period is an often-cited concern. OEM dealerships may also be active in distribution of genuine parts in a wholesale capacity. Additionally, independent tyre dealerships and fast-fitting servicers have gained traction in much of the region – particularly in South Africa but also in sub-regional markets (e.g., East Africa). These typically aim to provide mid-tier quality products at much lower prices than OEM dealerships, while excelling at customer service.

Across Sub-Saharan Africa, there is currently a variance in the level and enforcement of regulations regarding minimum requirements on the quality of parts, servicing and roadworthiness (e.g., import standards, vehicle inspections). Some markets (e.g., Ethiopia) have mandatory annual vehicle inspections, others have roadside checks that face implementation challenges due to systems and capacity constraints (e.g., Ghana), while others are yet to develop clear guidance. Such policies can be an important lever in ensuring a minimum level of road safety and roadworthiness is met.

2.1.4 External trade: global and intra-regional flows

With limited production capacity outside of South Africa and North Africa, the region's overall trade balance with the rest of the world is heavily negative. The region imported USD 45B of vehicles and components in 2019 (8% of all regional imports) and exported USD 17B (of which South Africa and Morocco contributed 92%[3]).

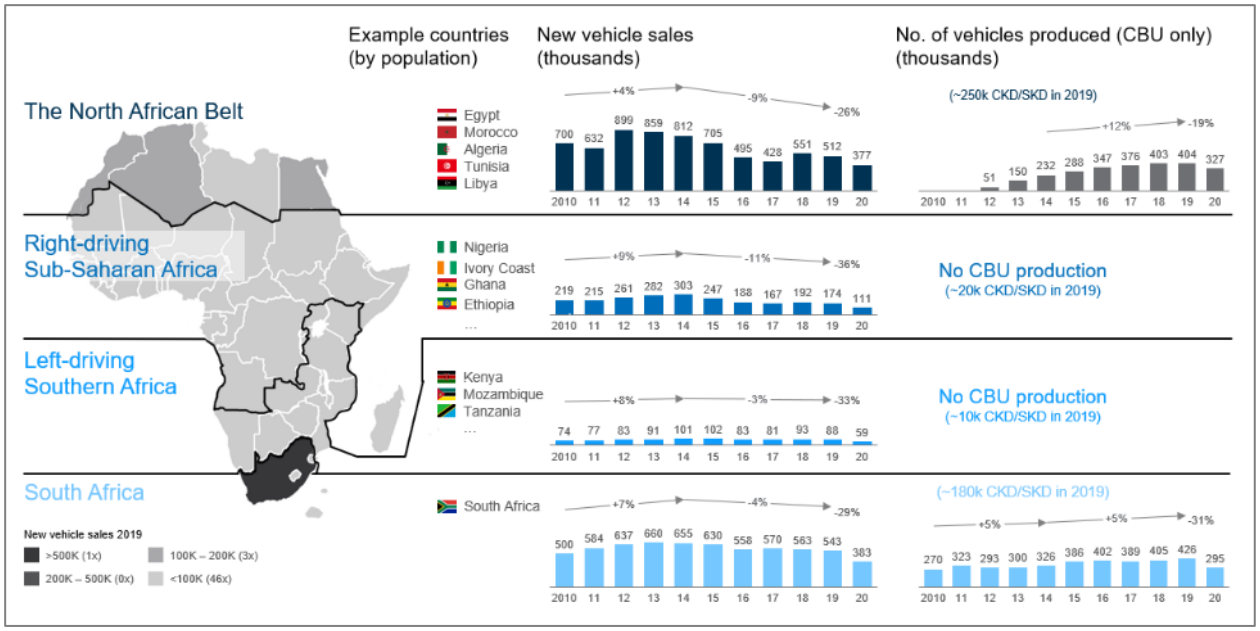
Intra-Africa trade in the sector is currently minimal, with just 6% of the total trade of automotive products happening within the region. While market integration has been promoted through Regional Economic Communities (RECs), tariff protections and non-tariff barriers (NTBs) such as complicated border crossing procedures are still prevalent. In addition, markets are geographically fragmented with limited connecting transport infrastructure.

[3] Source: Trade Map

2.1.5 Sub-regional market analysis

Automotive markets in Africa are heterogeneous and cannot be solely considered as one for analytical purposes or when making strategic recommendations. There are broadly four sub-regions observable – defined by industry maturity, socio-economic development, and sector-specific considerations (specifically, left vs. right-hand drive configuration of vehicles).

These four regions include more developed "poles" in South Africa and the North African Belt, where incomes are generally higher than the rest of Africa, and automotive production is already established at some level of scale. The rest of Sub-Saharan Africa can be split into Right-driving (mostly West and Central Africa), and Left-driving (mostly Southern and East Africa). These last two regions typically have much smaller new vehicle sales markets and minimal value-added automotive production today.



Sources: IHS Markit, stakeholder interviews, press search

Figure 2-6: Overview of four sub-regions

a) North African Belt (NAB) – emerging export hub for OEMs and Tier 1 component suppliers looking to nearshore production for Europe

Comprised of relatively wealthy countries (GDP per capita in 2019: USD 11.4K[4]) on the Mediterranean, NAB has emerged over the last decade as a nearshore vehicle and component production hub for European Original Equipment Manufacturers (OEMs) exporting over USD 11B annually[5]. Countries included are Morocco, Egypt, Tunisia, Algeria, and Libya.

While the local demand is modest (annual new vehicle sales in 2019 were 512K[6]), there are significant new vehicle markets in Egypt and Algeria, both reaching 200K annual sales at peak, supported by a large population and growing middle class.

Morocco has been the clear leader in component and vehicle manufacturing. As one of only two CBU producers, it produced 400K CBU vehicles in 2019, with Morocco and the rest of the region contributing a

[4] Population and GDP data for the rest of section is sourced from the Economist Intelligence Unit
[5] Source: Trade Map
[6] Source: IHS Markit

further 250K assembled vehicles through CKD / SKD. Automotive industry clusters are well established in Morocco with a highly supportive investment environment. Tunisia has specialised as a component exporter to European OEMs given small domestic markets, while Algeria and Egypt cater to the local market through CKD assembly. NAB is covered in further detail in Section 2.4 of this Report.

b) Right-driving Sub-Saharan Africa (RSSA) – Large population but low rate of motorization served by used imports, minimal assembly

RSSA is made up of numerous states in mainly of western and central Africa with a large population (775M in 2019) but low income (GDP per capita in 2019: USD 3.6K). It is also characterised by a challenging business environment, with high difficulty of doing business in many countries due to macro challenges, political instability, and challenged infrastructure. Improvement in the business environment in select markets such as Ghana and Ethiopia point to future potential. Countries included are Nigeria, Ghana, Ethiopia, Côte d'Ivoire, Angola, the Democratic Republic of the Congo, Sudan, Senegal, Rwanda and several others.

Low levels of income across RSSA have meant a low motorisation rate (e.g., Ethiopia has among the lowest in the world at 8 vehicles per thousand) with limited new vehicle sales. Only Nigeria has a sizeable local vehicle parc (approximately 11M), while others are all below 2M[7]. New vehicle sales are limited (174K in 2019) with approximately 90% of vehicle parc growth from used imports[8] due to better affordability. Imports are mostly sourced from Europe and the US, both of which are large right-hand drive markets.

Given scale & affordability challenges, production is minimal and constrained to CKD / SKD. Nigeria had a significant footprint pre-oil shock but has declined substantially since. Current CKD / SKD production levels across the region remains at around 10K per year[9]. Ethiopia, Ghana, and Nigeria are covered in detail under Section 2.3 of this Report.

c) Left-driving Sub-Saharan Africa (LSSA) – Smaller population than RSSA, similar characteristics, heavy importer from Japan imports, some emerging assembly

Made up of a smaller number of countries in the southern and eastern parts of Africa, LSSA has a smaller population than RSSA (246M in 2019) and similar levels of income (GDP per capita in 2019: USD 3.1K). It has relatively higher levels of regional integration (e.g., East African Community (EAC) market integration much more advanced than other RECs) and political stability compared to RSSA leading to investors continuing to be attracted to the region. Countries included are Kenya, Uganda, Tanzania, Mozambique, Namibia, Zambia, and others.

Both vehicle parc (only Kenya larger than 1M) and new vehicle sales (under 90K in 2019) remains low similarly to RSSA due to affordability. As a result, used imports comprise over 75% of vehicle parc growth[10] with 60-80% of imports coming from Japan – one of few mass markets of left-driving vehicles.

There is some presence of assembly in the region despite the small market size but is currently limited to SKD of passenger vehicles (PV) and SKD/CKD of commercial vehicles (CV). Capacity is heavily underutilised due to limited demand, and local supply chain integration is also minimal. CKD / SKD

[7] Source: IHS Markit
[8] Source: UNEP, Trade Map
[9] Source: IHS Markit, stakeholder interviews
[10] Source: UNEP, and Trade Map

assembly in the subregion totalled approximately 10K vehicles in 2019[11], despite higher capacity. Kenya is covered in detail under Section 2.3.4 of this Report.

d) South Africa – sizeable local market and production capabilities

It is the smallest region in terms of population (59M in 2019) with a single country but has the highest average income (GDP per capita in 2019: USD 13.3K) and the largest new vehicle market (543K sales in 2019). It also has a significant production capability serving both local and export markets, with over 400K CBU production and approximately 180K CKD / SKD assembly in 2019. The automotive industry is supported by attractive policy incentives, including a duty credit scheme that allows tariff-free imports based on volume of locally produced/assembled vehicles. South Africa is covered in detail in Section 2.3.1.

2.2 Emerging trends

The global automotive industry is undergoing dramatic change due to broader socio-economic and political conditions and trends, as well as technological innovation in the industry itself. The implications of these trends will vary for the African automotive industry, and markets within. This section focuses on four key global and regional trends:

1) Impact of COVID-19 pandemic
2) Regional trade integration & African Continental Free Trade Agreement (AfCFTA)
3) Connected, Automated, Shared, Electric (CASE) vehicles; Mobility as a Service (MaaS)
4) Carbon neutrality policies

2.2.1 COVID-19

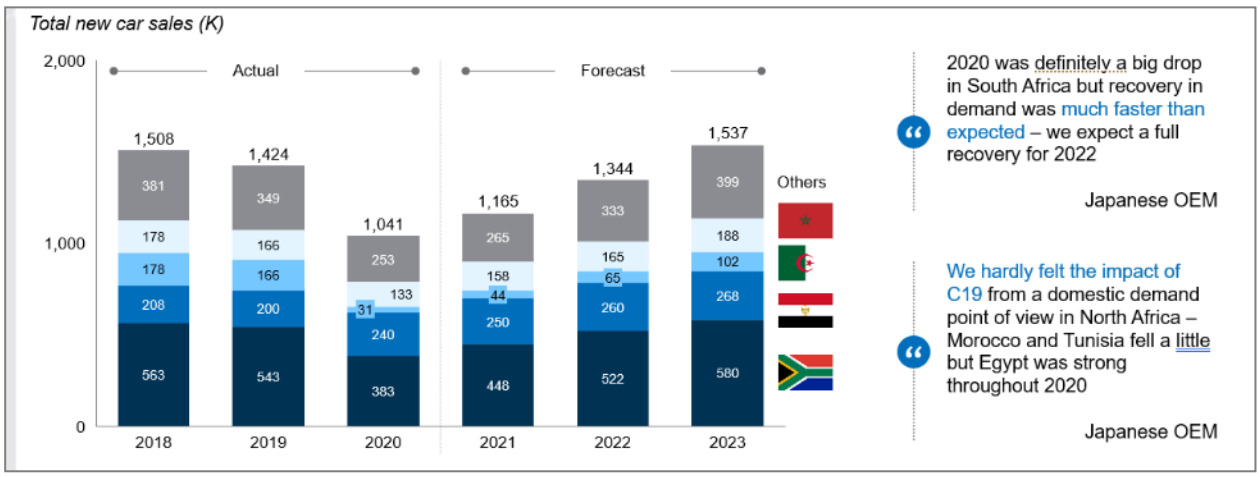
a) Macro context – two-speed recovery expected across Africa

As of December 2021, the spread of COVID-19 had led to approximately 270M cases worldwide and over 5M deaths[12]. The pandemic and responses to attempt to contain it resulted in a 3.5% contraction of global GDP in 2020[13] (vs. forecast of +3.4% growth). The pandemic has not spared Africa, where more than 9M cases and 200K deaths have been recorded[14].

The impact on African economies has varied, with international organisations such as IMF forecasting a two-speed recovery to take place. Major commodity producers (such as S. Africa, Nigeria, Angola) have been hit hardest due to the global slowdown reducing demand for commodities and are predicted to take a couple of years to recover, reaching 2019 levels in 2022 or 2023. Other markets, such as Ghana, Kenya, Egypt, Ethiopia, have experienced flat or slowing growth in 2020 but are expected to return to strong growth in 2021. However, growing fiscal deficits in many countries due to falling revenues and stimulus spending will place pressure on future government expenditure.

[11] Source: IHS Markit
[12] Source: Johns Hopkins University, as of December 17th 2021
[13] Source: IMF
[14] Source: Africa CDC

b) Demand-side – significant short-term impact on auto sales, recovery by 2022-23



Source: IHS Markit

Figure 2-7: Africa new vehicle sales forecast, 2018-23

Global new vehicles sales fell by 30% (from 90M to 69M[15]) in 2020 as purchasing power fell amid rising unemployment, and potential buyers looked to avoid or defer making costly purchases. Full recovery to 2019 levels is not expected until 2023. New car sales also fell across Africa, from 1.4M in 2019 to approximately 1.0M in 2020 (27% drop; Figure 2-7). For the African market, a bounce back to pre-pandemic levels in key markets (South Africa, Egypt, Algeria, Morocco) is expected by 2022, with a full recovery in 2023 in line with global forecasts.

c) Supply-side – impact on auto production and supply chain limited to short-term

Global automotive supply was also hit by short-term disruptions, exacerbated by a heavily globalised supply chain. In Africa, impact on supply was also seen but remained relatively contained and short-term in nature. While several major OEM plants shut down in early 2020 in response to fall in demand and to protect their workforce (e.g., BMW Rosslyn plant in South Africa, Renault Tangier plant in Morocco), they were reopened within one to two months albeit with reduced capacity.

OEM investment has continued in Africa, with Ford announcing USD 1B investment to expand its production plant in South Africa, increasing annual capacity to 200K units and creating 1.2K direct jobs as well as 10K jobs across the local supplier network. Toyota and Nissan both announced plans to open SKD plants in Ghana[16], following previous investment by Volkswagen who established a plant in 2020.

d) Policy – mixed response: sector relief in SA, Morocco and Kenya but tariff reversal in Nigeria to alleviate consumer pricing pressure has harmed producers

Sector relief was provided to OEMs and suppliers in some countries, notably South Africa (ZAR 36B via National Disaster Benefit Fund and the Automotive Industry Transformation Fund), Morocco (EUR 50M from the European Investment Bank, funds from the EU and World Bank, and postponement of certain corporate taxes), and Kenya (USD 5.5M direct support to assemblers, and corporate tax cuts).

[15] Source: IHS Markit
[16] Sources: company websites

Elsewhere, support to the automotive industry remained limited. In Nigeria, the Federal Government decided to contain consumer price pressure that worsened during the pandemic by slashing tariffs for imported vehicles from 35% to 10%. This worsened the competitive position of local assemblers relative to imports and has led to declining production and even closures. The pandemic also led to delays in negotiation and implementation of AfCFTA as member states prioritized immediate COVID-19 responses. While tariff-free trade began in January 2021, important negotiations such as Rules of Origin (ROO) have not yet been concluded[17].

e) Long-term implications – OEMs to prioritise resilience and cost efficiency, while fiscal support to the sector may be deprioritised in some aspiring countries

While the automotive industry is on the road to recovery, there are longer-term implications of COVID-19 for the sector:

- **OEMs will continue to address cost base**, with two-thirds of auto executives in Africa looking to cut costs[18], and the sector in South Africa seeing partial. 16K job losses
- **Local suppliers may take longer to recover,** with small scale suppliers facing considerable liquidity challenges – 83% having under 3 months reserves of cash[19]
- **Fiscal challenges for some countries** likely to limit fiscal support to the sector or delay any policy to reduce overall revenue base in the immediate future (e.g., Kenya, Ethiopia)
- **Processes will become further digitised**, with a shift away from Capex and M&A investments to focus on process improvement – digital process transformation top of mind for investment in the next 2 years of African auto executives[20]
- **Potential shift to regionalized supply chains**, as globally, supply chain models shift more to regional model; OEMs may start looking to localize and diversify supply chain to heighten resilience, which is limited currently due to lack of scale, but could benefit North Africa.

2.2.2 Regional trade integration & AfCFTA

Historically, intra-Africa trade has been limited due to both physical and policy-related barriers. Regional trade of automotive goods has been even more limited, with major producers exporting almost exclusively outside of the region (e.g., 93% of South Africa vehicle exports are for outside of Africa[21]). Critical constraints to intra-continental trade include:

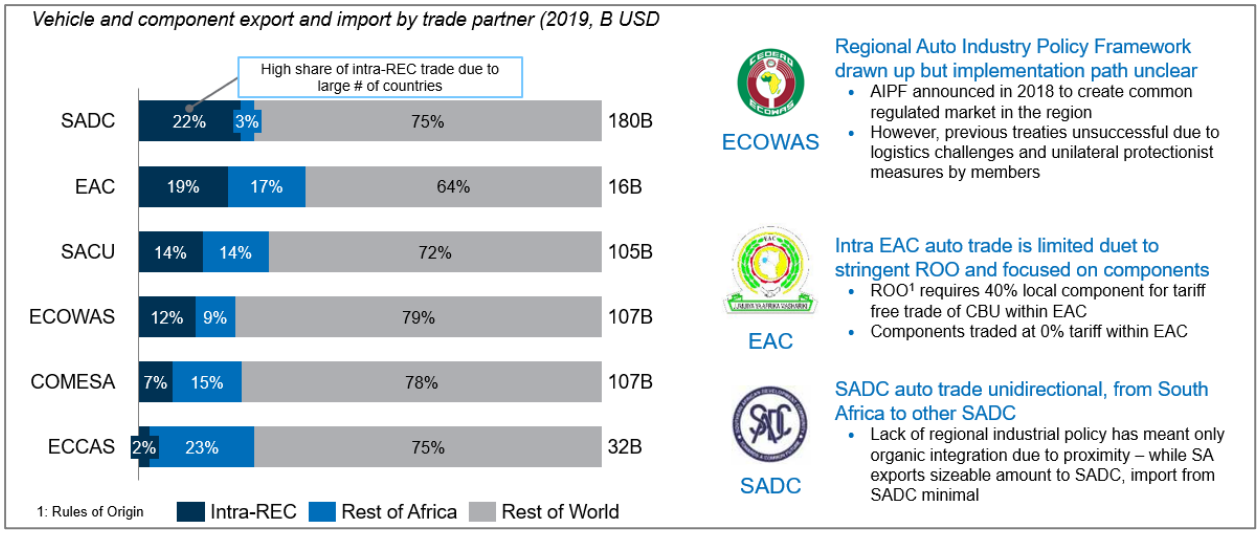
- **Geographically distant markets,** with an average of 4,100 kilometres between major cities – the highest of any continent and 3 times that of Europe
- **Limited connecting transport infrastructure** with no East-West or North-South highways, limited railway service outside of southern Africa, and sporadic availability of quality ports; transportation costs estimated to be 50% to 175% higher than the global average[22]

[17] As of September 2021
[18] Source: Deloitte study of viewpoints of automotive sector executives across Africa, conducted in June 2020
[19] Source: Deloitte
[20] Source: Deloitte
[21] Source: NAACAM Automotive Export Manual, as of 2018
[22] Source: KPMG

- **High tariffs** between countries not covered by Regional Economic Communities (RECs), with most favoured nation (MFN) tariffs typically 20% to 50% for CBU imports
- **Non-Tariff Barriers (NTBs)**[23], such as license restriction, delay in customs, corruption, and foreign exchange restrictions are highly prevalent, adding significant cost to trade.

RECs have been set up over the past decades to facilitate intra-regional trade, and to act as building blocks for African integration. They primarily promote trade as a Free Trade Area (FTA) or a customs union, removing tariffs for products produced within the region. Numerous RECs have been established (with 8 recognised by the African Union (AU)), with overlapping membership and each at different stages of integration. The most prominent RECs for the priority countries of this study are the Southern African Development Community (SADC), Economic Community of West African States (ECOWAS), and East African Community (EAC).

Despite these efforts, intra-African trade in general remains low and is especially so for automotive goods (typically only 5-15% of trade flows are intra-regional; see Figure 2-8). This is due to limited local production but also challenges in developing coordinated policy. Several attempts for regional policies have yet to bear fruit, while intra-regional trade is often subject to restrictive rules of origin (ROO) requiring levels of local content that only South Africa and Morocco are able to meet.



Sources: Trade Map, press search

Figure 2-8: Intra-regional trade and REC policy framework for automotive sector

In January 2021, the first phase of the African Continental Free Trade Agreement (AfCFTA) came into effect. The AfCFTA is a landmark agreement for the 54 member states of the AU (38 countries have ratified to date[24]) – a continent-wide free trade area that will eventually go beyond trade in goods to cover services, investment, competition, and intellectual property.

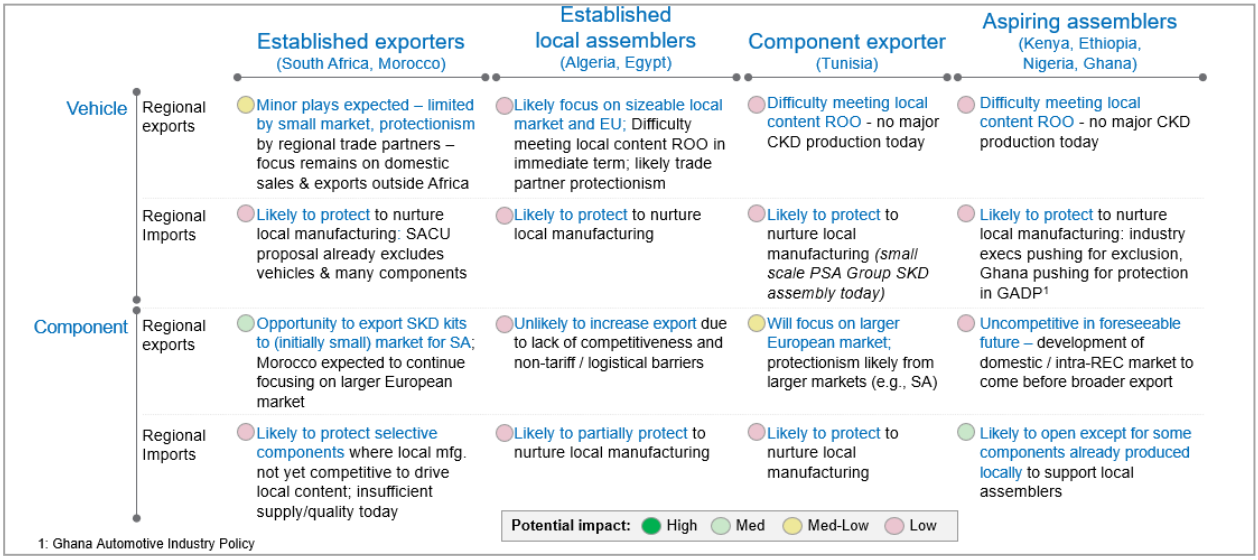
While tariff-free trade is a core tenet of the AfCFTA, the impact on the regional automotive sector is expected to be limited in its current form due to (a) likely protectionism by existing and aspiring producers, and (b) restrictive ROO requirements. Firstly, while the AfCFTA promises to liberalise intra-regional trade, the process will be gradual and with exceptions (see Figure B2 in Appendix). Countries with an ambition

[23] NTBs refer to trade restrictions, other than tariffs, in place that act as a barrier to international trade. NTBs can include a wide variety of measures, such as quotas, rules of origin and foreign exchange restrictions

[24] Source: Trade Law Center, as of September 2021

to develop their automotive industry are likely to protect the industry by designating key items under Sensitive or Exclusive lists.

Secondly, current ROO proposals would require at least 40% of vehicle content to be made regionally to qualify for tariff-free trade, which only Morocco and South Africa's manufacturers are able to meet today. See Figure 2-9 for country-level implications.



Source: Stakeholder interviews, BCG analysis

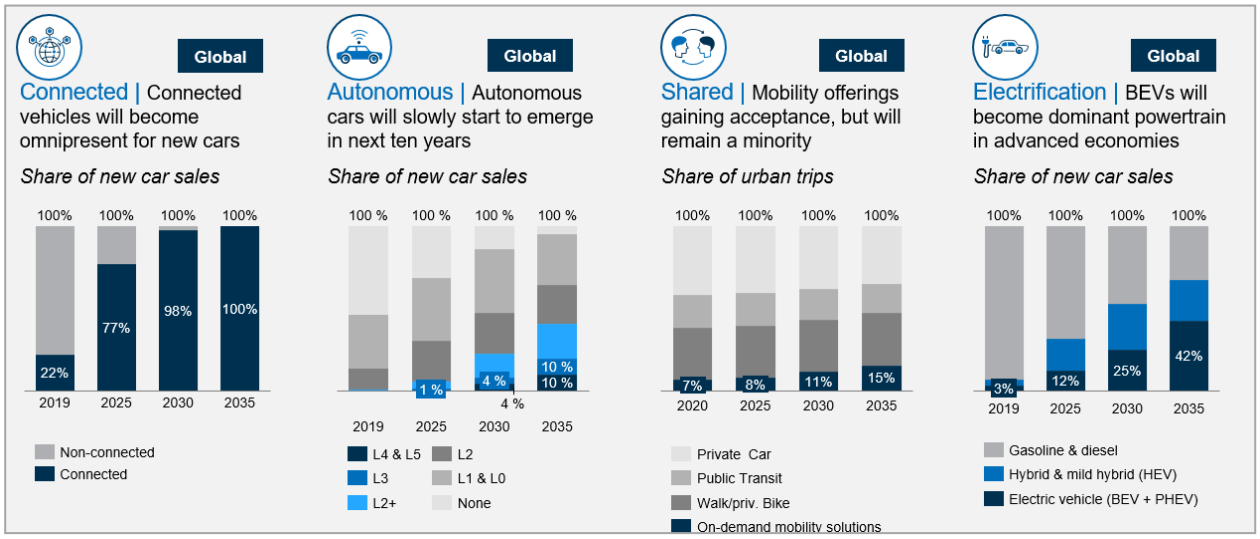
Figure 2-9: Potential impact of AfCFTA in current form on regional auto trade, by country

Given these potential constraints to regional integration, the African Association of Automotive Manufacturers (AAAM) in partnership with AFREXIM Bank and the African Organisation of Standardisation (ARSO) has recently proposed a Pan-African Auto Pact that would coordinate regional development of the automotive sector. The objective of the Pact is to foster regional hubs across the region including the development of regional supply chains, in a coordinated manner (i.e., with some degree of specialisation in vehicle types across hubs). The proposed Industrial Partnership Agreement (IPA) would support the proposed local content requirements under the AfCFTA but allow for preferential trade between member states of the Pact at lower levels of localisation temporarily, under Trade-Related Investment Measures (TRIMS) provisions of the World Trade Organisation (WTO). Additionally, the Pact would coordinate approaches to standards harmonisation, trade and customs administration, fiscal incentives and the development of infrastructure and skills. As of the end of 2021, South Africa, Ghana and Kenya had been confirmed as members of the Pan-African Auto Pact.

2.2.3 CASE / MaaS

Globally CASE trends have become the driving force of technological innovation within the automotive industry and are expected to be increasingly prevalent in new vehicle sales over the next 10-15 years. However, the pace at which each of the four technologies is advancing differs greatly (see Figure 2-10).

In Africa, key enablers are in place to further grow Shared mobility services that have gained traction in the past five years, as well as some potential for Connected services, including business to business (B2B) telematics and fleet management. New Energy Vehicles (NEV) are more challenged due to affordability and infrastructural constraints but are expected to have some presence by 2035.

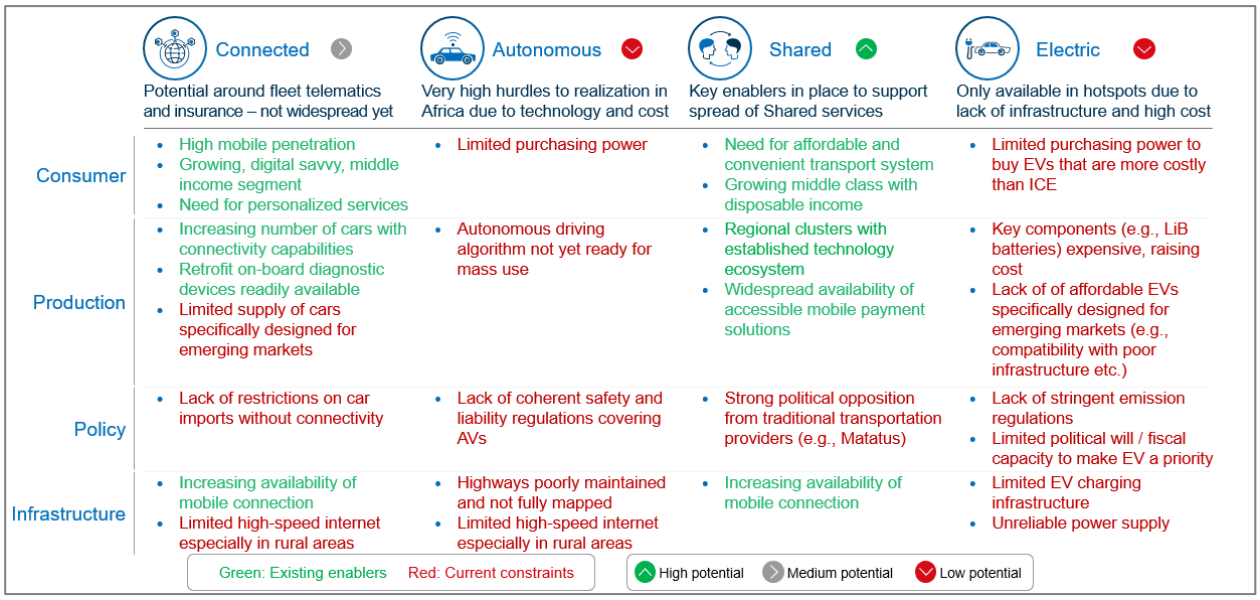


Source: BCG analysis

Figure 2-10: Global trend in CASE penetration, 2019-35

However, there are significant barriers to Autonomous vehicles becoming ubiquitous in African markets due to challenges with affordability, the number of well mapped and maintained roads, and legislative roadblocks (Figure 2-11).

As a result, the rest of this section focuses on Connected, Shared, and Electric vehicles. Mobility as a Service[25] (MaaS) is also not covered in depth in this report, as there are a limited number of true MaaS providers[26] in most of Africa given the limited prevalence of formal mass transit systems.



Source: Expert interviews, BCG analysis

Figure 2-11: Key enablers for and constraints to the development of CASE in Africa

[25] Defined as "a service that optimizes the combination of multiple modes of transport to meet the varied and diverse mobility needs of individual travellers on a trip-by-trip basis, and provides a one-stop solution to search, reservation, and payment". Source: Japan Ministry of Land, Infrastructure, Transport and Tourism

[26] Notably, Moja Ride in Côte d'Ivoire which received investment from Mobility 54 as a result of winning the Mobility 54 Special Prize at the NINJA business plan competition hosted by Nikkei and JICA

a) Connected – spreading usage in B2B, basic services provided in B2C

Connected vehicles are capable of connecting to wireless networks, enabling vehicles to communicate with other vehicles and other devices. Both B2B and Business to customer (B2C) services have emerged as more and more vehicles become connected, either through built-in connectors or retrofit devices.

Connected services for Africa have developed mostly around B2B services, especially with fleet management and cargo logistics gaining traction. They each address key pain points such as poor road safety, limited road infrastructure, fragmented freight services, and low utilization of cargo space (see Figure B3 in Appendix).

Start-up companies have been particularly active in the cargo logistics space, with companies like Kobo360 (raised USD 37M total[27]) and Lori Systems (raised USD 38M total) creating a platform that directly connects cargo owners to truck operators. This helps access to fast and affordable transportation for cargo owners as well as increasing cargo space utilization for operators.

B2C services in Africa are mostly contained within usage-based insurance with advanced B2C services (e.g., infotainment) still nascent. As affordability limits the number of newer cars in the vehicle parc, connectivity is realised mostly using retrofit devices.

OEMs have had some limited activity in the B2C space, concentrated in South Africa. Toyota has started equipping all new cars with connectivity, providing in-car Wi-Fi, car health checks, service bookings, GPS locator, request roadside assistance, and infotainment while Volkswagen is offering the We Connect Go application to support plug-and-play connectivity.

Moving forward the key challenge is likely to be the development of in-depth solutions for the B2C sector. Current services offered are limited by slow digitization of traditional service providers (e.g., insurance) and services based on 2G / 3G networks that limit transmission of larger and more precise data. Potential solutions to back the trend may be to support digital transformation of traditional service providers as well as supporting the development of communication infrastructure.

b) Autonomous – high hurdles to realization given technology and cost challenges

The adaptation of autonomous vehicles in Africa is likely to take time due to technology and cost challenges. Fully autonomous (Level 4[28] or 5) driving still face technological roadblocks which means no global OEM has been able to release a fully autonomous vehicle despite extensive testing across the world. Even after technological hurdles are overcome, high costs will mean by 2035 just 10% of the new vehicles sold globally will be fully autonomous[29]. Those new autonomous vehicles will likely be limited to advanced economies such as the US and Europe, with proliferation in Africa to follow at a later stage given challenges with affordability, quality road infrastructure, digital mapping, and high-speed internet connectivity.

c) Shared – ride-hailing gaining a foothold with high mobile penetration but lagging large economies, last mile delivery growing with increase of e-commerce

Two main types of shared services have become widespread in major cities across the continent – ride-sharing catering to affluent commuters and last mile delivery services transporting products bought online.

[27] Source: Crunchbase
[28] Defined by United States National Highway Traffic Safety Administration as "the vehicle can itself perform all driving tasks and monitor the driving environment – essentially, do all the driving – in certain circumstances. The human need not pay attention in those circumstances."
[29] Source: Boston Consulting Group

Ride-hailing in Africa is set to continue growing but will lag that of larger economies at less than 10% of urban trips by 2035. The US, EU, and China are forecast to reach 15 to 25% of urban trips in the same period. Solutions in Africa mostly cater to the affluent class that can afford personal transport today, but widespread availability of mobile connections paired with a lack of an efficient transport system means ride-hailing is gaining a foothold. While global local ride-sharing companies such as Bolt and Uber control large markets, local start-ups (e.g., SWVL, Safeboda) have emerged providing differing value propositions.

Last mile delivery has also grown as e-commerce has boomed, partially due to the COVID-19 pandemic – with leading player Jumia reporting a 50% increase in transactions during the first six months of 2020[30]. While larger players such as Glovo and Jumia work with individual drivers, start-ups such as Sendy and Dellyman (both of which also have cargo logistics platforms similar to Kobo360 and Lori Systems) have sprung up to provide delivery options for smaller enterprises.

Toyota and Volkswagen are again the most active OEMs in this space in Africa. Toyota Tsusho's corporate venture capital arm (Mobility 54) has made several investments into the industry (including Sendy) while Volkswagen are running a small-scale car-sharing and ride-sharing operation in Rwanda.

A key challenge is likely to come from the traditional transportation industry (e.g., *matatus* in Kenya) that provides a more affordable solution compared to ride-hailing and have historically pushed back against replacement solutions.

d) Electric – limited penetration in Africa by 2035 due to infrastructure challenges; global exporters (SA, Morocco) facing major changes

While most advanced economies are forecast to reduce internal combustion engine (ICE) vehicles to a minimal level by 2035, emerging countries are likely to lag behind with less than 10% electrified by 2035[31]. Currently there are very few New Energy Vehicles (NEV including HEV, PHEV, BEV and FCEV) on the road in Africa – only 3% of vehicle imports (new and used) to the region were NEVs in 2020. By comparison, 21% of new vehicle sales in the EU in 2020 were estimated to be NEVs.

Interestingly, in South Africa (where imports of used vehicles are banned), NEV represented just 0.3% of total vehicle imports in 2020. Meanwhile in the rest of SSA, NEV represented 3-4% of total vehicle imports. One potential explanation is the rising volume of imports of used hybrid (HEV) and plug-in hybrid (PHEV) vehicles from Europe, Japan and other mature markets (e.g,. Toyota Prius and Corolla hybrids, Honda Civic hybrid). Unlike BEV, hybrids can be run with existing refuelling infrastructure (i.e., petrol station pumps) and do not require specific charging infrastructure. It is estimated that such used hybrids represent the large majority of NEV imports to SSA currently[32]. In addition, a limited number of NEV buses have appeared in major cities in South Africa and Morocco but has not become widespread.

The key constraint for Africa to reach ubiquitous NEV ownership outside of large metropolises will be the high cost of NEVs compared to ICE vehicles in Africa, although prices globally are expected to fall as battery technology advances. Another major roadblock is the necessary investment in infrastructure, as the spread of NEV is reliant on easy access to charging stations. Germany is aiming to reach 1M stations by 2030 at 1 per 0.4 square kilometres. South Africa currently has 200 stations at 1 per 6,100 square kilometres.

[30] Source: Oxford Business Group
[31] Source: BCG analysis
[32] Source: Trade Map data and online marketplace research, Exact estimates of hybrid and electric vehicle trade flows are not possible due to a large share of NEV vehicles being classified generally as non-ICE (e.g., HS code 870390) rather than using specific codes for hybrid (e.g., 870340) or electric motors (e.g., 870380)

Developing the infrastructure requires large public investment (e.g., Germany to invest 6.5B USD in charging infrastructure in push to reach 1M stations by 2030) as well as close co-ordination with OEMs, electricity producers, and petrol station owners to create an inclusive policy, both of which will be challenging to implement. Much of rural Africa lacks access to electricity and existing access can be unreliable. Significant time and investment will be necessary to ensure reliable access to electricity. HEVs may be better suited to the SSA market in the near-term given the lower requirements for infrastructure investment. However, new HEV sales are likely to be constrained by affordability challenges in most of SSA (excluding South Africa), unless pricing is brought in line with new ICEs (most HEVs are currently more expensive on average, due to additional build costs associated with the powertrain).

While NEV will take time to become widespread in Africa, long-term increase in NEVs globally will place pressure on exporting countries such as South Africa and Morocco to adapt. Export targets such as the US and Europe are increasingly shifting to NEV, with new ICE car sales (including hybrid vehicles) effectively banned in the EU in 2035. OEMs will have to manage a bifurcation between NEV demand from export markets and ICE demand from local markets, which will affect scale of production.

As wealthier regions transition to NEV, the global production of new ICE vehicles will fall significantly. This will mean a gradual decrease in the size of the ICE vehicle parc globally, with the regional share of ICE vehicle parc shifting towards emerging markets such as India. The source of used ICE imports, on which Africa currently relies upon, will likely shift as a result to emerging markets, with increasingly less coming in from Europe, the US, and Japan.

OEM investment in NEVs has started to accelerate on the continent, with Toyota South Africa investing USD 150M starting production of Corolla Cross hybrid (HEV) in 2021[33]. The Corolla Cross is positioned as a price competitive SUV with better fuel efficiency than ICE alternatives. Self-charging hybrids (HEV) have gained traction more quickly in South Africa compared to plug-ins (PHEV)[34], given better affordability and infrastructure challenges. Additionally, PHEVs currently face higher customs and excise duties on import than ICE and non-plug-in HEVs. Nonetheless, BMW and Nissan are collaborating to build around 60 charging stations in South Africa[35]. In North Africa, Stellantis will begin production of the Opel Rocks-e BEV in Morocco[36] at its Kenitra plant.

2.2.4 Carbon neutrality policies

a) EU Carbon Border Adjustment Mechanism (CBAM) – potential impact on African exporters if scope is expanded to include vehicles and components

Urgency around the impact of climate change has increased greatly over the past few years. Stringent regulations around carbon emissions have arisen in recent years within advanced economies, with the EU taking the largest steps to date. In July 2021, the European Commission published a detailed proposal to turn the EU's climate goals into concrete policy actions, reducing net emissions by 55% from 1990 levels by 2030[37].

[33] Source: Toyota
[34] Source: Engineering News article, "EV revolution to be felt in SA in 2022, but affordability concerns linger", October 2021
[35] Source: IT Web
[36] Source: Morocco World News
[37] Source: European Commission

In addition to the ICE sales ban touched upon in the previous section, another key policy action that may have important implications for the African automotive industry is the Carbon Border Adjustment Mechanism (CBAM). CBAM is a carbon border tax that tackles carbon leakage by taxing imports of carbon intensive products such as industrial raw materials. CBAM will be introduced in 2026 when purchase of import permits for products affected will be required[38]. This will be preceded by a pilot phase from 2023 where importers must calculate and report emissions but will not have to buy import permits.

While affected products are initially limited to raw materials (announced as cement, steel, non-ferrous metals, ammonia, nitric acid, and electricity[39]), there is scope for further products such as automotive components and vehicles to be included which would disadvantage countries with carbon intensive energy generation and is a significant exporter to the EU such as South Africa, with additional costs for vehicles expected to be 6-12%[40]. To mitigate the impact of CBAM and maintain competitiveness, individual manufacturers will likely need to invest in carbon neutral manufacturing processes, receiving an independent validation to apply for exception.

b) Local regulations – limited regulation and support for emission reductions

While EU presses ahead with emission regulation and incentives to increase the number of zero and low emission vehicles, local regulations and incentives across Africa remain limited. Both at the REC level and within individual states, there are some efforts to harmonize and introduce vehicle emission regulation at Euro 2 to 4 level. Incentives to increase zero and low emission vehicles are limited to import duty exemptions and reductions (e.g., Morocco, Kenya, Ethiopia, and South Africa) but unlikely to have significant impact without necessary supporting infrastructure.

[38] Source: European Commission
[39] Source: European Commission
[40] Source: BCG analysis

2.3 Priority country deep dives: baseline and emerging trends

This section will provide a deep dive into the current state and emerging trends of the five priority countries for this study. The priority countries are as following (in order of Southern, Western and Eastern Africa):

1. South Africa
2. Nigeria
3. Ghana
4. Kenya
5. Ethiopia

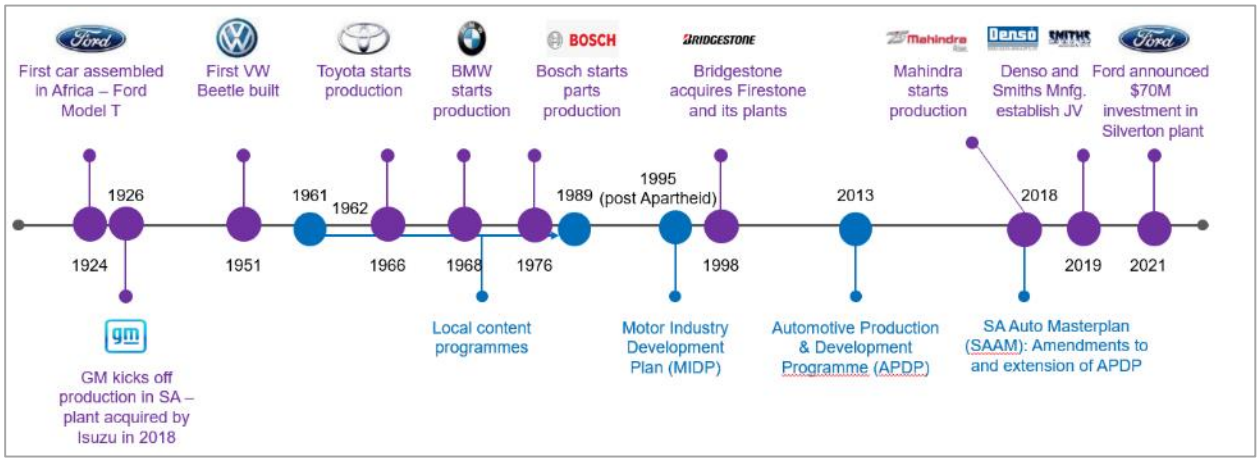
Within each of the country deep dives, there are 7 key dimensions that are examined:

a) Macroeconomic context
b) Demand
c) Supply: vehicle and component manufacturing
d) Supply: distribution, sales & aftersales
e) Policy
f) Emerging trends: regional integration
g) Emerging trends: CASE

2.3.1 South Africa: baseline and emerging trends

Executive summary

- **Upper-middle income economy, the Africa's 2nd largest (as of 2019)** – but high inequality, slow growth: GDP of USD 351B in 2019, 2% CAGR to 2030; GDP per capita of USD 6K but with large disparity in wealth (highest in world)
- **Mature market for new vehicle sales and largest in Africa (550K p.a.)** but declining since peak in 2015 given recent macroeconomic challenges
- **Established vehicle manufacturer and largest in Africa** with 9 major OEMs producing 600K units a year, serving both local (40%) and export market (60%)
- **Automotive a major industry –** contributing to more than 6% of GDP and creating nearly 300K jobs in a country with unemployment rate currently above 30%
- **Significant component industry with 500 companies** serving local manufacturers, but facing difficulty localising complex components - local content steady at 40%
- **Industry is supported by generous government incentives and grants** that boost South Africa's competitiveness; recent Masterplan targets reaching 1M production
- **Major shift in key export markets will impact SA sector –** rise of NEV in EU, UK and others while local market likely to stay predominantly ICE; possible carbon border taxation (EU CBAM) will challenge SA given high reliance on fossil fuels



Source: NAAMSA, APDP, SAAM, company websites, press search

Figure 2-12: Timeline of automotive industry evolution in South Africa

a) Macroeconomic context – 2nd largest African economy as of 2019 with relatively high income but socio-political issues exacerbated by COVID-19 damaging economy

South Africa has the 2nd-largest economy in Africa (GDP of USD 351B in 2019) and is classified as an upper-middle income by the World Bank with GDP per capita of USD 6K[41]. SA has one of the highest levels of income inequality worldwide with 42% of the 58M population having income below USD 2,500 per capita (PPP). Unemployment exceeds 30%[42].

Multinational corporations are attracted by South Africa's relatively diverse economy, modern infrastructure and strong FDI incentives, as a base for both the domestic and regional market. However, challenges to the business environment remain, including recent labour disputes, currency depreciation and corruption scandals. Furthermore, the economy contracted by 7% and 1.5M jobs were lost in 2020 as the effect of COVID-19 hit[43], while social unrest in July 2021 led to more than 300 deaths[44]. The economy is not expected to hit pre-COVID GDP levels until 2024, followed by a continued low growth environment (1-1.5% CAGR to 2025[45]).

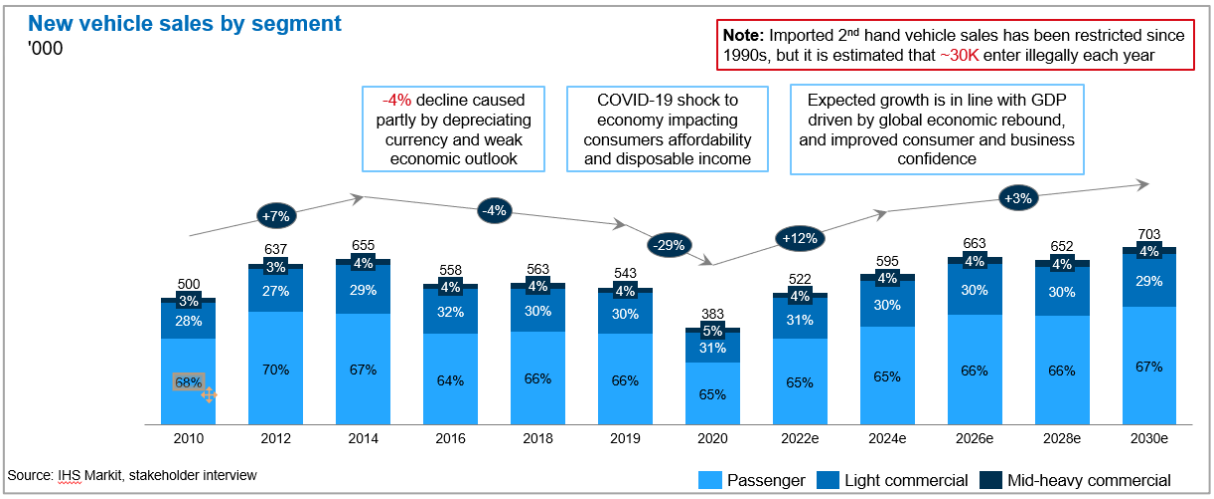
b) Demand – Largest new vehicle market in Africa but gradual decline since 2015 peak, due to challenging macroeconomic climate

South Africa has the highest level of new vehicle sales in Africa at nearly 550K (2019) – almost 40% of the entire regional market. The motorisation rate is five times the Sub-Saharan African average, at 172 vehicles per thousand people[46]. This reflects South Africa's relatively high-income level for the region, as well as the relative maturity of the local automotive sector. The new sales market is boosted by a longstanding ban on used imports[47].

Over the past decade, new sales initially exceeded economic growth at 7% CAGR from 2010-14. However, sales declined in the second half of the decade as the Rand depreciated and economic growth stagnated.

[41] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[42] Source: World Bank, World Development Indicators (WDI)
[43] Source: Bloomberg
[44] Source: Reuters
[45] Source: IMF
[46] Source: IHS Markit
[47] Despite the used import ban, an estimated 30K used vehicles South Africa illegally each year (source: stakeholder interviews)

The impact of COVID-19 led sales to fall a further 29% vs. 2019 levels, as job losses and declining incomes hit purchasing power. Levels are forecast to recover by 2023 followed by 3% CAGR over 2024-30, in line with the global economic rebound and improved consumer and business confidence (Figure 2-13).



Source: IHS Markit, stakeholder interviews

Figure 2-13: South Africa new vehicle sales by type, 2010-2030e

The current new vehicle sales market is led by small sedans and hatchbacks (42% of all vehicles sold in 2018[48]), as well as pickup trucks (23% of all vehicles sold in 2018; locally known as *bakkies*) in the mid-price range. However, SUVs have risen in share over the past decade, from 14% share in 2010 to 22% share in 2018, a trend that is expected to continue in the future in line with the global market. Relative to other Sub-Saharan African consumers, South Africans are more brand-conscious and willing to spend more for durability and experience[49].

Historically Volkswagen and Toyota have led the PV market with 20% and 18% share respectively in 2018[50], owing to established local production. VW Polo, the most popular light PV model in the country, is produced locally. Hyundai has gained share in recent years, competing in the mini-compact space. In CV, Toyota leads the market with 33% share in 2018, predominantly with pickup trucks and minibuses (used as local *taxis*). Nissan, the number two player in CV, has lost share in recent years to Ford and Isuzu.

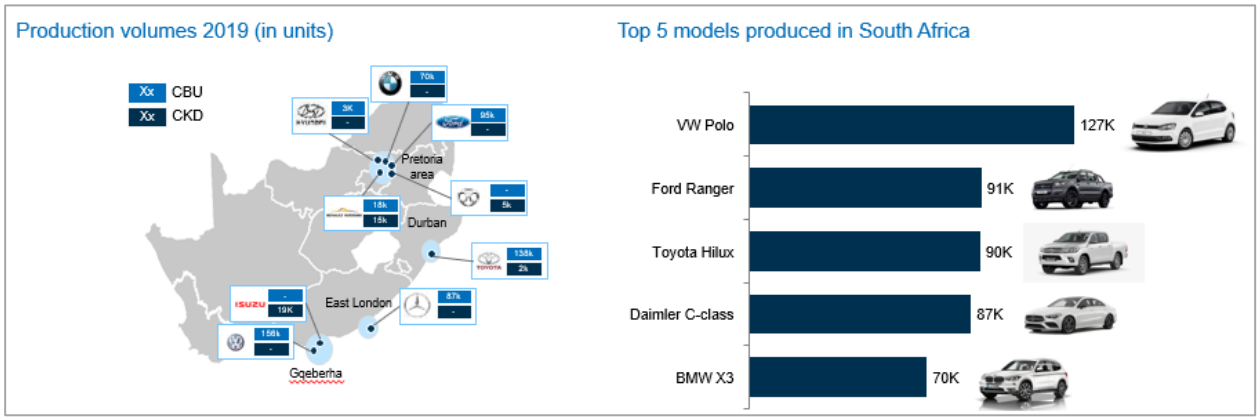
c) Supply: vehicle and component manufacturing – established CBU manufacturer for local and European markets, supported by strong government incentives

South Africa leads vehicle manufacturing in Africa with 9 major OEMs producing 600K vehicles as of 2019 (pre-COVID). The automotive industry is an important contributor to the South African economy, contributing 6.4% of GDP and accounting for 19% of manufacturing output and (both 2019)[51]. Export value of vehicles and components in 2019 was USD 13B, comprising 14% of all exports[52]. The automotive industry has been a key employer even through periods of economic uncertainty and high unemployment,

[48] Source: IHS Markit
[49] Source: BCG Africa Consumer Sentiment Survey for Automotive, 2018
[50] Source: IHS Markit
[51] Source: South Africa Department of Trade, Industry and Competition (DTIC)
[52] Sources: NAAMSA Automotive Export Manual 2021; DTIC

employing 100K directly in vehicle and component manufacturing and further 200K indirectly[53]. While the largest automotive producer in Africa, output is less than 1% of global volumes.

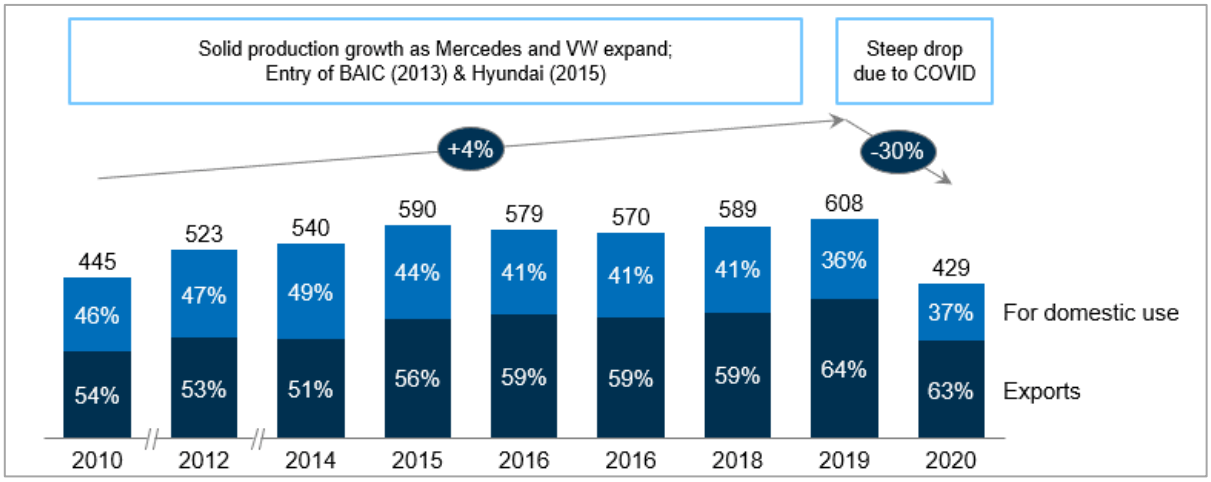
Manufacturing in South Africa is centred around 3 special economic zones (SEZs) of Pretoria, Durban, and Ggeberha (previously known as Port Elizabeth). Volkswagen and Toyota are the leading manufacturers with approximately 160K and 140K annual production respectively (see Figure 2-14), representing 2% of their global production volumes.



Source: IHS Markit, press search, BCG interviews

Figure 2-14: OEM facilities by location, production volume and type (2019)

Production levels have grown from approximately 450K in 2010 to over 600K in 2019 due to both new entrants (BAIC in 2013 and Hyundai in 2015), as well as existing players expanding (Daimler and Volkswagen). While approximately 40% of production serves the South African market, contributing to just under half of local new vehicle sales[54], the remaining 60% of volume is currently exported Figure 2-15). Many OEMs serve both the domestic and export market, leveraging the favourable duty-credit scheme. The share of exports has risen over the past decade as the domestic market has stagnated.



Source: IHS Markit, NAAMSA

Figure 2-15: Vehicle production by destination market (thousand units), 2010-2020

[53] Sources: DTIC; stakeholder interviews
[54] Source: NAAMSA

Slow growth in the domestic market presents a potential challenge to the long-term trajectory of the South African automotive industry. While South Africa exports a considerable volume today, its competitiveness to do so relies on being able to capitalise on duty credits awarded for each vehicle produced. These credits are used to serve a portion of the domestic market with duty-free imports, the rest met by local production (see *Policy* section below). As the domestic market plateaus, it limits how many new credits can be utilised, to the extent that exporting more becomes much less attractive to OEMs[55]. Nonetheless, recent growth in exports indicates that the threshold has not yet been hit.

Most vehicle exports are destined for Europe given free trade agreements, logistical trade links and some overlap in popular models (e.g., VW Polo). The UK is the top partner with a quarter of all exports (101K units in 2019); the next largest recipients are EU countries (113K units) and Japan (33K)[56]. Intra-regional exports remain small at just 12.5% of total value[57], despite close ties within the Southern African Customs Union (SACU) and Southern African Development Community (SADC). Namibia is the top regional export destination but has seen exports half since easing used car import restrictions[58].

A significant local supply chain supports vehicle production, with over 500 players operating in three automotive clusters (Pretoria, Durban, and Ggeberha). Local content utilisation in local vehicle manufacturing stands at around 40%[59], below Morocco (60%) and a key area of government focus in current policymaking. Increased supply chain localisation is challenged by four main factors: market scale, cost of production, availability of quality raw materials, and availability of quality local suppliers (Tier 2, 3, etc.).

Firstly, **demand from locally based OEMs** is sufficient for many components (e.g., within axle/driveshaft/chassis, interior, exterior/body groups) but does not reach the level required for efficient production of other scale-sensitive groups for many manufacturers (e.g., certain engine, transmission and electronics parts)[60]. A sizeable increase in demand is required to make such production viable, but current growth prospects would not represent a step-change.

Secondly, local production competitiveness is challenged by relatively **high input costs** (e.g., labour, logistics) and unreliable infrastructure (especially electricity). Thirdly, **raw materials** such as steel are available from local producers and protected with import tariffs. However, these materials are not available in all the grades required for OEM manufacturing due to limited economies of scale and challenges meeting OEM quality standards. Lastly, the current **local base of Tier 2s and 3s** for supply to global Tier 1s is relatively shallow and can struggle to meet OEM quality standards due to availability of skills, training and quality testing infrastructure. OEMs spend approximately R500M (USD 33M) annually on training, along with programmes from agencies (e.g., AIDC) and development partners.

South Africa also exports USD 3.6B of components annually (as of 2020)[61], with relatively flat growth since 2016 (below 1% CAGR). Catalytic converters represented 48% of total component exports, benefiting from South Africa's unique Platinum Group Metal (PGM) resources. The remainder of exports is much more dispersed across components, with the next largest contributors being engine parts (6% of total), tyres (5%) and radiators/radiator parts (2%). Given South Africa's distance from key global markets, exports are typically higher value components that partially leverage local materials and can be shipped at low cost[62].

[55] Source: Stakeholder interviews
[56] Source: NAAMSA, as of 2019
[57] Source: Trade Map
[58] From 5 to 8 years in 2013
[59] Source: Stakeholder interview
[60] Sources: Stakeholder interviews, Author analysis
[61] AIEC Automotive Export Manual 2021
[62] Ibid.

d) Supply: distribution, sales & aftersales – well-developed dealership and sales driven by large new vehicle market

Vehicle distribution and sales are well-developed and formalised relative to the rest of the continent, driven by a mature new vehicle market. New vehicles are typically sold through formal dealerships: official OEM, authorised single-brand or independent (mostly multi-brand). There are currently 5 listed independent dealerships on the Johannesburg Stock Exchange.

Dealerships have recently seen slow sales growth due to domestic market trends, as well as thin margins. Some level of market consolidation is expected in coming years, as seen with Barloworld's sale of its dealership unit to NMI Durban South Motors in 2020. Smaller "mom-and-pop" players may struggle to make the required investments to meet OEM standards going forward and may be targets for an industry roll-up by major players[63].

Most dealerships also provide warranty and aftersales services, which can be a critical revenue stream and higher margin business[64]. Consumers in South Africa thus have two main channels to access repairs and aftersales parts:

- **Authorised repairers** – Working with certification from OEMs, authorised repairers conduct repairs under warranty, provided under bundled plans.
- **Independent repairers** – Independent channel handle repairs not under guarantee and using aftermarket components

The recent introduction of "Right to Repair" guidelines prevent vehicle owners from being locked into bundled servicing plans, such that dealerships must continue to honour the warranty even if serviced at an independent repairer. Dealerships are also no longer allowed to bundle service plans with vehicle sales. Proponents believe that Right to Repair will introduce transparency to pricing and induce more competition between authorised repairers and independent repairers.

e) Policy – sector supported through attractive and stable policy framework given critical role in economy; recently shift in focus to driving localisation

The automotive sector has received strong support in post-Apartheid South Africa given its importance to employment and output, with highly attractive incentives and a stable policy framework since the Motor Industry Development Plan (MIDP) in 1995, and more recently the Automotive Production and Development Programme (APDP) in 2013.

Key elements of South Africa's current policy under APDP include measures to restrict imports as well as incentivise manufacturers to produce locally:

- **CBU import duties**: 25% duty on CBU imports (18% for European imports, 0% for vehicles with an engine smaller than 1,000 cc) and 20% import duty on CKD kits to protect the local industry and incentivise consumers to buy locally produced vehicles
- **Used import ban**: Imports banned unless for rare exceptions such as vintage cars, and specially designed vehicles for disabled drivers
- **Automotive investment scheme (AIS)**: 20% grant on investments in automotive production assets

[63] Source: stakeholder interviews
[64] Source: stakeholder interviews

- **Volume assembly allowance (VAA)**: Duty-free import credit provided to manufacturers that assemble more than 10K vehicle annually. Allowance is further increased if more than 50K produced, incentivising OEMs to produce a select number of models in South Africa for both local and export, while importing other models duty-free
- **Production incentive (PI)**: Duty-free import credits based on local value added in the production process

In 2018, the Department of Trade, Industry and Competition (DTIC) published the South Africa Automotive Masterplan (SAAM). The Masterplan laid out ambitious targets of reaching 1% of global production (0.6% today), 100% growth in employment, and 60% local content (40% today) by 2035[65]. To achieve this, a revised version of APDP known as Phase 2 (APDP2) was introduced in July 2021 after a delay due to COVID-19. In line with SAAM's focus on raising local content, the new APDP2 amends the VAA (renamed to VALA) to provide duty-free import credits based on local value add (calculated by subtracting the price of imported components from wholesale price) and the number of vehicles produced rather than simply the number of vehicles produced, as was the case with APDP[66].

DTIC has also developed a NEV Green Paper (discussed in detail in *Emerging trends* section) which proposes to expand support for infrastructure development and local NEV production.

The private sector has also actively developed programmes to help drive transformation of the sector's local value chain and develop SMEs through the establishment of the Automotive Industry Transformation Fund (AITF) in 2020. The AITF was established as a collective Equity Equivalent Investment Programme (EEIP) between seven multinational automotive manufacturers in South Africa[67], and will target funding of upstream and downstream businesses with at least 51% ownership by black South Africans under the provisions of Broad-Based Black Economic Empowerment (B-BBEE) Codes. The ZAR6B (USD 400M) fund has an initial 10-year mandate.

f) Emerging trends: regional integration – AfCFTA has potential to boost regional exports, but protectionism by other countries anticipated

South Africa production prospects are currently constrained by stagnant domestic demand (also impacting competitiveness of global exports, due to structure of PI and VAA). Therefore, the regional market is becoming of increasing importance for future growth. South Africa currently exports regionally leveraging tariff-free trade within SACU and SADC. However, scale remains limited due to the small market size, high logistics costs and other non-tariff barriers to trade.

The AfCFTA could broaden tariff-free access to a larger continental market, including the likes of Nigeria and Kenya – however, physical and logistical challenges remain considerable without major regional infrastructure investments. Additionally, many key Sub-Saharan Africa markets also have ambitions to grow their respective automotive industries (e.g., Kenya, Ghana, Nigeria etc.). Such countries are likely to protect their industry through the AfCFTA's Sensitive and Excluded lists. Thus, successful regional integration must overcome these challenges, for example with regional co-ordination through policies such as the Pan-African Auto Pact proposed and supported by the Association of African Automotive Manufacturers (AAAM) and Afreximbank (see Section 2.2.2).

[65] Source: DTIC
[66] Source: JETRO
[67] Source: AITF website, stakeholder interviews

On the supply side, greater free trade could allow South Africa to regionalise is supply chain over time. Regionalisation has not yet advanced across SACU and SADC, apart from Botswana producing around half of ignition imports into South Africa. This is due to significant challenges that are likely to inhibit supply chain regionalisation in the long term:

- Demanding quality assurance: OEMs enforce strict reliability standards of automotive suppliers
- High transport and logistics costs: Current automotive industry is typically formed around tight geographic clusters enabling Just-In-Time (JIT) production
- Policy mismatch: South African government currently supports localisation of supply chain within Africa to protect domestic industry; may be unwilling to outsource

Nonetheless, there is potential for certain components to shift to regional production in the longer-term, mostly where specific countries have strong competitive advantage (e.g., very low labour cost for labour intensive processes; access to rare raw materials).

g) Emerging trends: NEV shift and carbon neutrality – South Africa must adapt quickly to Europe's increasing shift to NEVs, as well as proposed CBAM

Today the EU is South Africa's largest export market[68]. The EU has recently announced an effective ban of ICE vehicles by 2035, such that almost all new vehicle sales will shift to NEV within the next 15 years[69]. South Africa's domestic market is likely to trail behind in the shift to NEVs, in part due to a delay in developing necessary charging infrastructure[70]. As a result, OEMs face a bifurcation of demand – requiring them to produce both NEV and ICE vehicles if they are to retain their largest markets, likely in the same facilities / on the same production lines[71].

While joint production of NEV and ICE vehicles in the same facility is likely feasible based on current processes[72], it will introduce inefficiencies that could impact overall competitiveness. Furthermore, moving to NEV processes will require significant capital investment that must be justified to OEMs as they make global decisions about where to locate their NEV production footprint. It will also require adaptation in the local supply chain for components impacted by the shift to NEV, as well as changes to global sourcing networks and logistics[73].

In response to this threat to South Africa's addressable market, DTIC published a NEV Green Paper in May 2021 that proposes (a) driving local NEV demand by tackling the lack of charging infrastructure and high cost of NEV acquisition, and (b) incentivising OEMs to produce NEVs through duty-free import of unique NEV components[74]. The Green Paper remains a draft document for public comment and has yet to be submitted to the cabinet for consideration (as of writing)[75]. Whether these proposed measures can

[68] Source: NAAMSA
[69] Source: European Union
[70] Source: Stakeholder interview
[71] Due to minimum efficient scale requirements for production, domestic market demand levels are unlikely to justify their own production lines without also serving exports
[72] Source: Expert and stakeholder interviews
[73] Source: stakeholder interviews
[74] The Paper proposes a new duty-credit policy specifically for imported NEVs and NEV specific components that would allow imported NEV components to claim the same status as "local" components in the calculation of VALA duty-credit incentives. Source: DTIC
[75] September 2021

incentivise OEMs to shift to NEV production remain to be seen, with none of the major OEMs starting mass NEV production yet (Toyota began production of the hybrid Corolla Cross[76] in 2021).

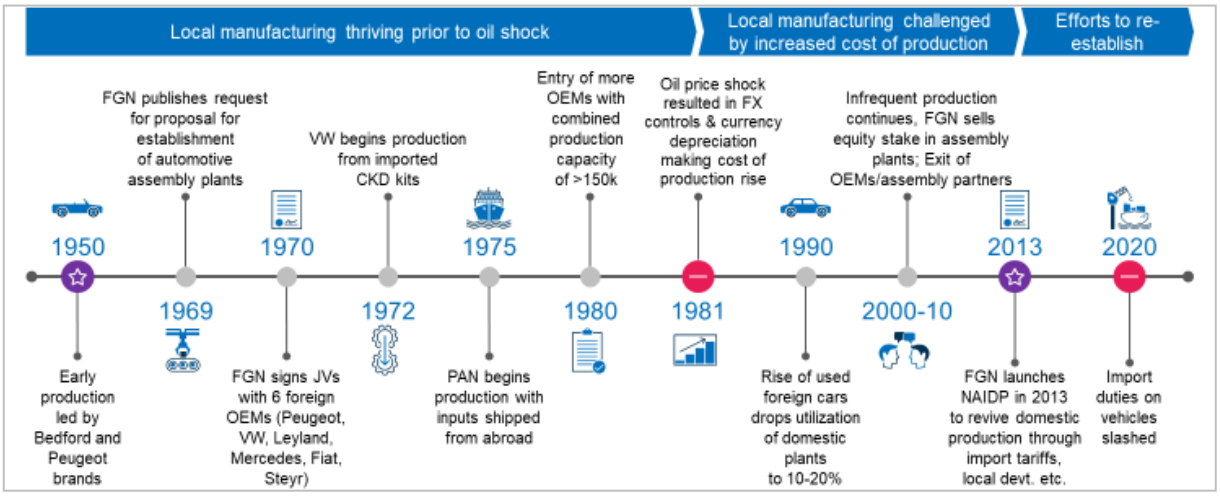
The EUs proposed introduction of a Carbon Border Adjustment Mechanism (CBAM) by 2026 could also impact the South African automotive industry significantly. While the current form of the legislation only applies to raw materials and exempts any manufactured goods, experts expect future forms of the regulation to include energy intensive manufactured goods such as vehicles and components[77]. As South Africa overwhelmingly relies on coal to produce its electricity, individual companies will need to individually source cleaner energy and receive independent validation or face extra taxation (estimated to be around USD 600 per vehicle), hurting competitiveness. As of now, there has been limited policy action in South Africa in response to CBAM beyond public statements of concern over the EU's proposal[78].

2.3.2 Nigeria: baseline and emerging trends

Executive summary

- **Africa's largest economy** by GDP (USD 448B) and population (201M), but growth constrained by **currency pressure** and **business climate challenges**
- Nigeria has **Africa's largest vehicle parc;** however, **new vehicle sales are low** (55K in 2019) due to low affordability vs. used imports, which make up over 90% of sales
- **Historically sizeable local industry** for vehicle assembly (>100K units p.a.) and parts; **deteriorated since 1980s** due to structural challenges ignited by oil price shocks
- Vehicle production is **currently limited to small-scale SKD assembly** (10K units in 2019), with limited capacity utilisation (5%) and **low localisation of supply** (<5%)
- **The aftersales market is large but highly informal,** with limited regulation /standards, limited availability of skilled labour, and a high prevalence of low-quality / counterfeit parts
- **Recent policy efforts such as the NAIDP** (2013) generated initial interest, but faced significant implementation challenges and **failed to revive the sector;** OEM / assembler confidence is currently low following tariff reversals (Finance Bill 2020)
- Regional access via **ECOWAS would double addressable market** (new sales), **but high ROO requirements and NTBs** (port inefficiency, logistics) hinder opportunities

[76] Source: BusinessLIVE
[77] Source: Stakeholder interview
[78] Source: Joint statement issued at the conclusion of the 30th BASIC Ministerial Meeting on Climate Change



Source: NAIDP, company websites, press search, stakeholder interviews

Figure 2-16: Timeline of automotive industry evolution in Nigeria

a) Macroeconomic context – largest African economy with a growing middle class, but challenged by external shocks and internal business environment

Nigeria is Africa's largest economy in terms of GDP (USD 448B) and population size (201M)[79], with modest GDP growth of 3% p.a. projected until 2030. Nigeria has the 3rd highest GDP per capita in West Africa at USD 2,230, and the country's upper/middle class has grown from 13% of the population in 2003 to more than 20% in 2020. Over half of the population live in urban areas such as Lagos (Africa's largest mega-city) and Abuja.

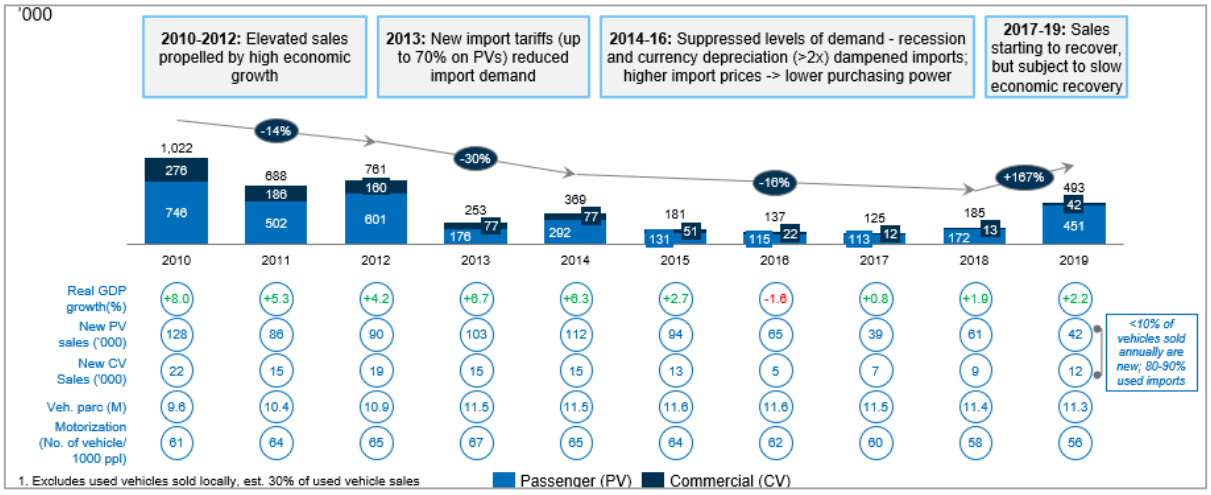
Despite the country's size, Nigeria's GDP growth has slowed over the last decade due to recessions and a difficult business environment. Nigeria has been impacted strongly by two recessions: in 2014 due to global oil price shock, and in 2020 due to COVID-19. Both recessions have led to significant currency depreciations (more than 150% vs. the US dollar since 2013) and rising inflation. These shocks have hit consumer spending and manufacturing activity. Furthermore, Nigeria's business environment is cited as a significant constraint (ranked 131st in Ease of Doing Business[80]) with corruption and bureaucracy, physical infrastructure (roads, ports), capital controls, and high cost of financing cited as key issues.

b) Demand – sizeable market with largest vehicle parc in Africa but new vehicle sales volume low due to dominance of used imports

As of 2020, Nigeria has the largest vehicle parc in Africa with an estimated 11.3M vehicles on the road[81]. This is driven by a sizeable population and modest motorisation rates. Nigeria has 56 vehicles per 1,000 people, which is higher than Kenya (34 per 1,000) but lower than Ghana (64 per 1,000), South Africa (172 per 1,000) and the global average (180 per 1,000)[82]. Most of these vehicles came to Nigeria as used imports from the US, EU and other high-income markets.

[79] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[80] Source: World Bank Doing Business Report 2021
[81] Source: IHS, WHO, Nigeria National Bureau of Statistics, Press search. Wide range in reported parc figures across sources, mid-point number leveraged in report analysis
[82] Source: IHS, Country-specific sources, Press search

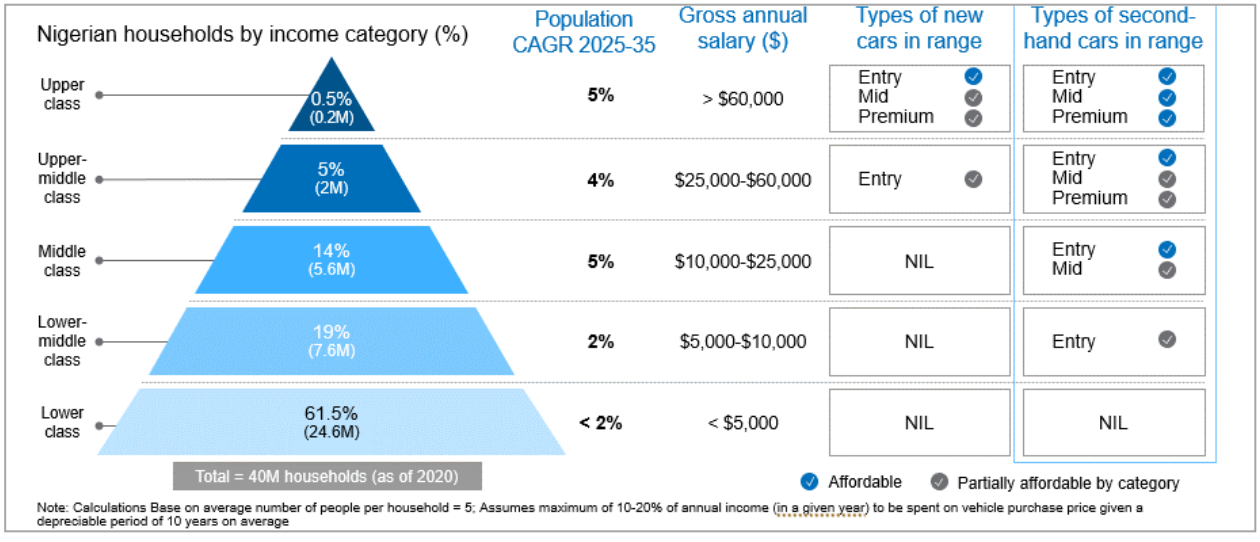
Total car parc growth has slowed in recent years (from 2.7% CAGR over 2010-15 to 0.5% CAGR for 2015-20) due to recessionary pressure, depreciation and tariff hikes reducing sales. Sales of new vehicles have dramatically declined in the past decade. In 2010, total vehicle sales[83] stood at an estimated 1.0M vehicles but dipped as low as 125K in 2017. Sales recovered to almost 500K in 2019, still half of 2010 levels. Of these sales, less than 10% were for new vehicles. New vehicle sales fell from 150K in 2010 to 55K in 2019 (Figure 2-17), reflecting sector wide decline and rising tariffs in 2013.



Source: Trade Map, BCG analysis

Figure 2-17: Nigerian total vehicle sales (imports and locally assembled, thousand units), 2010-2019

The remaining approximately 90% of vehicles added to the road each year are used imports, known locally as *Tokunbos*. Demand for *Tokunbos* is driven primarily by affordability, with only the top 5% of Nigerians able to afford a new PV, at most (Figure 2-18). Used cars are typically three- to five-times less expensive due to age-based value depreciation, wide availability from developed markets and lower tariffs vs. new cars (Pre-2021: 35% tariff vs. 75% for new). Consumer vehicle financing options are limited with high interest rates (up to 20% p.a.) and strict terms (typical 10% down payment with 1- to 4-year repayment) that hinder new sales.



Source: Oxford Economics, BCG analysis

[83] Sales (annual addition to car parc) = Local production + new & used imports of on-road PVs and CVs. Excludes local used sales

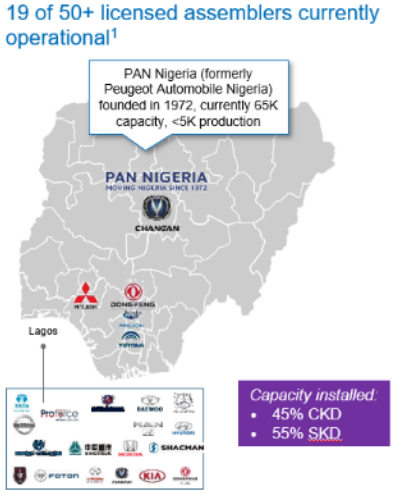
Figure 2-18: Vehicle affordability by Nigerian household income category

Nigerian consumers show a strong preference for affordable, durable and efficient vehicles[84]. Toyota is the market leader for both new and used PV with 30% and 45% shares respectively. The rest of the new vehicle market is dominated by premium brands such as Lexus[85] (14%), Range Rover (12%), Mercedes (10%). As few individuals can afford new vehicles, corporates, governments and other bodies make up 70% of new vehicle sales (PV and CV combined). New vehicle buyers tend to purchase larger cars (e.g., SUVs) due to comfort on unpaved local roads, while used vehicle buyers typically purchase smaller (e.g., saloon, hatchback) and older cars (on average, vehicles are older than 11 years) due to the lower price point.

c) Supply: vehicle and component manufacturing – in structural decline since 1980s; competitiveness vs. imports challenged today

Nigeria's automotive industry dates to the 1950s, with early production led by Joint Ventures (JVs) between the Federal Government of Nigeria (FGN) and foreign OEMs (incl. VW, Peugeot, Leyland, Daimler) as part of Nigeria's industrialization drive. By the early 1980s, Nigeria had installed capacity of over 150K vehicles p.a. (SKD/CKD), with some producers (e.g., Peugeot Nigeria) utilizing up to 40% local content. Three clusters formed around assemblers in the South (Lagos-Ogun-Oyo), North (Kano-Kaduna) and Southeast (Anambra-Enugu). Local components included tyres (e.g., Dunlop, Michelin), seats and batteries.

However, the industry fell into sharp decline following macroeconomic challenges stemming from the 1981 global oil price shock and subsequent recession and depreciation of the Naira. Local producers faced soaring production costs and began to exit as demand fell, while FGN sold equity stakes and reduced subsidies. As a result, component manufacturers fell into decline, especially with rising cheap imports from China and other parts of Asia[86]. Currently, local assembly activity remains low despite reported installed capacity of 180K units from historic investments (both SKD and CKD; Figure 2-19).



Company name	Brand	Product	Capacity
PAN Nigeria		(CKD) Cars and buses	60k
Dana Motors		(SKD) Cars, SUV, mini-buses	27k
Stallion Nissan		(SKD) Cars, SUVs, mini-buses, pick-ups	15k
Hyundai Motors Nigeria		(SKD) Cars, trucks and buses	15k
National Trucks Manufacturers		(SKD) Pick-ups, trucks, buses, SUVs, etc.	12k
Innoson Vehicle Mfg.		(CKD) Pick-ups, trucks, buses, SUVs, etc.	10k
Zahav Automotive		(SKD) Cars, trucks and buses	10k
ANAMMCO	SHACMAN	(CKD) Trucks and buses	8.5k
Proforce	Proforce	(CKD) Armored vans and buses	4.8k
Iron Products Industries		(SKD) Trucks and buses	4k
Leyland Buson Motors		(CKD) Trucks and buses	4k
Scoa Nigeria		(SKD) Trucks and buses	2k
Stallion Motors		(SKD) Trucks and buses	2k
VON Automobile Nigeria		(SKD) Trucks and buses, SUVs, etc.	2k
Transit support services	SHACMAN	(SKD) Trucks	1k
Nigeria Sino Trucks		(SKD) Trucks	1k
Honda Auto. Western Africa		(SKD) Cars	1k
Lafbart		(CKD/SKD) 3-wheelers and trucks	0.5k
Kojo Motors		(SKD) Buses	0.15k

Sources: NADDC, press search, stakeholder interviews

[84] Source: BCG Africa Consumer Sentiment Survey for Automotive, 2018
[85] Lexus is a brand owned by Toyota but provided separately here to distinguish the premium segment
[86] For example, the local tyre industry (led by Dunlop and Michelin) historically met 75% of local demand but both are now defunct

Figure 2-19: Operational assemblers in Nigeria

Capacity utilisation stands at just 5% with approximately 10K units produced in 2019, while local content usage is now less than 5%. Only a few components are locally produced e.g., lubricants, petroleum products. Key constraints in increasing capacity utilisation and local content utilisation include:

- **Low demand for new vehicles** – prevalence of more affordable used vehicles
- **Policy implementation limited / unpredictable** – planned incentives and support under NAIDP (2013) not fully implemented or reversed (e.g., Finance Bill 2020) with limited consultation between government and private sector - resulting in lack of predictability for investors; lengthy procedures (e.g., renewal of assembler certificates)
- **Naira depreciations, access to FX** – volatile & depreciating Naira, limited FX access
- **Infrastructure challenges** – electricity cost/access, transport infrastructure quality, port inefficiencies and delays (e.g., consignment delays incurring added demurrage)
- **Limited quality of local components and skills** – local suppliers unable to meet quality specifications, local testing infrastructure very limited, dearth of trained talent

Further discussion of Nigeria's sector competitiveness is given in Section 4 of this document.

d) Supply: distribution, sales & aftersales – downstream activity highly informal, with limited regulation / standards for used vehicles and aftersales parts

The distribution and sale of vehicles in Nigeria flows through three main channels, differing significantly based on the type of vehicle being sold:

- **OEM and/or authorised dealerships** – primary channel for new vehicles (both imported and locally assembled), often providing warranties and aftersales services for purchased vehicles. Some OEM distributors offer certified used car programmes but remain relatively niche vs. other channels given typically more expensive vehicles.
- **Independent dealers** – primary channel for used vehicles (import & locally used). These are often individual dealerships or informal networks of dealers across the country[87] that source vehicles directly from abroad (e.g., dealerships in Dubai and USA). Customers purchasing through independent dealers often have limited information on vehicle specifications (i.e., age, mileage) and quality assurance.
- **Private sellers** – typically selling locally used vehicles. Recently, online platforms[88] have emerged and gained popularity. Consumers face similar challenges in terms of verifying information and assuring the quality of vehicles.

The aftersales market is estimated to total USD1.5-2.0B as of 2020[89], with tyres accounting for the largest share of sales at approximately USD450-550M. Batteries are the second largest single expenditure, contributing approximately USD150M in sales annually. Within the aftersales market, there is a high prevalence of cheap non-branded generic parts and used parts. More than 85% of tyres and 55% of other

[87] Example locations include Berger, Ikorodu Road, Lekki in Lagos; Kubwa, Nyanya, Garki in Abuja; Aba road, Oginigba road in Rivers; and IBB Way in Kano

[88] For example, jiji.com is an online marketplace for used vehicles, currently with presence in 5 countries including Nigeria

[89] BCG estimate based on imports of approximately USD1.1B in 2020 (Trade Map mirror data), adjusting for locally produced and locally sourced used parts as well as end market markup and services

parts are imported from China, which is the largest global manufacturer of generic vehicle parts and tyres. While Nigeria has historically had a manufacturing presence in the tyre market, levels have been negligible since 2005 following a tariff reduction and the exit of major players.

This prevalence of cheaper parts is driven by low levels of affordability, with a maximum of 5% of the population able to spend more than USD 500 per year on vehicle maintenance (a typical annual spend threshold for new branded parts and service)[90]. An annual vehicle roadworthiness certificate (implemented at the state level) is required for all vehicles and is being enforced by the Federal Road Safety Commission (FRSC) through roadside inspections. While such measures likely boost the level of maintenance and repair in the market, compliance is understood to be below 100%.

Parts are mostly sold through informal and unstructured channels, with a prevalence of "mango-tree"[91] mechanics and "open-air" garages. More than 95% of customers turn to informal garages due to their lower cost and widespread footprint. Conversely, official dealers and service providers occupy only the premium market, with higher prices and smaller networks of outlets concentrated in big cities. Additionally, the limited awareness for maintenance amongst customers have resulted in low customer retention (below 10%) by official dealers[92].

e) Policy – recent government efforts via NAIDP (2013) unsuccessful in reinvigorating sector; implementation challenged

In 2013, the National Automotive Industrial Plan (NAIDP) was launched to revive domestic production. NAIDP also established the National Automotive Design and Development Council (NADDC) to oversee implementation. NAIDP focused on five key areas (Table 2-1).

Table 2-1: Summary of NAIDP (2013) support and initiatives for the automotive sector

Policy topic	Activities
Investment promotion	• Incentives for local assembly and manufacturing to attract leading OEMs • Tariffs to protect domestic industry (import duties + levies)
Skills development	• National Board of Technical Education (NBTE) to develop curricula for skills development programs for engineering, mechanics at universities in Nigeria • Industrial Training Fund to coordinate with SENAI in Brazil
Infrastructure formation	• Formation of automotive supplier parks in partnerships with international OEMs, strategic global suppliers and State governments
Standards setting and enforcement	• Standards Organization of Nigeria to develop safety standards and Automotive Test Centres for safety and quality testing • Federal Road Safety Corps & Nigerian Customs Service to control smuggling • States' Motor Vehicle Administration Departments to review and reform vehicle inspection and certification system
Market development	• Establish captive finance operations with domestic dealership networks to improve vehicle affordability

Sources: NAIDP (2013)

[90] Estimate based on 5% of the population earning in excess of USD25,000 gross annual salary, with no more than 2% spent on vehicle maintenance and repair based on US benchmarks for comparable income levels; US consumers typically spend 1.5-2.0% of their annual gross salary on vehicle repair and maintenance when earning USD 10,000-60,000; anything above this percentage level is considered not reasonable affordable for this analysis. (Source: Oxford Economics, US Bureau of Labor Statistics Consumer Expenditure Survey, BCG estimates)

[91] "Mango-tree" mechanics operate by the side of the road and do not have a permanent establishment, and are often not formally qualified or have very little formal training in auto repair and servicing

[92] Source: Stakeholder interviews

The NAIDP sparked considerable interest among investors, with USD 1B of Foreign Direct Investment (FDI) commitments announced between 2013-19. However, much of this investment was not been realised, as implementation of NAIDP hit several stumbling blocks and the sector was hit by effects of the 2014 recession and subsequent Naira depreciation.

Importantly, the NAIDP has not been officially put into legislation to date. Implementation across the various relevant government agencies has thus been challenged, with roles, mandates and budgetary allocations unclear. Stakeholders in the sector describe insufficient coordination among government agencies and limited engagement of the private sector. Additionally, policy towards the automotive sector had limited continuity, particularly as subsequent administrations have taken approaches that differ from the original policy. Most recently, the Finance Bill 2020 overruled NAIDP by reducing import duties on new Fully Built Units (FBU) of PV, and new and used FBU CV (See Table B2 in Appendix) and has been described by some private sector stakeholders as a "policy somersault".

The immediate impact of the Bill has been to further reduce competitiveness of local assembly vs. imports, with most assemblers slowing or shutting down production and reducing headcount. OEM confidence in the sector is currently very low, with assemblers drafting "survival plans" and even some shifting operations to Ghana (e.g., Volkswagen).

f) Emerging trends: regional integration – ECOWAS and AfCFTA could offer access to large markets, but currently restrictive terms and sizeable non-tariff barriers

Nigeria is part of the Economic Community of West African States (ECOWAS), established in 1975 with 15 member countries and a population of 400M people. Nigeria has duty-free access for CBU and components exports to the rest of the region under the ECOWAS customs union, which can potentially open up an additional market of 350-400K vehicle sales per year as of 2019 (of which 40K were new) to Nigerian producers.

However, CBU exports are currently subject to a 30% regional content requirement under ECOWAS Rules of Origin (ROO); Nigeria currently has less than 5% local content usage. Competitiveness of regional producers is further challenged by (a) high relative cost of production vs. imports, (b) high transport/logistics costs and non-tariff barriers, and (c) unilateral measures and country specific taxes applied on vehicles. As a result, nearly all vehicle trade in the region comes from external imports.

In 2018, ECOWAS country representatives and experts met in Abuja, Nigeria to launch development of a regional automotive industry policy that would boost production and promote regional value chains. Despite strong interest at the time, there has been limited action to date. More recently, the African Continental Free Trade Area (AfCFTA) went into effect as of January 2021. It is likely that AfCFTA will allow duty-free access for automotive vehicles subject to 40% local content requirements – higher than ECOWAS requirements. Nigeria's export potential under AfCFTA is likely to be limited in the near-term as a result. Furthermore, it is expected Nigeria will choose to protect its automotive sector (as well as tariff revenues) by maintaining tariffs on vehicle imports through use of the excluded item list.

g) Emerging trends: CASE – Shared mobility growing, some activity in Connected, while Autonomous and NEV less promising

Several innovative solutions have arisen in the Nigerian market in recent years to solve pain points in the traditional automotive and transport markets, particularly those leveraging mobile technology. Elsewhere, next generation vehicles (e.g., electric, autonomous) are yet to gain traction.

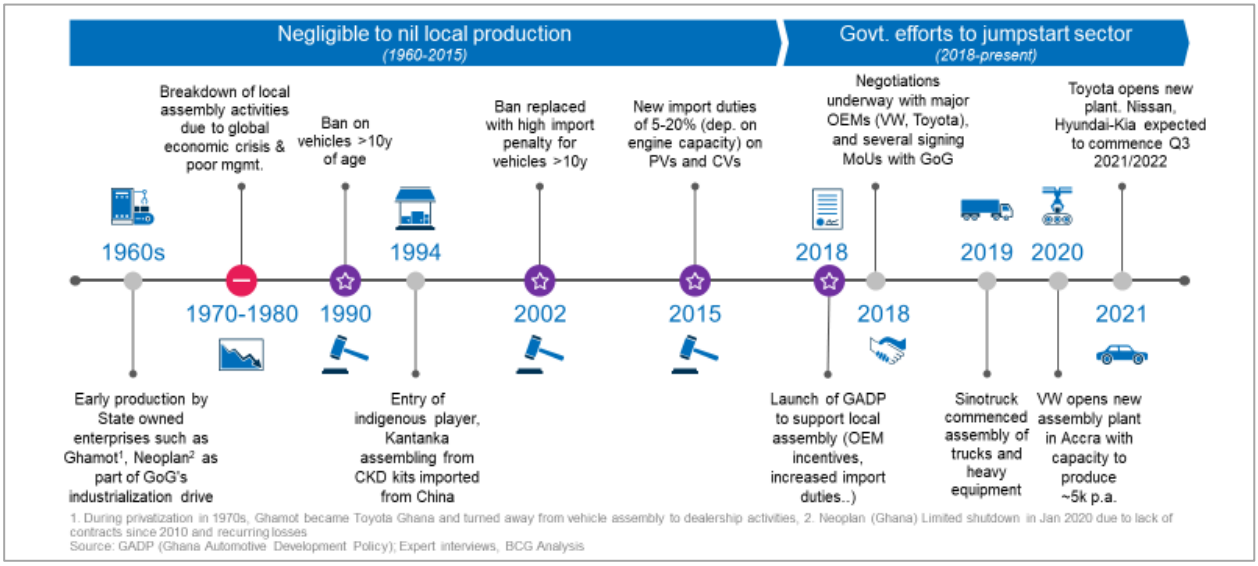
- **Connected vehicles:** Spreading usage in business-to-business (B2B) services, based on retrofit devices emerging in fleet management and cargo logistics. For example, Kobo 360, an aggregator platform connecting drivers/fleet operators with businesses, offers a cashless, app-based system beneficial in reducing inefficiency and corruption in on-road cargo logistics[93]. Business-to-consumer (B2C) services (e.g., infotainment) are still nascent, given prevalence of old vehicles and imports catered to origin market.
- **Shared mobility:** Platforms and digitally enabled solutions providing shared mobility services in Nigeria have risen rapidly over the last 5 years, supported by growing mobile penetration and upper/middle income consumer class. The shared mobility ecosystem includes local and international players, incl. Bolt and Uber for car sharing.
- **Autonomous and NEV:** Uptake is currently challenged due to lack of necessary infrastructure and supporting technology. For Autonomous, key barriers include network reliability and uncoordinated road networks. For NEV, electricity access and reliability are a major constraint in Nigeria (ranked at 171 of 190 countries[94] globally). The first Nigerian-produced NEV vehicle was announced by Hyundai in November 2020, but planned production numbers are yet to be confirmed.

2.3.3 Ghana: baseline and emerging trends

Executive summary

- **Africa's 9th largest economy (**USD 67B in 2019) with 4% CAGR forecast to 2030 despite recent macroeconomic challenges; sizeable FDI over past decade, boosted by relative stability
- **Modest vehicle parc** (1/6th of Nigeria at 2M in 2019) with **low volume of new sales** due to low affordability and availability of cheaper used imports
- **Domestic production historically negligible, but OEMs entering in last 2-3 years** with small-scale SKD assembly (e.g., Toyota, VW, Sinotruck); minimal local content
- **Entry sparked by recent automotive policy** (GADP 2018, legislated 2020) that will raise tariffs and provide fiscal incentives; capacity to reach 15K by 2022
- **Aftersales highly informal with limited regulation / standards,** but Government of Ghana (GoG) looking to introduce regulations in near-term
- **Limited near-term export potential** to ECOWAS (total 100K new vehicle sales in 2019) due to high ROO requirements, NTBs, likely protectionism from other aspiring producers (Nigeria)

[93] Drivers can use payment apps on their phones to pay for provisions instead of carrying cash, which reduces susceptibility to bandits or corrupt officials. Kobo is also able to track trucks real-time and dispatch a team in case of truck breakdowns.
[94] Source: World Bank, 2020 Doing Business Report



Source: GADP, press search, stakeholder interviews

Figure 2-20: Timeline of automotive industry evolution in Ghana

a) Macroeconomic context – 9th largest African economy with rising middle class, sizeable recent FDI inflows; recent macro challenges, but outlook positive

Ghana is Africa's 9th largest economy with GDP of USD67B in 2019 and 13th most populous country at 30M people (2nd in West Africa, but smaller than Nigeria at 201M)[95]. Ghana is known for its relatively strong and stable institutions in the region among West African countries, making it a favourable investment destination – it has received the 5th highest volume of FDI in Africa over the past decade, ahead of much larger nations[96]. Ghana is a lower middle-income economy with GDP per capita of USD2,200 in 2019 and a rising middle class (18% of population).

Despite the economy's rapid growth at the beginning of the decade (10% CAGR over 2010-13 in real terms), Ghana experienced several slowdowns over the past decade. First, global commodity price shocks in 2014 saw growth slow to 2.1% by 2015, leading to a twin deficit in the fiscal and trade balances. COVID-19 has also hit Ghana, with growth slowing to 0.4% in 2020. These recessions led to significant depreciations of the Cedi, which lost 75% of its value between 2011 and 2020 and affected consumer purchasing power.

In terms of future macro-economic outlook, the IMF forecasts recovery in real GDP growth rates – 4.6% in 2021 and 6.1% in 2022 - based on a global commodity price recovery and tighter monetary policy commitments by the government (subject to COVID-19 evolution). Long-term growth is forecast at 4% CAGR to 2030[97].

b) Demand – Limited vehicle parc (1/6th of Nigeria) with minimal new sales (10-15K units), due to lack of affordability and availability of cheaper used imports

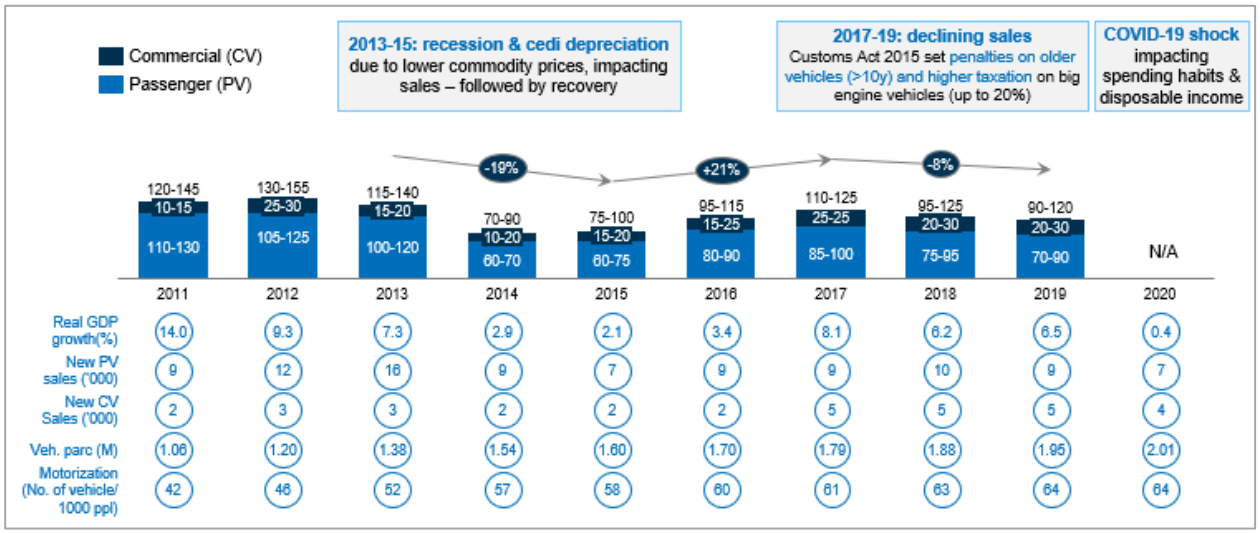
Ghana has a relatively small vehicle parc of 2M (in 2020), just one-sixth of Nigeria (at 11.3M) due to Ghana's much smaller population. The motorisation rate is relatively high for Sub-Saharan Africa at 64

[95] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[96] UNCTAD inward FDI flow data for 2010-19 (absolute USD)
[97] Source: Oxford Economics

vehicles per thousand people (vs. 34 per thousand for Kenya with a similar income level), but well below the global average (180 per thousand).

The overall stock of vehicles on the road continues to increase, broadly in line with GDP, with vehicle parc growth of 11% CAGR over 2010-2015 and 5% CAGR for 2015-2020. The dip over the past five years reflected reduced sales from recessionary pressures, depreciation, and a tariff increase. Total additions to the road (new vehicle sales sand used imports) stood at 90-120K as of 2019[98].

Almost all this volume came from import of used vehicles, predominantly from the US, Europe and other developed markets. New vehicle sales have been very low at just 10-15% of total sales, totalling 10-15K in 2019 (Figure 2-21). PVs typically represent 75-80% of total sales (new and used).



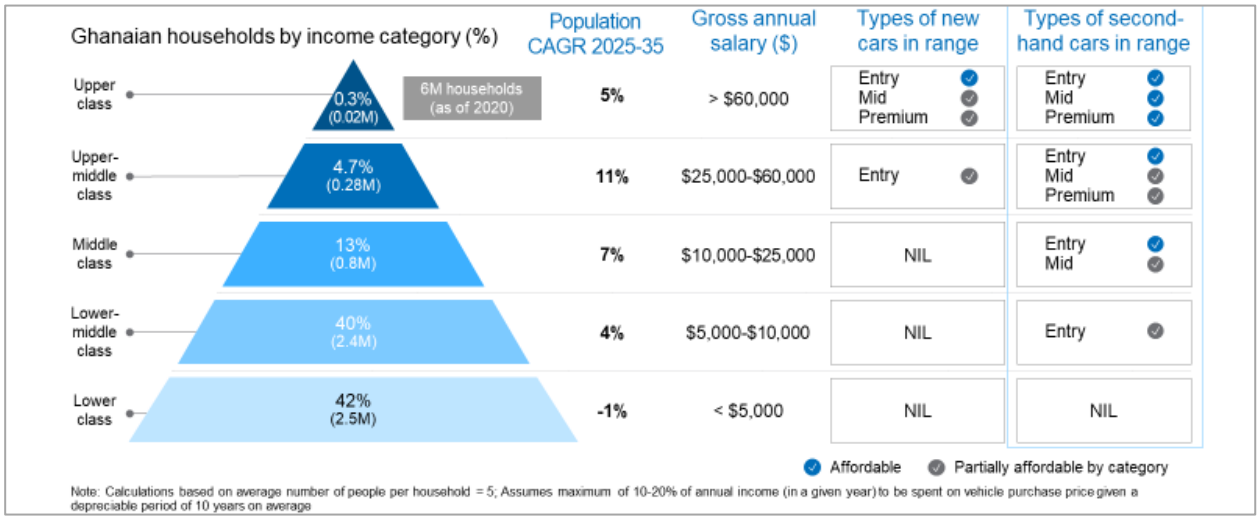
Source: Trade Map (for total vehicle sales based on import values); IHS (new vehicle sales), WHO (car parc); BCG analysis

Figure 2-21: Ghana total vehicle sales – imports and locally assembled (thousand units), 2011-20

Vehicle imports (both new and used) amounted to Ghana's top import bill in 2019 (USD 1.3 B) with PV supply led by USA (39% of value) and CV by China (17% of value).

The demand for used vehicles is driven primarily by affordability challenges; less than 5% of Ghanaians can afford a new car (Figure 2-22). Used cars are typically three- to five-times cheaper than new cars due to age-based value depreciation, wide availability from developed markets (e.g., USA) and a lack of restrictions on importation (e.g., age limits). Affordability is further impeded by a lack of vehicle financing options, with high interest rates (up to 20% p.a.), and strict terms (i.e., high down-payments, short repayment periods).

[98] Source: IHS, Trade Map



Source: Oxford Economics, BCG analysis

Figure 2-22: Analysis of vehicle affordability by Ghanaian household income category

As with other Sub-Saharan African countries, the lack of vehicle affordability is reflected in the vehicle landscape, with Ghanaians have a strong preference for durable and efficient vehicles[99]. For PV, the market is dominated by Japanese and Korean brands (Toyota, Hyundai, Honda, Kia, Nissan) with a combined share of 70% of the market. Toyota is the market leader with 32% market share, also leading the CV market (24% share). Other leading CV brands include Mercedes and Hyundai (20% share each). Due to limited affordability for individuals, corporates, governments and other bodies are primary purchasers of new vehicles. New car buyers tend to purchase larger cars (e.g., SUVs) due to comfort on local roads, while used vehicle buyers typically purchase smaller (e.g., saloon, hatchback) and older cars (on average between 6-9 years) due to their lower price point.

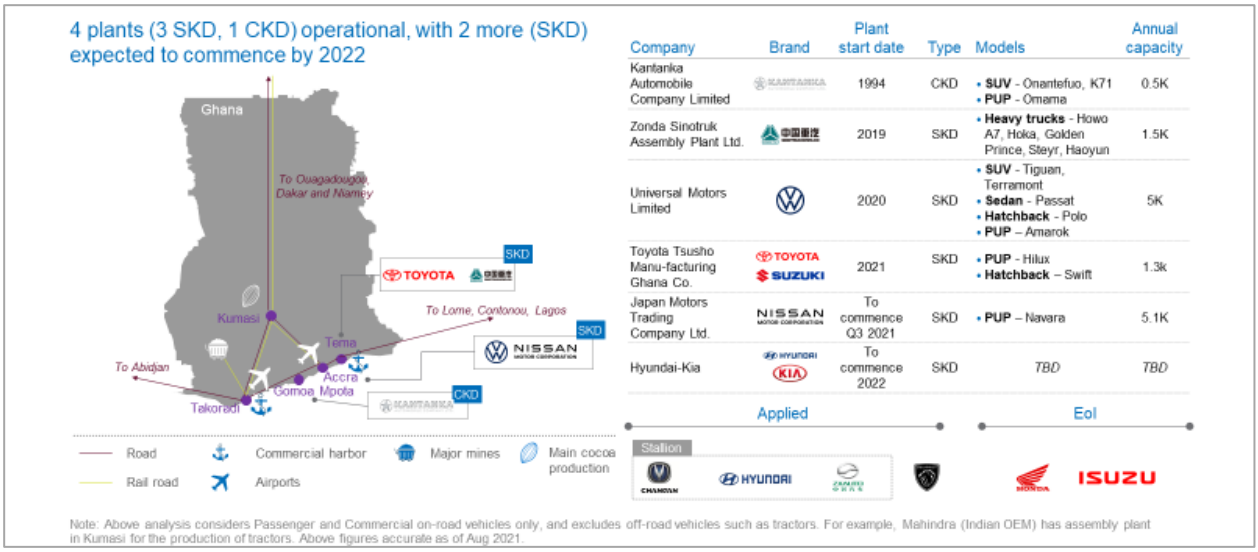
c) Supply: vehicle and component manufacturing – negligible until recent OEM entry (small-scale SKD assembly) spurred by GADP; supplier base lacking

Unlike neighbouring Nigeria, Ghana does not have a notable history in the automotive sector, beyond some early activity in the 1960s (Figure 2-20). Since then, domestic production has been negligible, players active only at very volumes[100].

Despite this, Ghana has successfully attracted the entry of several global OEMs since 2019, following launch of the Ghana Automotive Development Policy (GADP) in 2018. Sinotruck, Volkswagen, Toyota and Nissan have announced plans for SKD plants (with some already active at low volumes), with several more in the pipeline (Figure 2-23). In 2021, Toyota Tsusho Manufacturing Ghana opened its plant with assembly of the Toyota Hilux pickup as its first model. In a partnership with Suzuki, the plant also plans to begin assembling the Suzuki Swift model in 2022 – the first plant to produce Toyota and Suzuki models on the same assembly line[101]. As a result, Ghana now has a combined installed capacity of 7K units and is expected to grow to approximately 15K by 2022 (10% of Nigeria's installed capacity), covering a range of vehicle models. OEMs/assemblers are concentrating in Accra and Tema – Accra being a key centre of commercial activity and Tema a rising port city with export processing zones offering investors industrial park facilities. Most of this installed capacity is expected to be for passenger vehicles and light commercial

[99] Source: BCG Africa Consumer Sentiment Survey for Automotive, 2018
[100] For example, local assembler Kantanka entered in 1994 has produced 100 to 150 units annually
[101] Source: MyJoyOnline

vehicles, but there is also interest by some global OEMs to venture into 2-wheelers and heavy commercial vehicles.



Source: Press search, stakeholder interviews

Figure 2-23: Operational assemblers in Ghana

However, most of this capacity remains at the SKD production level, with OEMs making small scale investments (of 1-5K plant capacity each) given the current small size of the domestic new vehicles market and current challenges in accessing regional ECOWAS market i.e., 30% Rules of Origin (ROO) requirements. Local content usage is currently less than 5% of the total material value of vehicles, with only limited components locally produced (e.g., springs, lubricants). This is due to limited scale and an almost non-existent supplier base, given the lack of prior activity in the sector. Additional challenges cited by OEMs/assemblers include the high cost and time delays in securing necessary infrastructure at plants – e.g., power and water supply, and lack of relevant skills and local talent in the sector[102].

d) Supply: distribution, sales & aftersales – independent and informal channels dominant, given lack of new vehicle market or professionalised services

Most downstream automotive sector activity in Ghana flows through independent dealer networks and informal aftersales providers. As with Nigeria (2.3.1), nearly all sales are imported used or locally used vehicles. These are predominantly sold through an unstructured, and oftentimes informal, network of independent dealers that source vehicles directly from foreign channels (i.e., dealerships in Dubai, USA or neighbouring transit hubs such as Nigeria, Togo or Benin).

Customers purchasing through such channels face challenges in verifying vehicle specifications (i.e., age, mileage) and quality assurance. More recently, online platforms have also emerged and gained popularity for individuals, private sellers and dealers to advertise used vehicles for sale online[103].

The low volume of new vehicles sold each year are primarily sold via official OEM distributors or appointed dealers, with warranties and aftersales services provided for purchased vehicles. Some OEM distributors

[102] Source: stakeholder interviews
[103] For example, jiji.com is an online marketplace for used vehicles, currently with presence in 5 countries including Ghana

also offer OEM-certified used car programmes but are typically more expensive and therefore not as popular as the unstructured network.

The aftersales market is estimated to total USD 500-575M as of 2019, with tyres accounting for approximately 30-45% of all parts sales. As with other countries in Sub-Saharan Africa the market is highly informal, with 70-80% of the market concentrated in informal SME businesses. The majority of private individual and SME vehicle owners in Ghana turn to informal garages due to a preference for cheap parts (particularly used and generic brands).

A full deep dive analysis of the Ghanaian aftersales market is shown in Appendix A: Ghana aftersales market deep dive based on quantitative and qualitative surveys conducted in November 2021 as part of this study. The aftersales market is relatively sizeable, with estimated annual sector revenue of USD 500-575M (equivalent to USD 250-290 per vehicle) of which tyres represent approximately 30-45% of total spend. The sector is highly fragmented and informal, with 70-80% of the market concentrated in informal SME businesses. In the formal sector, which represents 20-30% of the market, companies typically gain most of their revenue from B2B business and focus on repair and maintenance of new vehicles. They charge a premium for durability and quality of parts, as well as customer service and trust. The informal sector serves the majority of the B2C and SME base with low-cost offerings for older vehicles, with the median age of vehicles being above 10 years.

This high level of informal activity is predominantly driven by low consumer purchasing power and related sensitivity to pricing. Only 20% of Ghanaians can reasonably afford to repair and maintain a vehicle at the minimum possible spend level, while only 5% can afford to repair and maintain a vehicle with premium parts (e.g., OEM genuine originals) and services. As a result, average spend levels per vehicle are considerably lower in the informal sector, which serves customers with considerably cheaper product offerings; used parts represent the majority of informal business part sales.

e) Policy – GADP incentivises local assembly via tariffs & fiscal incentives, with positive steps towards full implementation; OEMs attracted for small-scale SKD

The Ghana Automotive Development Policy (GADP) was launched in 2018 to kickstart local automotive production, with the aim of establishing Ghana as a "fully integrated and competitive (automotive) industrial hub" in the region. GADP also established the Auto Desk under the Ministry of Trade and Industry (MOTI) to provide support to prospective automotive investors. Support under the GADP covers fiscal incentives to local manufacturers, restrictions on imports, and initiatives to stimulate local demand (Table 2-2).

Table 2-2: Ghana Automotive Development Policy (GADP) 2018 – summary[104]

Key pillars	Policy action
Incentivizing local manufacturing	Tax Holidays • Corporate Tax holiday of 5yrs for enhanced SKD Registered Assemblers • Corporate Tax holiday of 10yrs to CKD Registered Assemblers Preferential duties • Exemption of import duties and related charges on any plant, machinery, equipment and parts for Registered Assemblers Value based duty rebate scheme on CBUs

[104] Source: Ministry of Trade & Industry; Expert interviews; Press search

	• Multiplier rebates for SKD (1x), Enhanced SKD and CKD (2x) based on number of units assembled • Rebates on Local Content manufacturing Streamlined Processes at the Port • Direct Port Delivery Procedure and Dedicated quay to for all cargo consignments imported by Registered Assemblers
Restricting and disincentivizing imports	Import duties and levies • Increased duties: 35% of CIF value on all vehicles as Import Duty on New and Used Vehicles for Non-Registered assemblers (vs 5-20% prior) Import restrictions on older used vehicles • Ban on vehicles>10yrs, vehicles assembled from parts imported as spare, salvaged and flooded vehicles.
Promoting market development and trade	Vehicle Financing Schemes • Asset based vehicle financing scheme to promote the purchase of locally assembled vehicles and vehicles imported by local assemblers Government Procurement and Patronage • Preferential procurement policy for program vehicles Export development • Promotion and export of locally assembled vehicles to the ECOWAS market Industrial infrastructure • Establishment of a purpose-built Automotive Park (in progress) and Automotive Development Support Centre

The policy has been well received by potential investors, triggering market entry from several global OEMs for small-scale SKD assembly (as discussed above). The policy provides more favourable fiscal incentives than most other policies in Sub-Saharan Africa (e.g., Kenya's Draft NAP, Nigeria's NAIDP), and is the only policy outside of South Africa and North Africa to have been written into legislature. In 2020, the GADP was enacted into law under the Customs (Amendment) Act.

However, some provisions were deferred until further notice, such as the increase in import duties and ban on vehicles older than ten years (Table B3 in Appendix).

Based on discussions with the government, the rationale for the deferral (most likely until 2022) was to allow sufficient time for local assembly ramp-up so as not to cause a sudden supply shock in the vehicle market[105]. Other countries in the region have typically struggled to implement such restrictions, due to strong lobbying from import dealerships and the potential impact on in prices.

Additionally, Ghana is less restrictive on used imports than some countries (e.g., Kenya, Ethiopia and South Africa have tighter age limits or complete bans). Used import restrictions have typically been critical in incentivising a shift from used imports to new vehicles. Without such restrictions, the new vehicle sales market may not be sufficient to support a sizeable local assembly footprint over the medium-term. There have been some early indications that future policy actions will be considered, such as further age limits (i.e., phased ban on used imports), local supply-chain development and NEV policy, which would enable local assemblers to further boost competitiveness.

In the aftersales market, the government is considering the introduction of regulations and implement standards for spare parts through the revised Road Traffic Act (currently being debated in Parliament).

[105] Source: Government stakeholder interviews, conducted July-Sep 2021

f) Emerging trends: regional trade integration – limited near-term export potential to ECOWAS due to high ROO, NTBs and likely protectionism from partners

Ghana is part of the ECOWAS customs union in West Africa, which was established in 1975 with 15 member countries and has a total population size of 400M. Ghana has duty-free access for CBU exports and components to the rest of the region under the ECOWAS customs union, a market of 850K vehicle sales in 2019 (of which 10% were new vehicle sales).

While Ghana has regional advantages given a relatively conducive business environment and recent automotive policy implementation, some limitations remain such as restrictive ROO[106]. Additionally, Nigeria's own ambitions as an automotive producer may limit opportunities for Ghana to export to Nigeria due to protectionist policies[107]. Finally, regional export is hindered by competitiveness challenges including relatively higher cost of production (vs. imports), high transport/logistics costs, and other non-tariff barriers (e.g., lengthy customs processes). Export potential under the recent AfCFTA is also likely to be limited in the medium-term given similar challenges with ROO, protectionism and transport/logistics barriers.

If these hurdles are overcome, ECOWAS (excluding Nigeria) presents an additional 300K vehicle sale a year (35K new), in addition to the relatively small local Ghanaian market. In 2018, ECOWAS country representatives and experts met in Abuja, Nigeria to launch development of a regional automotive industry policy that would boost production and promote regional value chains. Despite strong interest at the time, there has been limited action to date.

g) Emerging trends: CASE - Shared mobility growing, some activity in NEV, whilst Autonomous and Connected less promising

The rise of CASE trends is currently relatively nascent in Ghana, as in other Sub-Saharan African markets, but with some emerging activity and potential for the future:

- **Shared mobility:** Platforms and digitally enabled solutions in Ghana has risen rapidly over the last 5 years- supported by growing mobile penetration and upper/middle income consumer class. The shared mobility ecosystem includes local and international players, including Bolt and Uber for car sharing.
- **NEV:** The government is pushing to boost uptake of NEVs in Ghana to generate demand for excess grid generation capacity - nearly 100GWh in excess were generated in 2019; sufficient to charge up to 1.5M NEVs. The availability of excess electricity in Ghana, unlike other SSA countries, is a strong enabler for NEV uptake but issues with power reliability and costs persist. Furthermore, consumer demand for new vehicles and NEVs is presently very low due to lack of affordability such that NEVs are not expected to reach critical mass for private companies to invest in NEV related infrastructure. The government is taking actions to promote NEV demand via its 2020 Drive Electric Initiative through the installation of public charging infrastructure and launch of public E-buses, although this remains at small-scale relative to global efforts. Looking forward, the GoG is also developing a national e-mobility policy including tax credits for NEVs/users and manufacturers. However, fiscal constraints limit government's ability to invest therefore requiring private sector collaboration to further development in the NEV space.

[106] Duty-free vehicle export is subject to 30% regional content requirement under ECOWAS Rules of Origin (ROO); Ghana presently has less than 5% local content usage

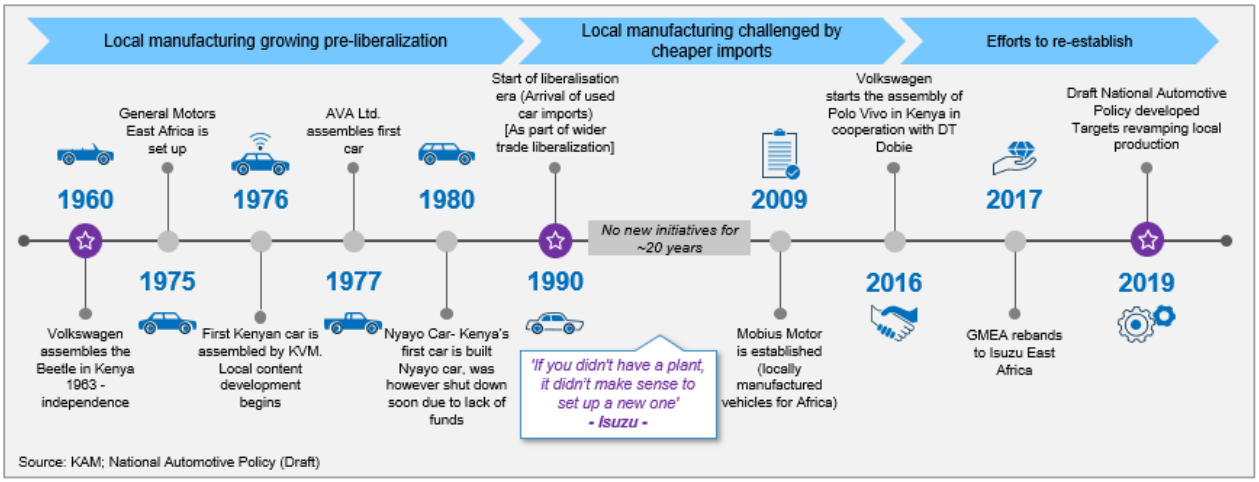
[107] It may be challenging to access the Nigerian market due to likely protectionism i.e., unilateral measures that Nigeria may enforce to protect its domestic automotive market

- **Autonomous and Connected vehicles:** Uptake is currently challenged due to lack of necessary infrastructure and technology to support. Key barriers include network reliability and uncoordinated road networks. For Connected, there is scope for usage in B2B services in fleet management and cargo logistics, similar to the case in Nigeria, where Kobo360, an aggregator platform, has been successful in reducing inefficiency and corruption in on-road cargo logistics.

2.3.4 Kenya: baseline and emerging trends

Executive summary

- **Africa's 7th largest economy** by GDP with a population of 53M and access to East Africa; relatively favourable business climate driving increased investment
- Low vehicle parc and **low volume of new** sales (13K, less than 15% of total sales) due to **used import dominance** driven by low affordability
- Assembly footprint since 1960s but **production still minimal today** (8K in '19, mostly CV SKD/CKD), with underutilised capacity (20%) and low local content (<20%)
- Recent government **policy drafted (NAP 2019)** to revamp local industry including used vehicle imports age limits, **yet to be implemented** amid strong lobbying
- Regional access via **EAC would double addressable market** for Kenyan assemblers, but **high ROO requirements on SKD** assembled cars limit near-term access to CV
- **Aftersales market is relatively small and highly informal** due to affordability challenges and limited regulation and standards
- **Shared mobility uptake increasing** in Kenya, **some activity in Connected** in B2B logistics while NEV and Autonomous remain less promising



Source: KAM, National Automotive Policy (Draft), press search, stakeholder interviews

Figure 2-24: Timeline of automotive industry evolution in Kenya

a) Macro-economic context – 7th largest economy with large population of 54M and growing consumer class, with access to regional trade networks

Kenya is Africa's 7th largest economy with GDP of USD 96B, and the richest country in East Africa with GDP per capita of USD 1,800[108]. It is one of the largest populations in the region at 53M, with a growing consumer class[109] (2.8M out of 12.2M households, growing at 8% CAGR). In recent years Kenya has had a relatively stable political and macroeconomic environment, and it has increasingly become a hub for investment and innovation within East Africa[110], ranking 2nd to Nigeria in venture capital investments at USD 305M raised in 2020 alone[111]. Nonetheless, manufacturing activity remains low at 10% of GDP (global average of 16%[112]).

Like many others, the economy suffered considerably following the COVID-19 pandemic. Approximately 2M Kenyans fell into poverty and another 900K lost employment. Nonetheless, a quick recovery is expected by 2021 (8% economic growth). However, some key hurdles will remain, mainly rising government debt (currently more than 65% of the GDP) and the high fiscal deficit (7.5% of GDP).

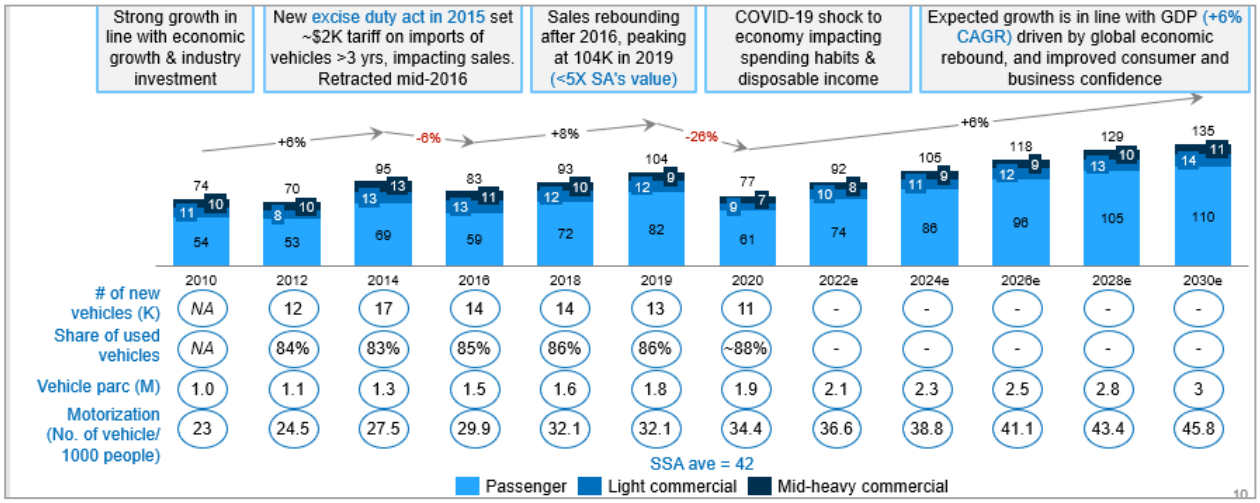
b) Demand – small car parc despite sizeable population due to low purchasing power, but growing through used imports; very low new vehicle sales

As of 2020, there were 2M vehicles on Kenyan roads, representing a low motorisation rate of just 34 vehicles per thousand people (global average of 180). Car parc has doubled since 2010 (7% CAGR), however, and is expected to rise to 3M by 2030 (6% CAGR), broadly in line with GDP growth.[113] This growth has come almost entirely from import of used vehicles.

The low level of motorisation is similarly reflected in vehicle sales. Just 104K vehicles were newly registered in Kenya in 2019, and of those, only 13K were new. Almost 90% of vehicles are used imports from markets such as Japan, South Africa, and Europe.

Historically total sales have broadly tracked GDP growth, with two significant sales drops in the market over the past decade caused by an increase in import tariffs (2015) and the COVID-19 pandemic (2020). New vehicle sales have remained relatively flat over the past decade, with all growth coming from used imports. PVs account for approximately 80% of vehicle registrations each year, while light and mid-heavy CVs make up 12% and 9% respectively (Figure 2-25).

[108] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[109] Consumer class defined as population with income > USD 10K
[110] Source: IMF, Business Daily Africa, Business Insider
[111] Source: World Economic Forum
[112] Source: The World bank Group, Business Wire
[113] Sources: IHS Markit, Fitch, Oxford Economics, UN/Haver Analytics, BCG analysis



Source: IHS Markit, Fitch, Oxford Economics, UN/Haver Analytics, BCG analysis

Figure 2-25: Kenya total vehicle sales – imports and locally assembled (thousand units), 2010-30e

The small size of the new vehicle market and prevalence of used vehicles is predominantly driven by affordability challenges. Vehicle financing options have punitively high rates (close to 15% on average[114]) and have strict repayment terms, limiting their accessibility to the majority of Kenyans. As a result, only the upper and upper-middle class can afford cars (12% of Kenyans)[115]. A much smaller share of Kenyans can afford new cars, which are typically two to three times as expensive as used (imported) cars.

Tied to affordability, prospective buyers in Kenya place importance on brand credibility, vehicle durability, and fuel efficiency[116]. Low running costs, the availability of cheap parts and solid resale values drive a significant part of vehicle purchasing decisions. In addition, Kenyans prefer to purchase older vehicles, typically six to eight years old, in line with the government's ten-year limit for used vehicle imports. Toyota leads sales of imported used and locally used vehicles with approximately 50% share of PV sales, also recording the 3rd highest sales in the more fragmented CV market with 12% share, behind Isuzu (40%) and Mitsubishi (25%)[117].

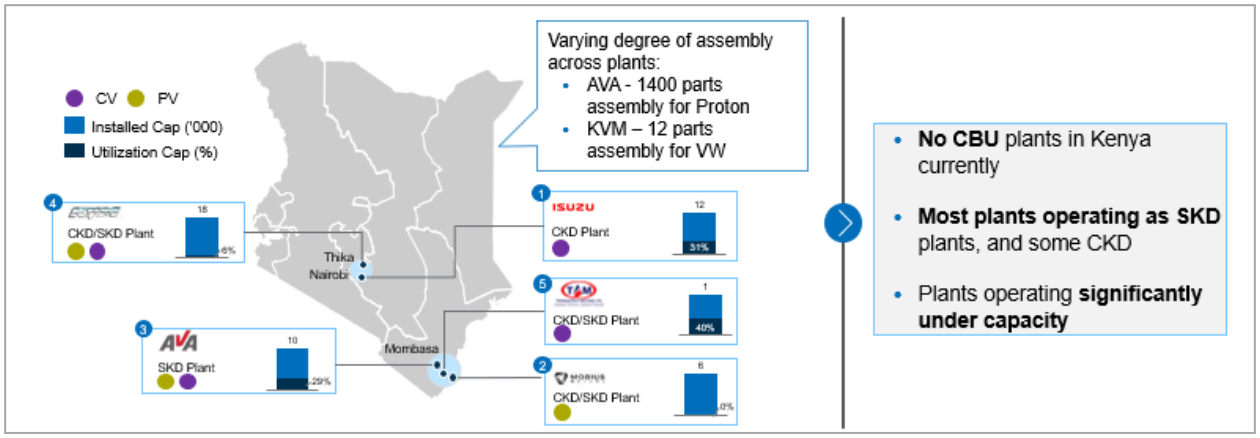
c) Supply: vehicle and component manufacturing – assembly and component production remain limited due to low new vehicle demand, import competition

Kenya's auto industry dates to the 1960s, with a wave of entry in the 1970s that still defines the landscape today. Foreign OEM General Motors entered in 1975 by forming GM East Africa[118], followed by local multi-brand assemblers Kenya Vehicle Manufacturers (KVM) in 1976 and Associated Vehicle Assemblers (AVA) in 1977). Local production peaked in 1989 at a still relatively modest 13K units. Trade liberalization from 1990 onwards opened the automotive market to cheaper imports (new and used), challenging the competitiveness of local assembly. The industry has stagnated since, with limited additional investment beyond local start-up Mobius Motors (established in 2009).

Today, Kenya has five operational production plants (Figure 2-26). AVA, KVM and, to a smaller extent, Trans Africa Motors conduct multi-brand assembly for more than twenty different brands collectively.

[114] Source: EIU, Kenya Central Bank, Press search
[115] Sources: Oxford Economics, Fitch Report, 2019 Kenyan Census, Kenya Households Budgetary Survey 2016, BCG Analysis
[116] Source: BCG Africa Consumer Sentiment Survey for Automotive, 2018
[117] Sources: Jiji.co.ke; press search; BCG Analysis
[118] Now Isuzu East Africa

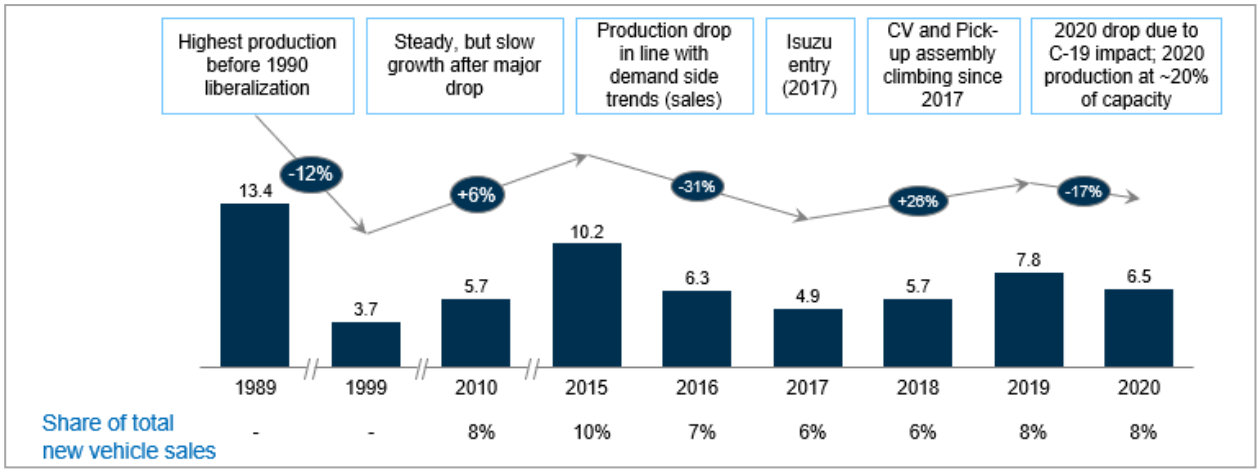
Isuzu East Africa (formerly GM East Africa) is the only 100% owned Isuzu plant outside of Japan and is focused on CV assembly. Mobius Motors is the only local brand.



Source: KAM, BCG analysis

Figure 2-26: Kenya's production plants

Combined, these five plants have a 47K installed capacity but produce only 5-10K vehicles annually (Figure 2-27). Production has been low and inconsistent over the past decade, showing no clear upward trajectory even after Isuzu's investment into GM East Africa, although an uptick in LCV pickup production from Isuzu and several other brands has been observed.



Source: Fitch, stakeholder interviews, BCG analysis

Figure 2-27: Kenya total vehicle production (thousand units), 1989-2020

Production is predominantly low value-add, with less than 10% of content being produced locally (on average). Kenya has around 40 component, aftersales parts, and body manufacturers, but they are small in scale and typically operate under capacity. This is due to local supplier challenges in meeting efficient levels of scale and OEM standards (raw materials, processes and quality specifications), despite certain components being subject to tariffs as part of government efforts to drive localisation.

Localisation levels are higher for CV, where CKD assembly is more feasible due to differing scale and quality requirements. Conversely, PVs are typically assembled by SKD due to inadequate scale for modern PV processes (e.g., painting / coating).

Since consumer affordability is a key hurdle in the Kenyan market, most of production today is in Light and Mid-Heavy CV due to more stable and profitable new vehicle demand from government and corporate purchases. Additionally, opportunities for expansion exist for CVs – the NAP proposes a used import ban on buses and trucks, opening the market for local assembled options. Meanwhile, PV production remains challenged by cheaper used imports, with a slower implementation of import age restrictions expected. Some brands and assemblers are attempting to drive price competitiveness against used imports, such as Mahindra & Mahindra and Proton, but they have been unable to capture a large portion of the market due to a perception of low quality to date.

d) Supply: distribution, sales, and aftersales – dominated by informal channels with high degree of cheap imports (used vehicles and low-quality parts)

Vehicle distribution in Kenya is through a mixture of official OEM channels, unstructured independent dealer networks and private sellers. As in other countries in this study (e.g., Nigeria, Ghana), official OEM channels and appointed dealers are the predominant channels for new vehicle sales. They typically provide warranties and aftersales services. Independent dealers are the primary channel for used vehicles (import & locally used) and tend to be individual dealerships or informal networks that source from developed markets. Imports constitute 90-95% of all vehicle sales (98K of 104K units in 2019), excluding the second-hand local market. Japan leads in source of imports across the board, constituting 80% of PV imports followed by the UK and South Africa (8% and 4% respectively). This is in part driven by the high demand for the same vehicle configuration (drive on left-side of road). For CV, 50% of the imports are from Japan, followed by South Africa (16%), China (10%) and India (7%).

In the aftersales market, tyre market comprises a significant portion of total sales and are typically low-cost, with a high wear-and-tear rate. A large share of their sales is through formal channels from manufacturers such as AutoXpress, Kingsway Tyres, Maxxis, and Silverstone. The rest of the aftersales market is highly informal (approximately 70% of activity), through small-scale garages and shops colloquially known as "Jua Kali". The prevalence of the informal sector is due to lower cost and widespread footprint, as well as limited standards or regulations regarding vehicle roadworthiness inspections and part quality standards.

e) Policy – draft National Automotive Policy (NAP) in place but yet to be legislated; potential to boost local assembly if fully implemented but historic challenges

The National Automotive Policy (NAP) was drafted in 2019 with the vision of promoting local assembly and manufacturing relative to both new and used imports, as well as supporting local component manufacturing. Key policy levers focus on import restrictions and fiscal incentives for local producers, as below:

- Tariffs on all CBU imports of 35% (excluding EAC)
- **Phased used import ban**, phasing out used CVs immediately and used PVs by 2024 following the schedule below:
  - 8-year to 5-year-old in 2020
  - 5-years to 3-year-old in 2022
  - 3-years to zero (complete ban on used PV) in 2024
    - Note: implementation currently delayed
- **Removal of the 20% excise duty** on locally assembled vehicles – *already implemented*
- **Fiscal incentives for component producers**, targeting 40% local content by 2030
- **Priority public procurement** to local manufacturers/assemblers

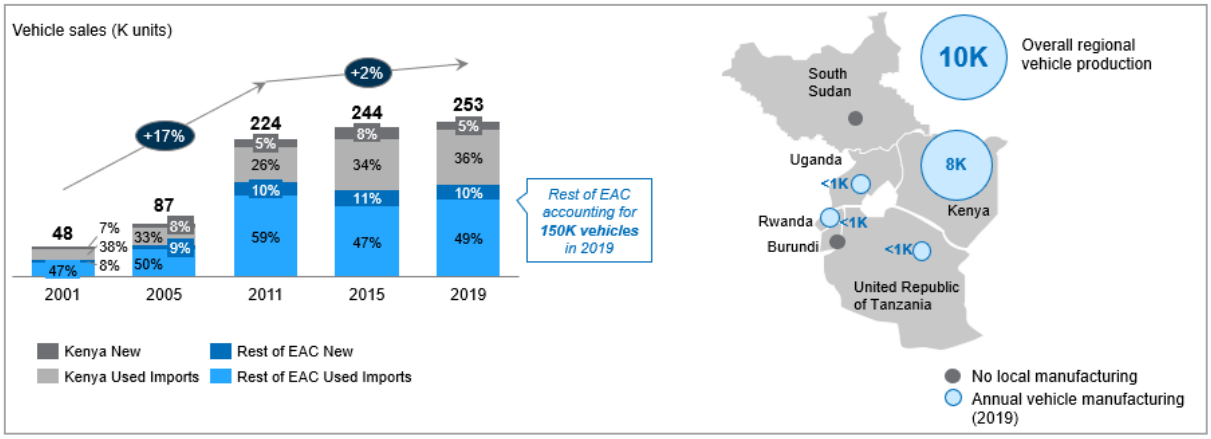
The net result of the above measures is that new imports would receive 50% higher taxes/levies compared to their locally assembled counterparts, while used imports would be phased out over time. This would significantly improve the competitive position of local assemblers, although the policy currently stops short of more comprehensive incentives to stimulate consumer demand (e.g., consumer vehicle financing programmes) or further develop infrastructure (e.g., dedicated automotive industrial parks).

The NAP has, however, encountered opposition – particularly from existing importers and dealerships that would be severely impacted by planned used import restrictions. In addition, such bans would likely increase the average cost to consumers considerably, at least in the short- to medium-term. Finally, vehicle imports generate approximately USD 400-600M for the country. A portion of this revenue would be at risk in the near-term due to reduced vehicle demand as tariffs increase, a trade-off with future potential revenues from a growing domestic sector.

Previous attempts to raise import tariffs and restrict used imports have been retracted or revised as a result of such opposition (in 2015, 2019 and 2020). As a result, there is currently a lack of clarity and confidence surrounding implementation and timing of the NAP.

f) Emerging trends: regional trade integration – EAC can potentially double market, but hampered by ROO requirements & NTBs; AfCFTA impact limited near-term

Kenya is part of the East Africa Community (EAC), one of Africa's smaller (177M population) but most integrated regional economic communities (RECs). Within EAC, Kenya has the most developed automotive industry (80% of total production), and the EAC presents an opportunity to double its addressable vehicle market (Figure 2-28). Excluding Kenya, the other five countries represent a combined 150K vehicles market (25K new), mostly in Tanzania and Uganda.



Source: KMI, Trade Map, BCG analysis

Figure 2-28: EAC market opportunity for Kenya

However, automotive trade within EAC is currently limited due to lack of competitiveness of locally produced vehicles, and restrictive ROO. It has a 25% ROO requirement on SKD vehicles, which Kenyan PV producers are not currently able to fulfil. CKD assembled vehicles do not face the same ROO, providing an opportunity for Kenyan CV assemblers already using CKD.

Additionally, non-tariff barriers and country-specific taxes such as excise tax add to the cost of vehicles, creating up to a 20% price difference for vehicles. Consequently, virtually all EAC vehicles come from outside the region, mostly imported from Japan and China. In efforts to revamp regional vehicle trade, EAC

is developing an auto sector policy to standardize regional definitions and drive local assembly, but no progress has been made since draft in 2014[119].

Outside EAC, the 40% proposed AfCFTA ROO vs Kenya's less than 10% local component integration is likely to limit Kenya's access to the continental market.

g) Emerging trends: CASE – Shared mobility uptake rising, increasing growth in Connected, Autonomous and NEV unlikely to pick up soon

Leveraging the increasing use of mobile technology and digital networks[120], Kenya has quickly adopted innovative mobility trends over the past few years, which have helped solve some of the challenges of traditional transport networks like congestion. However, the uptake of these emerging trends is still relatively low as traditional transport options (motorcycles, matatus, buses) retain dominance due to their low cost and ubiquity in both urban and rural areas.

- **Connected vehicles**: spreading usage in business-to-business (B2B) services for last mile delivery, fleet management, and cargo logistics. Business-to-consumer (B2C) service is still a nascent market due to prevalence of old cars and imports catered to origin markets. In 2019, connected vehicles comprised 12% of vehicle sales in Kenya, and are expected to grow to more than 90% in 2030 in line with global trends, supported by policy initiatives to ban used vehicle imports.
- **Shared mobility**: more than ten transport and mobility solution service companies are already operational in Kenya with strong investment backing. Their growth has been sustained by the growing consumer class, coupled with OEM support e.g., Toyota, which has invested in mobility start-ups such as Sendy through their Corporate Venture Capital, Mobility 54.
- **Autonomous and NEV:** uptake is currently limited due to lack of necessary infrastructure and supporting technology. Autonomous vehicles are unlikely to endure Kenya's rough highways and unstructured road networks (just like in Nigeria), while electric vehicles are inhibited by high electricity costs despite relatively high accessibility[121]. However, there are emerging start-ups that produce electric motorcycles locally.

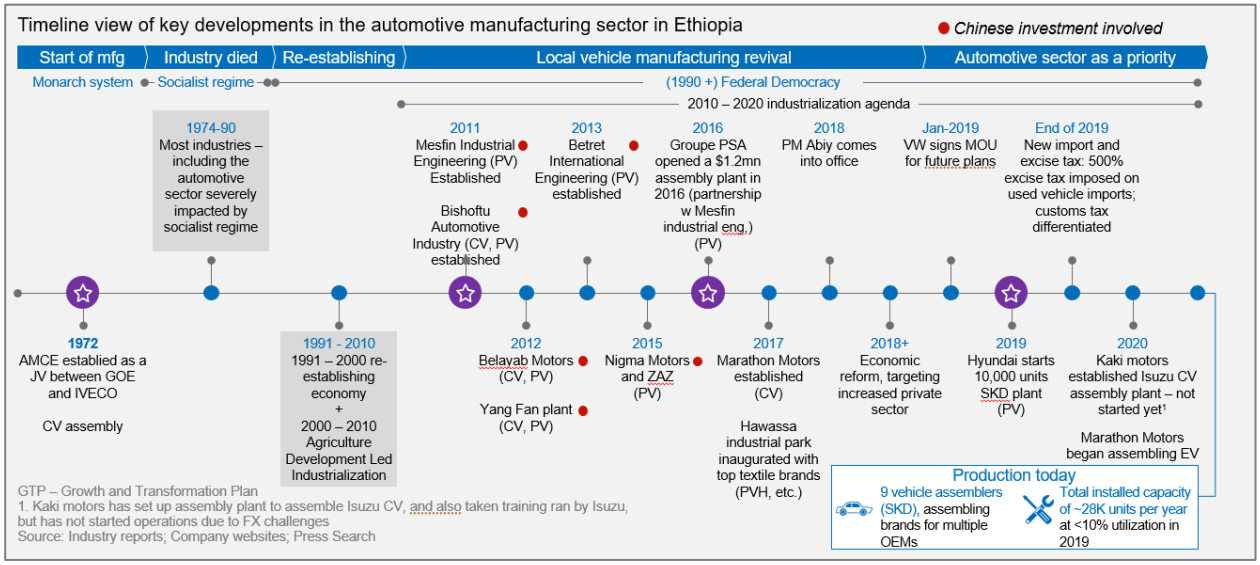
2.3.5 Ethiopia: baseline and emerging trends

Executive summary

- **2nd largest population in Africa with low-income level:** Africa's 6th highest GDP (USD 96B in 2019), forecast to grow at 5% up to 2030; Low GDP per capita of USD 855
- **Historically state-led economy** with key sectors dominated by state-owned enterprises, but **recent privatisation** wave attracting considerable foreign investment
- **However, macroeconomic challenges to business remain** – severe FX shortages, high currency depreciation and inflation rate
- **One of lowest motorization rates in the world** at 8 per 1,000 people with historically very low new vehicle sales (<10K), driven by low income and high excise taxes
- **However, major shift to new cars in 2020 following excise tax overhaul** – from 22% of total sales in 2019 to an estimated 80% by second half of 2020

[119] East Africa Trade and Transport Facilitation project
[120] 81% of Kenyans have access to internet – highest in Sub-Saharan Africa
[121] Kenya ranked 71st of 190 countries globally in accessibility of electricity. Source: World Bank, 2020 Doing Business Report

- **Local vehicle assembly remains minimal (~1K annually)** across 9 SKD plants due to limited access to FX and limited clear incentives to produce locally
- **Currently no cross-cutting sector policy in place but under development**



Source: Industry reports, company websites, press search

Figure 2-29: Timeline of automotive industry evolution in Ethiopia

a) Macroeconomic context – Large underdeveloped market with considerable potential as privatisation unlocks investment opportunities, if stability achieved

Ethiopia is the second most populous country in Africa with a 112M population in 2019 but is also one of the poorest, with a GDP per capita of USD 855 in 2019[122] (35th in Africa). It has achieved strong economic growth, averaging of 9.5% real GDP growth over the past decade[123], supported by gradual liberalisation of the economy.

Key industries have historically been dominated by state owned enterprises, with the banking, telecommunication, transportation, and energy sectors under government control. However, there has been a drive to privatise state owned enterprises under Prime Minister Abiy Ahmed, with a consortium made up of Safaricom, Sumitomo, and Vodacom successful in their bid to privatise Ethio Telecom. Investment has surged, with Ethiopia attracting USD 17B in FDI over the past 5 years (4th highest in Africa)[124].

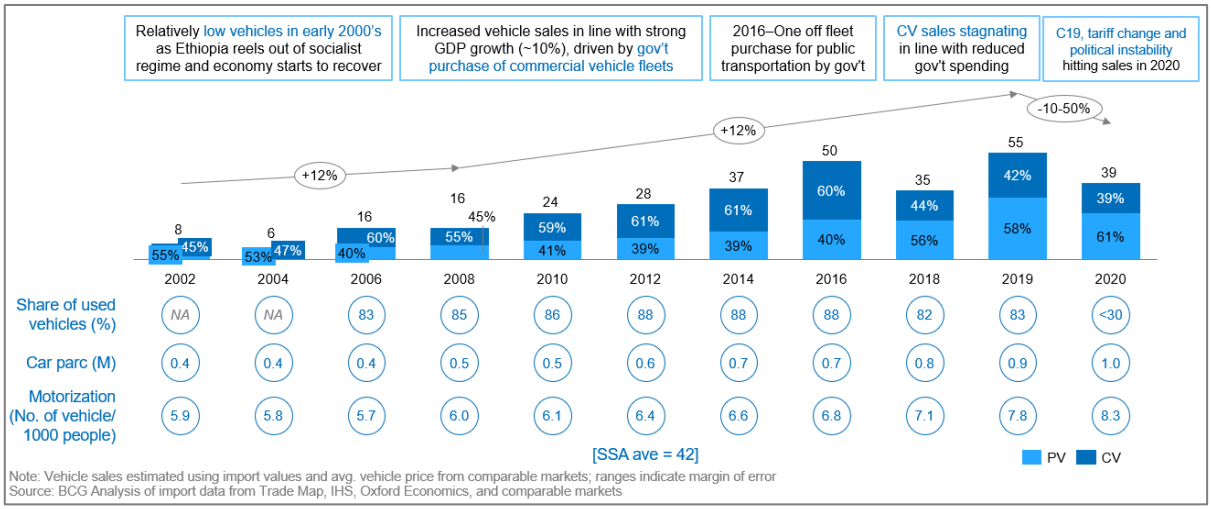
Nonetheless, the Ethiopian economy has faced significant challenges in recent years, with high inflation (averaging 13% over the last decade) and depreciation of the Ethiopian Birr (ETB) by half since 2015[125]. High trade deficits and external debt-funded public investment[126] have led to severely limited access to foreign currency and difficulty repatriating profits. Political instability has heightened with civil conflict in Tigray province since late 2020. This has threatened relationships with key global allies such as the US – however foreign investment levels are expected to remain high in the medium-term[127].

[122] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[123] Source: IMF
[124] Source: UNCTAD FDI data, 2015-19
[125] Source: World Bank, National Bank of Ethiopia
[126] Source: IMF
[127] Source: Economist Intelligence Unit (EIU)

b) Demand – Very low motorisation rate due to weak purchasing power, high taxes; new sales historically negligible but recent shift due to major excise tax change

Ethiopia has one of the lowest motorisation rates in the world at 8 vehicles per 1,000 people (a quarter of the level in Kenya). Low vehicle ownership stems from Ethiopia's low-income level, as well as the high price of vehicles due to significant taxation on imports. Pre-2020, net taxes increased the price of a vehicle by over 200% on the imported value[128], one of the most restrictive tax structures observed globally. Additionally, a lack of access to foreign exchange (FX) and currency depreciation has further limited access and affordability.

Despite a small vehicle parc, sales have doubled in the past decade – from under 25K in 2010 to approximately 55K in 2019 (Figure 2-30).



Source: Trade Map, IHS, Oxford Economics, BCG analysis

Figure 2-30: Vehicle sales[129] in Ethiopia by segment (thousand units), 2002-20

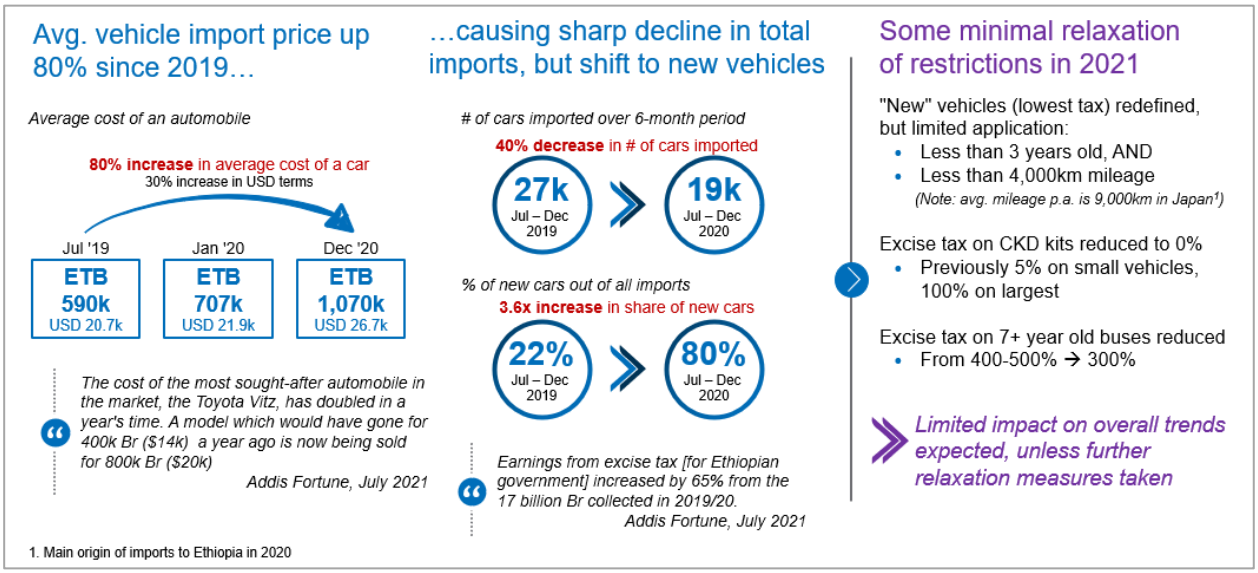
The rise was driven by a rapidly growing economy and increased government purchase of commercial vehicles. New vehicles have historically remained below 15%[130] of sales in Ethiopia, with consumers opting to import heavily used vehicles from developed markets (average age of more than 12 years[131]). Used imported vehicles are typically three to four times cheaper than new vehicles, having seen significant depreciation in value[132]. CVs have historically been a significant driver of demand for new vehicles, making up 40-70%[133] of sales. This is due to periodic government purchases, better access to financing for corporations, and duty-free importation. A previous mandate to source locally assembled vehicles wherever possible was mostly fulfilled by state-owned Bishoftu Automotive Engineering Industry, but the mandate is now only applied to pick-up vehicles.[134]

In 2020, a new structure for excise taxes was introduced that strongly incentivises purchase of new vehicles by decreasing tax rate on new smaller vehicles, while exponentially increasing tax rates for older vehicles

[128] Source: Ethiopian Customs Commission; BCG analysis
[129] Calculated from Trade Map and triangulated with stakeholder interviews; Total sales include all additions to national vehicle parc: new vehicle imports, used vehicle imports & locally assembled vehicles
[130] Source: Stakeholder interviews
[131] Source: UNEP
[132] Source: Stakeholder interviews
[133] Source: Stakeholder interviews
[134] Source: Stakeholder interviews

(Figure B5 in Appendix). This differs from the previous excise tax structure, that was based only on engine size.

The impact of the shift in excise tax has been swift and profound. Since its introduction, the average import price has risen by 80% in ETB terms (from ETB 590K to ETB 1.1M between July 2019 to December 2020) and 30% in USD terms (from USD 21K to USD 27K in the same period). The effect has been twofold, with a volume impact and a shift in the new to used vehicle ratio. Overall import levels have dropped by 40% (from 27K between July to December 2019 to 19K between July to December 2020[135]) while in the same period, the share of new cars has increased by almost fourfold (from 22% to 80%). Some minimal relaxations of restrictions[136] were announced in July 2021[137] but are expected to have limited impact on overall trends unless further changes are implemented[138].



Source: Addis Fortune; the Reporter Ethiopia; BCG analysis

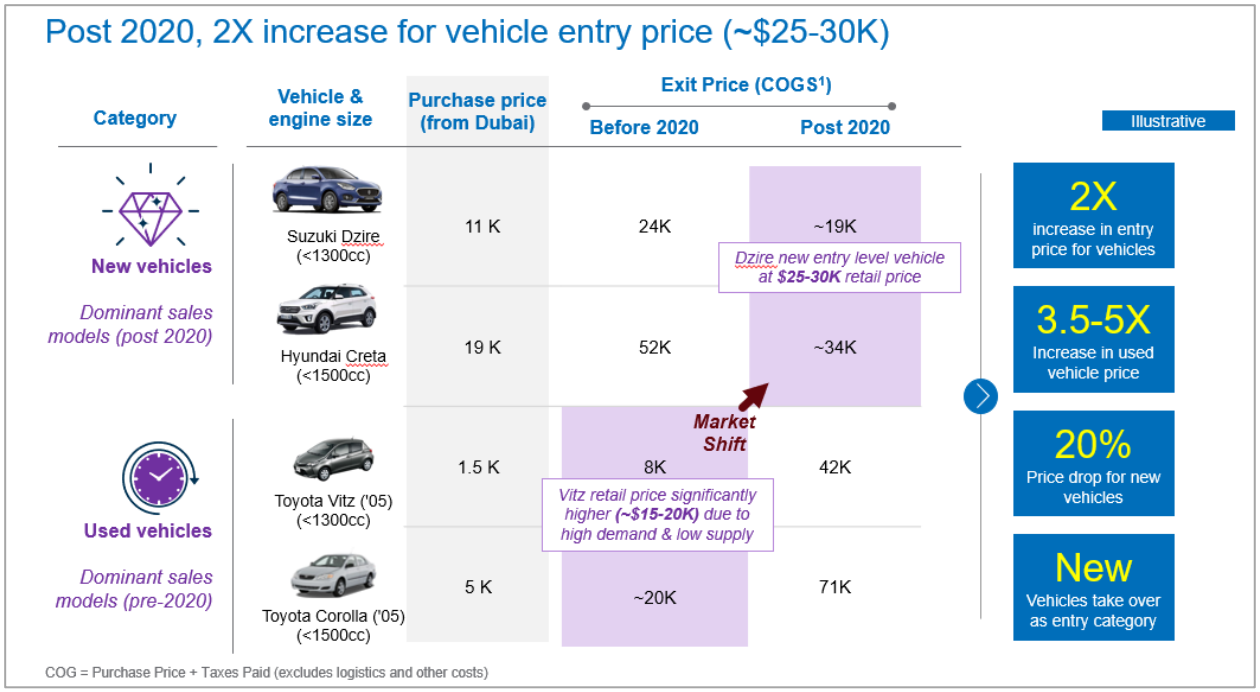
Figure 2-31: Impact of Ethiopia 2020 Excise Duty changes (summary)

As the attractiveness of used imports has reduced, there has been some increased demand for locally produced vehicles from Hyundai and Lifan. Other vehicles in high demand include the Suzuki Dzire produced in India, a small engine PV that incurs low taxes and is a trusted Japanese brand[139].

Volume losses can be explained further by looking at the lowest entry price point for vehicles. Prior to the tax change, the typical entry PV was a heavily used imported small car (e.g., 10-year-old Toyota Vitz). Post-2020, the price to consumers for such vehicles increased by 3.5 to 5 times. At the same time, new imported vehicle prices have dropped approximately 20% so that small PVs (e.g., Suzuki Dzire) are now the lowest price entry option (Figure 2-32). However, the net effect has been a twofold increase on the price of an entry point vehicle (irrespective of new vs. used)[140], such that only 0.1% of Ethiopian households earn

[135] Source: Addis Fortune
[136] Including redefining "new" vehicles to cars that are less than 3 years old and have less than 4,000 kilometres mileage, reduction of excise tax on CKD kits reduced to 0% (previously 5% on small vehicles, 100% on largest), and excise tax on buses more than 7 years old reduced from 400-500% to 300%
[137] Source: The Reporter Ethiopia
[138] Source: Stakeholder interview
[139] Source: Stakeholder interview
[140] Source: EIC; stakeholder interviews; BCG analysis

enough to afford vehicles[141]. There are further challenges to affordability due to limited access to vehicle financing[142].



Source: EIC; BCG interviews; BCG analysis

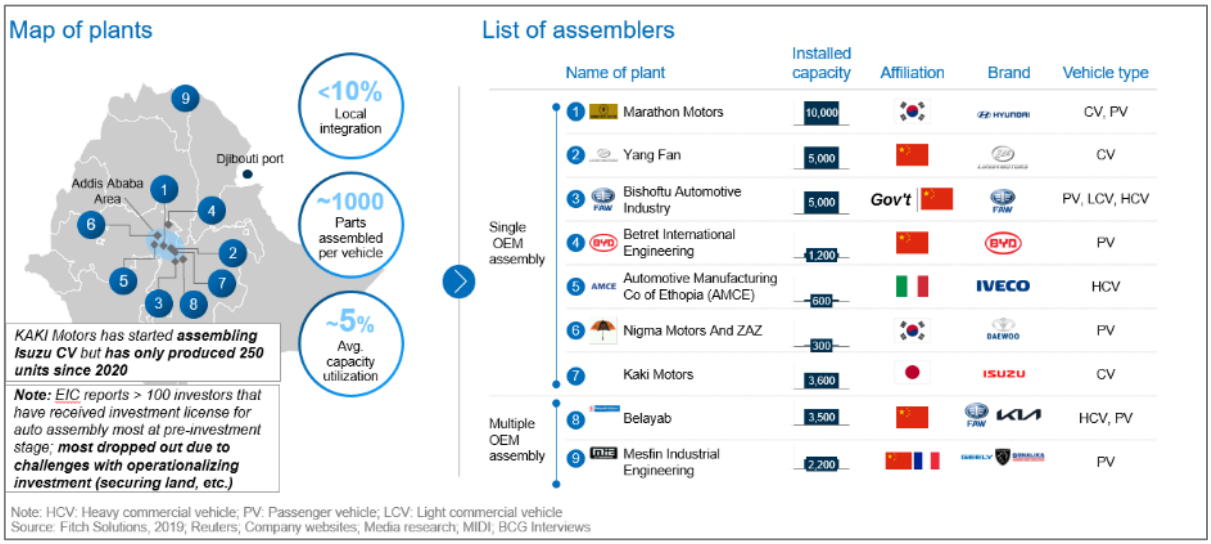
Figure 2-32: Impact of Ethiopia 2020 Excise Duty changes on vehicle entry price

c) Supply: vehicle and component manufacturing – 9 SKD plants but production minimal (~1K p.a.) due to FX shortage, lack of policy/incentives for local industry

With only one vehicle assembly plant operational before 2010, eight new assemblers entered the Ethiopian market between 2010 and 2020 during a period in which the Government of Ethiopia (GoE) increasingly promoted an industrialisation agenda under Growth Transformation Plan (GTP) I and II. Installed capacity reached an estimated 31K units as of end 2020, with most plants concentrated in the Addis Ababa region (Figure 2-33).

[141] Source: World Bank

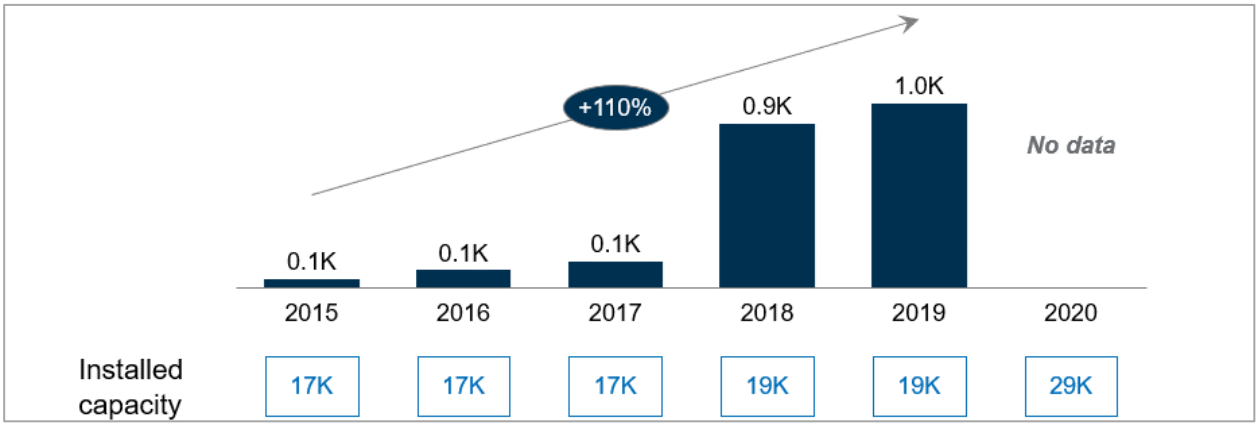
[142] Average annual interest rates are typically 14-19% (compared to 2% in Morocco, and 11% in South Africa) with a significant down payment of 30-60% (compared to 10% in South Africa, and 10-20% in Kenya).



Source: Fitch Solutions, Reuters, company websites, press search, MIDI, stakeholder interviews

Figure 2-33: Map of assembly plants in Ethiopia

The largest assembler by capacity is Marathon Motors (a joint venture funded by Hyundai and former long-distance runner Haile Gebrselassie), which entered the market in 2017. Most other recent entrants have involved Chinese investment, focusing on both the CV (Yang Fan, Bishoftu, Belayab) and PV spaces (Betret, Mesfin), often with local partners and/or state involvement (e.g., Bishoftu). Kaki Motors, the dealership for Isuzu, opened a plant in 2020 with a capacity of 3.6K but has produced less than 300 vehicles since operations began. Despite these investments, capacity utilisation remains very low with only 1K units estimated to be assembled in 2019 (Figure 2-34).



Source: MIDI, EIC, BCG analysis

Figure 2-34: Volume of vehicles assembled in Ethiopia, 2015-20 (thousand units)

Assemblers in Ethiopia have faced significant challenges in expanding production, including:

- **Competition from imports / government policy**: unlike other aspiring automotive hubs, Ethiopia has yet to approve a dedicated automotive sector policy. Relatedly, there is very limited incentivisation of local assembly relative to new imports at a given engine size, such that assemblers must compete with imported vehicles produced in globally efficient production plants
- **Lack of access to adequate forex**: major shortages in forex in recent years have impacted the ability to import assembly kits at scale, and within the required time frame. Further, profit repatriation is severely impacted for foreign owned corporations

- **Low availability of skilled workforce**: Skills development through the formal education system (e.g., TVET) and on-the-job training remains limited, leading to a shortage of highly trained technicians and engineers[143].

Volkswagen signed a memorandum of understanding (MoU) in January 2019 to build its fifth African manufacturing presence in Ethiopia at the time (after South Africa, Nigeria, Ghana, and Rwanda). However, there has been no further update since the original announcement amid continued macroeconomic and political challenges in Ethiopia.

Given limited local assembly, Ethiopia relies mostly on imports for its supply of vehicles. Value of imports grew exponentially in the 2000s and has continued to grow by 5% CAGR between 2010-2019, standing at around USD 1B in 2019. Japan represents 50% of the value of CV imports and 65% of the value of PV imports. Many Japanese vehicles are routed through Dubai's free trade zone, where vehicles undergo steering conversion from left-driving to right-driving configuration.

The local supply chain for components is also limited, with imports dominating the market. Local manufacturing is limited to low complexity parts such as mirrors, leaf springs, and fenders. While 52 component manufacturers (including 9 tyre manufacturers) are reported by the Ethiopia Investment Commission (EIC), plants remain highly underutilised. In 2020, Horizon Addis Tyre, which had a capacity to produce 800K tires annually, closed down having been running at 30-40% utilization in recent years[144]. An estimated 5% of components used in assembly are locally manufactured[145].

China is the largest component exporter to Ethiopia, with non-branded (generic) products making up the bulk of the share. OEM / OES parts are perceived as being high quality but expensive. Local component manufacturing faces further pressure from the proliferation of generic products, lack of local vehicle assembly, lack of forex access, and a fragmented aftersales market dominated by informal service providers.

d) Supply: distribution, sales & aftersales – fragmented market dominated by informal sector, formalization may increase as new vehicle sales grow

Distribution and sales in Ethiopia are through both official OEM dealerships and unstructured independent dealer networks. As with other countries in this study (e.g., Nigeria, Ghana, Kenya), official OEM channels and authorised dealers are the predominant channels for new vehicle purchases. They typically provide warranties and aftersales services. Independent dealers are the primary channel for used vehicles (import & locally used) and tend to be individual dealerships or informal networks that source from developed markets.

The aftersales and maintenance service market is highly fragmented and dominated by informal service providers. Small, independent garages are widely accessible and are typically used by consumers to undergo the mandatory annual vehicle inspection. The market has grown since 2020 as there has been an increased demand for original OEM parts for new vehicles, following the excise tax revision. Nonetheless, due to affordability challenges it is expected that many will continue to use cheaper white label products unless warranties become more mainstream.

[143] Issue identified by GIZ and currently being addressed through GIZ and AAAM project
[144] Source: the Reporter Ethiopia
[145] Source: stakeholder interview

The Federal Trade Authority (FTA) currently imposes a mandatory annual visual and technical assessment of key components to test roadworthiness. The implementation of annual inspection by licensed Inspection Centres has resulted in a demand spike around annual inspection periods for informal garages[146] where drivers seek maintenance and repairs to ensure their cars meet standards.

e) Policy – lack of auto sector policy has constrained competitiveness of assemblers, but draft in process that is expected to cover fiscal support & skills development

While industrialisation has been a leading priority for the GoE over recent years, it does not yet have a clear automotive sector policy or plan in place for the automotive industry – unlike other aspiring producers in the region. The sector has received government interest, as exhibited by the MoU signed between the Ethiopian Investment Commission (EIC) and VW in 2019. However, the recent major overhaul of excise tax did very little to improve the relative competitiveness of local producers in comparison to imports, although the incentivisation of new vs. used vehicles is a significant boost to the addressable market size.

Historically, a key challenge has been alignment across government institutions on their respective roles and mandates. Currently the Metal Industry Development Institute (MIDI), under the Ministry for Transport and Industry (MOTI), has been assigned to lead automotive sector issues. The EIC previously took a leading role, while the FTA and MOTI are also keenly interested in the sector – resulting in a lack of clarity within government and for stakeholders.

Stakeholders also mention inconsistent policy as one the major stumbling blocks for the industry (e.g., recently removed local assembly requirement for government fleet purchases). As industry associations remain nascent and little consultation takes place with the private sector, sudden changes in tax structure or other policy have damaged sector development and reduced investor appetite. For example, Kaki Motors built out an assembly plant with a capacity of 3,600 vehicles per year based on an understanding that government policy will support local assembly, which has yet to materialise. Kaki have produced less than 300 units in the two years that the plant has been in operation.

MIDI is currently in the process of drawing up a policy document that will clarify the long-term goals for the industry and the necessary fiscal and technical support to reach those goals, supported by GIZ. Current plans point to a draft by the end of September 2021, to then be shared to the cabinet by October for consideration. However, institutional shuffles and ongoing domestic turmoil might have caused delays in the process.

f) Emerging trends: regional integration – export potential to regional markets limited even within REC; AfCFTA impact limited in near-term

As Ethiopia's industry remains highly nascent and competitiveness is still low, export potential remains limited. This is further exacerbated by the lack of tariff-free export markets. Even though Ethiopia is a member of COMESA, it has yet to join COMESA's regional FTA.

Outside of COMESA, there have been ongoing discussions regarding Ethiopia joining the EAC, which have yet to materialize. If Ethiopia joins the EAC, the current ROO (25% local content requirement for SKD vehicles[147]) will continue to restrict export potential as Ethiopia currently has very low rates of local content integration. Additional NTBs and country-specific taxes add further cost to the price of vehicles.

[146] Source: stakeholder interview
[147] See Kenya section for details

Similarly, the 40% proposed AfCFTA ROO will limit access to the continental market unless revised. Finally, Ethiopia may protect automotive products from continental competition (e.g., CBU vehicles from SA) through the AfCFTA's "excluded items" provision.

g) Emerging trends: CASE – very nascent stages, but long-term potential to grow NEV given renewable energy infrastructure investments and political support

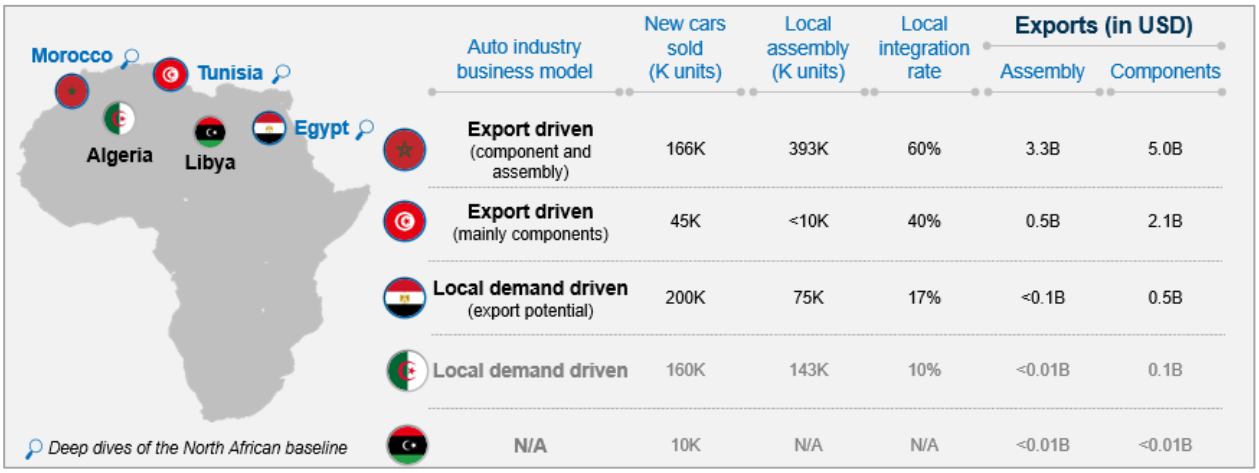
Ethiopia's automotive sector is currently at a very early stage regarding CASE trends, but some small-scale activity and emerging trends indicate long-term potential:

- **Connected vehicles**: limited current usage with few service providers for both B2B and B2C use cases due to low mobile penetration (20% of population[148]) and a still nascent technology ecosystem. Future growth likely based on increased number of new and connectivity-ready cars in the vehicle parc, as well as further reforms in telecommunications infrastructure increasing access to mobile internet.
- **Shared mobility**: several home-grown shared mobility services have emerged but at a limited scale. Market leaders including such as Ride, Feres, ZayRide, and Seregela, have capitalised on a vibrant and young start-up ecosystem. There is potential for continued growth as investments in digital payment and telecommunications (e.g., Safaricom entering mobile communications industry) are likely to continue.
- **NEV:** Ethiopia is one of very few countries where cheap electricity can be available through nearly fully renewable sources – pending the completion of the Grand Ethiopian Renaissance Dam, which would cement Ethiopia as a 100% green generator. With the excise tax change in 2020 also aimed at reducing emissions by shifting to more fuel-efficient newer, smaller-engine cars[149], government support for carbon neutrality has been strong. Hyundai has begun NEV assembly based on a "request put forth by the prime minister to the Hyundai president"[150], while there are plans to convert public buses in Addis Ababa to NEV in the near future[151]. Challenges around infrastructure development and affordability do exist, as with other Sub-Saharan African countries, that may challenge Ethiopia in its goal of 20% NEVs by 2030[152].

[148] Source: GSMA
[149] Source: stakeholder interview
[150] Source: Anadolu Agency
[151] Source: stakeholder interview
[152] Source: stakeholder interview

2.4 North Africa baseline and emerging trends

In recent years, the North African Belt has developed a local automotive industry with more than 600K annual vehicle production, USD 3.8B in vehicle exports and USD 7.6B in component exports as of 2019 (Figure 2-35). Morocco has been highly successful in attracting OEMs and suppliers, positioning itself as an emerging CBU export hub for European OEMs looking to nearshore vehicle and component production. Tunisia has also built a nearshore component export industry, while Egypt and Algeria assemble vehicles for relatively large local markets.



Auto industry business model	New cars sold (K units)	Local assembly (K units)	Local integration rate	Exports (in USD)	
				Assembly	Components
Export driven (component and assembly)	166K	393K	60%	3.3B	5.0B
Export driven (mainly components)	45K	<10K	40%	0.5B	2.1B
Local demand driven (export potential)	200K	75K	17%	<0.1B	0.5B
Local demand driven	160K	143K	10%	<0.01B	0.1B
N/A	10K	N/A	N/A	<0.01B	<0.01B

Source: IHS, Trade Map, press search

Figure 2-35: North Africa Belt automotive industry overview, 2019

This section analyses Morocco, Tunisia, and Egypt in more detail. Each deep dive reviews the current state of the automotive sector, future industry perspectives and key trends.

2.4.1 Morocco: baseline and emerging trends

a) Macroeconomic context – 5th largest African economy with strong growth forecast investment climate boosted by political stability, structural advantages

Morocco is Africa's 5th largest economy, with a population of 36M and relatively high GDP per capita for the region of USD 3,200[153]. Starting in the 1990s, a concerted programme of trade liberalisation and privatisation resulted in an open and competitive economy[154]. This built on political stability, as well as a strategic location that enables access to major global markets.

Morocco's competitive business landscape is further enabled by a strong infrastructure network (including the Tanger-Med Port complex), increasingly skilled low-cost labour force, and international free trade agreements with global markets such as the EU and US. Further analysis is provided in Section 3 of this Report (case study of Moroccan automotive industry).

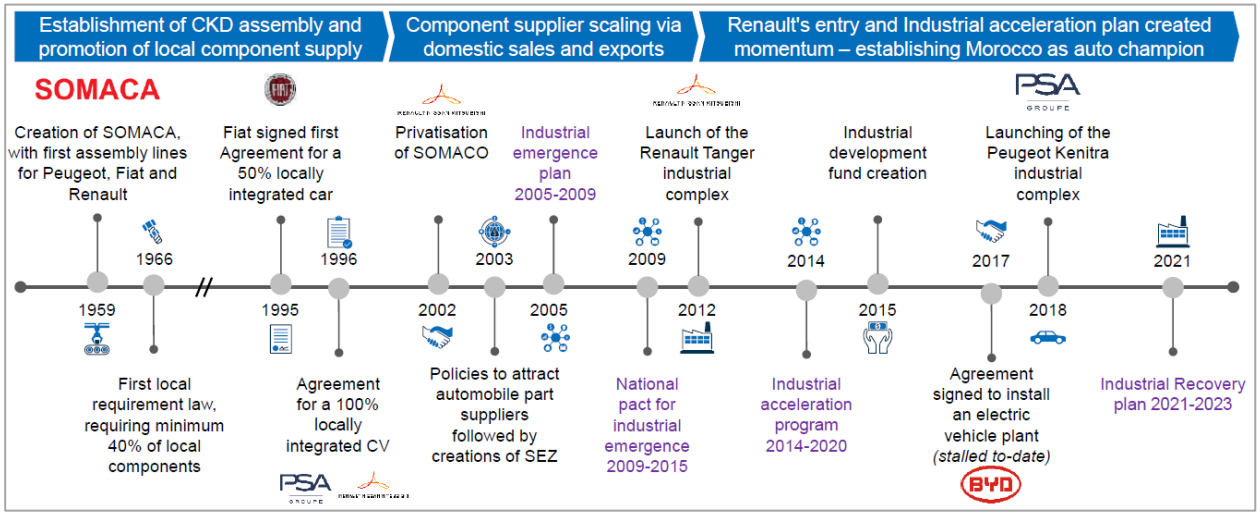
Morocco achieved steady economic growth of 3.4% between 2010 and 2019, but the effects of the COVID-19 pandemic caused a 7% drop in 2020 GDP[155]. Nonetheless, Morocco remains economically resilient and

[153] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[154] Placed 3rd in Africa in the World Bank's Ease of Doing Business Report 2021
[155] Source: The World Bank

is expected to bounce back quickly to full economic recovery by 2022, with a projected 3.9% GDP growth between 2021 and 2030.

b) Supply – grown to be champion of African automotive sector in 10 years in both vehicle and component manufacturing, built around nearshore export to EU

Vehicle assembly in Morocco started as early as 1959 with the creation of SOMACA, which had the first CKD assembly lines for Peugeot, Fiat, and Renault. Following a wave of privatisation and trade liberalisation starting in the 1990s, the local component supplier began to scale for domestic sales and exports, aided by policy and infrastructure investments. Then, over the past decade, Morocco has successfully attracted two major OEMs and many component suppliers through concerted efforts under the National Pact for Industrial Emergence (2009-2015) and later the Industrial Acceleration Programme (2014-20). Renault launched their Tanger industrial complex in 2012, while Peugeot S.A. (now part of Stellantis N.V.) launched their Kenitra industrial complex in 2018 (Figure 2-36).



Source: Government of Morocco, Press search

Figure 2-36: Timeline of Moroccan automotive industry development

As a result, CBU production capacity grew fivefold over 2009-19 and currently stands at 530K units per annum. Renault has an installed capacity of 340K and had planned to expand their capacity to 500K by 2022 but cancelled due to COVID-19. They currently achieve 60% local content integration. Peugeot has capacity of 200K with 60% local content integration, with plans to reach 80% (no definitive timelines have been released). Morocco is targeting to advance into the Top 7 global car manufacturers by 2025, improving from its current 26th rank, and is actively seeking to attract a 3rd international OEM to set up CBU production.

Morocco's automotive industry is heavily focused on being a nearshore hub for export to global markets, in particular the EU given close geographic proximity. Approximately 90% of PVs and 85% of CVs produced are exported. In 2020 alone, total exports were valued at USD 3.3B, with 80% of the 320K PV units produced being exported to France, Spain, and Germany. The rest were destined for the domestic market (10%) as well as Turkey and Egypt (10%).

Alongside rapidly growing CBU production, Morocco has developed a burgeoning components network with more than 230 Tier 1 and 2 suppliers. Government established six special zones to support the sector, aiming to (a) decrease imports by localizing large component imports through negotiations with OEMs, and b) grow exports. This has led to an increased local integration rate from 45% in 2012 to 60% in 2020,

while component exports now total USD 5B – exceeding vehicle exports. Components are mostly destined for OEM production facilities in nearby Europe. Suppliers have quadrupled employment from 40K in 2009 to 160K in 2020.

Component production and exports have become increasingly diversified. Exports now extend beyond wiring harnesses, which fell from 83% of exports in 2012 to 59% in 2020, into other groups including accessories (6%), lighting (5%), seats (5%), and spare motor parts (4%).

c) Local demand – 3rd largest African market, but small in global context; growth led by rising middle class, affordability; European OEMs with local presence lead

As of 2020, Morocco had 4.4M vehicles on the road, representing a moderate motorization rate of 120 vehicles per thousand people (above African average of 44, slightly below global average of 180)[156]. Vehicle parc is expected to grow to 6M by 2030. Motorization rates are boosted by relatively higher income levels for the continent, while vehicle financing and credit options are readily available at low interest rates.

Pre-COVID, new vehicle sales grew from 100K in 2010 to nearly 180K in 2018 (7% CAGR). Sales levels fell to 130K in 2020 due to the impact of COVID-19 but are expected to be recover to pre-COVID levels by 2022, followed by a 3% growth rate to approximately 230K in 2030.

The Moroccan government implemented a full ban on used vehicle imports in 2010, boosting the new sales market. In addition, the affordable entry-level segment grew from 20% of sales in 2010 to 31% in 2020, fuelled by models such as the locally produced Dacia entering the market. European brands lead overall, with Renault-Dacia topping new sales of both PV (more than 40% share) and CV (25% share). Japanese OEMs Nissan and Toyota are 9th and 10th in PV share with 3% each. For CVs, Mitsubishi is 5th (9%) and Toyota 6th (8%).

Despite the large production capacity, most vehicles in Morocco are imported. The domestic market is led by locally produced vehicles (5 out of the top 10 models in 2020 were locally produced), but imports provide access to a wider range of models and account for 75% of total sales. Imports are sourced mostly from the EU and Turkey due to proximity and FTAs.

d) Future perspectives and emerging trends: policy initiatives to drive sector growth; strategic opportunity to adopt EV

Morocco's strong and consistent policy approach in the auto industry and increasing global competitiveness is expected to spur further growth over the next decade, particularly if the government successfully attracts a third major OEM. It is also preparing to tackle the industry's carbon footprint and raise local integration rate to 80% through the new Industrial Recovery Plan 2021-23, which would ensure Moroccan exports comply with the planned EU Carbon Border Adjustment Mechanism (CBAM) and drive further value addition to the local economy. Morocco has a potential cost differentiation opportunity with CBAM, having one of the greenest electricity mixes of EU nearshoring suppliers.

Furthermore, Morocco is well positioned to adapt to shifts in its EU export market towards NEV, as a highly cost competitive destination for upcoming investments. It has a growing network of component supplies with dedicated plants for NEV and has an opportunity to source cobalt and fluorine locally for battery production (EV battery factories typically requires significant scale – choice of location highly competitive). Stellantis (formerly PSA) has recently launched NEV production with the Citroen Ami. In

[156] Source: IHS, Deloitte Africa

terms of local market infrastructure (which has been a significant challenge for comparable economies like South Africa), Morocco already has some operational charging stations with Tesla announcing entry in 2021[157].

2.4.2 Tunisia: baseline and emerging trends

a) Macroeconomic context – small but relatively high-income population for region; economy struggling since 2011 due to political instability

Relative to Morocco, Tunisia is a smaller market of 12M people (30th in Africa) but higher income with GDP per capita of USD 3,575[158] (12th in Africa). The economy has struggled over the past decade, largely due to political instability which has undermined its position as an investment destination and trade partner of choice. Since the Arab Spring in 2011, thirteen different governments have run the country, each with its own approach to economic development and diplomatic relations.

This has slowed economic activity and discouraged foreign investments, which have dropped by 56% from USD 1,512B in 2010 to USD 845M in 2019. Similarly, economic growth has been relatively slow at 2.2% CAGR from 2011-19. Tunisia saw GDP decrease by 8% in 2020 as a result of the effects of COVID-19 and is not expected to fully recover until 2023.

Tunisia currently lies behind its nearshore competitors in ease of doing business[159], with Morocco outcompeting on political and social stability, economic and business environment, and quality of infrastructure, all which are vital for the growth of an auto industry. This has stemmed growth in the industry, even though labour costs in Tunisia are a third of Morocco. Workers in Tunisia have also formed strong labour unions, with the risk of strikes deterring manufacturers further.

b) Supply – growing component exporter as nearshore for Europe-based OEMs, but limited diversification of product base; limited vehicle production (<15K CKD)

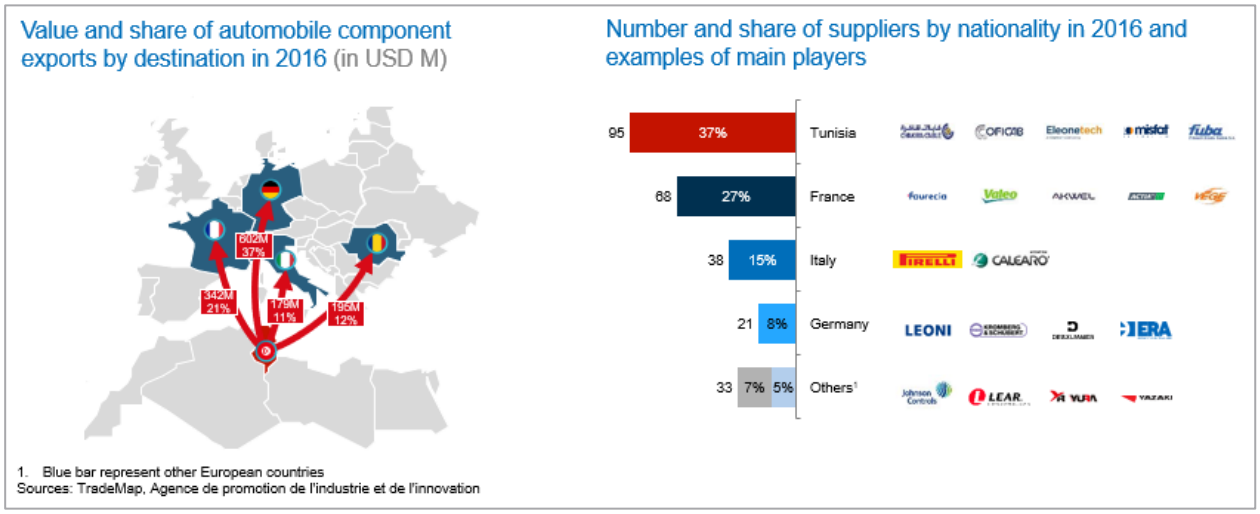
Tunisia's component manufacturing industry emerged rapidly over the 1990s and 2000s following accession to the General Agreement on Tariffs and Trade (GATT) in 1990 and free trade agreement signed with the EU in 1995. The first wave of Tier 1 settlement saw Akwel and Valeo established in the 1990s, followed by a second wave in the 2000s of major suppliers Sewon, Dräxlmaier, Yazaki, and Continental.

Tunisia has since grown into a component manufacturing hub for certain products, with approximately 280 Tier 1s and 2s in the country clustered around three technopoles and two special economic zones. Government has offered fiscal subsidies to auto players in the technopoles and signed free trade agreements with 54 countries as of 2020.

Production has historically been dominated by electric wiring (approx. 75% of automotive component exports over 2010-16), a labour-intensive process that benefits from Tunisia's qualified low-cost workforce (one-third of typical factory labour cost in Morocco[160]) and proximity to the EU market. Not only are 55% of the manufacturers European, but more than 80% of the exports are destined for the EU (Figure 2-37).

[157] Source: Press research
[158] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[159] Source: The World Bank Ease of Doing Business Report
[160] Source: Tunisia Investment Authority, BCG interviews

Component exports grew by 10% CAGR from 2010-19 reaching USD 2.1B[161]. Despite impressive recent growth, potential for future growth in the industry is inhibited by several factors. These include political instability from shifts in government and unions as well as fierce competition from Morocco's own component industry, which is now 2.5 times larger than Tunisia's and benefits from a broadening ecosystem and world-class infrastructure. Meanwhile, Tunisia has struggled to diversify its product base beyond the most labour-intensive components.



Source: Trade Map, Agence de promotion de l'industrie et de l'innovation

Figure 2-37: Tunisia's component industry – export destination, supplier origins (2016)

In terms of production of vehicles, Tunisia has limited local assembly of less than 15K units in CKD and no CBU production. IMM plant, opened in 1982 as a joint venture between General Motors and Isuzu, has a 4K CV capacity. PSA and Geely, both opened in 2018-19, have 3.5K capacity (for both PV and CV) and 1.5K capacity for PVs respectively. Tunisia's small domestic sales market and challenged business environment in recent years places it at a competitive disadvantage in comparison to Morocco, which has established itself as location of choice for potential OEMs.

c) Local demand – small market with declining new vehicle sales post-Arab Spring (45K in 2019), sluggish growth to 2030 due to high taxes and quotas on imports

Due to its small population (12M), Tunisia has a relatively low vehicle parc of 1.6M as of 2020 despite one of the highest motorization rates in Africa (130 vehicles per thousand people). The higher motorisation rate is a function of slightly higher GDP per capita, greater access to vehicle financing, and the "popular car system", a public incentive to increase vehicle adoption for low-income households[162].

Despite this, new vehicle sales have been on a steady decline of approximately 6% CAGR from 69K in 2014 to 48K in 2020. The market has suffered from political instability following the Arab Spring, dinar devaluation, restrictions on quotas, and heavy taxes imposed on vehicles. Although sales are expected to

[161] Source : Agence de promotion de l'industrie et de l'innovation, Trade Map
[162] The popular car system offers a 40% tax exemption (VAT and custom duty combined), lowering the regular car price of USD 13-18.5K to only USD 7.2-11.2K. Eleven models are offered through this program (three of which are Japanese – Toyota, Mitsubishi, and Suzuki), and some vehicles benefit from good financing conditions with 20% down payment.

recover post-COVID, reaching pre-COVID sales levels by 2022, they are forecast to grow slowly afterwards at 1% CAGR until 2030[163].

The Tunisian PV market has been historically Europe-dominated, with 70% share of European brands in 2014. This has fallen significantly in recent years to less than 30% in 2020, as Asian brands have taken the lead. South Korean brands Hyundai and Kia lead with a cumulative 21% share, while Suzuki has also grown significantly from 2% share in 2014 to 8% share in 2020 (4th largest). The CV market has been less tumultuous, dominated by Isuzu (40% share).

d) Future perspectives and emerging trends – potential to grow component exports contingent on political stability but competitiveness challenged vs. Morocco

The future of Tunisia's component industry is contingent on improved political stability and competitiveness over the medium-term. Instability over the past decade has dissuaded potential investors, with frequent change in governments and strong labour unions of key concern relative to regional peers such as Morocco[164].

More broadly, Tunisia must build a more conducive business environment, upon existing structural advantages (e.g., low labour costs, proximity to major markets). Tunisia recently invested in port infrastructure through construction of Enfidha port (1.6M container capacity planned by 2026), and renovation and expansion of Radès port. Nonetheless, further steps are needed to improve competitiveness relative to Morocco and other nearshore export options.

The government has already started putting in effort to revamp the local industry through the Industry Competitiveness Pact (2019-25)[165], which aims to leverage public-private partnerships for sector growth. It has ambition plans to reach USD 4.8B in exports by 2025 (80% higher than 2019 levels) while launching 30 plants, diversify the supply base an investing in a local NEV plant over the period. Plans to attract OEMs for local assembly are likely to be difficult in the immediate term, given the small domestic market and competition from Morocco.

On CASE trends, Tunisia has had an increasing uptake of connected vehicles – in line with the population's growing adoption of internet connectivity, from 46% in 2014 to 66% in 2019[166] – fuelled by a strong innovative ecosystem and government incentives to limit used vehicle imports and increase uptake of new vehicles. Shared mobility is nascent but restricted by limited use of digital money (60% of payments are made through cash or cheques), limited investment backing (small interest in Tunisia's mobility market since it is small), and little government incentives to nurture the ecosystem. NEV deployment is stalled by lack of action from the government, despite ambitious plans for the sector including a USD 350M investment in launching an NEV plant.

Much as Tunisia's component suppliers could be adaptable to NEV component production, they are likely to face challenges such as the EU's mandate to localize component production for parts such as the battery cell[167]. Additionally, NEV components require a large scale required for their production, which will be hard to access due to the current dominance of Asian suppliers.

[163] Source: IHS, BCG Analysis
[164] Source: Stakeholder interviews
[165] The Industry Competitiveness Pact targets to have 30 plants launched by 2025
[166] Source: The World Bank, International Telecommunication Union, World Telecommunications/ICT Indicators Database
[167] Source: Institut francais des relations internationales

2.4.3 Egypt: baseline and emerging trends

a) Macro-economic view – 3rd largest African economy with a population of 102M, growing steadily with improving stability

Egypt is one Africa's largest economies with GDP of USD 303B and population of 102M (ranked 3rd in Africa for both), with USD 3,550 GDP per capita[168]. The Egyptian economy has been historically troubled by political and economic instability. Over the past decade, it has been impacted by Arab Spring (2011), change of government (2013), and a currency flotation (2016) that resulted in 30% domestic inflation. As an oil-producing country, these events have also marred Egypt's oil trade prospects.

Despite this, Egypt has achieved rising economic growth over the last decade, from 2% in 2011 to 6% in 2019 (3.6% CAGR). Similar growth is projected until 2030, with strong growth in the middle- and upper-classes[169]. While nearly all global economies were negatively impacted by COVID-19, Egypt sustained positive real growth in 2020, albeit a decline from 5.6% in 2019 to 2.6% in 2020[170]. This was aided by timely fiscal interventions and recent macroeconomic stabilisation efforts. The longer-term effects of currency flotation, fiscal consolidation and structural reforms to strengthen the business climate offer a positive outlook for investors if sustained[171]. Inflation stands at only 6% versus 30% in 2016, and ongoing reforms (privatisation of state-owned enterprises, legal reform) have further boosted investor confidence.

b) Demand – 2nd largest local auto market in Africa with 200K new vehicle sales in 2020 but expected slow 1% growth in 2021-30

As of 2020, Egypt has the 2nd largest new vehicle sales market in Africa at 200K units per annum. There is also headroom for growth, with a relatively low motorization rate of 73 vehicles per thousand people (vs. 120 in Morocco, which has similar levels of GDP per capita). Nonetheless, total vehicle parc is forecast to grow slowly from 7.6M to 9.5M by 2030[172] (1% CAGR), due to import quotas, high taxes, and banned used imports that limit access to and affordability of vehicles. Currently, only 15-20% of Egyptians can afford cars[173], and banks have a mere 30% penetration rate, much lower than comparable economies (South Africa at 75%, Morocco 78%)[174].

New sales peaked during a period of relative political stabilization in 2014 at 310K vehicles, a 16% CAGR increase from 232K in 2012. This sales level is yet to be recovered: later in 2014, fuel prices rose by 50% and by a further 30-40% during the 2016 currency flotation and ensuing inflation, which saw sales swiftly decline at 9% CAGR from 2014-2018. New vehicle sales in 2019 of 200K were split between 157K (78%) PV and 43K (22%) CV. During COVID-19, online presence and government incentives boosted sales to 240K.

The PV market is relatively fragmented, with Toyota leading at an 11% market share followed by Hyundai (10%) and Nissan (9%). Toyota, Nissan and MG (a joint venture by SAIC group and Mansour Auto with 8% market share) have grown significantly since 2010, aided by local assembly presence. In the CV market Chevrolet dominates with 65% market share, seeing consistently high share in LCV (pick-up) sales as well

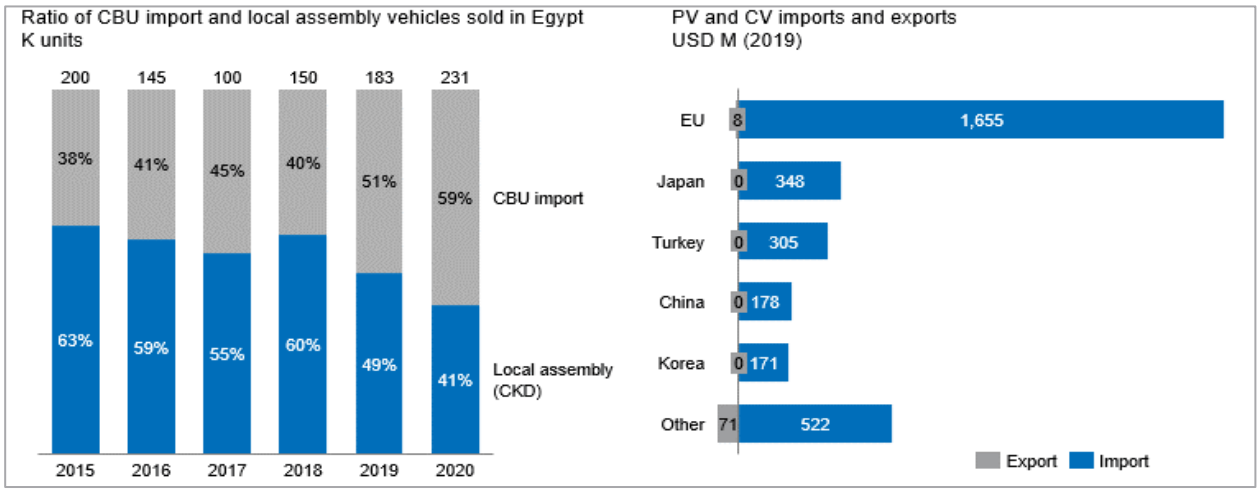
[168] Current USD prices; Sources: World Bank and OECD national accounts data, United Nations Population Division
[169] Lower class defined as <USD 35K annual income
[170] Source: The World Bank
[171] Source: IMF
[172] Source: IHS data, OIT, Desk research, BCG analysis
[173] Assumes maximum 20% of annual income will be spent on vehicle purchase. Data only of imports, exclusive of locally used vehicles' market. Source: Oxford Economics, Fitch Report, BCG Analysis
[174] Source: EIU, Experian, Press Search

as considerably increasing their MHCV share from 9% in 2010 to 70% in 2020. This has been boosted by introducing new models such as the Chevrolet Move in 2012-13.

c) Supply – sizeable but stagnant and underutilized CKD footprint (75K production, 30% utilization), hit by competition from CBU imports under FTAs (EU, Turkey)

Egypt's automotive sector has a long history, initially through local manufacturers (El Nasr Auto group founded in 1960, Seoudi Group in 1975), and later the entrance of global OEMs including General Motors (opened plant in 1985, began production in 1993). Today, Egypt has a sizeable CKD capacity of 245K across nine assembly plants – four local manufacturers, four JVs between global OEMs and local companies, and Nissan as the only fully foreign-owned enterprise.

While Egypt's installed capacity is one of the largest in the region, local assembly has declined from 119K in 2015 to 75K as of 2019. Egypt signed free trade agreements (FTAs) with the EU (in 2004) and Turkey (in 2005) – economies with highly competitive automotive sectors. Their gradual implementation has resulted in rapidly growing vehicle imports, especially over the past five years. Imported vehicles have increased from 40% share of new sales in 2015 to 60% in 2020 at the expense of locally assembled vehicles (Figure 2-38). Over this same period, the EU's share of imports rose from around 35% to 51% while Turkey's share increased from 4% to 11%. This shift has been driven by falling prices due to the tariff reductions, while local assemblers must still pay considerable tariffs on certain components, further impacting the local market's relative competitiveness.



Source: Trade Map

Figure 2-38: Egypt source of vehicles (import, local assembly) and trade policy overview

With an unclear policy toward the local automotive industry as well as a historic political and economic instability, global OEMs have had a challenging time in Egypt. However, recent improvements in the economy have led to some signs of future potential for the sector. Mercedes, for instance, closed its local assembly line in 2015 but returned in 2019 in partnership with a local partner. Meanwhile, Kia has invested USD 20M with plans of creating a 15K unit facility.[175]

In the component industry, Egypt has a smaller presence than North African counterparts Morocco and Tunisia. Nonetheless, component exports totalled approximately USD 0.5B in 2019 (approx. 5% of total

[175] Source: Egyptian International Motors, Egypt Today

exports) and have more than doubled over the past decade. The majority of exports are labour-intensive components shipped to Europe, leveraging the FTA and Egypt's cheap labour supply.

The local component industry includes five Tier 1s and a range of other suppliers, with more than half of export production concentrated in wiring harnesses. Wiring harnesses have grown significantly in recent years, boosted by investment from Tier 1s such as Sumitomo Electric. Tyres are the second largest export group, with the largest supplier being Pirelli with capacity for 1M units annually.

Despite the strong component supplier network, the local content level in assembled vehicles is relatively low at 17%, due to limited diversification of locally produced parts.

d) Future perspectives and emerging trends – structural advantages make Egypt a candidate for nearshore export in long-term, if critical challenges overcome

Egypt has an opportunity to develop both its assembly and component industry based on strong structural advantages: some of the lowest labour costs in the region (e.g., two to four times more affordable than Morocco), proximity and tariff free access to key markets (Europe and Middle East) and a potentially large local market. Recent macroeconomic improvements further offer hope for the sector.

While promising, the sector faces several critical constraints. First, there is no clear incentive and policy framework for the automotive industry while imports from the EU and Turkey are highly competitive given FTAs. Additionally, skilled labour availability is low relative to Morocco and Tunisia (potential competitors for investment) and there is a lack of adequate transport infrastructure such as RoRo[176] port terminals and storage areas. Meanwhile, the EU CBAM may further obstruct Egypt's component and vehicle export ambitions, given its reliance on fossil fuels (92% of Egypt's electricity generation).

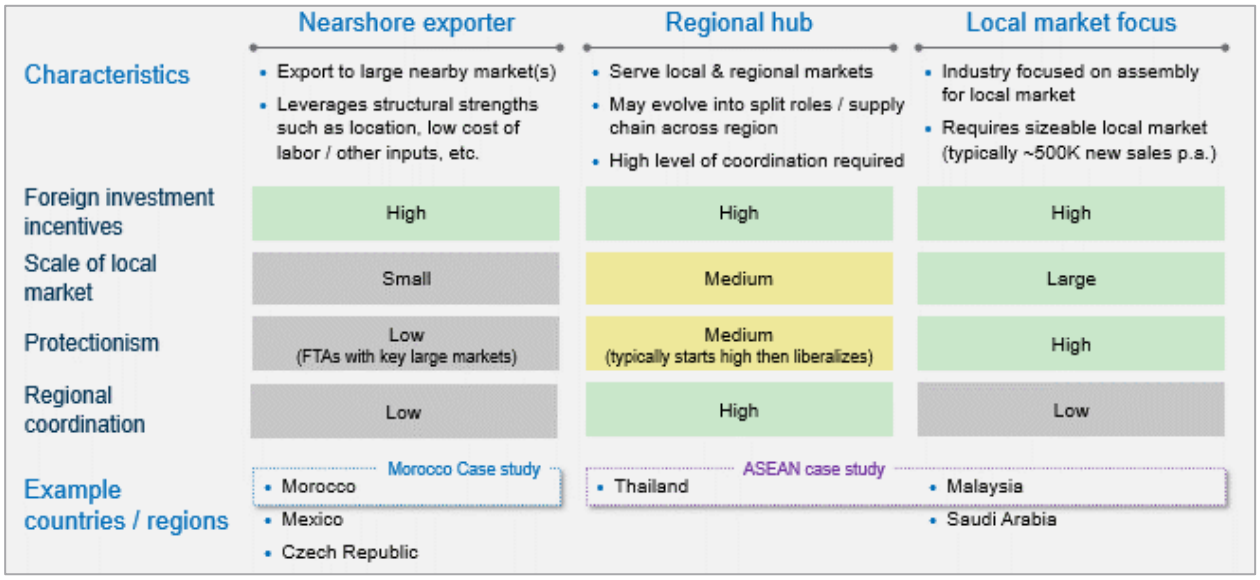
Emerging CASE trends have had limited impact so far, but demand for shared mobility is rising, and the government is showing early-stage support for NEV introduction. Various shared mobility solutions are now in the market[177], their growth led by increase of middle class, a weak public transport network, and flexible sector friendly policy frameworks allowing tech players to increase their market share. On NEVs, the government has revived the El Nasr plant after 11 years of closure to assemble 25K NEVs (plans to expand capacity to 53K by 2025)[178]. The government has also taken initiatives to acquire NEV fleets and build charging stations.

[176] Roll on/roll off ships designed to carry assembled vehicles and wheeled cargo containing components
[177] Entry wave after Uber's 2016 acquisition of Careem: SWVL (2017), WNGO Driver (2019), Dubci & InDriver (2020), UVA (2021) Source: Reuters, TechCrunch. Press search
[178] Source: Egypt Today, Daily News Egypt

3 Global case studies of automotive industry development

The global automotive industry has evolved considerably over the past half century. Reviewing the growth path of successful industries worldwide can provide useful cross-cutting learnings for the African automotive market and shed light on different development models pursued.

Typically, three major models of automotive industry development have been observed (Figure 3-1). Some countries have captured the local market as their focus, some have diversified further to serve both the local and regional market, while others have advanced into export hubs (often to large nearby markets).



Source: BCG analysis

Figure 3-1: Archetypal models of auto industry development

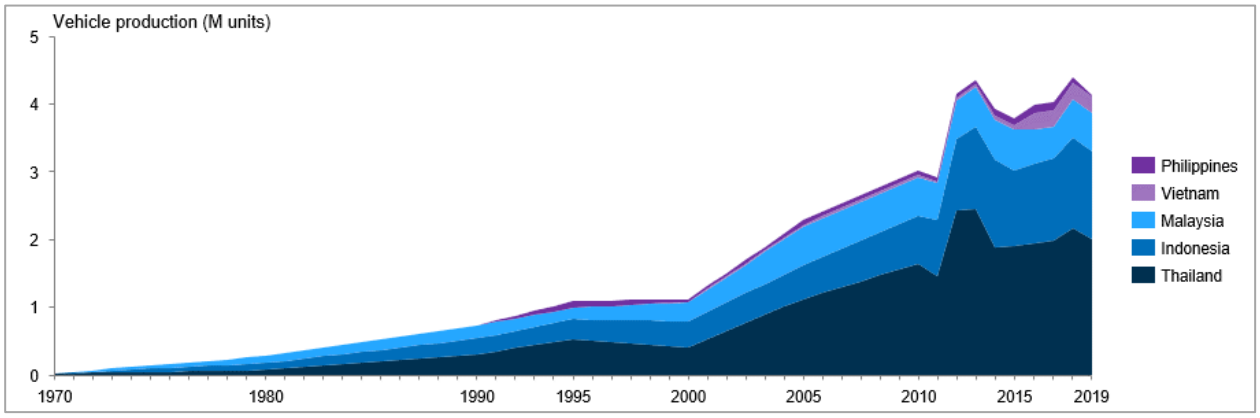
This section provides case studies of two automotive industries. First, the rise of South East Asian producers from the 1960s onwards is analysed as an example of coordinated regional policy and development, as well as development of specific local markets (e.g., Malaysia). Second, Morocco's emergence over the past two decades as a nearshore exporter to Europe and beyond is examined, also providing cross-cutting learnings for other African nations.

3.1 ASEAN: regional integration and industrial development

a) Context: regional industry producing more than 4M vehicles a year

South East Asia has successfully emerged as an automotive manufacturing powerhouse over the past half a century. The regional bloc of countries within the Association of South East Asian Nations (ASEAN) have transitioned from an almost complete reliance on imports in the late 1960s, to producing 4.2M vehicles annually as of 2019 (Figure 3-2). Few other countries have been so successful in building an automotive industry from such a low initial base. Thailand grew local production five times over in just two decades, from 300K vehicles in 1991 to 1.6M in 2010. At the same time, ASEAN has developed strong demand within the market – it is the 5th largest automotive market globally, with 82% of households owning a car[1].

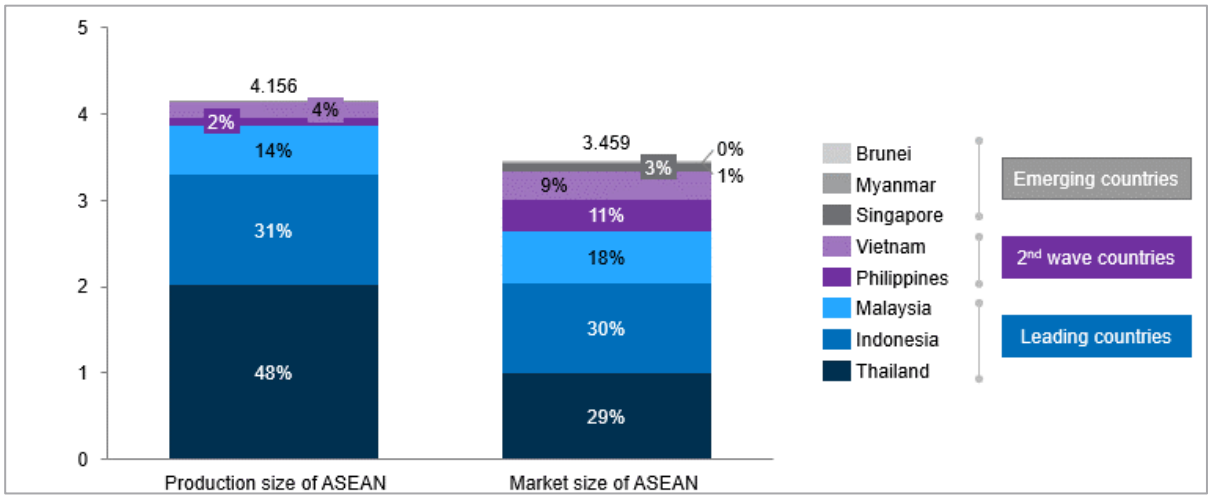
[1] Source: ASEAN UP (As of 2014)



Source: OICA, IMF

Figure 3-2: Evolution of ASEAN total vehicle production (M units), 1970-2019[2]

The more developed economies of Thailand, Indonesia, and Malaysia lead regional production (93% of ASEAN total) and constitute nearly 80% of sales in the region. Thailand alone produces nearly half of the region's total (Figure 3-3). The three countries were the first to actively develop their local auto industries within ASEAN. Vietnam and the Philippines have formed a second wave of countries emerging in the regional supply chain, contributing 6% of total vehicle production as well as substantial presence in upstream component supply. A smaller set of emerging countries, such as Cambodia, Laos and Myanmar have negligible vehicle production and sales but are increasingly seen as nearshoring locations for labour-intensive processes and component manufacturing given low labour costs (Figure B7 in Appendix).



Source: EMIS Automotive sector

Figure 3-3: ASEAN auto production and new vehicle sales by country, 2019 (M units)

Most vehicle-producing ASEAN countries sell the majority of vehicles locally: Indonesia sells 71% of units to the domestic market, while Malaysia, Vietnam and the Philippines sell 95-100% locally as of 2019. Thailand is the major exception with the local market comprising just under half of all production (48%), with the remaining 52% being exported to other ASEAN countries (14%) and a range of other global markets. This reflects Thailand's leadership position within the region as a highly competitive producer.

[2] Data shown for 10-year intervals between 1970 and 1990, 5 year intervals between 1990 and 2010, and 1 year intervals thereafter

Component supply is more export-oriented and regionalised, however, with the five largest producers exporting a cumulative USD 30B in component exports as of 2019. Exports are mostly intra-regional within ASEAN and the broader Asian continent: only 20-30% of component exports are to Europe, North America, and other regions (Figure B8 in appendix). This captures the broad ecosystem of component suppliers that has emerged over the past few decades, and the gradual dispersion of certain steps in the supply chain to countries with the strongest competitive advantage within ASEAN (e.g., labour-intensive steps to wave 2 and other countries).

b) Growth model – gradual transition from assembly to CBU with initial strong protection & continued regional integration, varied approach to foreign capital

In developing their auto industries, ASEAN countries gradually shifted from importing vehicles to manufacturing CBU vehicles for export over a course of decades – supported by sector protectionism, regional integration and value chain development.

Automotive sector growth in the region occurred across three distinct phases:

- **Phase 1: Nascent industrialization and import substitution (1950-1991)**
  - Import substitution policy – Rapidly rising incomes in the post-WWII period led to an increased demand for vehicles that was served via imports, resulting in large FX outflows. Thailand, Indonesia, and Malaysia began to promote their local automotive sectors as a form of import substitution, introducing high tariffs and restrictions on CBU imports and fiscal incentives (e.g., tax exemptions)
  - Began with assembly, followed by localisation policy – initial production in Thailand (and later Indonesia and Malaysia) relied on assembly of SKD/CKD kits that incurred lower tariffs; Thailand began to implement local content requirements (1975) and limit foreign ownership (1979) while Malaysia created Proton, the first national brand (1983)
  - Reaching scale, Asian supply chain integration initiated – towards the end of the period, the automotive sector was reaching scale in Thailand (approx. 300K units per year), Indonesia (approx. 200K) and Malaysia (above 100K); Japanese interest in region increases as source of cheaper labour after appreciation of Japanese Yen (JPY) following Plaza Accord; in 1988, the ASEAN Brand to Brand Complementation (BBC) scheme eliminated tariffs on parts movement in region between same brands, enabling foreign OEMs to build regional supply chain
- **Phase 2: Accelerated integration and liberalisation (1992-2010)**
  - ASEAN cooperation initiates regional supply chain – ASEAN Free Trade Area (AFTA) signed in 1992 gradually eliminated tariffs on finished goods in region (by 2010), while ASEAN Economic Cooperation (AICO) scheme established in 1996 to expand coverage of BBC scheme beyond OEMs to suppliers; ASEAN expanded with joining of Vietnam (1995), Laos and Myanmar (both 1997) and Cambodia (1999); high duties still constrained non-ASEAN imports, boosting regional chain
  - Export-oriented liberalisation in Thailand – ban lifted on CBU imports and tariffs substantially reduced (1991), with foreign ownership deregulated if 60% of production exported, experiences rapid growth with exception of Asian financial crisis impact in late 1990s
- **Phase 3: Mature reorganisation (2011-Present day)**

- Production matures in leading markets – overcapacity seen in Thailand and Indonesia along with slowed local market growth and flattening exports
- Rising labour costs drive broader supply chain regionalisation – small economies start to build local auto industries as production outsourcing ramps up to reduce labour costs and concentration; labour-intensive processes shift to Vietnam and elsewhere in region under "Thailand +1" and "China +1" strategies

A key characteristic of early automotive industry development in ASEAN was a gradual transition in the complexity and competitiveness of manufacture: first, assembly of SKD/CKD kits with heavy protectionism; second, enhanced assembly of kits with requirements on local content levels; third, integrated CBU production (See Figure B9 in appendix). At the same time, a wider set of related industries grew around the sector (suppliers, aftersales, insurance, etc.).

The three leading countries took different paths into their success, nonetheless. Thailand, the most successful vehicle producer, grew through heavy liberalisation in the early 1990s to attract foreign OEMs and gain scale as an export hub. A healthy components business has grown around this. Indonesia has leveraged a large domestic population (and thus potential market), maintaining some levels of protection, as well as a component industry serving Thailand and others. Malaysia pushed to protect its local industry with flagship national brands and placed large tariffs on imports. Vietnam and Philippines have established themselves as low-cost component exporters to Asia and beyond.

OEMs and parts suppliers have been equally pivotal in the evolution of the ASEAN supply chain. Toyota, for instance, has developed a regionally integrated vehicle-and-parts supply network under the Innovative International Multi-purpose Vehicle (IMV) platform project. The IMV's auto parts complementation and production network has been driven by the development of economic cooperation within ASEAN, enabling countries to specialize in producing various parts and components that they are competitive in while assembly and production is centralized[3]. Denso has adopted a similar approach under the Billiard Strategy, a pyramidal model where parts and components are manufactured in smaller upcoming economies like Cambodia and Laos, assembled to higher complexity higher up the pyramid, with higher value-add products incorporated at the top in the leading economies – Thailand, Indonesia, Malaysia – and global headquarters in Japan.

c) Key success factors – three major learnings for African automotive industry

The development of the ASEAN automotive industry provides three key lessons for Africa: (i) fostering the local market is often a pre-requisite to sector growth; (iii) regional integration is critical to developing equitable growth and a regional supply chain but is a long-term mission, and (iii) a phased policy approach is critical to nurturing sector competitiveness over time.

(i) Fostering local market and regional demand critical if nearshore export not viable

The three largest producing countries in ASEAN's automotive industry today also have the largest domestic sales markets, with the majority of production being sold locally. The region has not developed as a viable nearshore export hub for other large markets in Asia, in part due to strong domestic automotive sectors in the likes of Japan and China. As such, sizeable and growing local markets have been an essential platform for growth, especially during early stages. Even smaller ASEAN producers such as Vietnam and the

[3] Source: Intra-ASEAN economic Integration and Automotive Parts Complementation https://www.jstage.jst.go.jp/article/sisj/2011/26/2011_26_65/_pdf

Philippines have new vehicle sales 75-200K per year, larger than any Sub-Saharan African market outside of South Africa. Thailand exports over half its vehicle production as of 2019, following significant liberalisation in the early 1990s, but only after reaching considerable production scale (300K units per year) and efficiencies. It has seen production decline in recent years as the local market has slowed down and competition has intensified.

(ii) Regional integration is critical to developing equitable growth and a regional supply chain but is a long-term mission

Regional market integration can be a source of demand in the automotive sector, particularly if tariff elimination is accompanied by the reduction of NTBs and the development of strong regional infrastructure and logistics. However, less than 10% of vehicles produced in ASEAN are exported within the region – showing the difficulty of penetrating markets even when tariffs are eliminated, especially when several countries in a region have their own local industries (often receiving some level of government support). In Africa, this may require active coordination across countries to prevent protectionism and promote regional trade.

In ASEAN, intra-regional trade of components is much more prevalent – with anchor ecosystems in Thailand and Indonesia supported by low-cost suppliers in other economies. This is encouraging for the African region, although the regional supply chain in ASEAN only began to develop after three to four decades of strong growth and production levels of 3M units per year and above. Integration was pursued through a phased approach, with the gradual addition of less developed countries and specific efforts (e.g., "Thailand +1") to outsource parts of the value chain over time, allowing developing countries to catch up and participate in the sector based on their competitive advantages.

As such, African stakeholders could consider a long-term ambition of implementing a "hub-and-spoke" model, with a wider set of regional vehicle assembly/production "hubs" that source certain components from neighbouring country "spokes". This will require considerable coordination over many years, as seen with ASEAN (from its foundation in 1967, to introduction of BBC in 1988, to full implementation of AFTA in 2010). It may require sector specific coordination to prevent protectionism. Plans such as the Pan-African Auto Pact, spearheaded by AAAM, could be pivotal in this regard.

(iii) A phased policy approach is critical to nurturing sector competitiveness over time

The ASEAN automotive industry was gradually developed over several decades, with policies introduced in a phased manner that reflected the current position of the sector as well as ambitious but feasible aspirations. For instance, in Thailand, at first heavy restrictions were placed on imported vehicles to support competitiveness of an underdeveloped sector, along with strong incentives (e.g., tax breaks, land deregulation). Local content requirements were only introduced once assembly had reached a scale that could support a sizeable local supply chain. Finally, trade liberalisation only occurred once the domestic sector was deemed competitive enough to survive and thrive in the global market.

African policymakers that aspire to develop their local automotive sector should ensure that policies incentivise investment and foster competitiveness, while ensuring that greater value addition is built over time without compromising on growth.

Finally, the automotive sectors in ASEAN have received heavy government support and subsidisation over several decades, in addition to foreign investment. Developing an industry in Africa will require strong and stable commitments from governments, as well as significant investment that may have a large opportunity cost to consider.

3.2 Morocco: industrial promotion and ecosystem development

a) Context – rapidly growing nearshore export hub for vehicles and components

As discussed in more detail in Section 2.4.1, Morocco has had considerable success in the last decade as an emerging export hub for vehicle assembly and component manufacturing. It has rapidly increased production from 60K units in 2010 to 500K in 2019 and has ambitious plans to reach 1M by 2030. Morocco exports the vast majority of its automotive output to Europe, with vehicle exports of USD 3.3B and component exports of USD 5B in 2019.

b) Growth model – built on local market foundation, expanding into nearshore export hub to Europe, supported by structural advantages and strong policy

While Morocco's vehicle and component industry has rocketed in the past decade, its recent success has been built upon steady industrial development over a longer period, which can be characterised by into three broad phases:

- **Foundation of the auto industry (until early 2000s) – import substitution strategy fosters assembly industry for local market; state-led JV with European OEMs:** initial vehicle assembly (1960s onwards) targeted the local market, supported by trade protectionism and government intervention. The sole assembler, SOMACA, was founded as a JV between the Moroccan state, European OEMs (Fiat, Simca, Renault) and local Moroccan investors. Modest production (less than 25K) was achieved until 1995/96, when new agreements were reached with European OEMs to produce low-cost models with at least 25% local content[4]. This led to a first wave of global suppliers entering (Figure B10 in Appendix). In parallel, Morocco widened trade liberalisation in the 1980s, securing preferential trade agreements with key partners (e.g., EU).
- **Emergence of nearshore export model (2005-2014) – flagship OEMs and network of global suppliers attracted through deliberate policy**: in 2005, Renault became majority shareholder of SOMACA and began exporting to Europe and the Middle East. This capitalised on recent advancements in trade relations, a growing local supply base and forward-looking policy under the Emergence Plan (2005). In 2012, Renault significantly expanded its footprint by opening a 175,000-unit CBU plant that triggered a new era for the Moroccan automotive industry. Critical to this was a 2007 agreement with government to create a purpose-built production site in Tangier, capitalising on the recent launch of Tanger Med Port, a world-class complex just 14 kilometres from the coast of Europe. This was followed by investments and settlement of several Tier 1 & 2 suppliers to serve Renault, as well as European facilities. Local content integration for Renault reached approximately 40%.
- **Rapid growth and ecosystem development (2015-present) – second OEM settles, network of suppliers producing increasingly diversified components:** over the most recent period, Renault's facility rapidly increased capacity utilisation and was joined by the settlement of PSA (now Stellantis) in 2018 with a 400K unit facility. More suppliers have since entered the market, driving local content integration to 60%, and this base has become increasingly diversified (see Section 2.4.1). This was supported by the Industry Acceleration Plan (2014-20), with targeted the

[4] Source: Hahn and Auktor (2017)

building out of industry clusters (including via a dedicated industrial investment fund with USD 2B allocated).

c) Key success factors – structural advantages, macro enablers, supportive policy

The rapid emergence of Morocco's automotive industry over the past decade has been built on a set of key success factors that extend beyond this period alone. Morocco has benefited from: (i) strong structural advantages that make it a highly competitive location for nearshore exporting; (ii) a set of broader macro enablers that capitalise on these advantages and boost export market access and competitiveness, and (iii) strong and sustained industrial policy that has incentivised and fostered the automotive industry specifically.

i. Structural advantages – proximity to EU market enables export-oriented strategy, difficult to replicate in Africa in next 10-15 years; critical to build stability

Morocco is geographically well positioned to serve as a nearshore export hub to Europe and other major markets. Tanger Med port is just 14km from Spain, and there are 30 major vehicle manufacturing sites producing 4.7M vehicles annually within just two days of Morocco (Figure B11 in appendix). This can be a significant advantage in the automotive industry given the prevalence of just-in-time fulfilment of orders in the supply chain.

In addition, Morocco benefits from cheap labour – factory labour costs are a third of rates in Spain[5], and cheaper than other nearshore producers such as Turkey and Poland. Aside from vehicle production, the low cost of labour helped entice component suppliers to locate in Morocco starting with labour-intensive products such as wire harnesses.

(i) Macro enablers – far-reaching FTAs, relative stability, and world-class infrastructure

Beyond the automotive sector, Morocco has created an increasingly attractive investment environment. Morocco has free trade access to 55 countries[6], and is the only African country with FTAs with both EU and USA. At the same time, it has also experienced relative political and economic stability, which has been pivotal in attracting foreign investors. This is especially true in comparison to other North African countries that have seen political upheaval, currency swings and high inflation in recent years. Finally, Morocco has also invested heavily in developing critical infrastructure for industrial development, including world-class ports, railroad channels, and airport networks, ranking first in Africa for infrastructure quality[7]. The Tanger Med Port is connected to 186 ports in 77 countries, and the Casablanca port has an annual capacity of 1.6 M TEUs[8] with a high-speed train system opened in 2018.

(ii) Industry policy – long-term phased industrial policy with generous fiscal incentives and targeted efforts to attract flagship OEMs

Morocco's automotive sector has received continued government support – from involvement in SOMACA (founded 1959, operational 1962), to agreements with Renault and other OEMs in the 1990s and 2000s that drove significant joint investments, to promotion through successive industrial emergence and acceleration plans. Clear political commitment has been imperative in ensuring long-term investor confidence.

[5] Source: Mercer – Labour costs benchmark- 2011, BCG interviews
[6] Source: Morocco Ministry of Economy & Finance
[7] World Economic Forum
[8] Twenty-Foot Equivalent container

Interestingly, government intervention has come through broad sector-agnostic industrial support as well as highly targeted initiatives to actualise flagship automotive investments (e.g., Renault's Tangier facility). This targeted approach differs to what is seen in most recent Sub-Saharan African policies, that tend to focus on providing a broadly conducive environment for the automotive sector. In addition, it indicates a strong level of collaboration between government and the private sector in each major step forward – with commitments defined mutually based on what is achievable and required based on the stage of development.

Finally, growth of the automotive industry has required significant investment – from cross-cutting investments in world class infrastructure, to generous incentives for OEMs and suppliers, to investment funds for emerging industry players. One specific area of support has been the training the local labour force. Morocco offered training programmes to thousands to address productivity gaps and drive local employment in automotive manufacturing plants.

d) Implications for the future of African automotive industry

The development of Morocco's automotive industry builds on unique advantages, but also yields several cross-cutting learnings. Several implications can be drawn:

- **It is unlikely that SSA countries can replicate Morocco's export-orientated strategy in the next 10-15 years,** as no countries have the same structural advantages. However, Egypt has the potential to leverage its location, very low-cost labour and FTAs to target the EU, Turkish and Middle Eastern markets over time. Tunisia and Algeria also have potential if they can achieve a more stable investment environment.
- **Other African countries will need to develop local / regional market first** – as with Morocco, the local market can provide the foundation to develop a budding automotive industry (assembly and select components); this will require growing demand for new cars, and likely regional coordination to expand scale beyond SKD / light CKD levels
- **If conditions are met, African countries can learn from Moroccan approach** – grounding in large CKD with a few suppliers, gradually building out more integrated assembly and suppliers through a symbiotic relationship as market scale grows; key enablers include infrastructure (ports, industrial parks), labour training and FTAs to expand market. Consider close collaboration with private sector on flagship initiatives.

4 Future of the African automotive industry

This chapter considers the future of the African automotive industry in six steps:

1. Projected vehicle demand – scenario projections of the future scale of vehicle sales (new and used) by 2035 within the Africa region and for African exports to the rest of the world, including consideration of the addressable market for automotive producers based on market access (e.g., free trade agreements, trade costs, etc.)
2. Supply-side potential – assessment of the viability of vehicle assembly and manufacturing, component manufacturing and aftersales for each of the focus countries of this study, based on scale requirements and sector competitiveness
3. Future vision – perspective on the future potential of regional and focus country markets
4. Enablers to achieve vision – actions by stakeholders (public and private) that are required to ensure the future vision stated is achieved
5. Country deep dives – future vision and key enablers or each focus market, based on the current state and projected addressable market by 2035
6. Stakeholder roles – overview of how private sector and other key stakeholders can enact change in the industry to achieve the future vision

4.1 Demand: regional and export market forecast

a) Demand in Africa – likely to require transformation of market to reach more attractive levels of new vehicle sales (e.g., 5M by 2035)

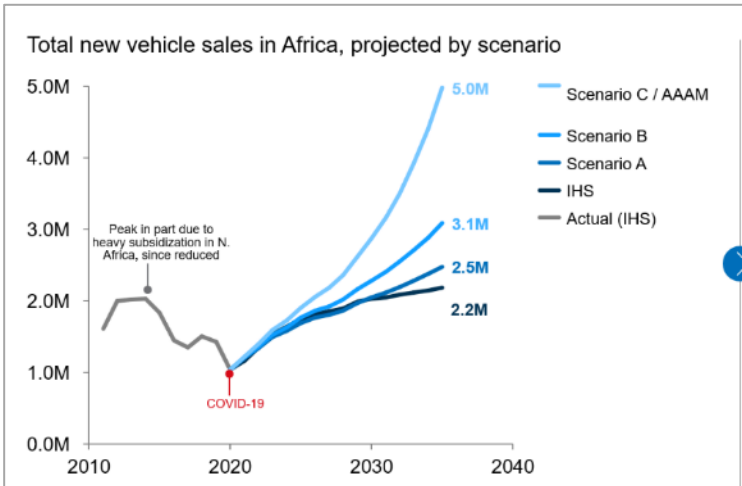
Africa's new vehicle market is set to grow over the next 10 to 15 years. In this report, a range of scenarios are considered when forecasting the potential market size in Africa by 2035. Each scenario considers two key growth drivers:

(i) **Motorisation rate –** across Africa, economic growth and improvements in the affordability of vehicles are expected to drive up the share of the population that are able to purchase vehicles; all scenarios are underpinned by improved momentum growth in car parc[1], in line with forecast GDP growth of 4% CAGR (IMF projections for 2020-26, extrapolated through to 2035[2]). Africa's car parc and real GDP growth tracked each other closely between 2010 and 2019, at 3.5% and 3.0% CAGR respectively (SSA: 3.8% and 4.0%). Additionally, improved access to credit, fiscal incentives/subsidies to consumers and/or producers and reductions in tariffs may further stimulate sales. The extent to which this happens will depend on actions by various national governments and other key stakeholders, with differing levels considered across scenarios. Historically, the limited differential between growth in car parc and GDP indicates limited improvements in vehicle affordability across the continent.

(ii) **Mix shift to new vehicle sales –** several African governments have implemented or are considering implementing policies that incentivise new vehicle sales, such as used import age restrictions and higher tariffs. There have also been historic challenges in implementing such limits in some markets. If enforced in a few major markets by 2035, regional new vehicle sales will receive a significant boost.

[1] Growth in car parc = additions to vehicle stock (local production + new & used imports), less reductions (end of life, exports)
[2] Real growth; Source: IMF, World Economic Outlook April 2021

Major and sustained action by governments and other stakeholders to improve affordability and incentivise new vehicle sales could have a significant impact on the market by 2035, especially in Sub-Saharan Africa (excl. South Africa) given the very low levels of penetration to date. This report considers four scenarios, spanning different levels of growth across each driver (Figure 4-1).



New car sales (M)	2019	2035 Scenarios:			
	Actual	IHS	A	B	C
N. Africa	0.59	0.90	0.90	0.90	0.90
RSSA	0.17	0.30	0.50	0.85	1.95
LSSA	0.12	0.20	0.35	0.60	1.35
S. Africa	0.54	0.80	0.80	0.80	0.80
Total	**1.42**	**2.20**	**2.55**	**3.15**	**5.00**

Assumptions for SSA by 2035[1]

	Motorisation rate (CAGR)	*Example benchmark*	New vehicle sales (% total)
A	3% (25 per 1,000)	*SSA, 2010-19*	20% *(+4pp)*
B	5% (35 per 1,000)	*Egypt, 2000-19* *Nigeria, 2000-19*	25% *(+9pp)*
C	9% (60 per 1,000)	*China 2000-19* *India 2000-19*	33% *(+17pp)*

1. Excluding South Africa. Note: regional domestic demand only; excludes export potential. Includes both PV and CV
Sources: IHS Markit, Trade Map, AAAM, BCG analysis

Figure 4-1: New vehicle sales forecast in Africa, projected by scenario – 2010-35

Details on each scenario are given below and in Figure 4-1:

- **Momentum case (IHS projections[3]):** total new vehicle sales in Africa reach 2.2M by 2035, growing at 5.0% CAGR from 2020 onwards. Trajectory slightly exceeds GDP growth due to a strong recovery in the share of new vehicle purchases to pre-COVID levels in early years, with sales growing at 4% CAGR thereafter. No additional growth from better affordability or policy incentivisation of new vehicle sales
- **Scenarios A, B and C:** model the impact of increased sales due to both drivers, namely an increased motorisation rate as a result of affordability improvements and the ratio of new vs. used vehicles.
  - Firstly, the impact of increased motorisation levels in line with developing country benchmarks is considered. Scenario A would entail growth of 3% per annum in line with the median rate observed and consistent with performance in SSA. Scenario B models SSA attaining top quartile growth in motorisation of 5% per annum, while Scenario C projects the impact of achieving top decile performance of 9% per annum.
  - Secondly, the implementation of used import restrictions in RSSA and LSSA results in a larger share of new vehicles in total sales, from 16% in 2019 to 25-33% in 2035 under the different scenarios. Achieving higher levels of new sales beyond momentum trends will require overcoming implementation challenges in enforcing comprehensive used import bans, and will likely have a slowing impact on motorisation rate growth due to an increased entry price point for vehicles[4]
  - The South African and North African markets follow the same trajectory as momentum case.

[3] IHS projections for 2020-30, extrapolated to 2035 at constant growth rate
[4] Assumption based on typical pricing of new vehicles, which can be 2-3x higher than used imported vehicles in many markets

b) Demand for exports from Africa – potential for manufacturing poles of South Africa and North Africa, but opportunities for other countries limited by competitiveness

Exporting vehicles to global markets outside of Africa requires a highly competitive automotive industry with a strong ecosystem of suppliers and skilled workers, cost advantages in production (e.g., labour, material costs, fiscal incentives, etc.) and in trade (e.g., free trade agreements, proximity to markets). Over the next 10–15-year period, South Africa and Morocco are well placed to access export markets, building on their existing position. Additionally, Egypt's proximity and preferential access to major markets may provide an opportunity to serve export demand. For other countries in Sub-Saharan Africa, the fledgling status of the automotive industry and high cost of transportation to global markets is likely to rule out exportation beyond the continent over the medium-term.

c) Addressable new vehicle sales markets – Africa highly fragmented today, so integration is critical to drive more equitable industrialisation; if achieved, regional hubs can emerge

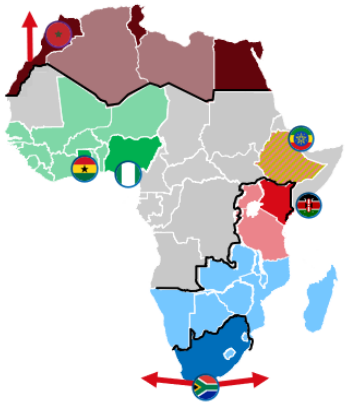
If Africa were a truly single market, the total demand size would be sufficient to support CBU manufacturing. However, the reality is a region of many smaller and highly fragmented markets. As discussed in the preceding sections, some RECs have helped to partially integrate subregional markets, although some challenges remain (e.g., restrictive ROO, transport costs, NTBs). If subregional automotive trade can be further facilitated through RECs, there is potential for subregional hubs to emerge and capitalise on the growing demand for new vehicles discussed above. Further automotive trade beyond REC borders, for example through the AfCFTA, is likely to be a much longer-term aspiration – given similar challenges at more acute levels.

Considering this, four to five subregions that have potentially sizeable addressable markets could emerge, and those markets could be served by "hubs" located in a particular country, including existing producers:

- **North African Belt:** large addressable market access to Europe and others, in addition to moderate domestic sales; intra-African trade limited by logistical challenges
- **Southern Africa:** large addressable market due to global export potential and domestic market, if former can be protected by adapting to emerging trends; potential to access incremental volume in subregion (SACU, SADC)
- **Rest of SSA (EAC, ECOWAS, Ethiopia):** potential to tap sub-regional markets in EAC and ECOWAS, contingent on coordination; size of addressable market highly dependent on used import restrictions; additionally, Ethiopia's large population and recent used import tariffs could be considered as a single market play.

Figure 4-2 provides a high-level view of the potential addressable market for the countries in scope for this study. Projections reflect strong momentum growth as well as enabling actions taken by key sector stakeholders to proactively develop the market (e.g., policy actions to limit used imports). Further detail on projections and the definition of each addressable market is covered in Section 4.5 of this report.

Potential hubs and addressable markets



Addressable market by hub – 2019 and 2035 (potential opportunity)

New sales ('000; PV & CV)	2019				2035			
	Local	Region *(ex. local)*	Region total	+Global exports *(Actual)*	Local	Region *(ex. local)*	Region total	+Global exports *(Potential)*
Morocco	165	325	590	+350	250	690	940	+500-1,000
Tunisia	45	545	590	-	60	880	940	-
Egypt	200	390	590	+<5	260	680	940	*+EU / ME*
Ghana	15	90	105	-	20-50	50	70-100	-
Nigeria	55	50	105	-	90-225	70	160-295	-
Ethiopia	12	-	<10	-	50	-	50	-
Kenya	12	16	28	-	25-90	30	55-120	-
S. Africa	540	40	580	+390	710	70	780	+130-440

Sources: IHS Markit, BCG analysis

Figure 4-2: Addressable market size by potential hub, forecast – 2019-35

4.2 Supply: assessment of sector potential

The automotive sector is highly scale sensitive. Higher volumes of vehicles and components typically drive significant production efficiencies. There is also a virtuous circle as scale rises – the sector can support a wider ecosystem of suppliers, typically clustered in close proximity, which in turn attracts more manufacturers and improves overall competitiveness. Large markets can also support stronger networks of aftersales service providers.

As such, the potential for developing an automotive sector in each focus country, and the region as a whole, is closely related to the addressable market discussed above. It also depends on supply-side factors such as the minimum efficient scale for producing various products, the complexity of manufacturing, and the competitiveness of the local sector relative to global suppliers.

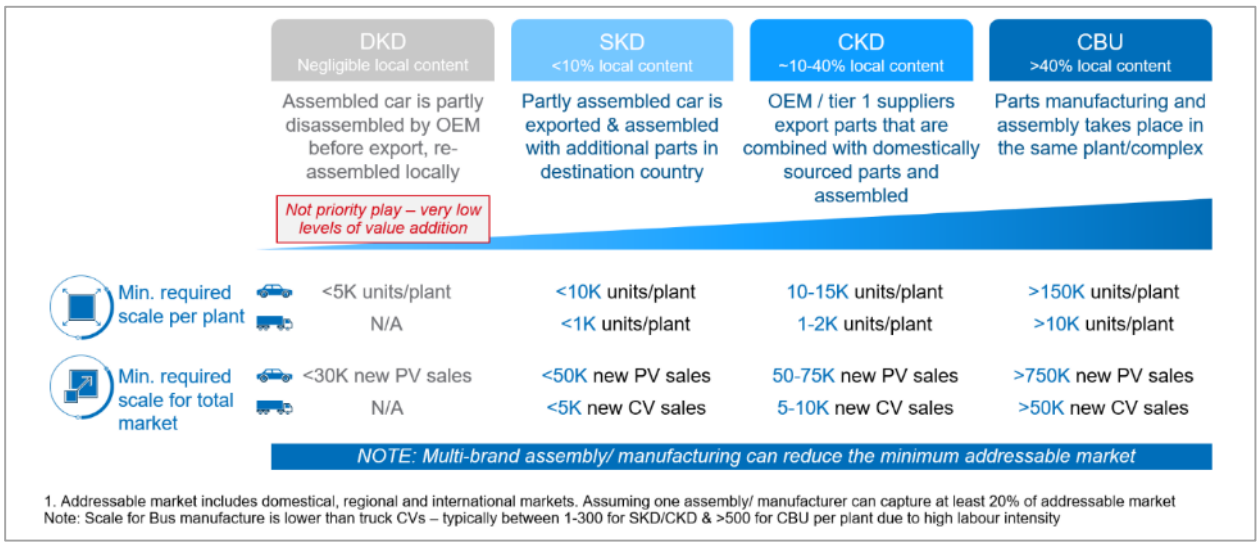
In this section, frameworks are introduced to assess each of the five focus countries of this report across such factors at a high-level. These consider (a) vehicle assembly/manufacturing, (b) component manufacturing for the vehicle supply chain, and (c) aftersales parts manufacturing. In addition, supply-side factors for (d) downstream aftersales services are considered. Further assessment for each of the five countries is provided in the future state deep dives (Section 4.5).

a) Vehicle assembly and manufacturing – potential for emergence of SKD/CKD assembly hubs in SSA, depending on demand growth; CBU less viable

Automotive plants range considerably in the types of activity and level of value addition conducted on site. At one extreme, producers can reassemble previously finished vehicles that are disassembled partially before import, known as Disassembled Knocked-Down (DKD) kits. Value addition is limited to minimal assembly but can be done at very low volumes due to limited economies of scale. On the other end, Completely Built Up (CBU) vehicles can be produced in integrated plants where significant manufacturing processes are undertaken, often leveraging high degrees of local content (more than 40%). As a result, local value addition is much higher. However, plants must typically produce more than 150K units per year for PV and more than 10K per year for CV to reach adequate levels of efficiency.

In between, producers can import and assemble Semi-Knocked-Down (SKD) kits of partially assembled products or Completely Knocked-Down (CKD) kits of unassembled parts. CKD typically requires more

complex processes (e.g., modern coating methods), requiring more scale to be efficient but also bringing more local value addition than SKD. CKD assembly typically requires more than 10K units per plant per year to reach minimum required efficiency for PVs, whereas SKD assembly can be done at lower volumes. For CVs, CKD assembly can be viable at 1-2K units (Figure 4-3).



Source: Expert interviews, BCG analysis

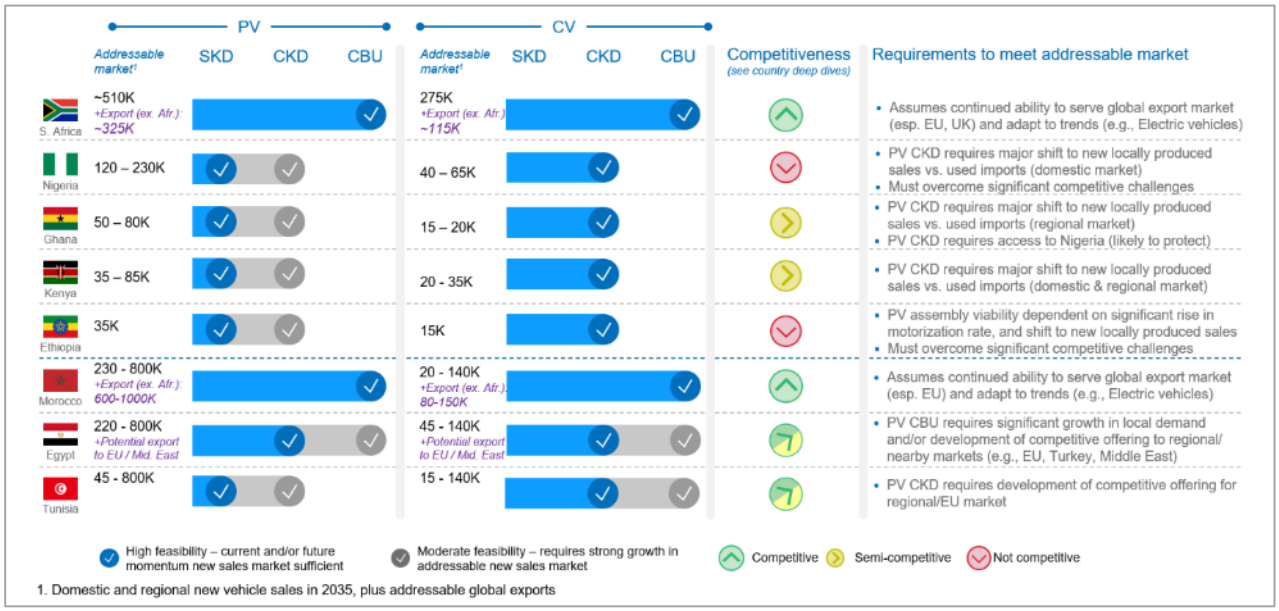
Figure 4-3: Minimum efficient scale for vehicle production, by level of value addition

For production to be viable, therefore, the addressable market must be at least 50K sales of new PVs a year for CKD assembly, and at least 750K for CBU production. This assumes that one plant produces between one and three vehicle models based on global norms, and those models can capture up to 20% of the total market. Minimum requirements for CVs are lower, at 5-10K units for CKD and at least 50K units for CBU. Some factors can reduce this requirement such as use of multi-brand platforms, or government subsidies.

Aside from having viable market scale, the feasibility of assembling or manufacturing vehicles in a particular geography will depend on the competitiveness of the local sector relative to global producers (e.g., input costs, enabling business environment). This is assessed in detail for each focus country in the future state deep dives (Section 4.5).

Assessing both the addressable market sizes and the minimum market scale required for production levels (Figure 4-3) gives insight into the potential for further automotive industrialisation by 2035. Figure 4-4 illustrates this, with three main groupings of countries.

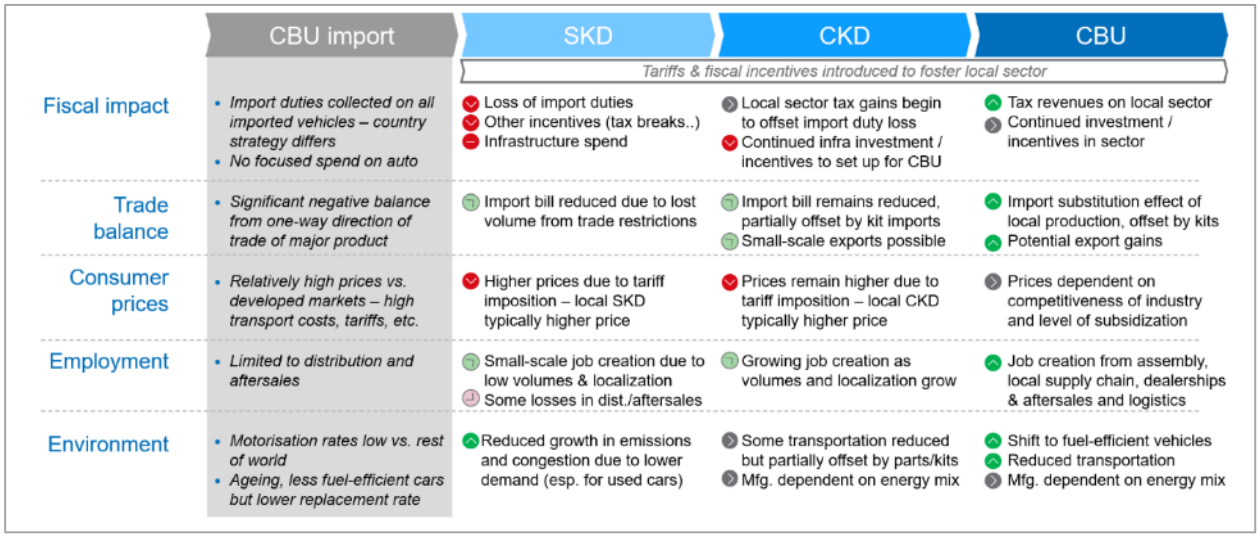
- **Existing CBU manufacturers** (South Africa, Morocco) will continue to have sufficient addressable markets to manufacture PV and CV in CBU plants, if they are able to protect global exports by adapting production to key emerging trends (EV, carbon neutrality)
- **Aspiring regional assembly hubs** (e.g., Ethiopia, Ghana, Kenya, Nigeria) can feasibly sustain lower levels of value-added PV assembly (SKD) and may be able to transition to CKD assembly by the end of the period – if sufficient new vehicle demand can be generated (e.g., via used import bans and/or regional integration). For CVs, CKD assembly may be viable earlier
- **New North African nearshore exporters** (Egypt, Tunisia) could emerge, but likely that Egypt is in a more advantageous situation due to its larger local market and strong trade ties with Europe and the Middle East. However, this is likely a long-term play given current competitiveness challenges vs. imports (e.g., from Turkey).



Source: BCG analysis

Figure 4-4: Vehicle production – viability assessment by country by 2035

While there may be potential for SKD and/or CKD assembly in aspiring SSA countries by 2035, developing the industry will require long-term investment. In the immediate term, policies such as high import tariffs and tax breaks are likely to reduce overall tariff revenues, increase fiscal expenditure and raise prices to consumers. In the longer-term, increased scale can support more value-added levels of production (CKD, CBU) and the sector can generate significant new jobs and tax revenues while reducing the import bill (Figure 4-5). Governments and partners must consider this trade-off when defining their aspirations for a local industry (Figure 4-5), as well as the risk involved (e.g., implementation failures).



Source: BCG analysis

Figure 4-5: Impact of tariffs and fiscal incentives on key outcomes, by level of production

b) Component manufacturing for vehicle supply chain

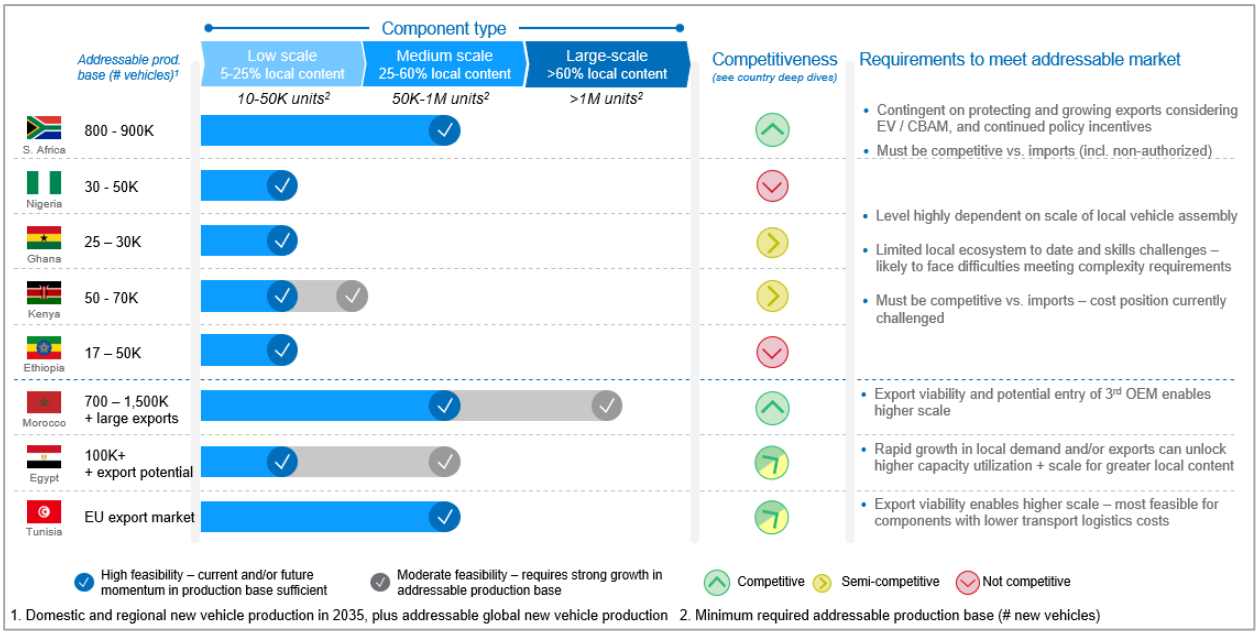
As the local vehicle manufacturing industry develops and grows, sourcing components from local suppliers becomes important to drive cost competitiveness (vs. imports with added costs of transport/logistics.

Components also vary in how sensitive production is to scale; as the assembly industry develops, more components become viable. Component producers can also find scale from exports and aftersales.

Two key factors determine the potential to produce components for the vehicle supply chain: production **scale** and sector **competitiveness**. Within competitiveness, a key consideration is whether local suppliers can meet the complexity requirements of different components (given skills, technology, etc.). Figure B12 (Appendix) illustrates that as demand and production scale rise, an increasing range of component groups can potentially be produced efficiently. It also shows that scale is not sufficient – complexity requirements can vary significantly between component groups, even if scale requirements are similar.

- If vehicle production is limited to small-scale assembly (e.g., SKD) and component exports are not feasible, only a few parts have scale to be produced efficiently (typically <10% of vehicle content)
- Until production can reach 50K units, the local supply chain can provide only 5-25% of the total content value for vehicle production. This is consistent with levels seen in the four aspiring industries discussed in Section 2.3 (Ethiopia, Ghana, Kenya, Nigeria)
- As production rises above 50K, 100K and 500K, more component groups become viable and 25-60% of content for the vehicle supply chain can potentially be localised. South Africa currently sit in this range, with 40% local content contribution
- Production above 1M units starts to unlock remaining components, including major groups (e.g., engine, transmission), allowing more than 60% of vehicle content value to be localised. Morocco sits between medium- and large-scale production, with mid-sized vehicle production and access to nearshore component export volume. It achieves approximately 60% local content contribution.

The above framework can be used to assess the scale of component manufacturing that is viable in a given market. Figure 4-6 does this for the focus countries of this study based on an approximate vehicle production base that could be achieved assuming some market share in Figure 4-4 goes to local producers[5].



Source: BCG analysis

Figure 4-6: Component manufacturing – viability assessment by country by 2035

[5] See future state deep dives (Section 4.5) for more detail on individual country production projections

Aside from scale, each industry must be able to produce competitively against imports – meeting complexity requirements, being cost competitive (incl. factor input costs, fiscal incentives, transport/logistics) and other considerations for investors.

- **Morocco** will continue to be best placed in Africa as a component manufacturer given strong domestic vehicle production, proximity to European OEMs for export, and a highly competitive position (see Sections 2.4.1 and 3.2)
- **South Africa** has some headroom to increase localisation beyond 40% based on the size of domestic vehicle production, but must (a) adapt the supply base to NEV and carbon neutrality regulation trends in key export markets, and (b) increase competitiveness by addressing capacity of local suppliers and cost/quality of inputs
- **Aspiring regional assembly hubs** (Nigeria, Ghana, Kenya, Ethiopia) are most likely to remain in low-scale component production by 2035, limiting value addition but with potential to reach up to 25% local content if competitiveness challenges addressed. Scale limited by estimated scale of local vehicle assembly, underdeveloped supplier ecosystem (skills, technology, etc.) and lack of cost competitiveness vs. cheap imports
- **Egypt and Tunisia** best positioned to export to nearshore markets, capitalising on cheap labour costs for labour-intensive components; potential boost if Egypt is able to develop CBU manufacturing.

The potential for development of a regional "hub-and-spoke" model as seen in ASEAN may be limited in the near- to medium-term in Sub-Saharan Africa, given scale challenges (as described above) in supporting localisation of the supply chain in general. In addition, trade-related costs (e.g., tariff protections under sensitive and excluded items list of AfCFTA, high transportation and logistics costs, NTBs) must also be overcome. However, over the longer-term, regional cooperation in the supply chain may help mitigate protectionism by providing clear roles and benefits to a wider range of AfCFTA member states – if sufficient scale in demand can be developed, and if roles reflect the relative competitive advantages of each player (e.g., materials availability, labour costs, etc.). This will require considerable coordination over many years, as seen with ASEAN (from its foundation in 1967, to introduction of BBC in 1988, to full implementation of AFTA in 2010). Specific efforts such as the Pan-African Auto Pact, spearheaded by AAAM, could be pivotal in this regard.

While the regional component industry outside of SA and North Africa may be limited by the nascent scale of assembly in other SSA markets (itself a factor of low new vehicle sales), aftersales parts serve a larger addressable market – all vehicles on the road.

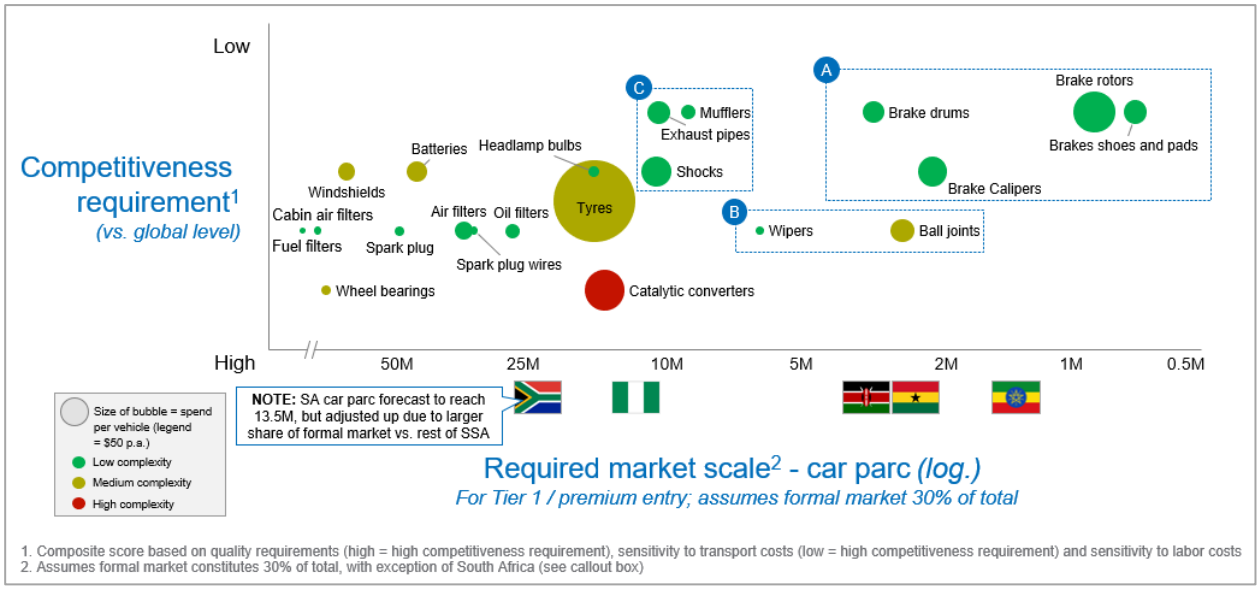
c) Aftersales parts manufacturing

The viability of producing parts for aftersales (local and export market) also depends on market scale and sector competitiveness for each product, with two key strategic questions:

- **Is there a sufficient addressable market** to support local production, given required scale for efficient production? The market is broadly a factor of three variables:
  - Vehicle parc in target market
  - Average annual replacement rate of the aftersales part
  - Target market share for producer (which market segment, competitive share); Global Tier 1s typically serve the premium formal market – which is relatively small in many countries in the region.

- **Can local production compete against imports** from global facilities? For each component, four factors can be considered in determining potential competitiveness
  - Complexity – ability to meet quality requirements of specific component (higher for authentic parts) given skills, technology, testing infrastructure, etc.
  - Sensitivity to transport costs – if highly sensitive (e.g., low-value and large/heavy), local production will have a cost advantage vs. import from distant markets
  - Sensitivity to labour costs – if a labour-intensive component, potential cost advantage depending on country's average sector wage vs. global producers
  - Prevalence of white label / counterfeit products – if commonplace in the market, it may be difficult for local sector to compete outside of low-quality produce; prevalence is largely a function of the other above factors

The above assessment framework shows that, ceteris paribus, manufacturing aftersales parts is most viable in large formal markets (e.g., South Africa), for high replacement parts with limited production scale requirements (e.g., brakes). Reading Figure 4-7 from left to right, larger formal markets have sufficient scale for a wider range of parts. Smaller markets are more restricted. Reading from top to bottom, some products have relatively low complexity requirements and may have some competitive advantages to being produced locally in SSA (e.g., brakes, exhausts), versus importing from abroad. Others are much more challenging.



Source: stakeholder interviews

Figure 4-7: Aftersales manufacturing – viability assessment by part & country, by 2035

The above assessment, along with the baseline analysis of this report (Section 2), suggest several key findings:

- Tier 1s are unlikely to be attracted to produce parts for the aftersales market outside of South Africa and North Africa by 2035. Only a few products (e.g., brake components) have sufficient scale for production, and the overall revenue opportunity remains low to attract global investors. Nigeria may be a longer-term opportunity for select parts if the business climate is improved and competitiveness requirements can be met. L for certain products

- Local production of some products is potentially viable in smaller markets (e.g., brakes, plus exhausts & shocks in Nigeria), but there is a risk of exacerbating the prevalence of low quality (and potentially hazardous) parts for the informal market if standards and controls are not enforced
- The tyre market is the single largest individual segment of aftersales, but only South Africa is forecast to have sufficient scale in the formal tyre market by 2035.

The implications of these findings for key sector stakeholders are twofold. Firstly, the viability of a component parts industry in the region is highly contingent on generating demand for the formal market. Supporting the development of warranty plans and enforcing higher quality repairs through standards and inspections can help change consumer behaviours, while coordinated regional integration efforts may increase the viability of regional exports for added scale in the long-term. Secondly, and in the meantime, support to local suppliers to produce the small set of viable aftersales products (e.g., via access to finance, skills development) with increasing quality can help improve competitiveness. This may be most attractive where products can also service local assembly, or where skills are transferrable to other industries.

d) Downstream aftersales services

The above assessments indicate that, outside of existing production centres, there is some potential for the emergence of manufacturing in the form of a few regional assembly hubs and low-scale component production, albeit as longer-term plays with relatively limited scale by 2035. Downstream of manufacturing however, there is already considerable activity in SSA markets.

Distribution, sales and aftersales services (e.g., maintenance & repair) are sizeable subsectors – for example, the aftersales market in Nigeria is estimated at USD 700-800M as of 2019, four times the local assembly industry. Informal and independent channels typically dominate outside of South Africa, leaving significant opportunities to drive greater efficiencies and attract sizeable investment for formalisation.

Aftersales in particular shows rising importance in Africa as vehicle parc rises and new vehicle and road safety requirements are introduced in certain markets (e.g., Ghana). Global OEMs are also increasingly interested in the sector as an opportunity to bolster their existing revenue lines (e.g., new vehicle sales) with high-margin business, but still face challenges given the prevalence of informal uncertified garages and non-genuine parts, and an informally trained / low skilled workforce.

4.3 Future vision for African automotive industry by 2035

In this section, a vision for the future of the African automotive industry is defined based on the current state across the region and in each focus geography (Section 2), emerging regional and global trends (Section 3), the forecast size and dynamics in each market by 2035 (Section 4.1), and supply side assessments of potential across the supply chain (Section 4.2).

This is an aspirational but achievable vision that will require key enabling actions by sector stakeholders, as well as conducive market conditions. The vision by 2035 can be expressed across four pillars:

Vision for the African automotive industry by 2035

I. **Regional market increasingly integrated** – subregional vehicle exports are enabled by REC policy efforts in the automotive space, and frameworks are in place to support broader (equitable) continental trade; regionalisation of upstream supply chain is further out beyond a handful of specific cases

II. **African manufacturing poles (SA, N. Africa) adapt and thrive –** component and vehicle manufacturing evolve to meet NEV demand and carbon neutrality regulations in key export markets, becoming a competitive advantage in some cases (e.g., Morocco). Production scales with further investment, including possible new CBU hub (Egypt)

III. **Regional CKD assembly hubs emerge in rest of SSA –** two to three markets (in East and West Africa) successfully grow new vehicle demand and develop growing vehicle assembly industry (25-70K units per year, each). Hubs successfully access subregional markets (Pillar I)

IV. **Downstream supply chain transformed** – channels professionalised, with improved quality standards and large private investment. Innovative solutions scale to rapidly improve access, affordability and quality

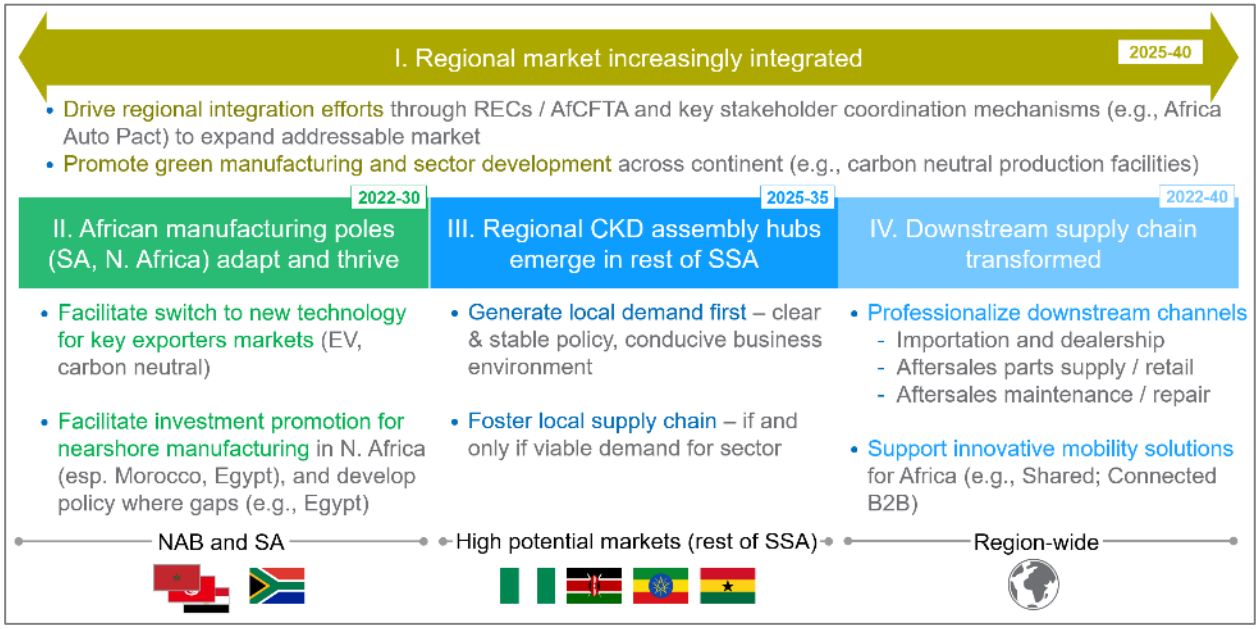


Figure 4-8: Future vision for African automotive industry 2035

If the above vision is achieved, the African automotive sector has the potential to reach 2.5-3.0M new vehicle sales by 2035 (based on Scenarios in Figure 4-1 and analysis in future state deep dives in Section 4.2), with annual vehicle production in excess of 3-4M units a year. North African countries could reach production of 1-2M units, especially if Morocco is successful in attracting additional OEM(s) and if Egypt can position itself successfully as a future nearshore hub. South Africa could grow production to an estimated 800-900K units, while aspiring regional hubs could reach up to 200K CKD units a year if the full vision is achieved.

Success in the above will support rising employment and improved fiscal and trade balances across producing countries. However, it is critical that policymakers in aspiring regional hubs and their partners

carefully consider the trade-offs required to foster the emergence of sectors (as discussed in Section 4.2, Figure 4-5), as well as the implementation risk involved.

Finally, the downstream opportunity may be even larger in some countries – given the high ratio of used vs. new vehicles today, and limited penetration of formal services to date. It may also require less fiscal spending and less polarising trade policy.

The potential in each country differs widely and are discussed in more detail in the future state deep-dives (Section 4.5).

4.4 Enablers to achieve vision

Achieving the above vision by 2035 will require critical enabling actions by key stakeholders under each pillar. Figure 4-9 provides a high-level overview of key enablers at the Pan-African level.

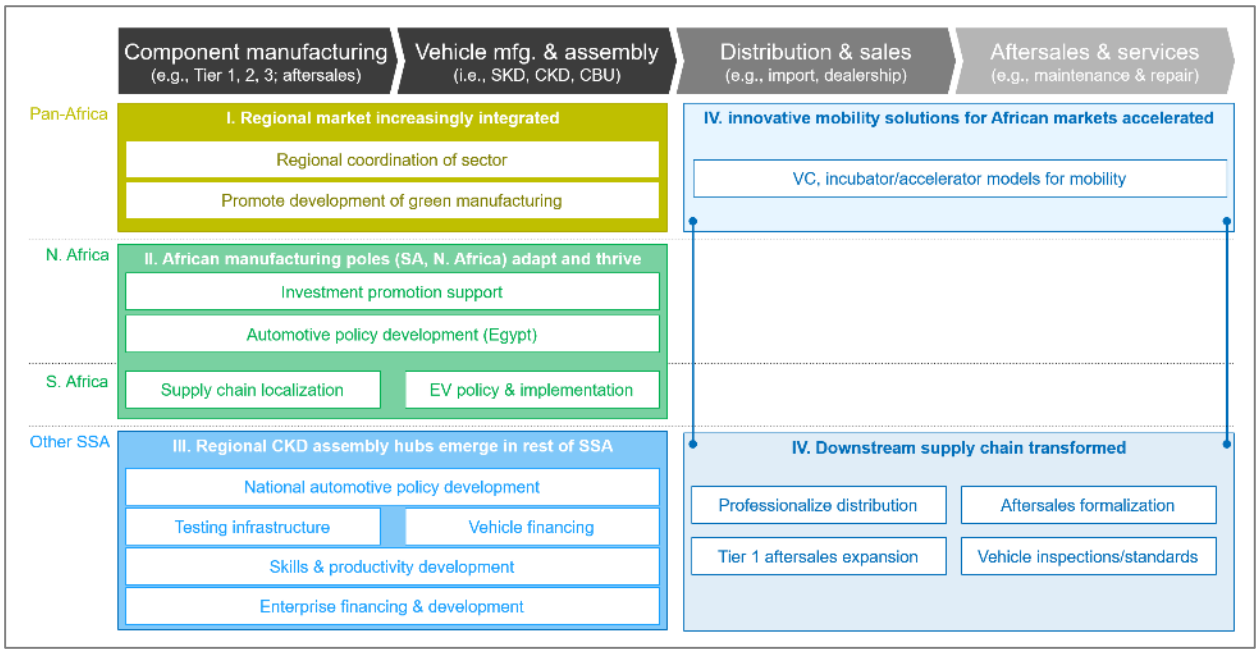


Figure 4-9: Critical enablers to achieve vision

To achieve **Pillar I**, two key enablers are likely to be important. Regional integration of the sector across the continent is critical to achieve necessary size of addressable market for manufacturers. This can be supported through strengthening AfCFTA and REC frameworks as well as creating industry specific mechanisms that further advance coordination, such as the Pan-Africa Auto Pact proposed by AAAM. RECs can also be supported through driving automotive industry policy development and implementation. As the world further shifts towards less carbon dependent methods of manufacturing, support for green manufacturing across Africa will also be necessary to advance competitiveness.

Under **Pillar II,** the growth of manufacturing poles in South Africa and the North African Belt is contingent on adapting and thriving in a rapidly transforming global automotive supply chain. Two topics are covered here: facilitating adaption to new trends such as NEVs and carbon neutrality, as well as providing support for foreign investment promotion and policy development where necessary:

- In North Africa, where Morocco's sector is already well-positioned to meet demand for NEV and may have a future competitive advantage given its relatively green energy mix, the imperative will be on attracting new investment. For Morocco this means actively looking to attract a third (and

potentially fourth) OEM to enhance its existing ecosystem. For Egypt, developing a CBU presence will require a clear and consistent policy for the automotive sector, as well as improving the overall investment environment;

- For South Africa, it is imperative to adapt the policy framework and further develop the local supply chain to meet the evolving needs of key export markets such as the EU. The EU is effectively banning sales of ICE vehicles in 2035 and there is potential that CBAM (planned to be introduced in 2026) that impacts countries with carbon intensive manufacturing will be applied to vehicles and component importation. This will be critical in order to remain a viable production hub for OEMs, given that the current local market cannot fully provide the required scale for efficient CBU production.

For **Pillar III**, the emergence of regional CKD hubs in 2-3 sub-Saharan African countries will require significant growth of local market demand for new vehicles, as well as fostering the local supply chain (commensurate with scale of local assembly):

- National automotive policy development and implementation will be required to firstly boost demand through gradually restricting used vehicle importation, and then support supply-side activities
- Local demand can be further stimulated by creating broader access to affordable vehicle financing (especially for SMEs and consumers), which may require overcoming limited information on creditworthiness, regulatory constraints and liquidity challenges
- On the supply side, developing the local supply chain and the necessary workforce to achieve this may require expansion of vocational training (e.g., TVET, apprenticeships) that meet private sector needs, efforts to boost sector productivity (e.g., training, process improvement), enterprise development (e.g., financing, business/financial literacy) and expansion of testing facilities to enable suppliers to meet OEM standards.

Finally (**Pillar IV)**, transforming the downstream supply chain will encompass both a sub-Saharan African and a pan-African aspect. In sub-Saharan Africa, developing and strengthening downstream channels would help support the industry to create further economic impact and employment, while contributing to road safety, and can be addressed through distribution and aftersales formalisation, strengthening vehicle inspections, and upskilling current workers. At a pan-African level, the growth of the burgeoning mobility start-up sector can result in significant socio-economic impact with improved affordability and access to transportation options, as well as employment. Further traction can be supported through nurturing the entire ecosystem and individual start-ups, including through incubation hubs, accelerators and private sector investment mechanisms (e.g., Venture Capital) that support the capacity of businesses but that also consider capital investments.

As with the overall vision, the critical enablers required to develop each focus country's automotive sector varies based on their starting point, key trends and market potential. These enablers are discussed in more detail in the country future state deep-dives.

4.5 Country deep dives: future of vision, impact, enablers

4.5.1 South Africa

Executive summary

- **Large & mature addressable market… –** domestic sales expected to reach ~710k in 2035, with additional ~500k export opportunity…
- **…Supported by strong policy… –** despite competitive drawbacks (e.g., electricity supply, skills gap), policy incentives compensate for competitiveness gaps
- **…but facing existential risk from global shift to NEV –** up to 70% of exports at risk by 2035 if SA producers do not adapt to NEV demand in key markets; production scale challenged by lagging domestic NEV (affordability & infrastructure constraints)
- **Critical to protect exports, then boost local content & access regional demand –** must first incentivise NEV & carbon neutral production, expand local NEV ecosystem

a) Addressable market by 2035 – domestic new vehicle market forecast to hit 0.7M units by 2035; export potential adds another 0.5M, of which 70% at risk if fail to adapt to NEV

South Africa's (SA) addressable market by 2035 will be driven by three main factors: the pace of domestic market recovery and long-term growth, the level of expansion into the regional market, and the ability to adapt to NEV production and carbon neutral regulations in global markets. The last factor is the biggest area of uncertainty for SA. Key global export markets (i.e., EU, UK, Japan) are expected to see a strong shift in demand to NEVs over the next decade and beyond. As global OEMs make investment choices as to where their production bases will be located, SA must adapt and remain competitive if it is to protect exports.

As such, two potential scenarios have been considered in forecasting the SA addressable market by 2035. Firstly, a **base case** is considered in which SA vehicle manufacturers continue to access and expand sales in the domestic, regional and global markets. Secondly, an **NEV downside case** is considered in which SA loses a portion of global exports due to challenges in competitively meeting NEV demand.

- **Base case –** 0.7M domestic market, 0.5M export potential by 2035:
  - Domestic market grows from 575K to 710K – total new vehicle sales are forecast to recover following the COVID-19 dip, growing steadily in line with GDP (which has historically matched new sales growth). Post-2030, sales growth forecast to slow as shared mobility gain wider popularity
  - Regional market grows from 50K to 70K (SACU, SADC): REC markets grow steadily, but remain small in terms of new vehicle sales due to affordability challenges and prevalence of used imports; limited export to rest of continent (excl. SACU, SADC) due to protectionism, high cost of transport / logistics, NTBs
  - Global exports rise from 375K to 440K: SA automotive industry able to competitively meet growing NEV demand in this scenario; exports grow broadly in line with domestic market sales, given the structure of policy incentives (duty credits – see Section 2.3.1).
- **EV drawdown case –** 0.7M domestic market, 0.2M export potential by 2035:
  - Domestic and regional markets: as above

- Global exports fall from 375K to 130K: if SA is unable to attract the required OEM investment to meet NEV demand in key export markets or fulfil carbon-friendly production criteria, up to 70% of potential exports are at risk; some export volumes are forecast to remain, due to continued (albeit smaller) demand for ICE vehicles in some markets.

In both scenarios, other major markets such as the USA and GCC are expected to have limited export feasibility in the next 10-15 years beyond small volumes today, due to the high cost of transport and logistics (for the USA) and less favourable tariff structures (GCC).

b) Sector competitiveness – policy incentives and existing clusters compensate for some structural challenges (e.g., electricity supply, skills gap)

South Africa is a leading automotive hub on the continent with strong CBU production, leveraging a relatively mature automotive ecosystem and highly attractive policy incentives that boost overall competitiveness. Nonetheless, some structural challenges remain (Table 4-1).

Given the shift to NEV production and carbon neutrality that will be required to maintain exports to current target markets, South Africa's competitiveness may be under threat. It will be critical to ensure that SA adapts to changing requirements, for instance in the policy framework, supply base and pool of talent/skills.

Table 4-1: Competitiveness assessment of automotive industry - South Africa

Factor	Assessment	Key strength(s) / challenge(s) – non-exhaustive
Maturity of automotive ecosystem	Med - High	• **Established clusters:** Strong OEM presence (600K production) with 35-40% local content integration • **Shallow base of Tier 2, 3, 4 suppliers,** limited test infra.
Cost competitiveness	Med	• **Relatively high labour costs:** higher than regional peers and other emerging producers (e.g., Morocco, Brazil, Mexico, Turkey); competitive vs. EU, US, UK
Enabling environment	Med – High	• **Highly attractive policy:** mature incentive structure for automotive manufacturers and suppliers • **Moderate infrastructure:** relatively modern and efficient roads, ports & logistics, but unstable electricity supply increase cost to serve • **Talent and skills gap:** availability of skilled workforce limited due to challenges in basic education and TVET

c) Future vision and enablers – critical to protect exports by adapting to key trends, with longer-term focus on driving localisation and fostering regional market

For South Africa to protect and grow its position in the global automotive supply chain, it is imperative to adapt to the shift to NEV in key export markets (and likely to carbon neutrality regulations) in order to maintain competitiveness. Without doing so, the local industry risks losing a significant portion of demand that could threaten CBU production efficiency. If South Africa successfully adapts, there is sufficient market scale[6] to incrementally drive supply chain localisation. Finally, there is long-term potential to develop the continental market through continued participation in AfCFTA negotiations and working

[6] As future-state vision is aspirational, base case scenario considered. Conversely, under NEV drawdown case, if SA is unable to adapt to NEV trends, CBU production will be challenged

towards regional supply chains (Figure 4-10 below). To do so will require specific enabling actions by key stakeholders.

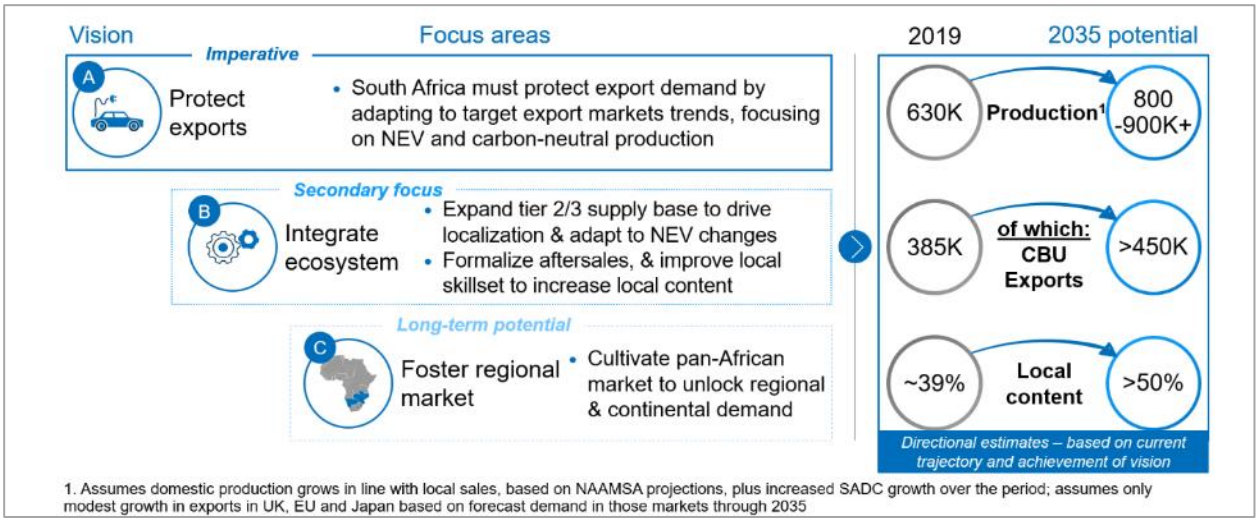


Figure 4-10: South Africa 2035 vision

Firstly, **protecting exports** will require targeted policies to adapt to global trends and incentivise OEMs to shift to NEV and carbon neutral production. A clear policy framework in the immediate future with supply-side incentives would help facilitate this. Incentives for local NEV demand could also be considered (e.g., removing luxury tax), although other structural challenges must first be overcome (such as reliability of electricity supply). Incentivising investment in carbon neutral facilities may also be considered now, ahead of pending regulation (e.g., EU CBAM). Additionally, continued investment in national transport, logistics and energy infrastructure will help boost SA's position against competing producers.

Secondly, further **integrating the ecosystem** and localising the supply chain can be boosted with focused skills development (e.g., expansion of vocational training, incl. adaptation to EV), collaboration programmes and incentives to encourage OEM/supplier partnerships, and investment in local testing infrastructure to reduce costs and improve access for suppliers.

Finally, **fostering the regional market** over the longer-term will require significant regional coordination. SA stakeholders can take a leading role in helping to define such a framework, which will need to enable tariff-free trade, prevent protectionism from other markets, and work to reduce other forms of cost (e.g., regional transport and logistics costs, NTBs).

d) Potential impact

If the above enablers are enacted, there is potential to grow the SA industry from a strong base today (Figure 4-10 above). Local production can reach larger volumes of 800-900K units p.a. (if exports are protected), based on existing NAAMSA projections. Exports could exceed 450K units, with the regional market likely to remain small by 2035. Additionally, there is headroom for improved local content integration by 2035 with support under SAAM– although higher levels will only be unlocked once production exceeds 1M vehicles (see Section 4.2).

If achieved, the automotive sector can rise from USD22B in 2019 (6% of total GDP) to USD32B by 2035 (8%)[7]. Formal employment could rise from 110K to 160K over the same period, with informal employment growing from 350K to 500K[8]. However, if SA is unable to cater to NEV demand in export markets the impact is likely to be sizeable. GDP contribution from the sector is forecast to fall to 17B (4%), formal employment to 83K and informal employment to 260K.

4.5.2 Nigeria

Executive summary

- **Steadily growing market if national automotive policy credibly revived…-** Nigerian market forecast to reach ~90K new sales by 2035, additional 70K regionally
- **…but currently inconsistent policy and challenging business environment** – NAIDP implementation limited, incentives reversed, investment climate challenged
- **Scale sufficient to reinvigorate assembly but contingent on NAIDP revamp**, reversal of tariff reduction, other demand measures.
- **Critical to provide stable business environment and promote demand** – need to reinstate investor confidence and build sizeable addressable market
- **Additional opportunities downstream in aftersales formalisation –** large but highly informal aftersales market can be boosted via network & skills development and improved regulations

a) Addressable market by 2035– domestic new vehicle sales market forecast to hit 90-225K units by 2035; ECOWAS export potential adds another 70K opportunity

Nigeria's addressable market by 2035 will be driven by three main factors: economic growth and consumer incomes, tariffs on imported vehicles, and regional market access. The second and third factors are areas of uncertainty for Nigeria.

Until the recent change in 2021, high import tariffs under the NAIDP (2013) encouraged the entry and assembly activities of several OEMs. After the recent change under the Finance Bill, however, some local assemblers have shut down plants and exited Nigeria due to inability to compete with lower priced imports. As such, the sector outlook is challenged if tariffs are held[9]. Export access to ECOWAS[10] is constrained by high ROO requirements (30% regional content) and other NTBs (logistics, infrastructure). It may be further limited by protectionism from other aspiring automotive producers (e.g., Ghana). Therefore, future export potential will depend on local/regional content development and regional agreements to resolve barriers.

Three scenarios have been considered in forecasting Nigeria's addressable market by 2035. Firstly, a **base case** is considered in which new vehicle sales broadly tracks GDP growth. Secondly, an **Import growth case** is considered where the recent tariff reductions in 2021 are maintained, thereby boosting new sales (via imports) but challenging for local assemblers. Thirdly, a **regional expansion case** is considered where

[7] GDP contribution from vehicle assembly and component manufacturing
[8] Formal employment from vehicle assembly and component manufacturing
[9] Some industry stakeholders view the new tariff structure as a temporary policy ahead of the 2022 elections and may return to NAIDP levels in the longer-term; Source: Industry stakeholder interviews, conducted between Jun-Sep 2021
[10] ECOWAS is a customs union consisting of 15 West African countries allowing tariff free access for traded goods if Rules of Origin (ROO) requirements are met

Nigerian producers can access the ECOWAS market. Depending on the scenario, Nigeria's addressable new vehicle market in 2035 could range up to 90K-300K.

- **Base case** – 90K domestic market by 2035:
  - New vehicle market grows from 54k to 90K[11], with CVs steady at 20-25% of total. Steady growth in line with forecast GDP, which has historically closely matched new sales growth; sales recover following 2013-2018 recessionary dip with 2035 sales 80% higher than 2019 levels, but lower than 2021 peak (120K new sales)
  - Vehicle parc reaches 13.7M, raising demand for aftersales parts and services
- **Import growth case** – 225K domestic market by 2035:
  - New vehicle market grows to approximately 225K if lower tariff structure held, due to sales uplift[12] from lower (import) prices per 2021 Finance Bill
  - However, this will lead to stagnation of local industry due to competition with cheap imports
- **Regional expansion case** – export potential of 70K on top of momentum/uplift
  - Rest of ECOWAS offer additional new vehicle market of 70K (50K PV) based on regional GDP forecasts, and with a vehicle parc of 10M by 2035 (cf. 6.5M in 2019)

b) Sector competitiveness – low investor/OEM confidence alongside competitive drawbacks of local production (e.g., electricity supply, port inefficiency)

While there is a potentially sizeable addressable market by 2035, Nigeria faces a number of competitiveness challenges today (

Table 4-2, refer to Table B4 in Appendix for assessment framework). As a result, despite Nigeria's historic presence in the sector, assembly capacity today is severely underutilised (at 5%). It will be critical going forward to boost Nigeria's competitiveness by improving the ease of doing business, policy environment, and developing the local supply base and pool of talent/skills.

Table 4-2: Competitiveness assessment of automotive industry - Nigeria

Factor	Assessment	Key strength(s) / challenge(s) – non-exhaustive
Maturity of automotive ecosystem	Low / Med	• **Historic capacity in place:** 180K installed capacity but severely underutilized – 10K produced in 2019 • **Limited base of local suppliers:** OEMs cite lack of good quality, cost-competitive and readily available suppliers
Cost competitiveness	Low	• **Low manufacturing productivity:** higher than regional peers, but uncompetitive vs. other emerging producers
Enabling environment	Low	• **Challenged automotive policy:** limited implementation of NAIDP (2013); recent policy reversals • **Limited infrastructure:** e.g., electricity supply, ports • **Talent and skills gap:** availability of skilled workforce limited due to challenges in basic education & TVET

[11] Estimates based on Nigeria reverting to the former (higher) tariff structure under NAIDP 2013
[12] Sales uplift estimated based on consumers' price elasticity of demand; vehicle sales historically elastic in response to price change with new vehicle sales 1.5-2X more volatile than used sales

c) Future vision and enablers – critical to address business challenges and improve policy environment, with longer-term focus on driving localisation

For Nigeria, there is potentially sufficient market scale[13] to revive local assembly (PV SKD, CV CKD) as well as drive further value along the supply chain, but only if business and infrastructure challenges faced by OEMs and investors are first addressed. It will then be essential to strengthen the policy environment and stimulate local demand to create viable scale for production, following which, the local supply chain can be developed. Separately, aside from assembly, there is significant opportunity in strengthening the aftersales sector through formalisation. All of the above will require specific enabling actions by stakeholders (Figure 4-11).

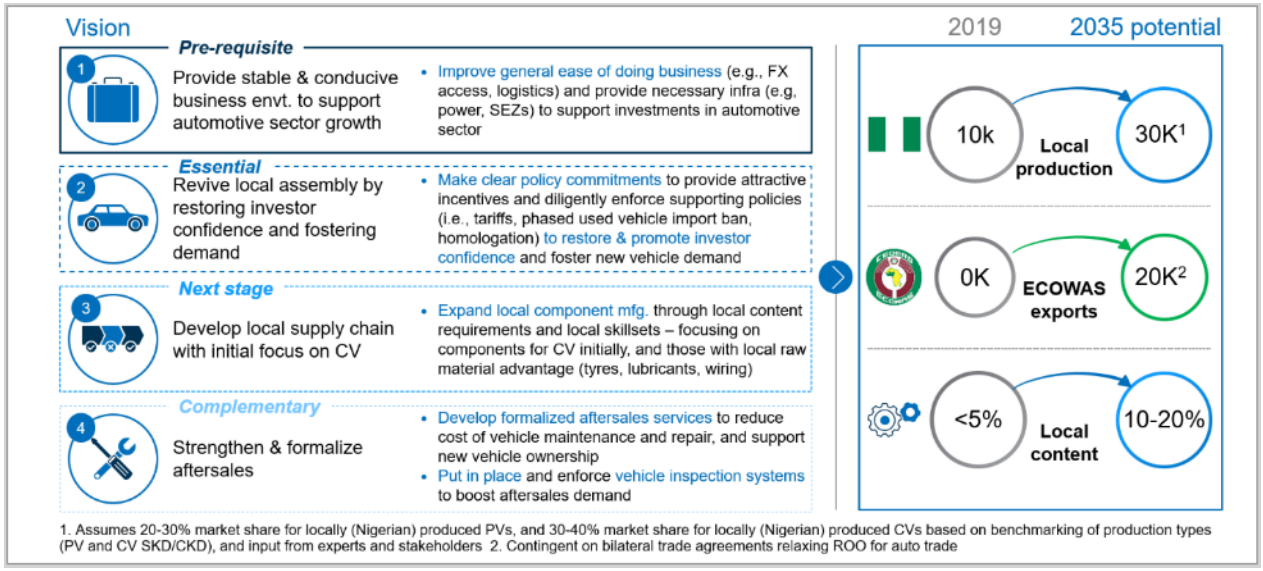


Figure 4-11: Nigeria 2035 vision

Firstly, **an improved overall business environment** for investors is a pre-requisite to enabling competitive production. This includes developing key infrastructure (e.g., automotive parks, reliable electricity supply, transport/logistics linkages), addressing FX shortages and addressing other institutional challenges.

Secondly, **credible policy commitments to revive local assembly** are essential if the sector is to develop, for instance through the legislation of a revised automotive policy (previously, NAIDP in 2013). This should include measures to foster local demand and boost local sector competitiveness relative to imports (e.g., tariffs, age restrictions). Without this, market demand will remain limited and investor confidence in the sector will not be restored.

Thirdly, **local supply chain development in the longer-term** will be facilitated once sufficient scale in assembly is reached. Once components and aftersales parts reach sufficient demand, growth can be supported through focused skills development (e.g., expansion of vocational training), collaboration programmes and incentives to encourage OEM/supplier partnerships, and investment in local testing infrastructure to reduce costs and improve access for domestic suppliers.

Concurrently, **strengthening aftersales services** can be achieved through initiatives to formalise garages via accreditation (e.g., networks or partnerships with OEMs/suppliers, third party platforms). Furthermore,

[13] As future-state vision is aspirational, base and regional expansion cases are considered. Conversely, under uplift – if lower tariffs under Finance Bill is maintained - sector is likely to decline due to being out-competed by imports, ceteris paribus

for mechanics, formal training and certification support can be established to ensure provision of reliable services. Additionally, enforcing regular vehicle inspections can improve roadworthiness and safety, and in turn generate aftersales demand.

d) Potential impact

If the above enablers are enacted by key stakeholders, there is potential to revive Nigeria's automotive industry and reach local production of up to 50K units per year (Figure 4-11 above). Within this, exports could amount to 20K units per year if ECOWAS can be accessed. Additionally, there is headroom for improved local content integration from <5% to 10-20% by 2035 as production scale increases and with support from future policies.

If the above potential is realised, the GDP contribution from the automotive sector[14] can rise from USD 187M in 2019 (0.04% of total GDP) to USD1.03B by 2035 (0.15%), still a relatively small sector. Formal employment from vehicle assembly could rise from 2K to 5-10K. The additional impact is constrained by low levels of localisation (10-20% potential in Nigeria by 2035, vs above 40% in South Africa).

4.5.3 Ghana

Executive summary

- **Low growth outlook for domestic market due to new tariff** – new sales to remain <20K, 2022 tariff increases average price without incentivising shift to used vehicles
- **Strong foundational policy in place but can go much further –** policy to drive shift from used to new; key enablers still to be built (skills, infrastructure, supply base)
- **Potential to foster small-scale local assembly –** current trajectory supports only 5-10K production; 30-40K if further import limits imposed
- **Critical to drive demand, support manufacturers and develop localisation –** must first follow through on GADP implementation and boost demand for new vehicles

a) Addressable market by 2035 – domestic new vehicle market forecast to remain below 20K by 2035; ECOWAS export potential (excl. Nigeria) adds another 50K

Ghana's addressable market by 2035 will be driven by three main factors: economic growth and consumer incomes, import tariffs and restrictions, and the ability to export to the region.

The upcoming increase in import tariffs in 2022 is expected to put downward pressure on new vehicle sales if fully implemented. In the longer term, any future policy to introduce restrictions on used imports (e.g., phased age limits similar to plans in Kenya) would likely drive a shift from used to new vehicle sales but negatively impact overall affordability. Regarding regional exports to ECOWAS, access is currently challenged (see Section 2.3.3). However, if obstacles are overcome there may be potential for exports (likely excluding Nigeria, given similar ambitions that may lead to sector protections).

Three scenarios have been considered in forecasting Ghana's addressable market by 2035. Firstly, the **base case** sees new vehicle sales hit by the upcoming tariff hike in 2022, broadly tracking GDP growth thereafter. Secondly, an **uplift case** assumes future age limits on vehicle imports are imposed (not currently planned),

[14] GDP contribution from vehicle assembly and component manufacturing

boosting new sales. Thirdly, a **regional expansion case** is considered where additional sales from ECOWAS are accessed. Depending on the scenario, the addressable new vehicle market in 2035 could hit 20-100K:

- **Base case** – new vehicle sales grow only slightly from 14K to 17K by 2035:
  - In the next 3-4 years, total sales are expected to contract due to increasing tariffs on all vehicles[15] - with a larger hit for CVs due to higher tariff increase; used imports will remain the cheapest option with limited shift to new vehicles
  - Thereafter, new sales grow steadily at a rate slightly below forecast GDP growth accounting for depreciation effects, based on historic trends in Ghana
  - Vehicle parc is projected to grow modestly from 1.9M in 2019 to 2.4M by 2035
- **Uplift case** – 30-50K domestic market by 2035:
  - In addition to momentum case trends, additional vehicle age limits drive a shift to new vehicles by the end of the period. This assumes a full used vehicle ban by 2035. Overall vehicle sales (new, used) decline due to less affordability.
- **Regional expansion case** – additional export potential of 50K:
  - Rest of ECOWAS (excluding Nigeria) offer an additional new vehicle market of 50K based on regional GDP growth forecasts, and with vehicle parc of 9M by 2035

In all three scenarios, other markets (Africa and beyond) are expected to have limited export feasibility in the next 15 years given significant barriers in logistics and trade.

b) Sector competitiveness – strong policy framework in place but enabling factors (e.g., infrastructure, skills, supplier base) remain underdeveloped

While there is a potentially sizeable addressable market by 2035, and despite promising policy steps, Ghana still faces a number of competitiveness challenges today that must be overcome (Table 4-3) such as a lack of key enabling factors (skills, infrastructure, component supply base) that diminishes competitiveness today. These should be priority areas for future support.

Table 4-3: Competitiveness assessment of automotive industry - Ghana

Factor	Assessment	Key strength(s) / challenge(s) – non-exhaustive
Maturity of automotive ecosystem	Low	• **Nascent assembly capacity:** Small but fast-growing production capacity with entry of four OEMs over last 3yrs • **Negligible base of local suppliers:** OEMs cite lack of quality, cost-competitive and readily available suppliers
Cost competitiveness	Low	• **Moderately competitive labour costs:** competitive vs. SA but higher costs vs. other SSA peers (Nigeria, Ethiopia) • **Low manufacturing productivity:** uncompetitive vs. regional peers (Nigeria) and other emerging producers
Enabling environment	Low / Med	• **Policy outlook** positive: GADP (2018), legislated but pending full implementation. Strong incentives for local assembly, but yet to incentivize shift from used imports • **Limited infrastructure:** unstable electricity supply despite generation capacity; inefficient transport networks

[15] Estimates based on Ghana implementing increased tariffs on vehicle imports – to 35% on PV and CV- in 2022, based on Customs (Amendment) Act 2020

		• **Talent and skills gap:** low availability of skilled workforce, challenges in basic education & TVET

c) Future vision and enablers – critical to drive demand to develop local assembly, with longer-term focus on localisation and regional access to ECOWAS

Growing the Ghanaian assembly industry (PV SKD, CV CKD) will require strong GADP implementation coupled with further steps to boost local demand and competitiveness. Following this the local supply chain can be strengthened once sufficient scale is reached. Aside from assembly, there is significant opportunity in the aftersales sector, which is highly informal today and lacks critical skills and training. Finally, since Ghana's domestic market is small, gaining broader access to ECOWAS through regional/bilateral negotiations is key to unlocking demand for larger production scale i.e., CKD. All of the above will require specific enabling actions by key stakeholders (Figure 4-12).

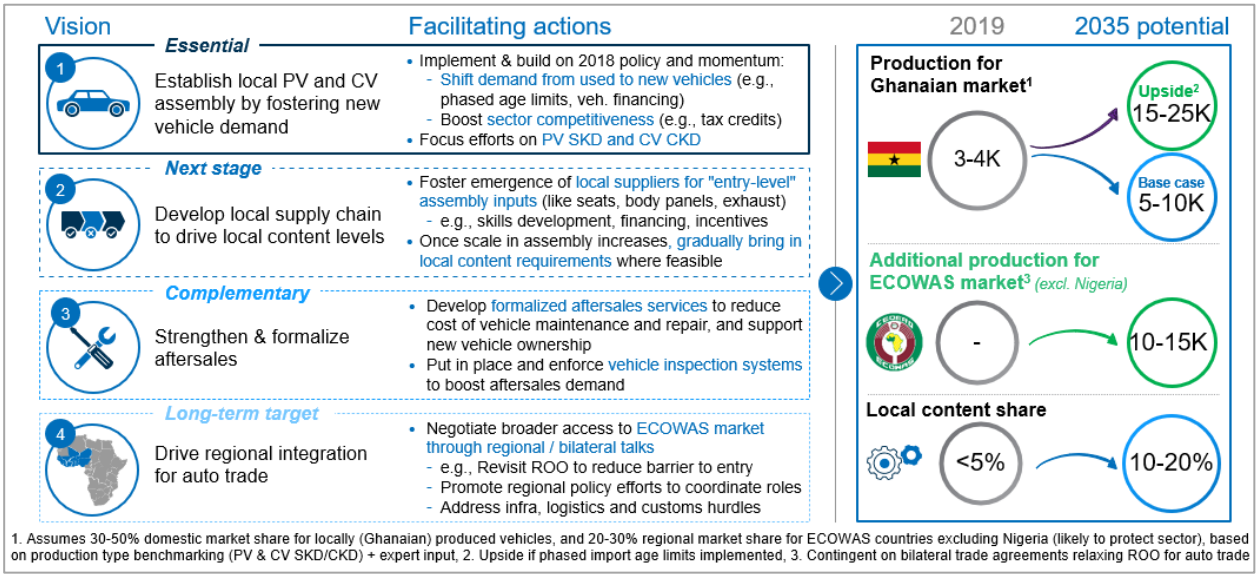


Figure 4-12: Ghana 2035 Vision

Firstly, **establishing local PV and CV assembly** requires implementing outstanding GADP provisions (i.e., tariffs, age limits) to maintain investor confidence. Additionally, to drive demand for new vehicles, used import age limits could be considered (similar to plans in Kenya), and vehicle financing initiatives can be further promoted to boost affordability. To boost sector competitiveness, investment in targeted infrastructure (e.g., industrial parks for automotive) and logistics facilities is needed, along with skills training programmes.

Secondly, **developing the local supply chain** in the longer-term should be a priority once sufficient assembly scale is built. In the immediate term, efforts should focus on providing low-scale components to assemblers. This can be supported through skills development (e.g., expansion of vocational training), collaboration programmes and incentives to encourage OEM/supplier partnerships, and investment in local testing infrastructure.

Concurrently, as with other SSA countries, **strengthening aftersales services** can be supported through garages accreditation initiatives (e.g., authorised OEM networks, platforms), formal training and

certification of mechanics, and regular vehicle inspections that increase demand for regular maintenance and repair with good quality parts.

Finally, Ghana can pursue **regional integration** over the longer-term by facilitating ECOWAS automotive agreements and addressing NTBs. This can unlock regional sales for Ghanaian producers but will require strong action by stakeholders across the region.

d) Potential impact

If the above enablers are enacted by key stakeholders, there is potential to establish local assembly, albeit at relatively low volumes, and reach up to 25-40K units[16] per year. Within this, exports could amount to 10-15K units per year if ECOWAS can be accessed. Additionally, there is headroom for improved local content integration from <5% to 10-20% by 2035 (Figure 4-12 above) as production scale increases and with support from future policies.

More broadly, if the above potential is realised, the GDP contribution from the automotive sector[17] in 2035 can rise from USD 55M in 2019 (0.08% of total GDP) to USD 350-825M by 2035 (0.25-0.50%). Formal employment in vehicle assembly could rise from 0.8K to 3-5K jobs over the same period. Broader value addition is limited by low levels of localisation by 2035.

4.5.4 Kenya

Executive summary

- **Growing new vehicle market by 2035 if NAP implemented –** forecast to reach ~90K new sales if import ban implemented, added 30-40K regional export opportunity
- **...but policy implementation lagging, other drawbacks –** yet to be enacted, local production not competitive vs. imports (skills gap, unreliable infrastructure, etc.)
- **…if resolved, potential to develop into regional CV CKD hub, and PV longer-term -** with additional opportunities in downstream
- **Critical to drive policy action to stimulate demand and incentivise manufacturers**, with support for localisation commensurate with scale of local industry

a) Addressable market by 2035 – domestic new vehicle market forecast to reach 55k-130K units by 2035 depending on NAP implementation; EAC adds 30-40K export opportunity

Kenya's addressable market by 2035 will be driven by three main factors: economic growth and consumer incomes, implementation of used vehicle imports restrictions (planned; full ban by 2029 for PV, 2022 for CV) and ability to export to the region.

While incomes are set to rise steadily, the implementation of phased age restrictions on imported vehicles under NAP (see Section 2.3.4) could significantly boost new sales. This is due to a share of used import volume shifting to new vehicle purchases once a full ban hits, although net sales will decrease due to falling affordability. Previous attempts at limits have been challenged, however. For regional exports, the EAC is

[16] Production potential of 25K given growth in addressable market under base case and regional expansion case ; 40K under uplift case and regional expansion case

[17] Vehicle assembly and component manufacturing

relatively well integrated to date but ROO requirements limit tariff-free access for SKD vehicles (impacting PVs).

As such, three forecast scenarios have been developed through to 2035. Firstly, in the **base case** new vehicle sales grow broadly in line with GDP growth, with no further import restrictions imposed. Secondly, an **import ban case** forecasts the impact of a phased used import ban over the period. Thirdly, a **regional expansion case** assesses sales upside if producers are able to export to the EAC:

- **Base case** – domestic market grows from 11K to 25K by 2035:
  - Domestic new vehicle sales grow steadily, broadly in line with forecast GDP growth[18]; sales expected to recover from COVID-19 impact after 2021
- **Import ban case** – domestic market reaches 90K by 2035:
  - Domestic new vehicle sales track the base case above but are boosted significantly by implementation of import age limits gradually over the period[19] – assumes full ban for PV by 2029 at latest, and full ban for CVs in 2022
  - In initial years, tightening of PV age limit causes customers to opt for "oldest possible vehicle" allowed, as used vehicles are still priced below new vehicles; major shift to new vehicles occurs when full ban implemented
  - Overall sales forecast to contract as age limits raise the entry price for consumers, although new sales increase due to mix effect
  - Vehicle parc expected to grow from 1.9M in 2019 to 3M in 2035
- **Regional expansion case** – export potential of 30-40K:
  - Rest of EAC offers additional new vehicle market of 30-40K based on regional GDP growth forecasts, with total vehicle parc of 2.9M by 2035 (cf. 2.4M in 2019)

b) Sector competitiveness – policy implementation lagging, with room to improve other drivers of competitiveness across the board

While there is a potentially sizeable addressable market by 2035, Kenya faces some competitiveness challenges today that must be addressed to support local industry growth (Table 4-4). While Kenya has some assembly capacity and local component manufacturing in place today (with CV production slightly more developed), capacity is underutilised, and the value chain is underdeveloped due to low market demand for locally assembled vehicles relative to cheaper used imports. It will be critical going forward to boost Kenya's competitiveness by improving the policy environment, infrastructure and the skills base.

Table 4-4: Competitiveness assessment of automotive industry - Kenya

Factor	Assessment	Key strength(s) / challenge(s) – non-exhaustive
Maturity of automotive ecosystem	Low / Med	• **Nascent automotive ecosystem:** Significantly underutilized vehicle and component manufacturers with less than 10% local content integration
Cost competitiveness	Low / Med	• **Low manufacturing productivity:** lower than regional peers (Nigeria, Ghana), only slightly better than Ethiopia • **Moderate labour costs:** competitive vs. emerging producers but expensive vs. SSA peers (Ghana, Nigeria)

[18] Adjusted for economic factors (consumer spending, country risk, etc.) that historically impact new sales in Kenya; Source: Fitch
[19] Phased import ban for PV: <5Y by 2023, <3Y by 2027, 0Y by 2029. For CV: 0Y by 2029. Current age limit at 8Y for both PV and CV

Enabling environment	Low	• **Challenged policy enactment:** NAP enactment lagging; in draft stage for 3 years due to lack of alignment across stakeholders; large debt burden may limit spending • **Limited infrastructure:** unstable electricity supply, expensive access to land and inefficient ports increase cost to serve

c) Future vision and enablers – critical to enact NAP and foster local demand, with longer-term focus on driving localisation

For Kenya, there is potentially sufficient market scale[20] to emerge as a regional CV hub (CKD production) whilst growing local PV assembly (SKD), as well as drive further value along the supply chain. For this to happen, it is essential that stakeholders foster domestic demand for new vehicles – for instance through the full enactment of the NAP. As a next stage, development of the local supply chain should be targeted at a pace that is commensurate with the scale of local assembly, starting with low-scale CV parts and expanding as industry grows. Aside from assembly, there is significant opportunity in strengthening the aftersales sector through formalisation. (Figure 4-13). To do so will require enabling actions by key stakeholders.

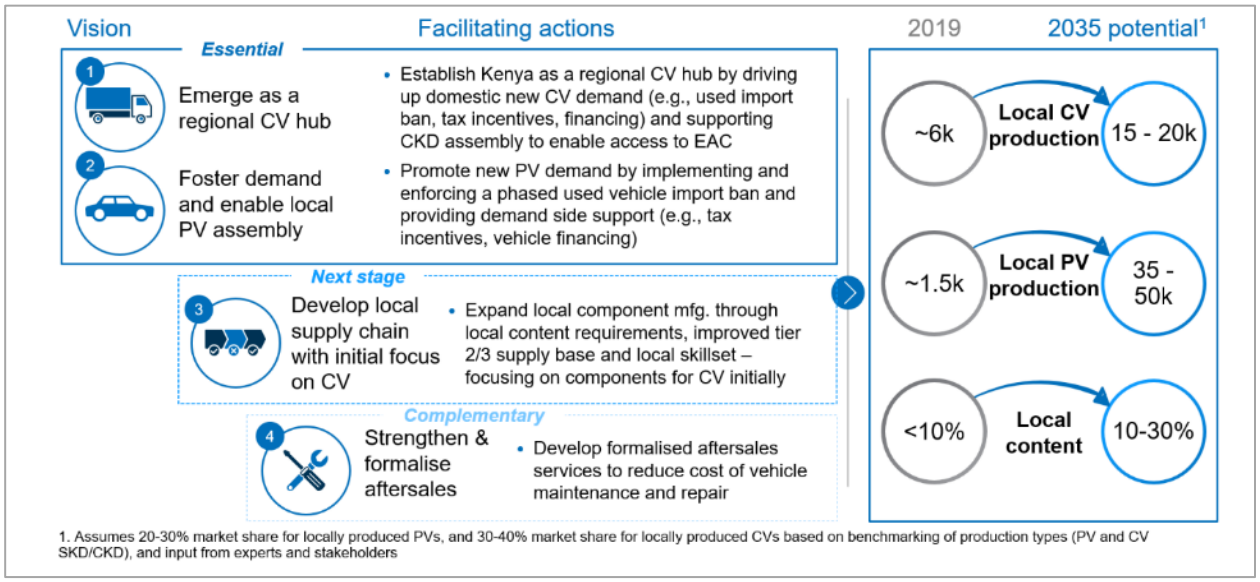


Figure 4-13: Kenya 2035 Vision

Firstly, **emerging as a regional CV hub and enabling local PV assembly** will require enacting the full provisions of the NAP. Local demand can be fostered by implementing the used import ban, offering VAT/tax incentives and affordable financing options (i.e., lower interest credit offers). Next, local assembly can be further supported through targeted infrastructure (e.g., industrial parks, incentives) to attract investors and boost confidence. Starting with CVs, stakeholders can work to improve access to EAC exports through addressing NTBs and other export promotion efforts in the region.

Next, **developing the local supply chain** should be targeted over the longer-term once sufficient assembly scale is built. Local content requirements should be carefully considered by product to ensure they do not act as a deterrent to growth, until there is sufficient scale in the market to support higher levels. In the meantime, viable suppliers can be supported via focused skills development (e.g., expansion of vocational

[20] As future vision is aspirational, import ban and regional expansion case considered.

training), collaboration programmes and incentives to encourage OEM/supplier ties, and investment in testing infrastructure.

Concurrently, as with other SSA countries, **strengthening aftersales services** can be supported through garages accreditation initiatives (e.g., authorised OEM networks, platforms), formal training and certification of mechanics, and regular vehicle inspections that increase demand for regular maintenance and repair with good quality parts.

d) Potential impact

If the above enablers are enacted by key stakeholders, there is potential to grow local assembly and reach local production of up to 50-75K units[21] per year. Additionally, there is headroom for improved local content integration from <5% to 20-30% by 2035 (see Figure 4-13 above) as production scale increases and with support from future policies.

If achieved, the automotive sector's GDP contribution can rise from USD60M in 2019 (0.06% of total GDP) to USD400-650M by 2035 (0.2-0.3%)[22] but will remain small relative to other industries. Direct and indirect employment could rise from 12K to 35-60K[23] over the same period. Value addition will increase towards the end of the period, as scale starts to support higher localisation.

4.5.5 Ethiopia

Executive summary

- **Local new sales forecast to reach 50K** by 2035 representing a fourfold increase compared to 2019 levels, boosted by new excise tax that incentivises new sales but reduces overall demand due to rising prices and very low affordability
- **Domestic sector constrained by low competitiveness** despite low input costs (e.g., labour) due to forex shortages, political instability and infrastructure challenges as well auto specific issues (e.g., lack of clear policy, skills gaps)
- **Potential for SKD assembly for local market;** sufficient scale in market for PV SKD & CV CKD but need dedicated effort to boost competitiveness vs. new imports
- **Key enablers to reach potential** are to address macroeconomic challenges, develop a targeted sector policy approach, and develop critical skills and infrastructure

a) Addressable market by 2035 – local new sales forecast to reach 50K by 2035 boosted by new excise tax incentivising new sales, reaching regional markets challenging

Local new vehicle sales in Ethiopia are estimated to grow significantly from less than 10K in 2019 to 50K a year by 2035. Projections are based on continued income growth but dominated by the impact of the current excise tax structure, which heavily incentivises new sales and is expected to drive significant volumes away from used imports and into new purchases (see Section 2.3.1 for further detail). A rapid shift to new vehicles has already been seen in 2020 and is expected to continue in coming years, as long as the

[21] Production potential of 50-75K given growth in addressable market under scenarios import ban + regional export cases
[22] GDP contribution from vehicle assembly and component manufacturing
[23] Direct production jobs, and indirect jobs in component manufacturing and downstream segments

policy situation remains unchanged. With political uncertainties and the development of a new automotive policy by MIDI (as an agency of MOTI) expected in the coming months, the situation may change.

The increase in new vehicle sales to 50K by 2035 is forecast based on several assumptions:

- **Continued growth of overall vehicle sales (2020-35):**
  - PV: 5% CAGR (new & used) – Based on growth in upper-class households, the main purchase demographic for vehicles
  - CV: 4% CAGR (new & used) – Based on historic volume growth
- **Shift to new vehicles as a result of excise tax rate change in 2020:**
  - PV: 70% new sales ratio (30% used import) over 2021-35 – H2 2020 actual (80%) with adjustment for 2021 excise tax relaxation
  - CV: 60% new over 2021-35 – as above, but including CV relaxations in 2021

Despite the shift caused by new excise tax, the overall volume of new sales will remain small at approximately 50K (35K PV, 15K CV). Accessing continental and regional markets will remain a challenge, given that a lack of free trade agreements between Ethiopia and its neighbouring countries today subjects Ethiopian exports to high tariffs. Even if Ethiopia joins the EAC, it may find difficulty meeting current EAC ROO, while transportation costs and NTBs provide further hurdles to trade. Finally, within the EAC only Rwanda and Burundi drive on the same side as Ethiopia (the right), complicating the assembly process.

b) Sector competitiveness – Low input costs but critical and structural constraints to sector across business environment, infrastructure, and skills development

Despite low input costs stemming from low cost of labour and electricity, there are critical constraints across the automotive sector development and enabling business environment (Table 4-5). As a result, the current automotive industry remains small and unable to compete with cheaper imported vehicles. Key steps around building the business environment will be needed to achieve a viable industry.

Table 4-5: Competitiveness assessment of automotive industry - Ethiopia

Factor	Assessment	Key strength(s) / challenge(s) – non-exhaustive
Maturity of automotive ecosystem	Low	• **Highly nascent ecosystem** – Limited presence of assembly and component manufacturers, less than 1K production and local component integration rate under 10%
Cost competitiveness	Low / Med	• **Low cost of labour and electricity** – Some of the lowest labour and electricity costs in the world • **Low productivity** – Lowest productivity among regional and global peers, less than a tenth of the US
Enabling environment	Low	• **No sector policy but in development** • **Macro/political challenges –** political instability and FX issues hindering investor appetite • **Skills gap –** limited availability of trained workforce

c) Future vision and enablers – Potential for PV SKD and CV CKD assembly for local market; must first address business climate, develop clear auto policy

With a potential new sales market of 50K by 2035, there is potential for local assembly of PV (SKD) and CV (CKD) by 2035 (Figure 4-14). However, there are critical constraints to doing business that must first

be addressed, as a key prerequisite for fostering the assembly industry. Firstly, FX shortages place a significant burden on assemblers that rely on importing assembly kits due to the lack of local component manufacturing. Secondly, current political conflicts and instable policy makes it difficult for corporations to make and protect long-term investments and operations. Thirdly, there is a need for reliable and affordable access to key infrastructure (e.g., roads, power, logistics services etc.).

After the pre-requisite constraints have been addressed, the next step would be to foster the assembly industry with a focus on the local market, with targeted automotive policy, provisions for boosting demand and affordability of vehicles, and supporting assembler capacity through skills development. The third and final stage would include developing the local supply chain to support assembly. Concurrent to all this, the aftersales sector provides significant opportunity given its highly informal structure today.

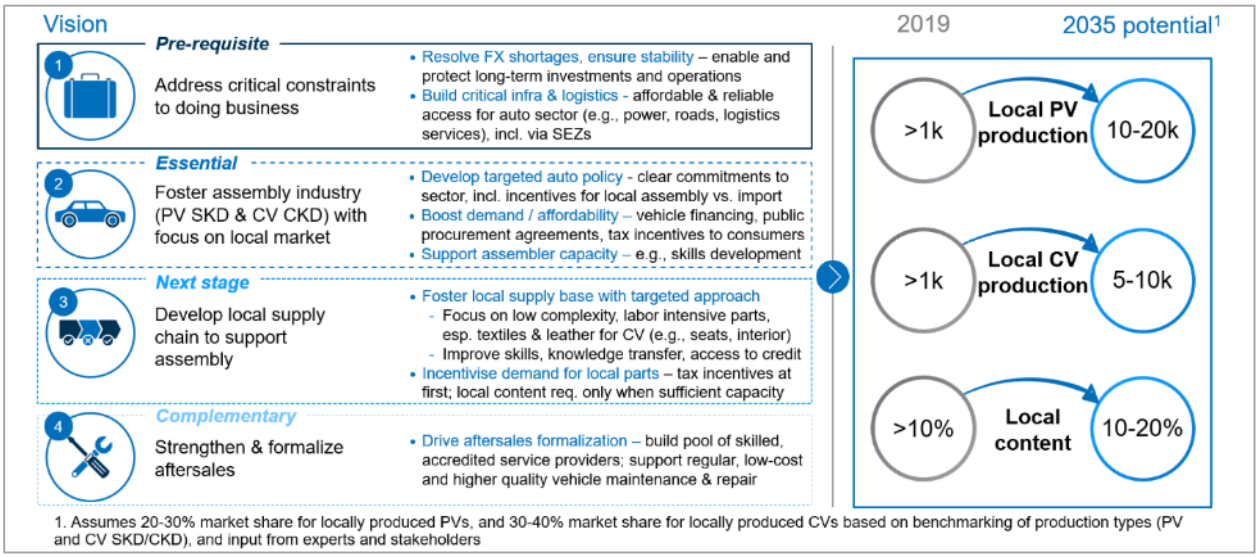


Figure 4-14: Ethiopia 2035 vision

Realising Ethiopia's vision for 2035 will require the implementation of several key enablers. To **address forex shortages and political instability**, both of which are structural issues with no easy solution, priority allocation of forex to the automotive industry and provision of political risk guarantees to investors could improve on the status quo. **Development of necessary infrastructure**, such as establishing or improving existing industrial parks and supporting the improvement of transport efficiency should happen concurrently to build up the business environment.

To **foster the assembly industry**, continuing to develop a clear and comprehensive automotive policy that incentivises local assembly over import is vital. This should be done in close collaboration with the private sector and potential investors to ensure investment is being directed well, as seen in Morocco. Clarification of ministerial/agency roles will help create visibility in the sector. The next step is to boost affordability and demand of new vehicles through improve credit access of consumers and shifting government procurement to locally assembled vehicles. Finally, collaboration with OEMs and component manufacturers to provide training and transfer skills will build out the capacity for local assembly.

As the capacity for assembly grows, Ethiopia should look to **develop its local supply chain**, with an initial focus on CVs. It should first start by defining where to play and identifying priority components, doubling down on efforts to support existing core industries such as. Textiles and leather. This should be supported by targeted fiscal and financial incentives in the short term and potentially local content requirements in the long term.

Alongside the above, Ethiopia can **strengthen and localize the downstream and aftersales market**, through market formalization efforts and aftersales skills development. Collaboration with OEMs and garages for provision of genuine parts & reliable services and creation formal vehicle inspection system would both improve safety of vehicles on the road and strengthen the dealership and repair garage networks. The creation of formal vehicle inspection systems can further increase demand for genuine parts, while improving the safety of vehicles.

d) Potential impact

If all enablers are realized, Ethiopia has the potential to reach local PV assembly of approximately 10-20K annually and CV assembly of 5-10K by 2035 (both under 1K currently), based on a few key brands capturing a strong share of the market (see Figure 4-14 above)[24]. Considering minimum viable scale for PV CKD is 50K annual sales in the market and 5K for CV CKD, the most relevant production model would be to aim for PV SKD and CV CKD assembly. At this scale, local content of 10-20% can be supported by 2035.

4.6 Role of private sector and other key stakeholders

4.6.1 Private sector players

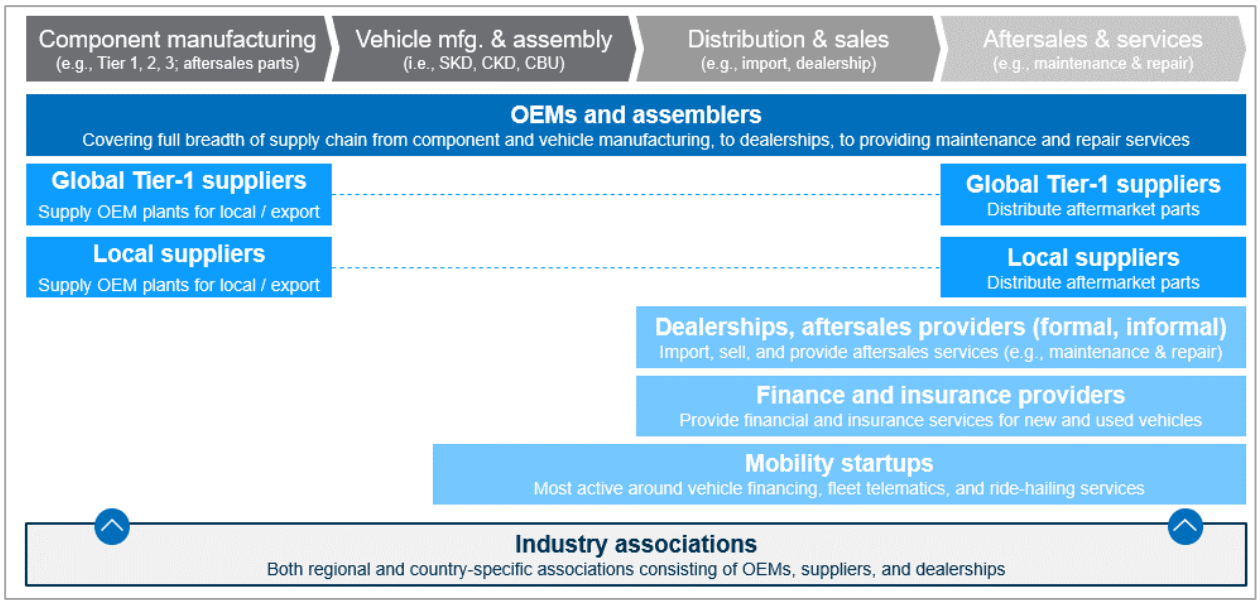


Figure 4-15: Automotive value chain in Africa

The automotive supply chain in Africa includes private sector players across four broad stages: component manufacturing; vehicle manufacturing and assembly; distribution and sales; aftersales and services (Figure 4-15). The level of local activity varies considerably across each step and across the continent. It is therefore important to consider the differing starting positions, future plans and needs of private sector stakeholders across this span, in order to consider the future potential roles areas for collaboration in development of the sector.

[24] Source: benchmarking of production types (PV and CV SKD/CKD), and input from experts and stakeholders

- **Global suppliers –** Tier 1 suppliers (e.g., Denso, Bosch, Bridgestone) and others have limited manufacturing presence on the continent today beyond mature markets (i.e., South Africa and NAB), due to the low scale of vehicle manufacturing relative to required production scale (see Figure B12 in Section 4.2b) and thin supply local base for upstream products. Suppliers are more active in the aftersales segment but are challenged by the prevalence of imported cheaper non-original parts. Bosch is active in 24 countries (with 13 offices), while others (e.g., Denso, Bridgestone) are more geographically concentrated in larger markets
- **Local suppliers –** operating at small scale outside of SA and North Africa, concentrated in a few low-scale products where local production is highly advantaged (e.g., seats). Typically struggle to meet OEM standards and pricing for a broader range of parts due to a lack of scale, skilled workforce, and testing infrastructure. Limited aftersales presence (excl. SA, North Africa)
- **Global OEMs –** CBU manufacturing is limited to South Africa and Morocco today, but OEMs are making small-scale assembly forays (SKD, CKD typically <10K) in potential regional hubs, with plans to expand capacity based on evolving market trends and policy environment. Greater manufacturing presence requires more scale in the market, but OEM's footprint in distributorship and aftersales is much more widespread, with sales networks across Africa (e.g., Toyota sells in 53 countries). Additionally, OEM-affiliated multi-brand dealers are utilised to further expand reach (Figure B13 in Appendix).
- **Dealerships** – The distributor and dealership market in Africa consists of official OEM dealers (primarily for new vehicles) and independent dealers/platforms (majorly for used vehicles). Independent dealers are more widespread in Sub-Saharan Africa (SSA), where used vehicle sales dominate. These independent channels (sometimes informal) source directly from foreign channels i.e., USA, Dubai and typically provide limited information for customers i.e., quality assurance, warranties. Recently, with the rise of e-commerce in Africa, online platforms have emerged where individuals, private sellers and dealers can advertise used vehicles for sale. Nonetheless, these platforms remain largely informal and unregulated.
- **Aftersales providers** – Similar to dealerships, the aftersales market consists of official OEM service providers (typically OEM dealers themselves) and independent garages/mechanics. Independent garages are more widespread in SSA; typically patronised by second-hand vehicle drivers who are not covered under warranty by OEMs. These garages are largely informal establishments – uncertified, unregulated, and offering non-genuine cheap parts. Regulation of aftersales activities in most of SSA is weak, although some governments (e.g., Ghana) are attempting to formalise (i.e., regulate) the sector to improve road user and environmental safety.
- **Finance and insurance providers** – access and affordability of vehicle financing remains a challenge across most of Sub-Saharan Africa, with challenges arising from limited information on creditworthiness of buyers due to lack of credit bureaus and limited collateral. Current provision by formal players (e.g., banks, dealerships) typically focuses on high-earning individuals and larger businesses, although a number of digital lenders have emerged in recent years in some markets. At the same time, many lenders and loan sharks charge very high interest rates over short periods to desperate customers. Vehicle insurance faces some of the same challenges, however penetration is typically higher than financing due to regulations requiring insurance on vehicles in a number of countries.
- **Industry associations** - AAAM (Africa Association of Automotive Manufacturers), a leading consortium of OEMs and automotive stakeholders in Africa, is playing a key role in regional coordination and advancing the future development of the industry in Africa. For example, AAAM

has taken a leading role in negotiating terms with the AfCFTA Secretariat and African governments on automotive ROOs under the AfCFTA. AAAM is also establishing external partnerships with foreign bodies e.g., GIZ to develop targeted programs in less developed markets. Additionally, country-level associations also exist in automotive-producing markets including South Africa, Kenya, Nigeria and Ghana. Based on the national context, these associations have varied plans and priorities but are typically involved in policy advocacy and lobbying activities. For example, NAAMSA (National Association of Automobile Manufacturers of South Africa) have been active in pushing for EV-friendly production policies.

- **Mobility start-ups** – With the rapid rise of ICT and mobile adoption in Africa, connected and shared mobility uptake is fast growing. Major OEMs such as Toyota and Volkswagen are exploring these emerging trends on the continent – for example, Toyota's corporate venture capital (CVC) arm, Mobility 54, is pursuing shared mobility initiatives in East Africa through investments in local start-ups. Additionally, there is increasing private sector/start-up involvement on the continent, with the entry of Uber and Bolt in multiple countries across Africa, and development of local connected fleet/logistics platforms (e.g., Kobo 360, Lori) offering real-time tracking of assets.

4.6.2 Japanese private sector

The Japanese private sector is well represented in Africa, but with differing strategies across players. Amongst OEMs, Toyota has the highest presence in Africa with a *chsan chishou* production strategy based on high levels of localisation to serve country-specific needs and requirements. Accordingly, Toyota has established a network of production plants across Africa with a CBU plant in South Africa, and several CKD/SKD facilities in Kenya, Egypt, and most recently, Ghana. Aside from production, Toyota's sales and distribution channels are well established with operations in 54 countries, and more than 400 sales amd service points across Africa[25]. Toyota Tsusho, the trading arm of Toyota Group, is actively supporting mobility start-ups in Africa, with investments in Sendy and Moja Ride[26] through its CVC arm Mobility 54.

Another Japanese OEM with significant presence in Africa is Isuzu, a leading CV player in the region. Isuzu runs CKD plants in South Africa, Kenya, and Egypt[27], all of which were inherited from General Motors OEMs. Another leading OEM, Nissan has CKD plants in Egypt and South Africa, with plans to open a SKD plant in Ghana. Suzuki, a major player in entry level vehicles and a market leader in India, have a limited production footprint (shared facility with Toyota in Ghana) but is penetrating the entry level segment leveraging their Maruti Suzuki plant in India. Honda, on the other hand, are working to streamline production globally and currently closing down production capacities in Europe. Honda's only presence in Africa remains the SKD plant in Nigeria.

On the other hand, presence of Tier-1 suppliers, especially in SSA, is more limited compared to OEMs. Denso has plants in Morocco and South Africa to supply local OEM plants with future plans to provide premium aftersales services and spare parts continentally, similar to Bosch's success in emerging markets. Bridgestone recently closed its Gqeberha (formerly known as Port Elizabeth) plant in South Africa as it looks to restructure its global footprint, with one plant remaining in South Africa. Bridgestone has also started testing telematic solutions in South Africa to diversify income streams.

[25] Source: Toyota Africa corporate website
[26] Source: Toyota Tsusho
[27] Nascent plant established also in Ethiopia by Kaki Motors but with minimal production

4.6.3 Other stakeholders

Aside from private sector players, there are other critical stakeholders that will play an important role in the future of the African automotive industry.

- **National governments –** Governments play an instrumental role in supporting and developing the local automotive industry. Government agencies are typically dispersed across several functions and roles impacting the automotive sector (e.g., automotive agency, trade promotion agency, revenue & customs authority, skills agency, standards authority); coordination is therefore critical to ensure policies are implemented successfully. Governments across Africa are at different starting points today with regards to the automotive sector, as seen in country baselines (Section 2.3)
- **Intergovernmental organisations –** RECs such as ECOWAS, EAC and SADC offer the most immediate opportunity to develop regional automotive trade given their relatively advanced status and the relative geographical proximity between member states but have yet to define clear automotive policies and often have sizeable restrictions (e.g., ROO requirements, NTBs). On the continental level, the AfCFTA Secretariat will play a critical role in driving long-term integration, but bottlenecks currently exist in terms of potentially restrictive ROOs (still under negotiation) and likely protectionism by key member states. See Section 2.2.2 for more details
- **Development partners –** Development partners support the African automotive industry through direct sector initiatives as well as indirect support programmes (e.g., sector-agnostic industrial promotion, training, infrastructure). There are broadly four areas of support to sector (below).
  - Policy support: policy advocacy and technical assistance for designing and implementing regional and country-specific automotive policies
  - Skills & human capital development: institutional technical and vocational education and training (TVET) programmes to develop formal labour market-oriented qualifications amongst the local labour force
  - Private sector promotion: targeted business support for investment facilitation, business financing, etc. to enable private sector investment and participation
  - Infrastructure & logistics development: infrastructure investment and Public-Private Partnerships (PPP) to improve business and trade competitiveness

  Figure B14 (Appendix) provides a mapping of select development partners to these support areas, based on recent activity and publicised plans.

4.6.4 Future role of private sector and other key stakeholders

In considering areas for potential future support to develop the African automotive industry, it is useful to first consider the role that different stakeholder groups will play. Table 4-6 provides an overview of potential roles and enabling actions for the region and by country.

Table 4-6: Stakeholder mapping for Enablers

Objective	Key enablers for priority countries	Geography
A. Regional market increasingly integrated		
1. Drive regional integration efforts	Intergovernmental orgs - African Union (incl. AfCFTA Sec.): • Facilitate AfCFTA negotiations between member states – especially around ROO negotiations • Support liberalization efforts for the automotive sector, and provide policy/technical assistance where required Private sector – Associations (i.e., AAAM) • Drive regional agreement (i.e., Auto Pact) on coordinated roles and policy across producers; support AfCFTA Sec.	pan-Africa
	Intergovernmental orgs - Regional Economic Communities (e.g., ECOWAS, EAC, SADC): • Define coordination framework for regional auto trade and supply chains to promote integration • Address restrictive ROO and NTBs, facilitating customs process • Invest in regional infrastructure and logistics to reduce high transport costs	pan-Africa (within RECs)
B. African manufacturing poles (SA, N. Africa) adapt and thrive		
2. Facilitate switch to new technology for key exporters markets (EV, carbon neutral)	Private sector - OEMs and suppliers • Invest in upgrading / new facilities for NEV and carbon neutral production capacity • Promote collaboration amongst OEM/Tier 1, Tier 2/3 for sourcing and skilling for local NEV components • Expand vocational trainings and local testing infrastructure to support Tier 2/3 suppliers of NEV components	
	Governments • Develop green policy and masterplan to adapt to rise of NEVs in key export markets incl. incentive schemes for shift to local mfg. and exports of NEVs • Provide support to OEMs to adapt facilities to carbon neutral production (e.g., tax incentives on CAPEX) • Collaborate with private sector to invest in NEV infrastructure for local market, if clear business case for local demand	
3. Facilitate investment promotion for nearshore manufacturing (North Africa)	Private sector - OEM • *OEM:* Conduct market assessments of potential production nearshoring hubs in North Africa (e.g., Morocco, Egypt) • *OEM:* Engage with governments and local supply chain to further validate viability and agree on terms of investment Private sector – global suppliers • Expand presence in Morocco, especially if 3rd OEM attracted to produce locally; otherwise, growth from nearshore • Explore ramping up nearshore component production in Egypt for labour-intensive components (e.g., wire harness)	
	Governments • Develop consistent auto sector policies/legislation w. firm commitments to support investor confidence • Initiate measures to enhance investment climate for foreign & local investors in sector (e.g., infrastructure, skills)	
C. Regional CKD assembly hubs emerge in rest of SSA		

4.	Support local assembly	Private sector OEMs/Suppliers: • Support vocational training and operational improvements to develop local skills and efficiency • Promote collaboration amongst OEM/Tier 1, Tier 2/3 for sourcing of local components *Associations:* Coordinate OEM and investor engagements in national policy dialogue and development
5.	Foster local supply chain	Governments • Develop consistent automotive sector policies/legislation with firm commitments to support investor confidence • Initiate and support measures to enhance investment climate for foreign & local investors in sector (e.g., Industrial Parks)
		• Enact NAP to incentivize local industry and local value addition, with supporting measures i.e., import limits • Invest in targeted infra (e.g., SEZs) and improve port efficiency to support market access/exports to EAC
		• Plan next policy steps in supporting OEM mfg. scale & competitiveness – OEM/component manufacturer incentives (near-term); localization requirements (medium term) in addition to necessary infra/logistics dev. and skills training • Gradually restrict used vehicles imports (i.e., tariffs, age limits, bans on smuggling)
		• Develop clear auto policy to incentivize local assembly; define supporting institutions to support implementation • Address FX shortages and provide risk guarantees to enable investments in automotive sector
D. Downstream supply chain transformed		
6.	Professionalize downstream channels (i.e., dealership, distribution and aftersales) channels	Private Sector - aftersales players: • Develop accreditation mechanism and formal training/certification programs in collaboration with skills agencies • Promote collaboration between OEM and garages/aftersales shops to develop authorized networks/partnerships/platforms • Promote in-house financing by dealers/partnerships with banks for auto-loans for customers
		Governments • Develop standards and testing infrastructure for provision of genuine aftersales parts • Boost demand/affordability of locally assembled vehicles i.e., credit access, consumer subsidies, govt. procurement • Provide training and certification programs for informal players i.e., aftersales mechanics, garages • Establish framework for periodic vehicle checks on roadworthiness and safety to generate aftersales demand
7.	Support innovative mobility solutions	Private sector – Start-ups + OEMs + tech companies: • Finance start-ups / develop tech hubs (i.e., accelerator, incubator, co-working spaces) to foster start-up activity and in partnership with OEMs/tech companies
		Governments • Promote start-ups & entrepreneurship in mobility space through incentives (e.g., R&D schemes, start-up funds), infra (e.g., tech hubs) and skills training • Establish policies and legislation governing shared mobility networks incl. protection of consumer data

5 Recommendations: potential JICA support to African automotive industry

In this section, the broad vision and enablers identified above as critical to the future of the African automotive sector are built upon, in order to identify potential areas of JICA support. Specifically, initiatives with the highest potential impact and feasibility of being successfully implemented are shortlisted for each priority country, and for the region as a whole. The result is a set of potential Pan-African initiatives and country-specific support measures that have the potential to advance the African automotive industry as a whole towards the 2035 future vision (see Section 4.3).

5.1 Framework for initiative development and prioritisation

To identify the highest potential initiatives for JICA support to the automotive industry in Africa, a four-step framework was employed. The overall process involved an iterative sequence: first identifying a wide range of options ("divergence"), before narrowing in on priorities in conjunction with input from key internal and external stakeholders to JICA ("convergence").

Specifically, a longlist was first developed to consider the full range of potential initiatives that JICA could support. This longlist was then refined into priority initiatives based on those with the highest impact potential and feasibility for JICA to implement. Finally, the priority initiatives were detailed out through initiative charters to provide guidance and implementation considerations for stakeholders. The detailed criteria for each of the above steps are outlined below.

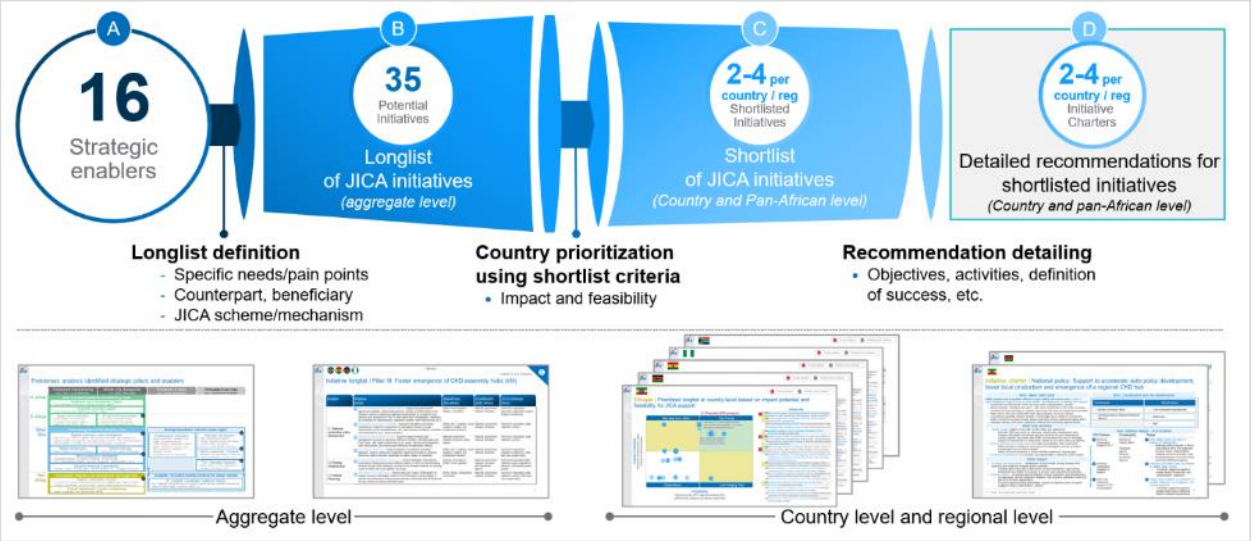


Figure 5-1: Multi-stage approach to develop initiative country- and regional-level recommendations

a) Identification of strategic enablers

In Section 4.4, sixteen strategic enablers were identified under each of the four vision pillars, spanning pan-African, subregion- and country-specific areas of focus. These enablers form the basis of the initiative development and prioritisation process.

b) Developing the long list of JICA initiatives

The sixteen enablers were then expanded upon and refined into potential initiatives specific to JICA, resulting in a longlist of 35 JICA initiatives. The longlist includes the following aspects for each initiative:

- Initiative description ("what") – overview of proposed actions
- Need or pain point ("why") – challenges or opportunities to sector identified in the study
- Counterpart stakeholders ("with whom") – potential bilateral partners for the JICA initiative
- Beneficiary stakeholders ("for whom") – individuals, groups or institutions that would gain directly from support package implementation
- JICA support mechanism ("how") – TCP, ODA loan/grant, PPP, etc.

The resulting longlist of 35 initiatives from this stage of the process was country-agnostic and is shown in Appendix B: Detailed figures and exhibits. The initiatives were developed and refined with input from internal JICA stakeholders.

c) Country prioritization using shortlist criteria

Next, each of the initiatives on the longlist were screened to identify those with the highest impact potential and feasibility. Initiatives were assessed at the country level, considering differing conditions across markets, with scoring based on a high/medium/low ranking across each dimension based on available quantitative and qualitative inputs.

Impact potential was assessed across three dimensions:

- Economic value addition, e.g., outputs such as jobs, trade, and investment
- Socio-economic benefits, e.g., skills development, technology transfer, consumer benefits, inequality reduction
- Ecosystem effects e.g., company development, industry acceleration

The feasibility of each initiative being implemented successfully was assessed across four dimensions:

- Alignment with JICA strategic priorities
- Operational feasibility based on JICA capacity (e.g., technical expertise), counterpart capacity (e.g., human resource) and implementation risk (ease of operationalizing the initiative)
- JICA additionality, including both duplication risk with other stakeholder initiatives and complementarity with existing in-country programs
- Bilateral counterpart alignment, which considers fit with the priorities of the partner state.

The prioritisation exercise was conducted for each of the five priority countries of this study, for the North African Belt countries (specifically Egypt, Morocco and Tunisia) and at the pan-African level for regional or multi-country initiatives. Three to five priority initiatives were identified for each, based on the assessment on both impact and feasibility. Additionally, some initiatives with high impact potential but lower feasibility due to operational or capacity constraints were highlighted as potential initiatives for later consideration. The detailed prioritisation matrices used for the assessment are shown in Appendix B: Detailed figures and exhibits.

An initial shortlisting of initiatives was discussed with relevant JICA stakeholders for feedback and refined based on their input. In addition, the shortlist reflects discussions with key external stakeholders on the most critical enablers for each geography from one-on-one interviews and country stakeholder workshops.

d) Detailed recommendation for shortlisted initiatives

The above process identified a set of priority initiatives that form the recommendation to JICA on potential future support to the automotive industry. For each of the proposals, detailed initiative charters have been developed (separate to this Report) to guide the next stage of work, should JICA proceed with designing and implementing support schemes in this area.

5.2 Shortlisted initiatives for potential JICA support

The detailed assessment and prioritization of initiatives (see Appendix B: Detailed figures and exhibits) resulted in several common themes emerging across countries for possible areas of JICA support. Figure 5-2 below summarises three broad groups of initiatives.

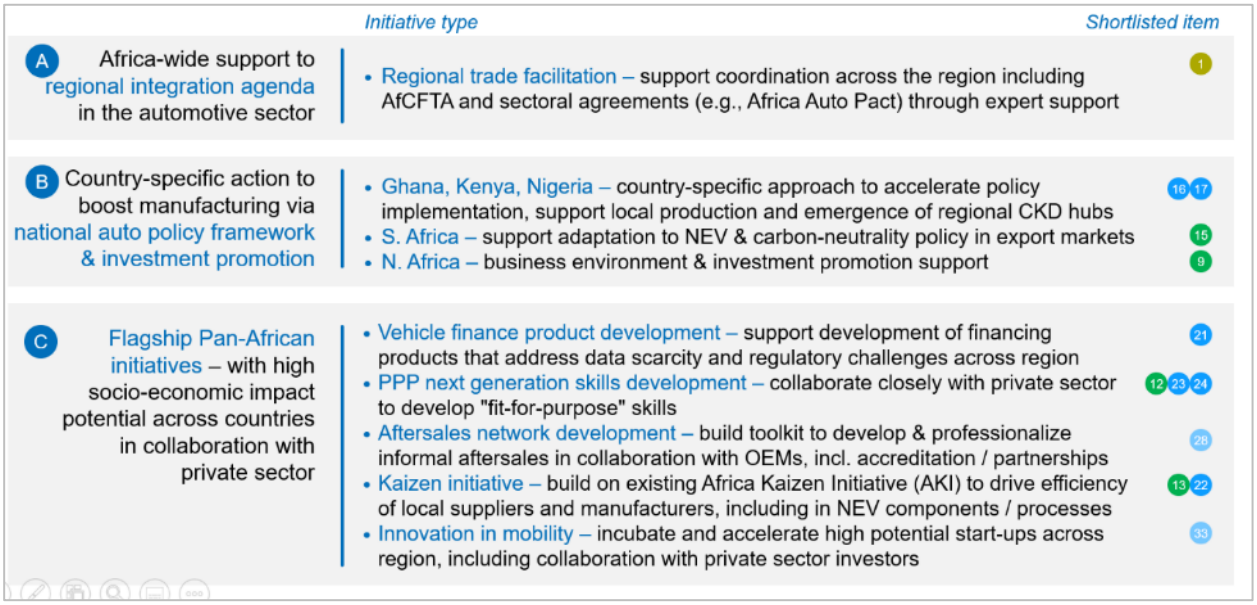


Figure 5-2: Summary of shortlisted priorities – Pan-African view

Firstly, it is proposed that JICA considers **support to the regional integration agenda in the automotive sector**. Successful regional integration has the potential for transformative impact on the industry, by pooling together fragmented pockets of demand for new vehicles into larger addressable markets – thereby supporting greater scales of production and local value addition. Achieving this will require considerable coordination across countries, however. There is currently a high likelihood that nations that wish to build domestic automotive industries decide to protect under the terms of the AfCFTA (i.e., through the Sensitive and Exclusion Lists). As such, JICA can consider supporting the efforts of key stakeholders (e.g., the AfCFTA Secretariat, AAAM on development and implementation of the Pan-Africa Auto Pact) to advance the regional agenda.

Secondly, there are a set of **country-specific support** areas proposed for JICA to consider supporting, related to **national automotive policy development and implementation** to boost the manufacturing / assembly sector in specific markets. Each country is at a different starting point with regards to the policy framework and key priorities (e.g., fostering assembly vs. adapting to NEV vs. attracting new OEMs). As such, JICA's support should be highly tailored to these specific considerations and reflect the varying levels of feasibility.

Lastly, several areas were identified as having potential as **flagship Pan-African initiatives**. These proposed support measures have high potential socio-economic impact across a number of countries and could be developed as umbrella regional programmes with country-level implementation and design considerations. These include:

- **Vehicle financing**: affordability is a critical constraint to new vehicle sales across the region and access to credit is constrained by a lack data on applicant creditworthiness, regulatory hurdles and liquidity constraints. Product innovation in vehicle financing (with a focus on SMEs and private individuals) has the potential to address this gap, especially if designed in partnership with commercial lenders, OEMs / dealerships and in some cases the government while considering innovative start-up solutions (e.g., leveraging digital payments).
- **Demand-driven (PPP) next generation skills development**: across countries in the region, there is often a sufficient supply of automotive workers but a lack of fit-for-purpose skills and training (e.g., mechatronics, automotive-specific courses, etc.) that meet the needs of the private sector. This is particularly relevant for aspiring production hubs looking to secure a skilled workforce, but also for the aftersales market across countries. Additionally, there is need to prepare the workforce for changing vehicle technology (e.g., connected vehicles, NEV). As such, there is an opportunity to expand support to the automotive sector in close collaboration with private sector players, to build skills and productivity tailored to demand.
- **Aftersales network development**: the aftersales market today across most of Sub-Saharan Africa is highly informal and fragmented, with a high prevalence of low-quality parts. This can impact the roadworthiness and safety of vehicles. The sector is also a considerable employer. In collaboration with formal private sector players (e.g., OEMs, Tier 1 suppliers), it is proposed that JICA considers driving efforts to professionalise MSMEs in the aftersales space, including through programmes to certify or accredit those meeting quality standards and facilitating partnerships with formal players.
- **Quality & productivity improvement by Kaizen**: there is considerable opportunity to improve quality and productivity in the local supplier base. JICA has the potential to bring extensive expertise and experience in supporting vocational training and productivity improvement through the existing Africa Kaizen Initiative (AKI). This can be built upon to further support local suppliers and assemblers in aspiring CKD hubs, as well as support adaptation to operations for an increasingly NEV-centric supply chain in South Africa.
- **Innovation in mobility**: new innovations in mobility such as shared service platforms (e.g., ride hailing, last mile delivery) and connected vehicle solutions (e.g., B2B fleet management) have potential to drive significant impact in terms of affordability and access, as well as job creation and economic growth. It is proposed that JICA considers supporting the incubation and acceleration of high-potential start-ups in this space, including collaboration with private sector investors active in the space. For example, JICA can design and operationalise new private sector accelerators in the mobility space to further develop relevant ecosystems, and/or provide debt/equity investment in high potentially mobility services providers through its Private Sector Investment and Finance (PSIF) scheme.

Implementation of the above initiatives can first be considered for the priority countries of this report, then potentially expanded to other Sub-Saharan African countries thereafter. See Section 5.3 for more details on country-level prioritisation.

5.3 Country shortlist summary

While the above initiatives have applicability across geographies, each country varies in its starting position. As a result, initiatives with the same theme can have different levels of potential impact and feasibility (e.g., policy status, investment climate, local industry capacity, alignment with stakeholder priorities). Based on these considerations, Figure 5-3 prioritises each initiative at a country level. For each country, initiatives are identified and proposed as being a first priority for immediate consideration, a second priority that could be considered in the future if certain preconditions are met (e.g., automotive policy implemented, successful pilots/programmes in other countries), or a non-priority.

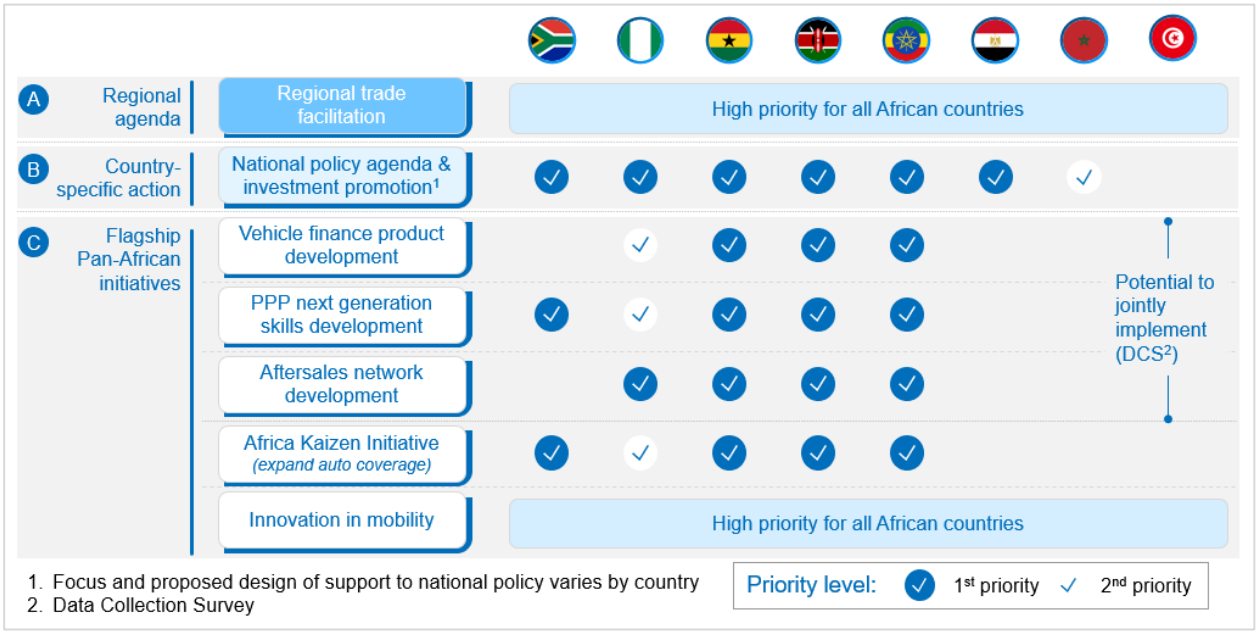


Figure 5-3: Summary of potential JICA support programmes by geography

Support to the regional integration agenda is considered as a cross-cutting initiative, given the need for coordination across intergovernmental institutions (e.g., AfCFTA Secretariat), private sector organisations (e.g., AAAM) as well as individual member states. Effective design and implementation of such initiatives will require close coordination across national and regional economic community levels.

Support to national policy framework development and implementation to promote local manufacturing and assembly is seen as a foundational first priority across all five focus countries of this study as well as Egypt, with a varied and tailored approach in each market. While general support to policy is considered in some nations (e.g., support to GADP implementation in Ghana), others target more specific factors (e.g., NEV adaptation in South Africa).

Finally, for some of the flagship Pan-African initiatives (vehicle financing, skills development, aftersales network development), two to three countries are identified as being first priority for implementation based on the market's current starting point. The other focus countries of this study are then considered as a second priority, pending critical actions that will enable the initiatives to be successful.

For Nigeria, where assemblers are operating significantly under capacity, it will first be critical to revitalise the local industry through national policy (e.g., trade and fiscal incentives) before supply-side initiatives (i.e., skills development) can be effectively implemented. Flagship initiatives could potentially be

implemented at a regional level (e.g., Data Collection Survey) with country-specific considerations and actions.

Section 5.4 now further discusses prioritization and specific design elements on a country-by-country basis. Addressing the country-specific nuances in the initiative design results in proposals that are likely to be address the needs of stakeholders in a given country's context.

5.4 Details of shortlisted initiatives by country

5.4.1 South Africa

South Africa's key priority is to continue protecting and growing exports, given the importance of exports in enabling CBU production at scale. This requires swift adaptation to a) shift of demand in export markets to NEVs and b) carbon neutrality regulations. Proposed initiatives focus on the major investments that are likely to be necessary to transform the local supply chain as well as support for training and skills development to continue building out the automotive industry ecosystem.

Important local context considerations include:

- More than half of vehicles produced in South Africa are exported to large economies such as the UK, the EU, Japan and the United States, and sustaining current levels of export is critical to maintaining the scale of CBU production given stagnation of domestic market
- Major export markets (especially in Europe) are shifting swiftly towards NEVs, and South Africa will need to adapt its supply chain to adapt to the change
- Carbon neutrality regulation is expected to tighten across advanced economies and result in exports from South Africa losing competitiveness as manufacturing processes in South Africa are highly carbon intensive – large investment required to transition to carbon neutral manufacturing
- Policy development is already underway (e.g., Auto Green Paper) but will require ongoing consultations to ensure it is supportive to all industry.

As a result, three priority initiatives are recommended for consideration:

1. **Support to build out the NEV supply chain** would tackle the largest pain point that South Africa faces, which is to adapt rapidly to transitioning needs in export markets. As a first step, it is proposed that JICA considers assessment of the local supply chain to identify (a) which components can feasibly be produced, (b) what challenges are currently faced and what incentives may be required to facilitate the transition for these component groups, and (c) what cross-cutting technology and skills requirements are required to develop an NEV component ecosystem with a competitive edge (e.g., electronics). As a second step, JICA could support the design of incentive structures for OEMs and suppliers to make necessary investments to ramp up the ecosystem (if required following the Auto Green Paper)
2. **Demand-driven skills development in collaboration with OEMs:** building off existing JICA support to TVET institutions in South Africa, it is proposed that future efforts consider collaboration with OEMs to refine programmes to ensure fit-for-purpose skills are developed, in particular including revamping of the existing curriculum to reflect the needs of adaptation to NEV-centric production (components, vehicles) and servicing. The initiative would additionally consider train-the-trainer programmes, apprenticeship programmes with OEMs, and Japan factory visits.

3. **Quality & productivity improvement by Kaizen** would build on the existing Africa Kaizen Initiative (AKI) that is conducted in partnership with AUDA-NEPAD and recent/ongoing support to the South African automotive industry[1] and expand to reach local automotive suppliers to increase their productivity and efficiency, including in NEV components / processes. Potential partnership with Japanese OEMs and suppliers could further strengthen the programme.

5.4.2 Nigeria

Nigeria's shortlisted initiatives focus on the need to revitalise the automotive industry so that the country can emerge as a regional CKD hub, as well as developing downstream channels.

Critical local context to consider regarding fostering CKD assembly hub potential include the following:

- Long-term policy commitment is a pre-requisite for industry revitalisation: implementation of (including legislating for) the 2013 National Automotive Industry Development Plan (NAIDP) has been challenged to date. This, coupled with recent policy changes (i.e., import duties and levies on PV and CV slashed by Finance Bill in 2020, overruling the NAIDP), have slowed local production and resulted in waning investor/OEM confidence
- Low affordability of new vehicles: less than 5% of Nigerians can afford new vehicles today, acting as a critical constraint to demand. Financing terms remain high, in part due to challenges in assuring creditworthiness of customers and securing collateral due to liquidity challenges with vehicle assets
- Limited availability of 'fit-for-purpose' skills: despite historic automotive industry development, formal training (e.g., TVET) yet to meet volume of demand for tailored automotive skills (e.g., mechatronics) although some programs in place.

The primary considerations for the downstream channel development include:

- Sizeable market potential: estimated car parc of over 11 million vehicles with high average age that require servicing
- Highly informal aftersales market: wide use of low-quality parts (heavily used, counterfeits) and infrequent servicing. Workforce mostly trained informally (dominated by self-trained mechanics). These two factors continue to raise potential safety and roadworthiness concerns.

Given the local context, the study proposes six priority initiatives for JICA. The two more immediate priority initiatives are:

1. **Policy implementation support:** It is proposed that JICA considers continuing its technical cooperation to support policy implementation in the auto sector. The JICA expert(s)/project team would work closely with the relevant ministries and agencies to advance consistent implementation of the existing and/or updated government policy. Additionally, the support would focus on building institutional capacity for implementation of used import restrictions, homologation regulations and a periodic vehicle inspection system. Consistent policy implementation would benefit the auto sector by providing a stable business environment and clear incentives for investment.

[1] JICA Experts (Auto Industry Human Resource Development Advisors) were dispatched to AIDC during 2017-2020; building on the contribution of the experts, JICA is planning to support the improvement of quality and productivity of the South African industry through the 5-year technical cooperation project Quality & Productivity Improvement (KAIZEN). This project will commence in 2022 with DTIC as a counterpart, with the automotive as the core target industry

2. **Aftersales network development - quality improvement and accreditation of SME garages in partnership with OEMs:** It is proposed that JICA considers conducting a Data Collection Survey to assess potential for developing partnerships between OEMs and high potential informal aftersales players. The survey would consider design of the partnership programme, which could include support to improve operations and standardise quality (e.g., training, provision of modernised equipment) and to ultimately certify high potential garages as authorised / accredited partners. OEMs would benefit from an asset-light, economically sustainable approach to expand offerings to second tier towns and smaller cities.

Given the impact and feasibility for JICA's support, there are additional opportunities to implement initiatives in the automotive sector. It is proposed that consideration be given to social issues such as road safety and skills development when formulating or studying investment and financing projects in the automotive sector. These additional opportunity areas include:

3. **Joint vehicle financing product development for banks and OEMs,** including sector specific pilots and risk assessment data development to increase access to affordable vehicle finance, especially for consumers and SMEs.
4. **Next generation skills development program design and pilot in collaboration OEMs** (e.g., Data Collection Survey) to prepare fit-for-purpose workers in assembly, manufacture, repair/maintenance of vehicles (incl. NEV, Connected), boosting overall productivity and creating higher value-added employment.
5. **Quality & productivity improvement by Kaizen:** consideration of support to local suppliers and assemblers under Africa Kaizen Initiative (AKI) once there is sufficient demand in the sector for local production, to boost productivity
6. **National policy deep dive on road safety & auto waste systems,** incl. maintenance and recycling for end-of-life vehicles and parts, to improve roadworthiness of vehicles and with the potential to create new employment opportunities and reduce the environmental impact of sector waste. To explore vehicle inspection system enhancement and road safety laws to improve driving conditions.

5.4.3 Ghana

Ghana's shortlisted initiatives also focus on the opportunity to foster emergence of CKD assembly hubs and develop downstream channels in the market.

The critical local context for initiatives under the CKD assembly hubs include:

- Strong momentum in assembly industry: recent OEM investments in small scale assembly, and positive recent policy steps through the Ghana Automotive Development Policy (GADP). The GADP has been legislated and partially enacted and there is potential to support further policy advancements (including used import limits, e.g., gradual phasing of tighter age restrictions)
- Affordability and vehicle financing gap: while affordability is critical for demand, vehicle finance rates remain punitively high, in part due to data scarcity for risk assessment
- Limited availability of "fit-for-purpose" skills: linked with a limited number of skilled worked in engineering and technical fields, with a growing need for the right skills to enable the nascent, fast-growing, production capacity within the country.

The primary considerations for the downstream channels were:

- Sizeable market potential: estimated aftersales market of $500M+ with car parc of over 2 million vehicles, with 70-80% of this market today concentrated in informal activity. Potential for economic growth and job creation through improved productivity and market formalisation.
- Prevalence of low-quality parts and limited formal training: as with Nigeria, there is wide use of low-quality parts (heavily used, counterfeits) and limited formal skills or training to support quality servicing, particularly for new vehicles. This results in low roadworthiness of vehicles, impacting road safety.

Given the local context, the study proposes five priority initiatives for JICA:

1. **Support implementation of GADP:** It is proposed that JICA considers support to the Ghanaian government (e.g., ODA loan if/when eligible, or technical cooperation) to enable key steps in GADP implementation (such as enforcement of used import limits, homologation, and tax incentives) while building institutional capacity. Technical support could include assessment of next steps in policy development beyond GADP (e.g., further regulations regarding used imports), as well as identifying the right pace for local component inclusion given the growing scale of local assembly. As a result of effective implementation, Ghana would benefit through the stable investment climate and sustained investor confidence and attract more investment into the auto sector.
2. **Support joint vehicle financing product development for banks and OEMs:** It is proposed that JICA considers bringing stakeholders together to identify and assess the feasibility of potential product solutions (e.g., via Data Collection Survey), including potentially piloting products in market. If implemented as a regional initiative, Ghana can be considered as an early priority country given existing interest from the Government of Ghana in vehicle financing solutions under the GADP
3. **Demand-driven next generation skills development:** It is proposed that Ghana is considered a priority country for the flagship skills development initiative, given that the emergent local assembly industry has a limited pool to draw from given the limited historic activity in the sector. JICA could consider partnering with OEMs and consult closely with government (incl. TVET colleges) to assess the current supply of fit-for-purpose skills, versus demand. JICA would work in close collaboration with OEMs to develop and pilot the training/apprenticeship program to prepare fit for purpose workers for the entire sector (including leveraging existing training facilities), including assembly, manufacture and repair/maintenance of vehicles (including NEV and Connected).
4. **Aftersales network development - quality improvement and accreditation of SME garages in collaboration with OEMs:** as with other priority countries of this study, there is significant potential in Ghana to improve the quality and growth of aftersales. As such, it is proposed that JICA considers implementing an aftersales network development initiative in collaboration with OEMs, as described in Section 5.2 above.
5. **Quality & productivity improvement by Kaizen:** consideration of support to local suppliers and assemblers by Kaizen cooperation in Ghana in collaboration with Africa Kaizen Initiative (AKI) to boost productivity.

5.4.4 Kenya

Kenya's five shortlisted initiatives are proposals that focus on a) fostering the emergence of CKD assembly hubs and b) developing downstream channels across the region. These proposed initiatives reflect the need for targeted efforts towards policy development, vehicle affordability and skill development. These proposed initiatives also examine ways to tap into the sizeable market potential of a more formalized aftersales market in Kenya.

Important local context for CKD assembly hubs include:

- The current state of the National Automotive Policy (NAP) and the need to ensure that future development, especially on levels of local content requirement, aligns realistically with the scale of local assembly
- Factors driving the affordability gap in vehicle financing- including data scarcity and low awareness of SME businesses at financial institutions, which hinders effective risks assessment and leads banks and other providers of capital to offer punitively high asset-finance rates
- Local academic institutions tend to offer generic technical courses thus producing graduates who readily match the skill requirements of the automotive industry. Currently, some private sector players including OEMs provide training to fill the gap independently, but a wide skills gap still exists

Regarding downstream channels, the primary considerations for proposed initiatives were:

- The high levels of informality within the aftersales market, which is characterized by low-quality parts (heavily used or counterfeit) and wide skills gaps (including self-trained mechanics who lack core skills and limited levels of financing literacy)
- The sizeable market potential of the aftersales market due to the car parc of over 2 million vehicles in Kenya, many of which are used cars.

Given the local context, we propose 4 priority initiatives for JICA:

1. **Assess the potential of component localization and review policies:** it is proposed that JICA could provide technical cooperation (e.g., data collection survey) to develop an evidence-base showing which components can be locally manufactured. This initiative will work closely with OEMs, local assemblers and aftersales providers to consider the scale requirements and local competitiveness factors and ensure selected components can feasibly be produced. The resulting output of the policy review would propose a policy arrangement that is aligned to components that are viable for local assembly and in line with the realistic scale of assembly
2. **Support for joint vehicle financing product development for banks and OEMs:** it is proposed that JICA's support involves bringing stakeholders (banks, OEMs, dealers) together to identify and address data gaps in financing, characterize and pinpoint sector-specific opportunities where they might offer lower vehicle finance rates to SMEs. The data generated from this process would help reduce the lending risk by creating more accurate inputs for the lending risk assessment system. This support package could include financing to enable a pilot of one of the jointly designed PV/CV finance products, and a reporting mechanism to ensure that the lessons and data generated are accessible across the entire sector
3. **Demand-driven next generation skills development:** it is proposed that Kenya be considered a priority country for the flagship skills development initiative given that the local assembly and

aftersales industry has a limited talent pool to draw from. Under this initiative, JICA could explore partnering with OEMs and consulting closely with government (including TVET colleges) to assess the current supply of fit-for-purpose skills, against demand. JICA would then collaborate closely with OEMs to develop and pilot the training and/or apprenticeship programs that prepare fit for purpose workers for the entire sector (including leveraging existing training facilities) in areas such as assembly, manufacture, repair and maintenance of vehicles (including NEV and Connected)

4. **Aftersales network development - quality improvement and accreditation of SME garages in partnership with OEMs:** it is proposed that JICA supports partnership formalisation between OEMs and high-potential informal aftersales players in large cities as well as 2nd tier towns. The partnerships would include standardization support and/or accreditation guidance for high potential garages to improve service quality and help informal aftersales providers to access modernized equipment, training and better brand recognition. OEMs would benefit from an asset-light, economically sustainable approach to expand offerings to 2nd tier towns and smaller cities.
5. **Quality & productivity improvement by Kaizen:** consideration of support to local suppliers and assemblers by Kaizen-related cooperation in Kenya in collaboration with Africa Kaizen Initiative (AKI) to boost productivity.

5.4.5 Ethiopia

Ethiopia's shortlisted initiatives focus on the support required for the nascent automotive industry to emerge as a regional CKD hub and the growing need for downstream channel development.

The critical local context under fostering the CKD assembly hub in Ethiopia are:

- Need for a cross-cutting auto-sector policy: The automotive sector's development is currently guided by fiscal policies (incl. significant excise duties), although there are ongoing efforts to develop an automotive policy. Such a policy will boost visibility and investor confidence in the future of the sector and prioritisation by government
- Notable increases in new vehicle sales linked to the new excise duty: While new vehicle sales have risen significantly, the new excise duty does not incentivise local assembly. The 2020 excise duty changes have made entry level used car two times more expensive than imported new vehicles, shifting customers choice significantly
- Foreign exchange constraints for manufacturers: shortages in foreign currency are significant constraints to automotive industry players today given the importance of importing SKD/CKD kits. For international OEMs, there are additional profit repatriation challenges to consider
- Low vehicle affordability with very low motorization levels: driven by high import tariffs, low disposable income, high inflation, and limited financial options
- Low availability of fit-for-purpose relevant skills domestically: limits local value addition and impacts productivity. Ongoing efforts by government and development partners (incl. GIZ)

The primary considerations for the downstream channel development are:

- This aftersales market is supported by mandatory, annual vehicle inspection (PV&CV) which creates a deeper aftersales market, but is limited by low motorisation rate
- Highly informal aftersales market: high prevalence of low-quality parts (often heavily used or generic/counterfeit imported brands), raising potential safety and roadworthiness concerns.
- Skills gap: aftersales space been dominated by self-trained mechanics vs. fit-for-purpose formal skills and training.

Given the local context, and based on the impact and feasibility for JICA's support, the study proposes four priority initiatives:

1. **Policy development and implementation support –** under this initiative, it is proposed that JICA considers support to the Ethiopian government (e.g., technical cooperation) to help accelerate the implementation of the new auto-policy (if finalised), based on the experiences and expertise from the automotive industry policy cooperation in recent years as a part of the longstanding industrial policy dialogue between JICA and the Government of Ethiopia. The initiative could provide support government to further refine policy and develop a detailed implementation plan with clear roles and accountabilities defined across government, with an emphasis on incentivising local assembly (including improving access to foreign exchange, building in incentives for local production as opposed to new imports, and supporting homologation development). The overall goal would be to strengthen institutional capacity for implementation.
2. **Support joint vehicle financing product development for banks and OEMs** including sector specific pilots and risk assessment data development to help build lending fact-base and increase the understanding of sector-specific lending opportunity and credit worthiness of SMEs
3. **Demand-driven skills, quality & productivity development in collaboration with private sector:** it is proposed that JICA considers partnership with private sector players, in close consultation with the private sector and ensuring synergies with other development partners (e.g., potential future GIZ programmes) to develop a skills, quality and productivity improvement programme. This would build upon longstanding Kaizen support and target private companies involved in the assembly, manufacture, repair/maintenance of vehicles (including NEV and Connected), rather than focusing exclusively on vocational/skills training where GIZ is already highly active. The initiative would boost job creation and value addition across the sector.
4. **Aftersales network development -** quality improvement and accreditation of SME garages in partnership with OEMs: it is proposed that JICA can consider implementing an aftersales network development initiative in collaboration with OEMs, as described in Section 5.2 above. Clear direction from a new policy framework on the future shape of demand (e.g., strong promotion of newer small-engine / green vehicles) will help clarify key areas of focus.

5.4.6 North Africa

The three sub-priority countries in North Africa (Morocco, Egypt, and Tunisia) are at differing levels of development with regards to the local automotive industry. As such, local context considerations are detailed below.

a) Morocco

- Large and rapidly growing industry with clear expansion plan: Morocco has a developed, high-growth CBU manufacturing industry and component supplier ecosystem with a clear plan to further build on its strength by attracting a third (and potentially fourth) OEM
- Comprehensive and consistent policy framework: strong investment incentives supported by a stable and attractive business environment and competitive advantages (location, labour costs, etc.)

b) Egypt

- Potential structural advantages to leverage: FTAs with large markets such as Europe and the Middle East giving tariff-free access for its manufacturers, competitive cost structure especially around labour, and existing CKD assembly and component manufacturing industry (e.g., Sumitomo Electrical Wiring Systems) that can act as the baseline for future growth of the industry
- Low-cost competition as result of FTAs: local CKD assembly industry is impacted by zero-tariff imports of CBU vehicles from the EU and Turkey with which Egypt has FTAs, which are more cost competitive
- Unclear policy and challenging investment environment: no clear framework / lack of visibility on automotive sector policy today negatively impacts investor confidence looking for public assurances of long-term commitment to the sector (as seen in Morocco); broad investment climate challenges (not isolated to automotive industry)

c) Tunisia

- Sizeable existing component export industry, but long-term potential currently challenged due to neighbouring Morocco's growth and increasing competitiveness, small domestic market, and high political instability over the past decade.

Based on the above, one immediate priority initiative has been identified to advance the business environment for the automotive industry in Egypt:

1. **Business environment improvement support in Egypt** – it is proposed that JICA considers broad support to the General Authority For Investments (GAFI) to assess the current investment climate and identify potential solutions, focusing analysis on several high potential sectors (including, but not limited to, the automotive sector). The assessment would include current policy and regulations (e.g., labour, investment, incentives, EPZ/SEZ/IPs) focused on 3-5 key sectors. This study could then be followed by **investment promotion and support** for GAFI to attract foreign investment in the chosen sectors (including matching with Japanese companies)

On top of the above priority initiative, four additional initiatives have been identified across North Africa as potential future areas for JICA support:

2. **Automotive policy development support in Egypt:** pending successful implementation of the above priority initiative, it is proposed that JICA considers further support to the Government of Egypt to develop an automotive industry policy that increases competitiveness of locally produced vehicles versus CBU imports, and supports component manufacturing (e.g., fiscal incentives, etc.)
3. **Support trade infrastructure investment in Egypt** that are currently viewed as bottlenecks to increase capacity for vehicle & part export, such as port terminals and/or surrounding infrastructure
4. **Investment promotion to attract additional investment to Morocco:** it is proposed that JICA considers providing support attract investment to Morocco, including a third (and potentially fourth) OEM (although existing efforts are understood to be underway) as well as component manufacturers to country (including expansion of Japanese supplier presence)
5. **Cross-cutting business environment evaluation in Tunisia** covering current policy and regulations in a similar way to the study in Egypt to understand the potential and current pain points in three to four key sectors, potentially including the automotive sector.

5.5 Implementation and next steps

This study has identified and made recommendations on high impact areas for potential future JICA support to the African automotive industry. The recommendations include targeted country- and regional-level initiatives to improve the production and trade of vehicles and components, as well as flagship regional programmes to drive socio-economic impact across the full automotive supply chain. For each of the proposals, further detailed guidance on initiative design (separate to this Report) has been developed to guide JICA's potential future implementation. JICA will continue internal and external consultation on its future support, based on the recommendation from this study.

Appendix A: Ghana aftersales market deep dive

Context

Through the course of this study, the automotive aftersales market has been identified as an area of significant economic activity and opportunity, especially given the large number of ageing used vehicles on Sub-Saharan African roads. The maintenance and repair of approximately 50 million vehicles (estimated car parc as of 2019) generates significant employment, particularly in the informal SME sector. However, due to this prevalence of informal activity, there is very limited data availability on the aftersales market in the region.

As a result, JICA identified Ghana as a highly suitable focus country for survey-based investigation of the informal sector, given recent policy steps taken by Ghanaian government in the automotive industry (i.e., Ghana Automotive Development Policy of 2018), recent private sector investment in Ghana's automotive industry, and the significant presence of informal markets for aftersales and services (e.g., Suame Magazine in Kumasi, Abossey Okai in Accra).

Two surveys were conducted in November 2021, through in-person interviews across the cities of Accra, Kumasi and Tamale:

- Quantitative survey of 70 informal business respondents, each interviewed for approximately 30 minutes through a close-ended / numeric survey
- Qualitative survey of 20 informal business respondents, each interviewed for approximately 45 minutes through open-ended qualitative questions that invited free-form responses

In addition, findings from the survey were supplemented with insights from several interviews conducted with Ghanaian stakeholders as part of the main report, including OEMs and authorised OEM dealerships, the Ghana Automobile Dealers Association (GADA) and government agencies. Finally, additional analysis of secondary data sources (e.g., official import data, company websites and online marketplaces) was leveraged to further supplement and validate the findings of the surveys.

While the survey and following assessment focuses specifically on the Ghanaian market, the findings are expected to be highly relevant for other Sub-Saharan African markets with similar levels of informal aftersales and activity.

Market assessment

The Ghanaian aftersales market is relatively sizeable, with estimated annual sector revenue of USD 500-575M[1]. This is approximately double the estimated size of the new vehicle sales market in Ghana and equates to an average spend of USD 250-290 per vehicle per year on parts, maintenance and repair. This is notably less than the average expenditure per vehicle in developed economies (e.g., USD 900 per vehicle per year in the US[2]), driven by lower purchasing power and the lower average value of vehicles.

[1] Market size estimation calculated using the total value of imported automotive parts in 2019 of approximately USD 260M (Source: Trade Map mirror data from partner countries) adjusted to reflect final retail pricing, plus estimated revenue from services (maintenance and repair, excluding value of parts) observed from survey data; final estimation triangulated based on observed pricing in market from survey data and typical replacement rates of parts from expert interviews.

[2] Source: US Bureau of Labor Statistics – Consumer Expenditure Survey (2019 data)

Within this overall market, parts account for 60-65% of total revenue, while cost of repair (excluding parts – e.g., labour) account for 25-30% of revenue and servicing for 5-10 of the market. Within parts, tyres alone account for USD 120-140M (30-45% of all parts) due to high costs and relatively frequent need for replacement[3]. Other frequently replaced parts such as batteries, brake pads, shock absorbers and filters contribute a further 30-60% of parts sales (USD 60-95M), while less frequently replaced parts (e.g., steering, driveshaft and components, fuel system) contribute a further 10-25% (USD 20-35M).

The aftersales market as a whole in Ghana is expected to see robust growth over the next 10-15 years, underpinned by expansion of the middle class. As of November 2021, businesses had generally recovered from the initial impacts of the COVID-19 pandemic which significantly reduced operations and demand but faced pressure from currency depreciations that increased the cost of importing parts.

The Ghanaian aftersales sector is also highly fragmented and informal, with 70-80% of the market concentrated in informal SME businesses[4]. Five major business segments are observable, varying in their size, level of formality, target customer, relationship to OEMs/original suppliers, and more. In the formal sector, which represents 20-30% of the market, companies typically gain most of their revenue from B2B business and focus on repair and maintenance of new vehicles. They charge a premium for durability and quality of parts, as well as customer service and trust. Three formal sector segments are identified:

A. Formal OEM / authorised OEM dealerships – 12-20% market share, with majority of business today focused on B2B (e.g., corporate fleets), servicing pickups, medium/heavy CVs and SUVs that were typically bought from the same dealership under warranty

B. Formal Tier 1 parts suppliers / authorised part dealers – 5-8% market share, with majority in authorised / franchised tyre dealerships (e.g., Rana Motors for Goodyear, C. Woermann for Michelin) for B2B and B2C segments

C. Formal independent tyre dealers and fast-fitters – less than 5% of share, with a small number of multi-brand tyre dealers and no significant presence of fast-fitter format players in comparison to other markets in Africa (e.g., AutoXpress and Kwik-Fit in East Africa)

The informal sector serves the majority of the B2C and SME base with low-cost offerings for older vehicles, with the median age of vehicles being above 10 years. Two major levels of informal sector players are identified, based on the survey:

D. Informal parts sellers and service centres (structured premises) – 10-15% market share; a subset of the informal sector with slightly larger scale (one-quarter of Segment D businesses collect revenue of over USD $200K per year; median of USD $70K), typically with structured premises, selling low-cost parts but capturing a slight premium relative to Segment E

E. Informal open market parts sellers and local garages (no structured premises) – 55-70% of the market, typically below USD 40K in annual revenue and serving the most price-sensitive customers, often located in large informal marketplaces (e.g., Suame Magazine in Kumasi, Abossey Okai in Accra).

[3] Typically recommended every 2-5 years or every 20,000–50,000 miles; varies widely by type and quality of tyre, consumer dynamics and national regulations

[4] Informal businesses defined in survey by type of outlet: parts sellers, service centres and local garages with small-scale operations, often lacking structured premises (i.e., operating in open markets, yards or at side of the road) and typically not part of the formal tax base

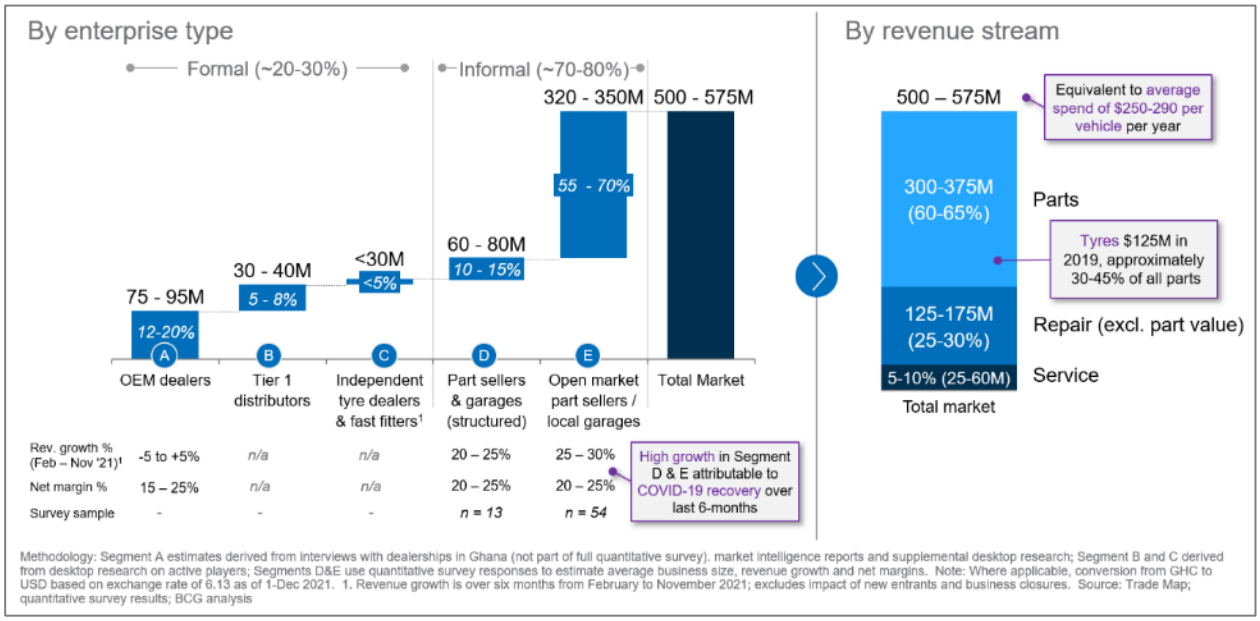


Figure A1: Estimated size of Ghanaian aftersales market (USD, 2019)

This high level of informal activity is predominantly driven by low consumer purchasing power and related sensitivity to pricing. Only 20% of Ghanaians can reasonably afford to repair and maintain a vehicle at the minimum possible spend level[5], while only 5% can afford to repair and maintain a vehicle with premium parts (e.g., OEM genuine originals) and services[6]. Pricing was identified as the single largest purchase driver in the informal sector according to Segment D and E businesses, with more than 30% indicating low pricing was the main reason customers choose their business.

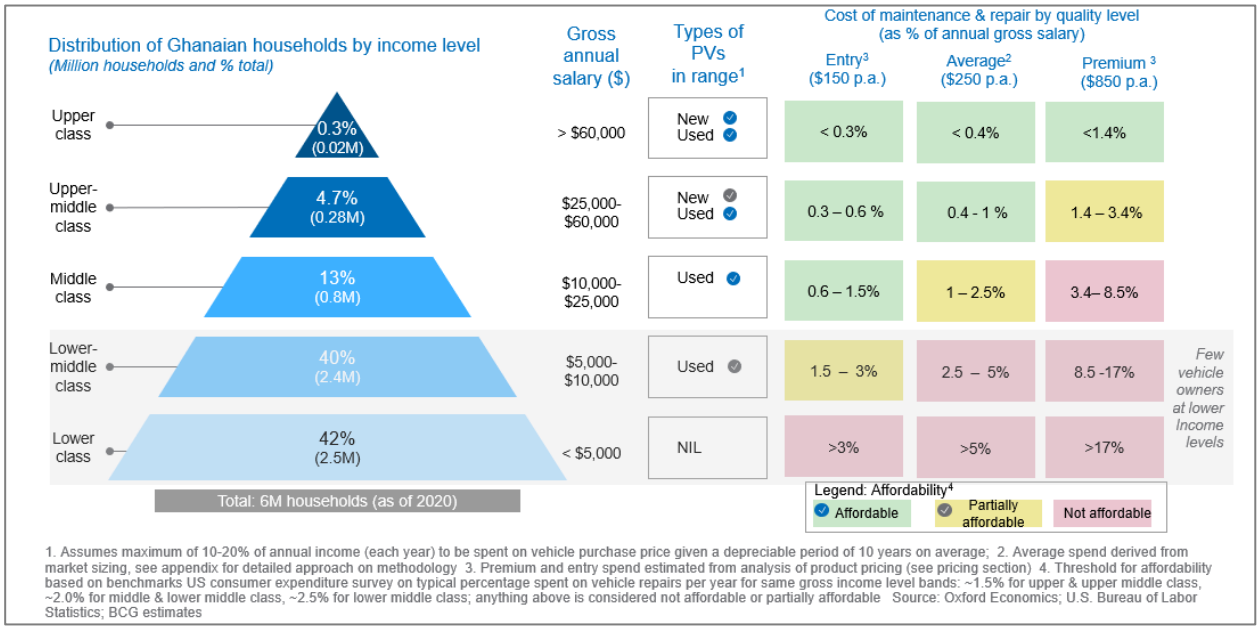


Figure A2: Affordability of vehicle maintenance and repair by income group, Ghana

[5] Threshold for reasonable affordability based on US benchmarks for comparable income levels; US consumers typically spend 1.5-2.0% of their annual gross salary on vehicle repair and maintenance when earning USD 10,000-60,000; anything above this percentage level is considered not reasonable affordable for this analysis. (Source: Oxford Economics, US Bureau of Labor Statistics Consumer Expenditure Survey, BCG estimates)
[6] Premium cost of maintenance and repair estimated at $850 per year based on pricing analysis of Ghanaian market

However, while pricing is critical, informal sector companies still differentiate *within* their segment on parts quality, albeit at affordable levels. Quality of parts was the second most cited purchase driver for Segment E companies (19% of respondents identifying as most important driver, additional 52% placing as 2nd or 3rd most important). While price is also critical for Segment D, quality of parts was ranked slightly higher than pricing (46% of respondents ranked as first purchase driver, vs. 31% for pricing), suggesting that businesses in Segment D are able to capture some quality premium vs. Segment E.

As a result, average spend levels per vehicle are considerably lower in the informal sector, which serves customers with considerably cheaper product offerings. Informal sector customers typically spend 3-6 times less on maintenance and repair (incl. parts) than formal customers of OEM dealerships (Segment A). While a large portion of this is driven by much higher expenditures on tyres in the formal sector, the differential is seen consistently across different parts.

The type of parts sold are distinctly varied by segment with four major tiers of product quality and price, namely premium brands (original genuine parts), mid-tier brands (or "2nd line" with relatively high quality), budget brands (lower quality), and finally used and generic/counterfeit parts. Formal OEM and Tier 1 dealerships (Segments A & B) sell premium products almost exclusively, while informal businesses (Segments D & E) mostly stock used/generic parts as well as budget brands. Formal independent players (Segment C) typically sell a range of mid-tier brands as well as premium and budget but remain a relatively small share of the market today in Ghana.

Used parts represent the majority of informal business part sales (Segments D & E), and almost 60% of all Segment E sales. More than two-thirds of used parts are imported, either individually or as scrapped vehicles from Europe, Dubai and elsewhere, with the remaining sourced locally (often referred to as "home-used"). An additional 20% of parts in the informal sector were reported to be non-original brands, although this number could be even higher[7].

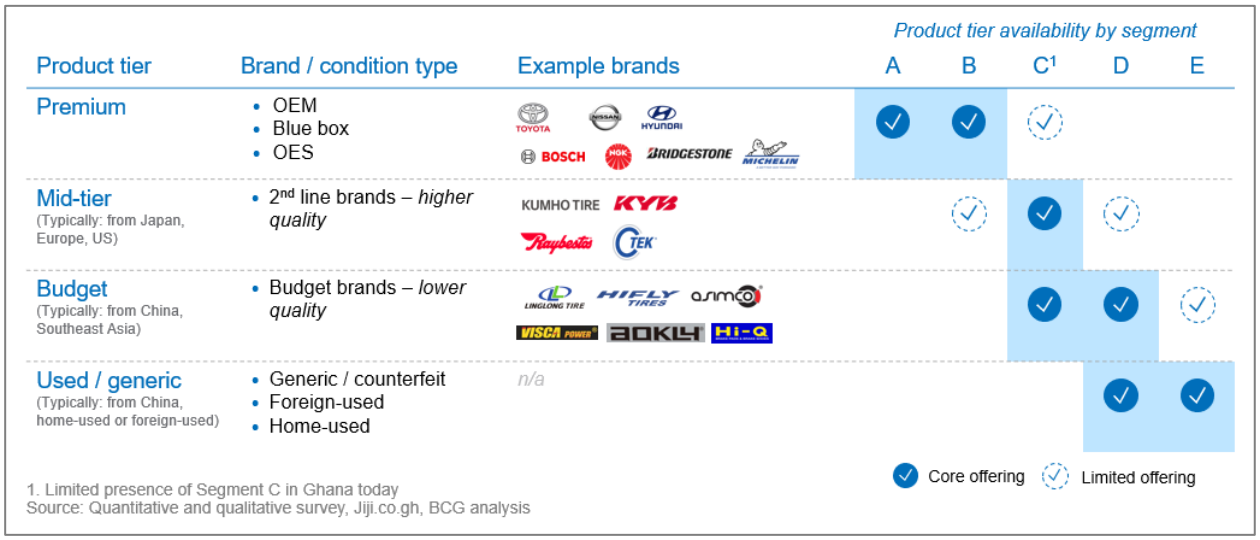


Figure A3: Typical product tier offering by enterprise segment, Ghana

However, there is evidence in the informal segments (D & E) of willingness to pay for higher quality parts & services, within an affordable range, especially in Segment D. Within segments, the average price for a given product tends to vary significantly (e.g., a typical pair of brake pads may cost USD 8 at

[7] Due to potential hesitancy for respondents to identify their business as selling non-original or counterfeit parts

one establishment and USD 25 at another), indicating some differentiation on quality (e.g., heavily used vs. lightly used vs. generic new). Furthermore, Segment D typically captures a price premium vs. Segment E, with median prices 10% higher for shock absorbers, 50% higher for brake pads, and up to 400% higher for tyres (likely due to use of new generic tyres vs. home-used).

Price sensitivity varies widely by product, with evidence that some informal segment customers are buying products at mid-tier brand pricing levels. Batteries are the only product with considerable informal sector demand in the premium and mid-tier pricing ranges, likely due to the essential nature of the product and higher durability of quality brands. Elsewhere, while there is limited informal sector demand at premium pricing, there is demand at mid-tier for lower unit cost items (e.g., spark plugs, oil and air filters), and widespread demand at budget brand price levels (including for brake pads, shock absorbers, ball joints, etc.). As such, there may be potential for formal players to enter the market in the budget and mid-tier price range for high replacement rate parts.

Beyond selling cheaper parts, informal players also have a significant cost advantage from their lower operating cost structure. Informal players (Segments D & E) can sell at a third of the price of formal players or less due to the use of lower cost parts, especially used parts, but also due to their lower operating expenses. Roughly 40-45% of the cost advantage that Segment E players have relative to formal dealerships can be attributed to lower COGS, with used parts typically four to five times cheaper than new original parts. Another (approximately) 50% of the cost advantage can be attributed to lower operating expenses, with rent payments on average less than 5% of revenue for Segment E (no structured premises) and labour costs not exceeding 10% of revenue. The remaining difference is attributable to limited tax payments, with a claimed effective tax rate of 11% of profits in Segments D & E (vs. 25% Corporate tax rate in Ghana).

As such, formal players looking to further penetrate the sector need to develop offerings with lower cost parts but also delivered through lighter operating models.

However, the informal sector faces a number of constraints to growth today – particularly around access to finance to fund working capital and expansion. Financing was identified by the informal sector survey as the most significant constraint to business, with 24% of all respondents listing it as the most critical challenge and almost 80% listing it as a top five challenge. Key issues included difficulty in accessing finance due to inability to provide collateral or prove creditworthiness, the lack of trust between banks and potential borrowers, and high interest rates. The second most cited constraint was the high cost of importing parts, with 20% of respondents listing this as their most critical issue (38% for Segment D). Common concerns included recent currency depreciations, import tariffs, and delays at ports (which have been exacerbated by COVID-19 related disruptions). In addition, concerns around the tax burden and intense price competition were stated as additional concerns.

While informal SMEs are content with the availability of skilled workers, there is a shortage of formal skills in the market. Informal apprenticeships are prevalent in Segments D and E with around 50% of staff (mostly mechanics) having undergone some form of on-the-job training in an informal setting. Only 20% of informal businesses identified issues with the availability of skills when asked as part of the qualitative survey. However, less than 15% of staff have vocational or higher education training (TVET, University) in the aftersales market and very few have on-the-job training in formal enterprises (e.g., OEM dealerships). As such, the supply of fit-for-purpose workers for the formal sector may be lacking. Most formal players today invest directly in training programmes to upskill the workforce.

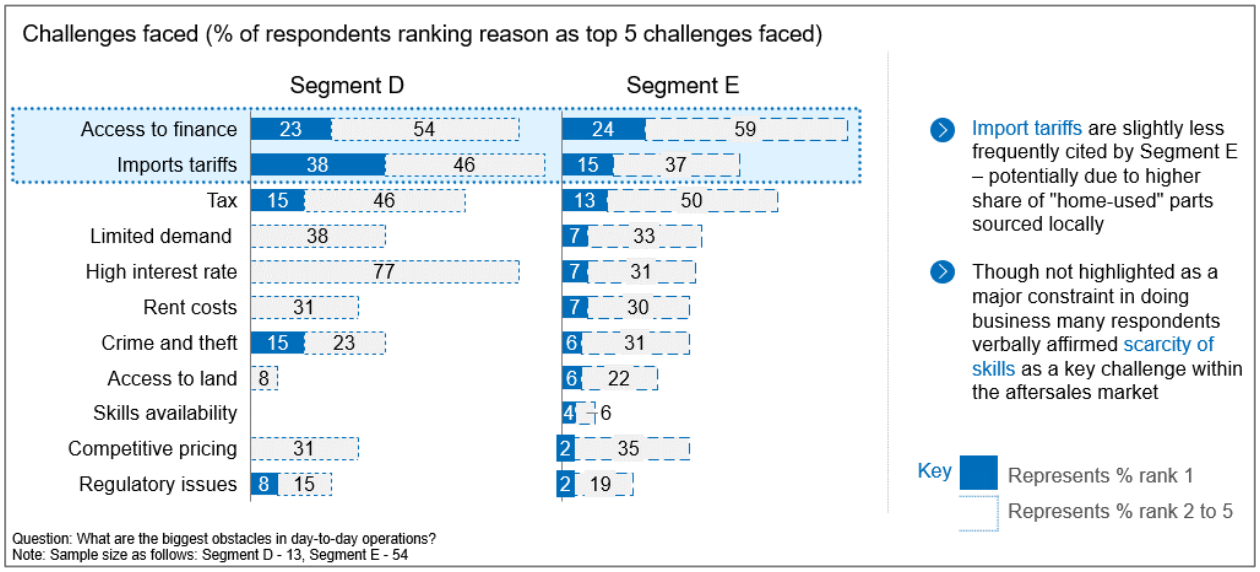


Figure A4: Key challenges for informal automotive aftersales businesses, Ghana

Private sector opportunities

Based on the above market assessment, the formal Ghanaian aftersales market has the potential to grow further in future. **Growth is likely to come from the middle of the market, which will require new business models with lighter operating costs and offering budget/mid-tier brands**. This is a potentially attractive opportunity for existing companies and potential new entrants over the longer-term, with middle market solutions a first step towards "graduating" customers towards higher quality products and service. This could be achieved through more disruptive solutions to drive behavioural change among consumers that are used to frequenting the informal sector, for instance new retail models (e.g., fast-fitters, accredited service centres, digital platforms).

Policy and regulatory environment

In addition to private sector investment, there are a set of policy steps and regulatory considerations that could expedite commercialisation of the Ghanaian aftersales market. These fall under two main categories of action:

- **Initiatives to address road safety and roadworthiness concerns**
  - Key challenges: (a) poor quality parts due to the prevalence of heavily used and counterfeit products, in part due to limited restrictions and standards regarding low quality imports, (b) limited regular maintenance of vehicles due to low purchasing power and limited enforcement of vehicle inspections
  - Potential policy solutions: (a) review of minimum standard requirements on imported parts, and capacity building for customs inspections and systems to implement and enforce standards, (b) implementation of digital system to support current road-checks and capacity building to support enforcement of checks
- **Initiatives to boost SME productivity and development**
  - Key challenges: (a) limited access to affordable finance to expand business and fund working capital, due to issues proving creditworthiness and providing collateral as well as related

high interest rates, (b) high cost of importation due to currency movement, tariffs and delays clearing goods at port, (c) limited supply of formal training/skills, e.g., vocational or on-the-job training with formal sector players

- Potential policy solutions: (a) collaboration between Government, commercial banks and development partners on SME financing offerings for automotive sector and beyond, along with enhancement of credit information systems (e.g., leveraging digital transaction data), (b) improvement of digital clearing processes at port, (c) updating of curriculum and partnership with formal aftersales players, e.g., OEM dealerships, to develop demand-driven training and apprenticeship programmes.

Key enablers and implications for JICA

The results of the Ghana aftersales survey and analytical deep dive indicate strong potential for programmes that collaborate with the private sector to develop demand-driven approaches to formalising the aftersales sector. These could include:

- **Quality improvement and accreditation of aftersales providers in partnership with OEMs and dealerships** *(regional flagship initiative in main report)* – support in developing a programme to build the capacity of high potential informal players (i.e., subset of Segment D) and incorporate them into a network of service centres for OEMs, thereby expanding OEM reach while helping scale and professionalise the informal players; may include access to finance mechanisms
- **Demand-driven skills development programmes in collaboration with formal private sector** *(regional flagship initiative in main report)* – work with OEM dealerships and other formal private sector players to develop training programmes for the whole aftersales sector but linked to apprenticeship and employment opportunities with the formal private sector. Potentially leverage existing / planned private sector facilities but with cross-brand collaboration, in close consultation with government agencies (e.g., CTVET).

Additionally, JICA can consider providing support in the development and implementation of regulations that enhance road safety and roadworthiness standards, in collaboration with key government agencies (e.g., Ghana Standards Authority, Driver and Vehicle Licensing Authority, Ghana Revenue Authority).

Finally, JICA can consider broader support to SME development (not exclusive to automotive aftersales alone), including access to finance and capacity building.

Appendix B: Detailed figures and exhibits

Project framework (Section 1.3)

Activity \ Period (Year, Month)	2021								2022
	5	6	7	8	9	10	11	12	1
0: Inception report	————								
1: Desktop analysis of current state of auto industry	■	■							
1: Interviews (S. Africa, Kenya, Nigeria)		■	■						
1: Interviews (Ghana, Ethiopia)				■	■				
2: Global trends and case studies	■								
3: Define future of auto industry (SA, Kenya, Nigeria)			■						
3: Define future of auto industry (Ghana, Ethiopia)					■				
3: Future of auto industry (pan-Africa)					■				
4: Future roles of private sector companies (SA, Kenya, Nigeria)			■						
4: Future roles of private sector companies (Ghana, Ethiopia)					■				
4: Future roles of private sector companies (pan-Africa)					■				
Interim report						Δ———Δ			
5: Formulation of JICA support						■	■		
Draft final report							Δ———Δ		
5: Finalization of JICA support								■	
Final report									Δ———Δ

———— Preliminary work period ■ On-the-ground field study period ■ Domestic production period Δ———Δ Report review period

Figure B1: Work plan

Diagnostic and emerging trends – Regional trade integration and AfCFTA (Section 2.2.2)

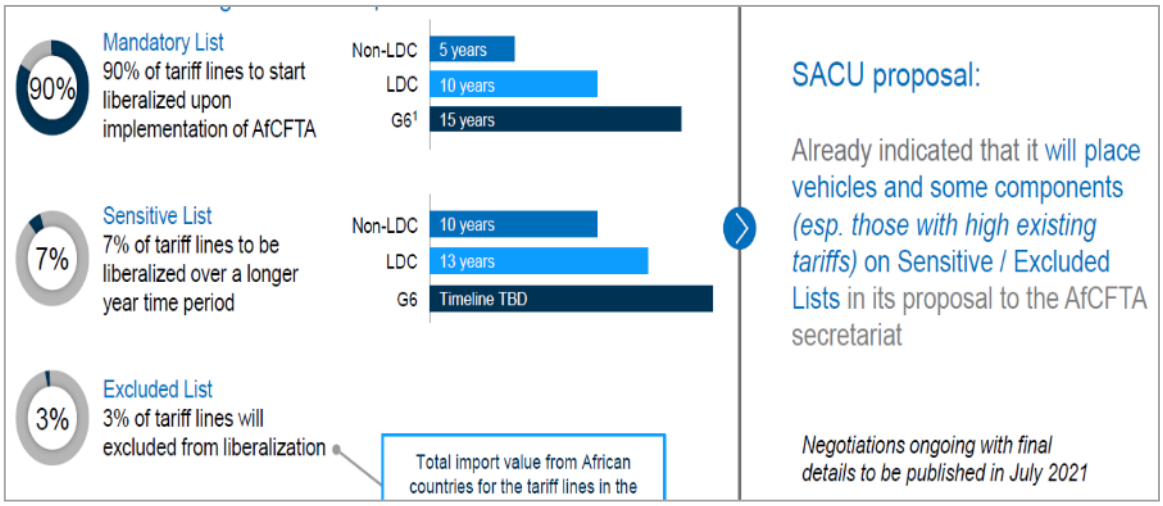


Figure B2: AfCFTA liberalization categories and implementation timeline

Diagnostic and emerging trends – CASE (Section 2.2.3)

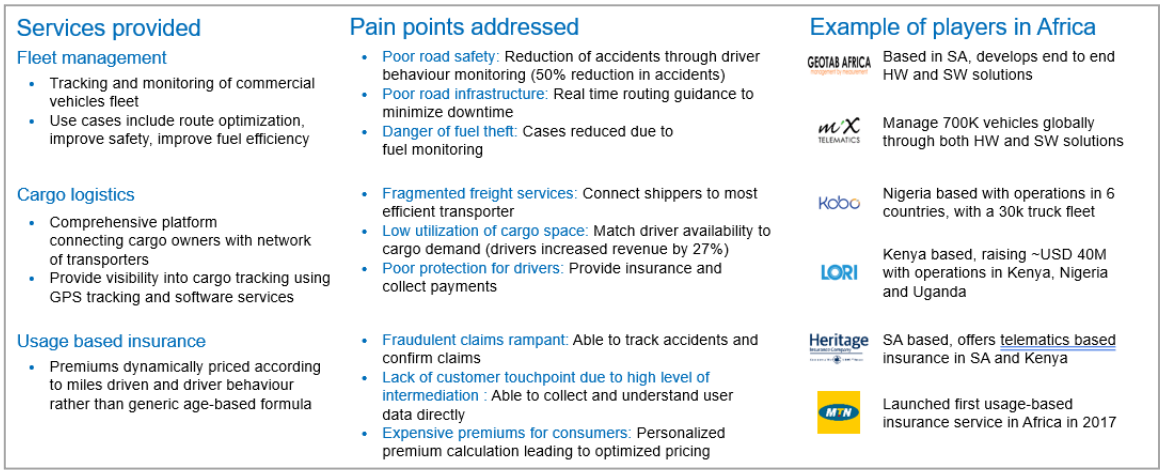


Figure B3: Connected services in Africa

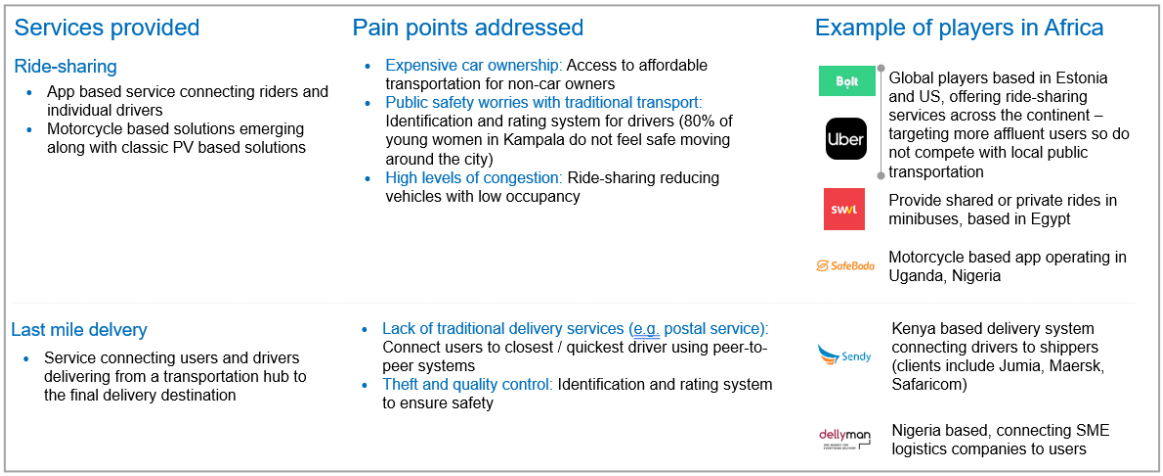


Figure B4: Shared services in Africa

Diagnostic and emerging trends – priority country deep dives (Section 2.3)

Table B1: Vehicle controls in priority countries

		Import restrictions	Homologation	Inspection
Current policy	SA	No used vehicle imports unless for exceptional circumstances (inheritance, vintage, immigration)	Completed before first sale of new vehicle; aligned to international best practices	Roadworthy required at change of ownership; or annually for public transport / heavy-load, and twice-yearly inspections for buses
	NG	• Tariffs: 35-40% on PVs and 10% on CVs per Finance Bill 2020 (eff. Jan 2021) – prev. 35-70% (PV) & 35% (CV) • Age limit: 15-year limit on used PVs/CVs	SON Conformity Assessment Program: Set of standards and certification processes for locally assembled and imported vehicles	Nigeria Highway Code (revised 2021) prescribes routine roadworthiness inspections – every 6mo for CVs and annually for other vehicles (>4yrs)
	KE	8-year age limit on used vehicle imports (CV and PV)	No defined criteria	• CVs and PSVs – annual inspection • PVs – inspection required by law for vehicles >4 years after manufacture but no guidance/operation exists
	GH	• Tariffs: 5-20% on PVs (depending on engine capacity), and 5% on CVs • Age penalties: 5-100% of PV CIF value, and 2.5-50% of CV CIF value per Customs Act 2015 (Act 891)	• Local dealer to furnish details of the manufacturers; Standards absent per Customs Act 2015 (Act 891)	Inspections (roadworthy certificates) required for: • First-time registration and transfer of ownership – number plate issuance • Annually for re-registration of vehicle per Road traffic Regulation LI 2180, 2012
	ET	No explicit import restriction 2020 – significantly higher excise tax for used vehicles	No defined criteria	Annual vehicle inspection mandated for all vehicles (PV&CV)
Implementation	SA	Strictly implemented – small amount of smuggled vehicles every year	Strictly implemented; vehicle cannot be offered for sale without homologation	Generally implemented, with spot-fines if roadworthy is out of date
	NG	Enforcement challenges: • Inefficient customs processes and limited consolidated systems • Incidence of smuggling across borders (Benin, Togo)		Enforcement by Vehicle Inspection Services varies across states, however: • Bribery/corruption concerns • Limited inspection follow-up
	KE	In effect – used imports 8 years or younger	N/A	• CV implemented at public (gov't) and private inspection sites • Private sector has better training and staffing • Overall limited capacity, low pricing of 10USD unable to sustain growth
	GH	Policy impact challenges: • Age penalties insignificant to deter demand due to low CIF values of imported vehicles	Policy effectiveness challenges: • Lax requirements – date of manufacture, model, no requirements on safety/emissions	Enforcement challenges: • Vehicles may not be physically inspected on-site and third-party inspections allowed • Limited inspection follow-up
	ET	New excise tax structure implemented – new vehicles dominate imports	N/A	Diligent implementation – all vehicles inspected annually at certified centres (both private and public); penalties for missing or forged inspection certificates

		Import restrictions	Homologation	Inspection
Future state	SA	No prospective changes across measures due to relatively mature industry & need for protection of local manufacturing		
	NG	Nigeria Customs upgrading single window system to improve trade processes; expected to improve effectiveness of policies	Construction of testing infrastructure (i.e. labs/facilities) underway in several key cities across Nigeria (Lagos, Abuja,.)	States prescribing transport guidelines and increasing frequency of vehicle checks on roads by VIOs2
	KE	NAP proposal to ban used CV imports by 2023, and PVs by 20291	EAC discussion to harmonize quality control for both imports and locally produced vehicles	• Government to give accreditation mandate to OEMs for inspection2 • PV inspection to commence in 20223 – 5-year inspection cycle, done by accredited OEMS
	GH	Customs (Amendment) Act 2020 legislated: • Tariff duties revised to 35% for both PVs and CVs • Import ban on vehicles >10 years Date of commencement shall be specified by Minister of Finance	Customs (Amendment) Act 2020 legislated: • Homologation certificate per newly developed Ghana Standards by Standards Authority required for imported vehicles Date of commencement shall be specified by Minister of Finance	No foreseeable policy changes planned
	ET	ESA proposal to restrict used vehicle imports based on emission standards	ESA considering setting standards for vehicle imports – early discussion stage only	Planning on adding further qualifications for emissions
Administering body	SA	International Trade Administration commission	National Regulator for Compulsory Specifications	South African Bureau of Standards
	NG	Nigeria Customs Service	Nigeria Customs Service + Standards Organization of Nigeria	State Vehicle Inspection Services
	KE	Ministry of Finance ds Set tax regulation Kenya Revenue Authority Enforce standards	Kenya Bureau of Standards Set standards National Transport and Safety Authority Enforce standards	Kenya Bureau of Standards Set standards National Transport and Safety Authority Enforce standards
	GH	Ghana Revenue Authority	Ghana Standards Authority + Ghana Revenue Authority	Driver and Vehicle Licensing Authority (under the Ministry of Transport)
	ET	Ministry of Finance Set tax regulation Ministry of Revenue Enforce standards	Ethiopia Standards Agency Set standards Transport Authority Enforce standards	Ethiopia Standards Agency Set standards Federal Transport Authority Enforce standards

Table B2: Tariffs and concessions structure in Nigeria on vehicles and kits

Tariffs		Pre-policy	2013–2018	Finance Bill 2020
FBU - PV	Duty	20%	35%	35%
	Levy	0%	35%	5%
FBU - CV	Duty	20%	35%	10%
	Levy	0%	0%	0%
CKD[1]	Duty	10%	0%	0%
	Levy	0%	0%	0%
SKD1[1]	Duty	12%	5%	5%
	Levy	0%	0%	0%
SKD2[1]	Duty	12%	10%	10%
	Levy	0%	0%	0%

Concessions for assemblers[2]		Pre-policy	2013–2018	Finance Bill 2020
FBU- PV	Duty	NA	35%	35%
	Levy	NA	0%	0%
FBU - CV	Duty	NA	20%	20%
	Levy	NA	0%	0%

Notes: 1. CKD (Complete knock down) while SKD(Semi-knock down) with SKD1 requiring higher local content cf. SKD2, 2. Assemblers able to import FBUs at lower duty rates in numbers equal to twice their local CKD/SKD production from 2013-16; equal to from 2016-18; by half from 2019-24

Table B3: Tariffs, import bans and concession structure in Ghana

Tariffs	Pre-policy	GADP 2018
CBU – Passenger[1]	5-20%	35%
CBU – Commercial[2]	5%	35%
CKD	5%	0%
Enhanced SKD	5%	0%
SKD	5%	0%

Import ban	Pre-policy	GADP 2018
CBU – Passenger (>10y)	Penalty 5-100%	Banned
CBU – Commercial (>10y)	Penalty 2.5-50%	Banned

Import Duty Rebate for CBUs [3] (based on value of imported kits)	Pre-policy	GADP 2018
CKD	NA	2:1
Enhanced SKD	NA	2:1
SKD	NA	1:1

Source: GADP, Customs Act (2015), Customs Amendment Bill (2020)

[1] HS code 8703 (Motor cars and other vehicles principally for the transport of persons)
[2] HS Code 8704 (Motor vehicles not exceeding 5 tons for the transport of goods)
[3] Assembler able to import FBUs duty-free equivalent to 2X value of CKD/Enhanced SKD kits imported; and 1X for SKD

		Engine Size (CC)					
	Vehicle assembly type and age	1,000	1,300	1,500	1,800	3,000	3,050
Vehicle Assembly	CKD Kits	5%	5%	60%	60%	100%	100%
	SKD Kits	5%	5%	60%	60%	100%	100%
Vehicle Imports	New	5%	5%	60%	60%	100%	100%
	Used, 1-2 yrs	55%	55%	110%	110%	150%	150%
	Used, 2-4 yrs	105%	105%	160%	160%	200%	200%
	Used, 4-7 yrs	205%	205%	260%	260%	300%	300%
	Used, 7 yrs & older	405%	405%	460%	460%	500%	500%

Sources: EIC

Figure B5: Ethiopia - 2020 excise tax rate for imported PV vehicles

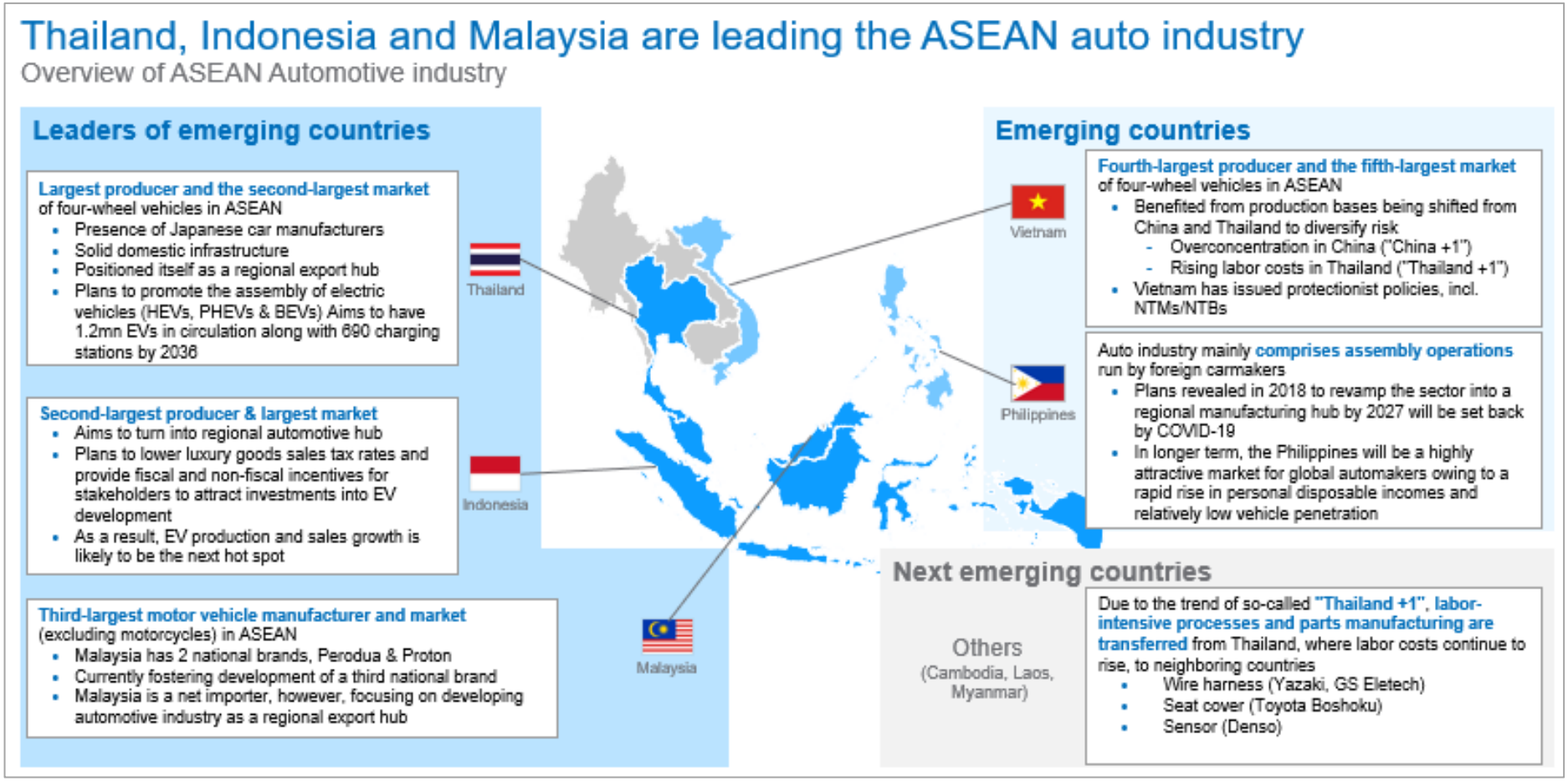
Local market optimization	Regional market development	Localisation	Infrastructure development	Industry transformation	Technology and associated skills dev.
Incentivise OEMs to capture a greater portion of market through alignment of domestic market developments and local production trajectories (e.g. small PV car market not captured by OEM) Policy and service infrastructure lessons from Thailand, Turkey and Australia	Establish a regional automotive trade and production block to serve SSA region and replace used car imports Establish a regional automotive development programme that operates to support the shared industrial development aspirations of SSA	Decrease gov service costs (electricity, water etc.) to improve focus on local content scale opportunities. Identify specialised local content using the ASCII[1] as a vehicle	Align advanced fuel quality with international market to mitigate the need to adjust vehicles for developed economies. Invest in required infrastructure to prevent falling behind in EV market by 2035	Commit to the BBBEE[2] of the industry through support of local black-owned SMEs in dealership, repairs and supplies. This is underpinned by recent Competition Committee Guidelines to increase competition through lowering barriers to entry	Develop tech/skills roadmap (EV, infotainment etc) leveraging SA's competitive advantage (e.g. PGMs)

1. Automotive Supply Chain Competitiveness Initiative 2. Broad-based Black Economic Empowerment

Sources: South Africa Automotive Masterplan

Figure B6: Strategic pillars of SAAM

Global case studies – ASEAN (Section 3.1)



Sources: EMIS Automotive, the Economist, MSR, JETRO

Figure B7: Overview of ASEAN auto industry players

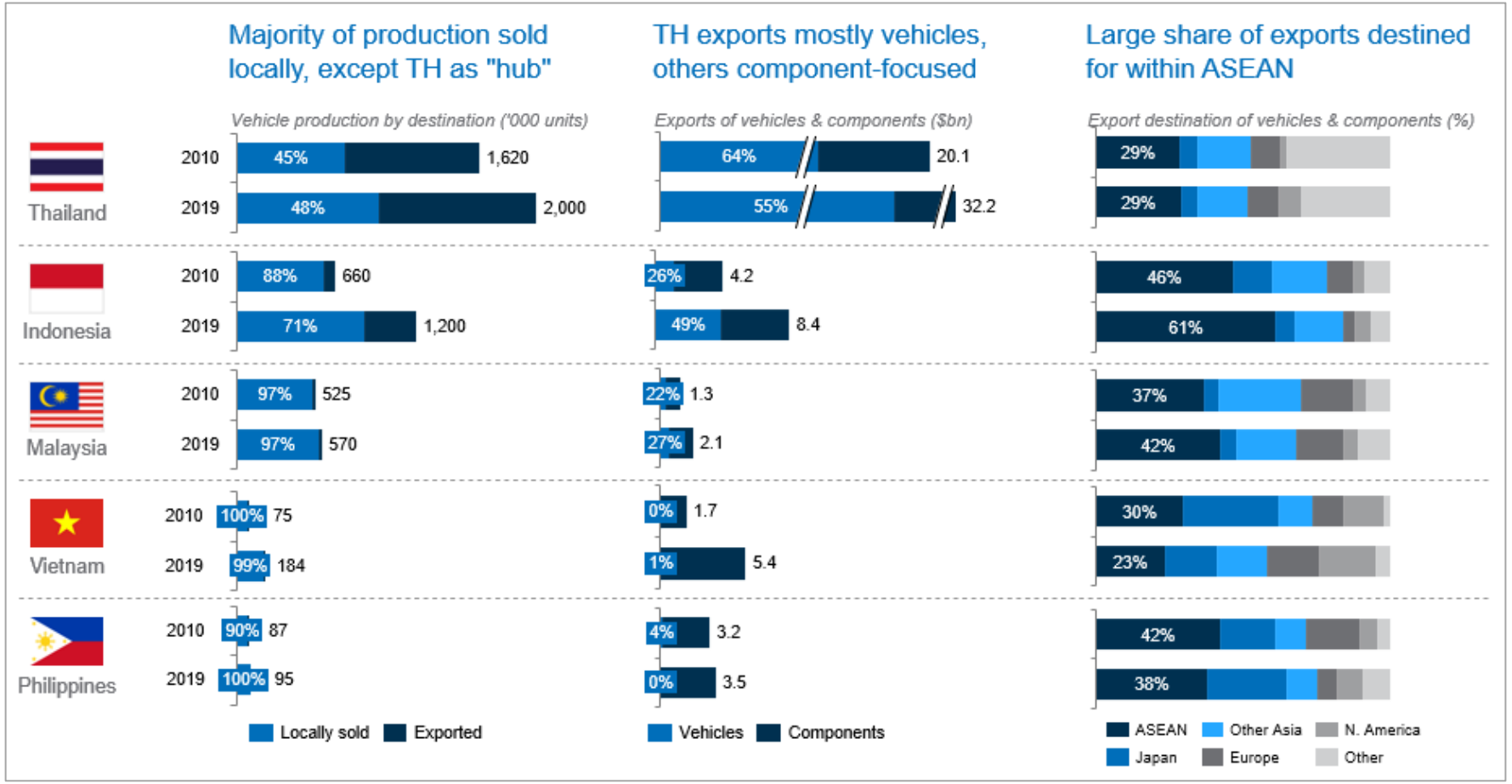


Figure B8: ASEAN exports: vehicles and components

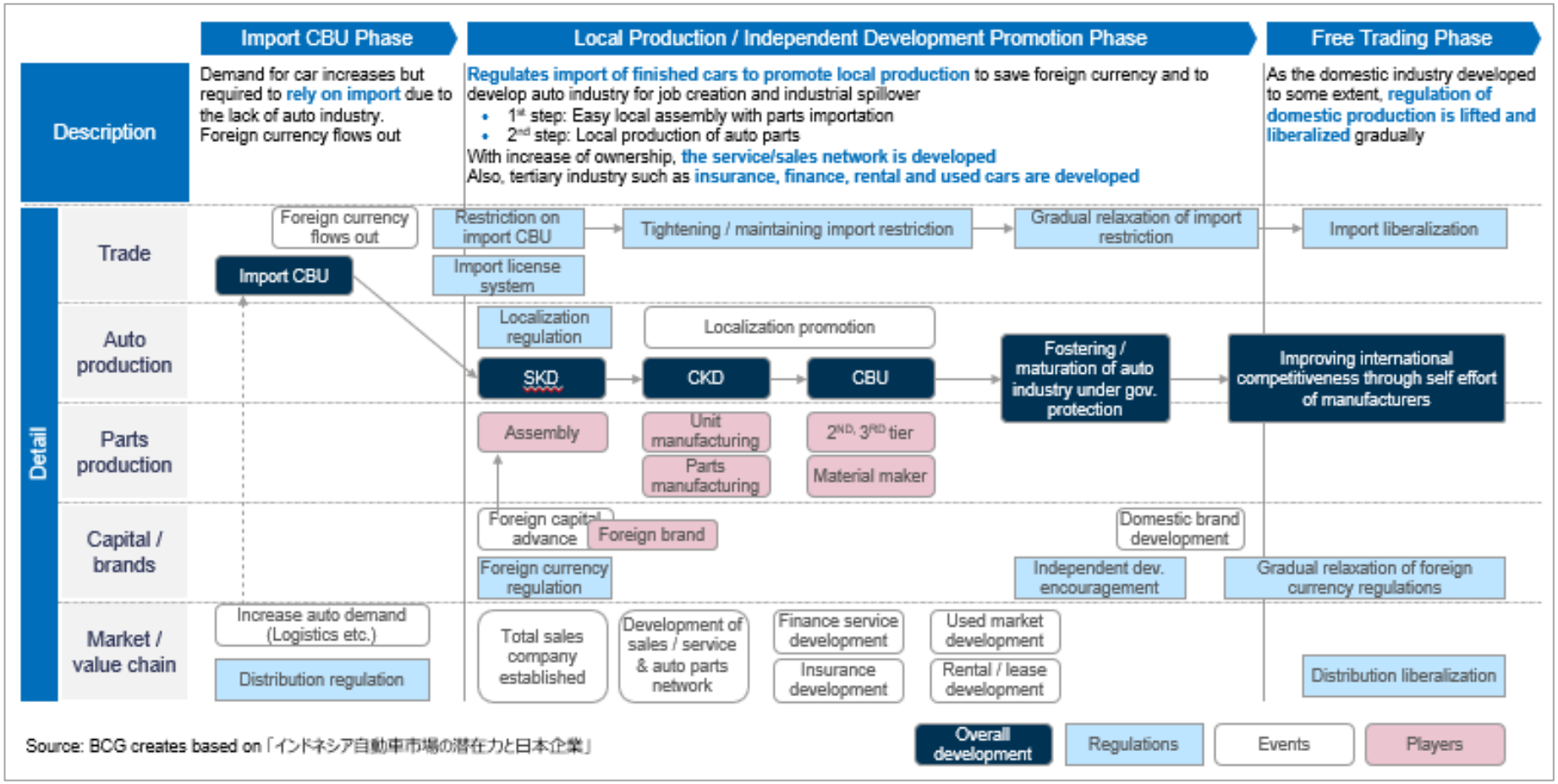
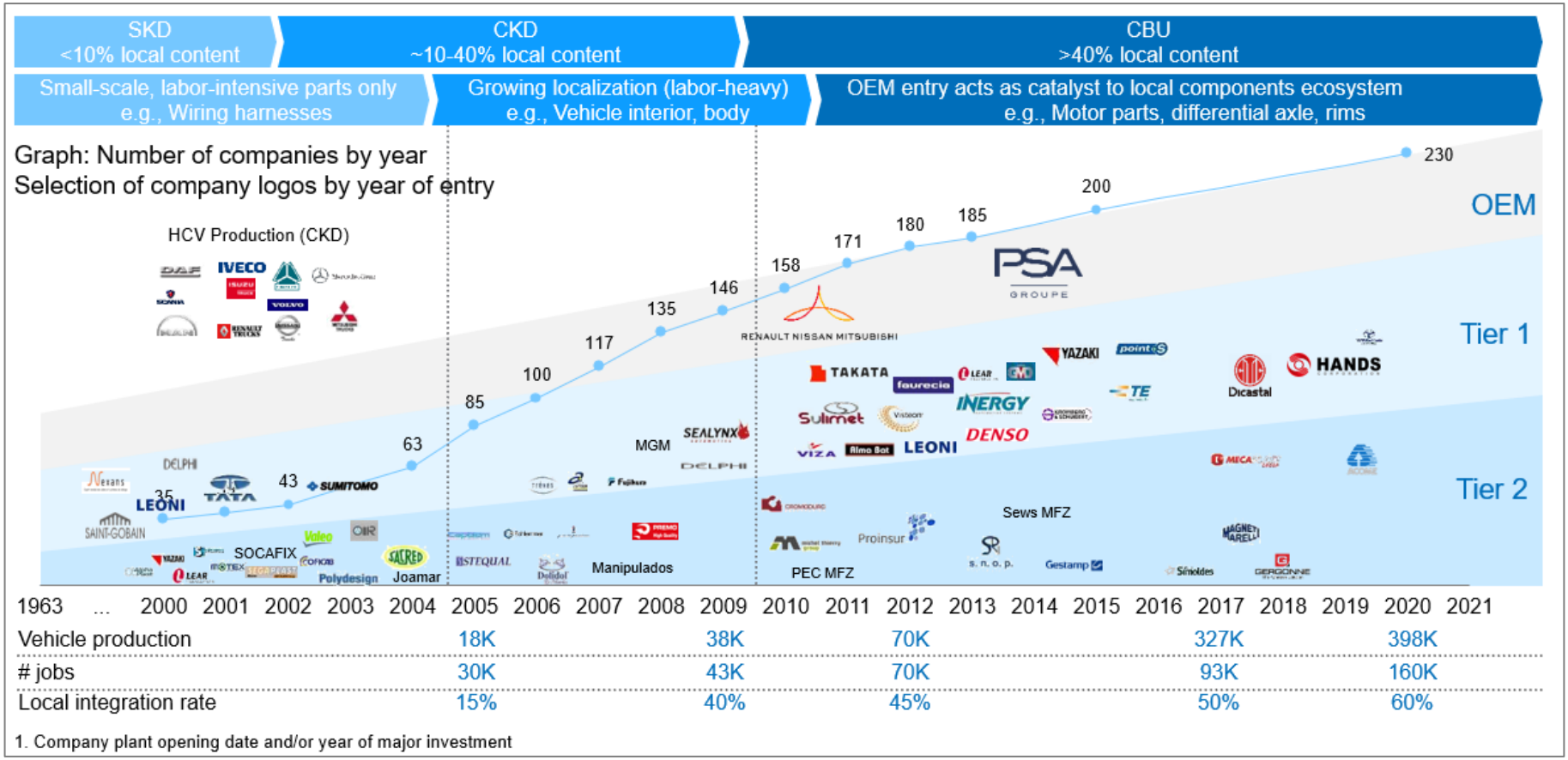


Figure B9: ASEAN auto sector development

Global case studies – Morocco (Section 3.2)



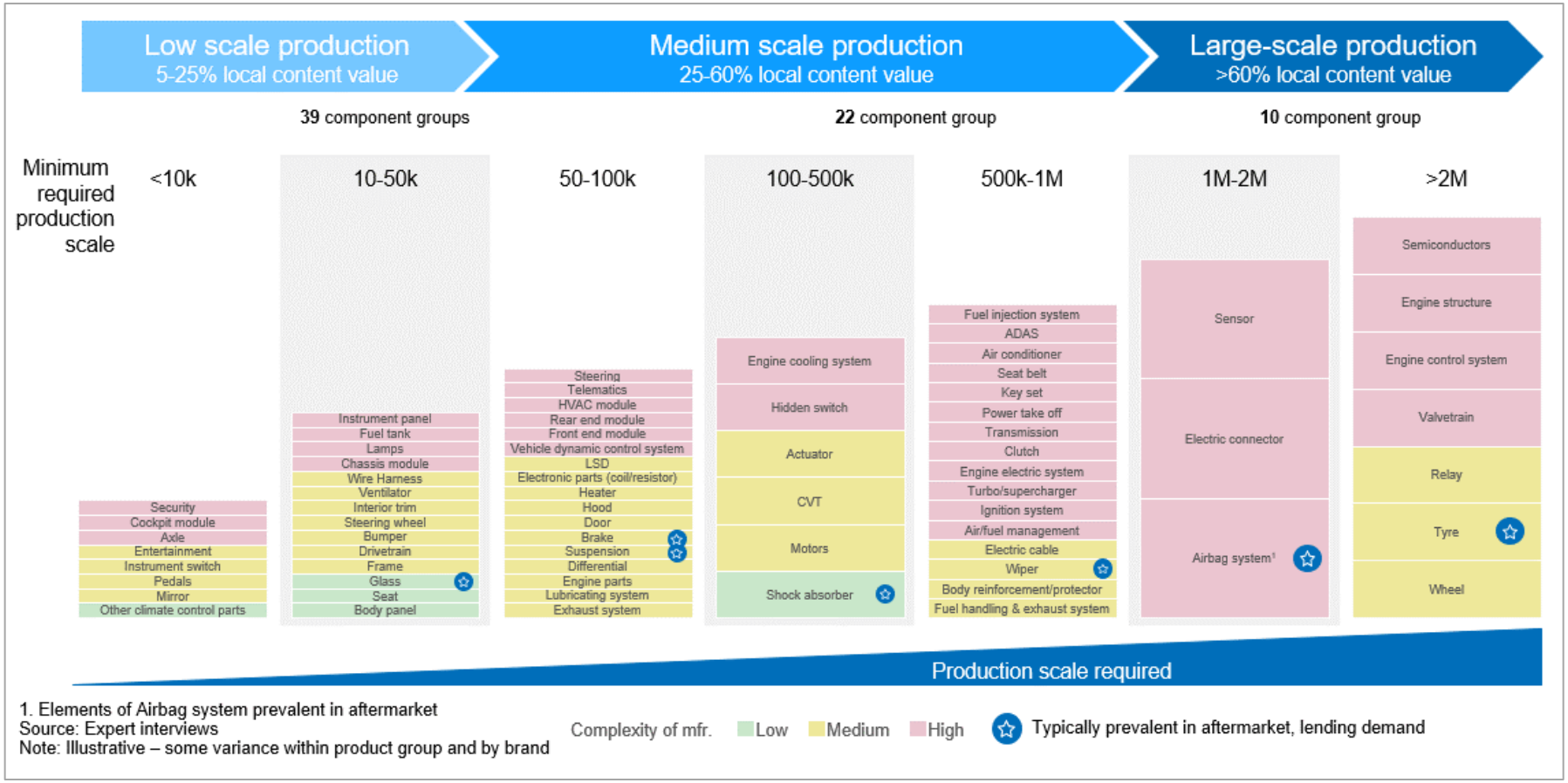
Sources: Morocco Ministry of Industry and Trade, stakeholder interviews, press search

Figure B10: Evolution of Moroccan automotive industry, 1963-2021

Source: IHS Markit

Figure B11: Vehicle production in close proximity to Morocco

Future state of Africa automotive industry – supply: assessment of sector potential (Section 4.2)



Source: Expert interviews

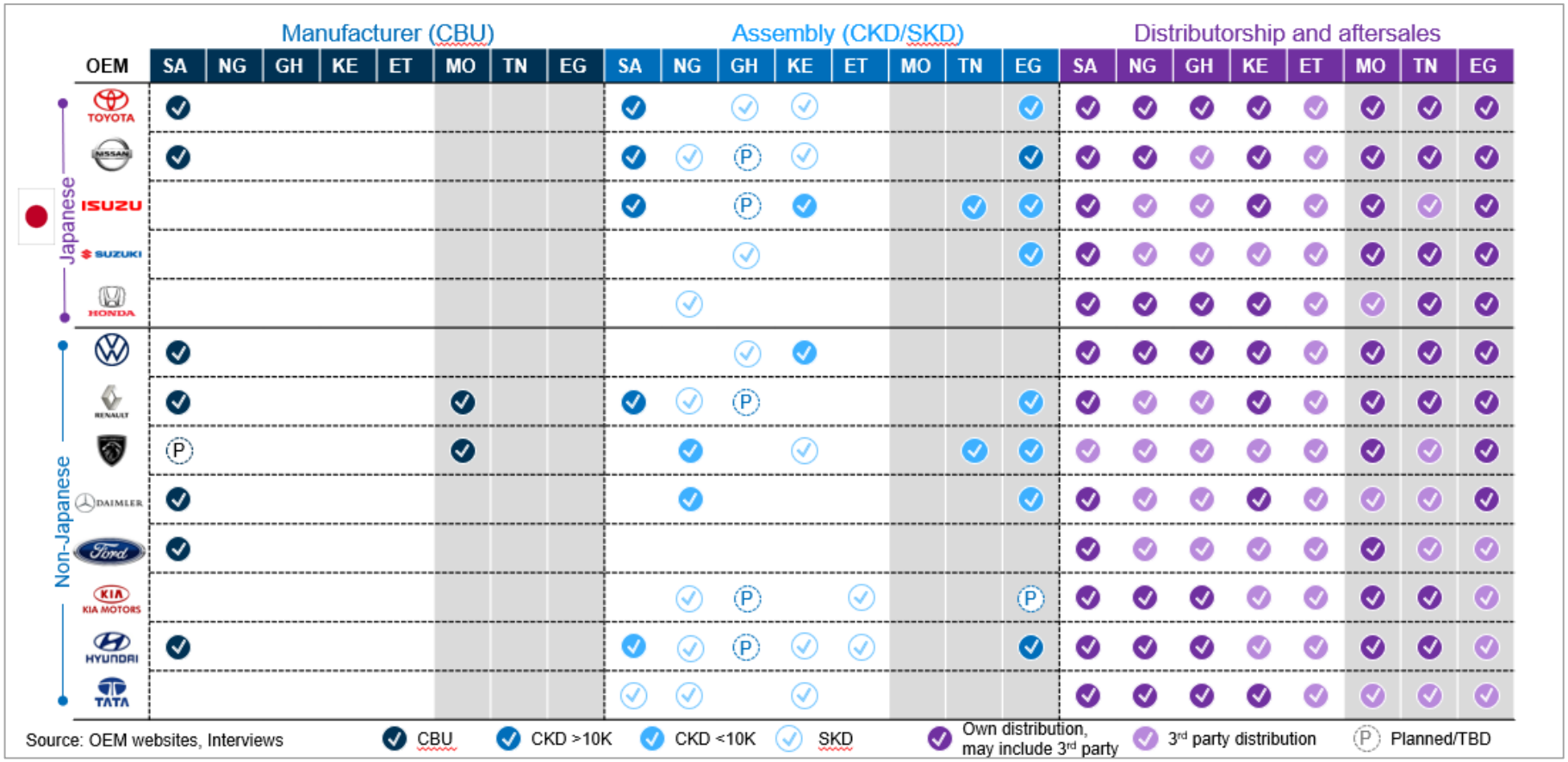
Figure B12: Component manufacturing – minimum scale and complexity requirements

Future state of Africa automotive industry – country deep dives (4.5)

Table B4: Automotive industry competitiveness assessment

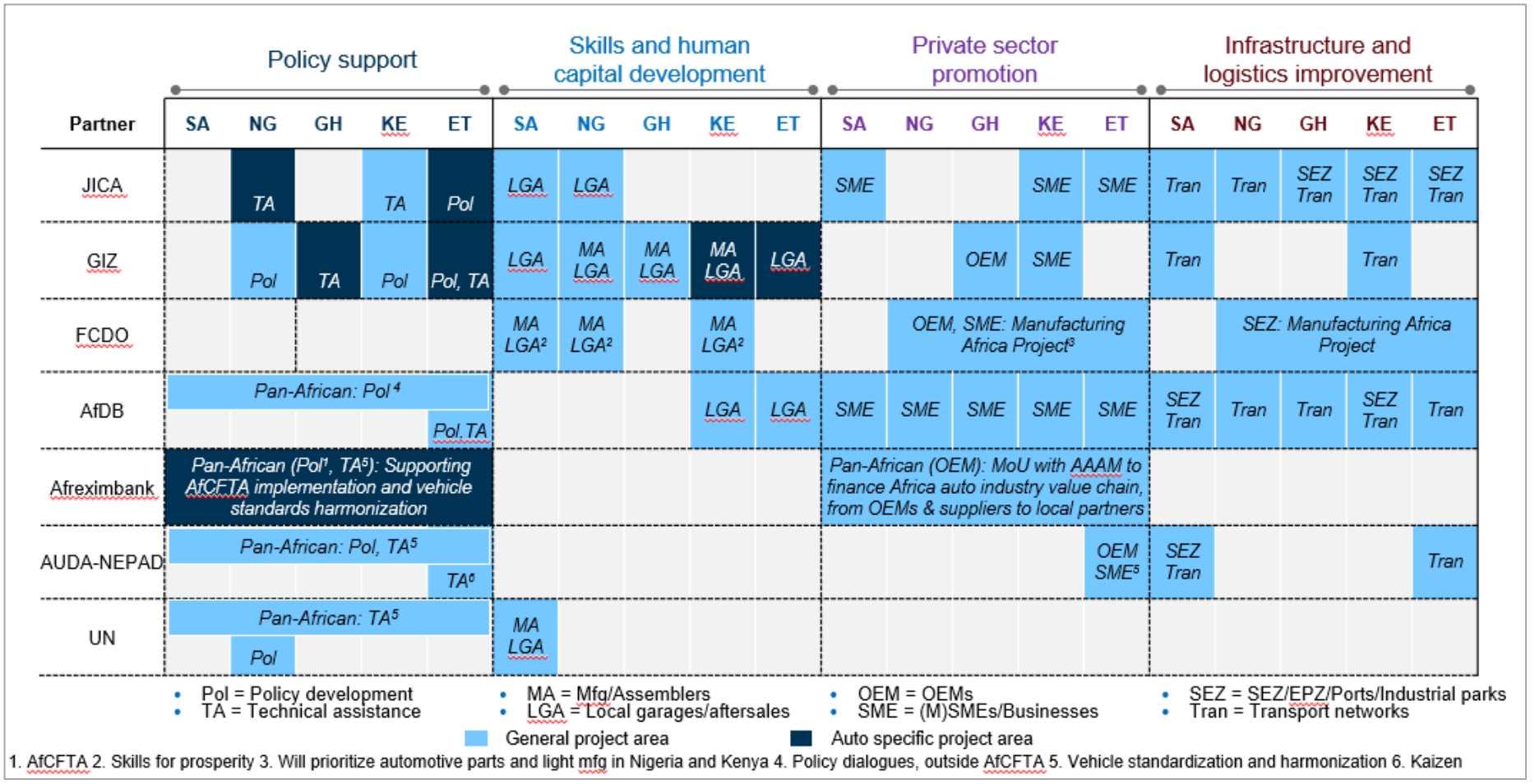
Factors	Indicators
Maturity of automotive ecosystem	Presence of automotive clusters Availability of local content suppliers Presence of supporting industries
Cost competitiveness	Manufacturing labour cost Manufacturing productivity Electricity cost
Enabling environment	Talent and skills availability Physical infrastructure and logistics Macro-economic stability and risk Government regulation / incentives

Future state of Africa automotive industry – private sector and other key stakeholder roles (Section 4.6)



Sources: OEM websites, stakeholder interviews

Figure B13: OEM activity across priority countries – key players shown



Source: Organisation websites, press search

Figure B14: Development partner support across priority countries – select agencies only

Long list of potential initiatives for consideration (Section 5.1)

Table B5: Long list of potential initiatives for consideration

Note: Shortlisted initiatives highlighted as green rows

Pillar	Enabler	No.	Initiative	JICA scheme	Counterpart	Direct beneficiary
1. Drive market integration and development over longer-term	1.1 Regional coordination of sector	1	**Pan-African trade facilitation support to accelerate AfCFTA implementation –** Assist regional stakeholders (e.g., AAAM, AfCFTA Secretariat, AFREXIM Bank) to coordinate approach across markets to facilitate new hubs and support advancement of the Pan-African Auto Pact, building on existing AfCFTA study	Technical cooperation (Data Collection Survey)	AfCFTA Secretariat and/or AFREXIM Bank	AfCFTA Secretariat, AAAM, AFREXIM Bank, national governments, OEMs, local suppliers
		2	**REC trade facilitation support (EAC) –** Support regional automotive industry policy discussions, as well as providing trade facilitation support and considering investment in cross-border transportation infrastructure and collaborations to reduce NTBs	Technical cooperation (Data Collection Survey)	RECs	National governments (Trade/Industry ministries), OEMs, local suppliers
		3	**REC trade facilitation support (ECOWAS) –** Building on the Automotive Industry Policy Framework published in 2018, support implementation of automotive policy, as well as providing trade facilitation support and considering investment in cross-border transportation infrastructure and collaborations to reduce NTBs	Technical cooperation (Data Collection Survey)	RECs,	RECs, National governments (Trade/Industry ministries), OEMs, local suppliers
		4	**REC trade facilitation support (SADC) –** Support regional automotive industry policy discussions, as well as providing trade facilitation support and considering investment in cross-border transportation infrastructure and collaborations to reduce NTBs	Technical cooperation (Data Collection Survey)	RECs	RECs, National governments (Trade/Industry ministries), local suppliers
		5	**Regional standards harmonization** to improve consistency of definitions and quality standards (e.g., definition of SKD / CKD, fuel standards, safety regulations)	Technical cooperation (DCS or dispatch of advisor/consultant)	ARSO or RECs	National standards authorities, OEMs, component manufacturers
	1.2 Promote green manufacturing across continent	6	**Regional and national policy for green manufacturing** - set up and implement incentives (e.g., green certification, tax breaks, CAPEX funding)	Technical cooperation (DCS or TCP); potential to consider follow-on ODA loan (non-project type)	RECs and/or National governments (Trade/Industry ministries)	OEMs, component manufacturers
2. Grow & protect established manufacturing bases	2.1 Automotive policy development	7	**Egypt policy development** - Support government to develop an auto policy that increases competitiveness of locally produced CBU vehicles against imports, and supports component manufacturing (e.g., fiscal incentives, etc.)	Technical cooperation (TCP, dispatch of advisors), ODA loan (non-project type)	Ministry of Trade and Industry (MTI) / General Authority For Investments (GAFI)	OEMs, component manufacturers

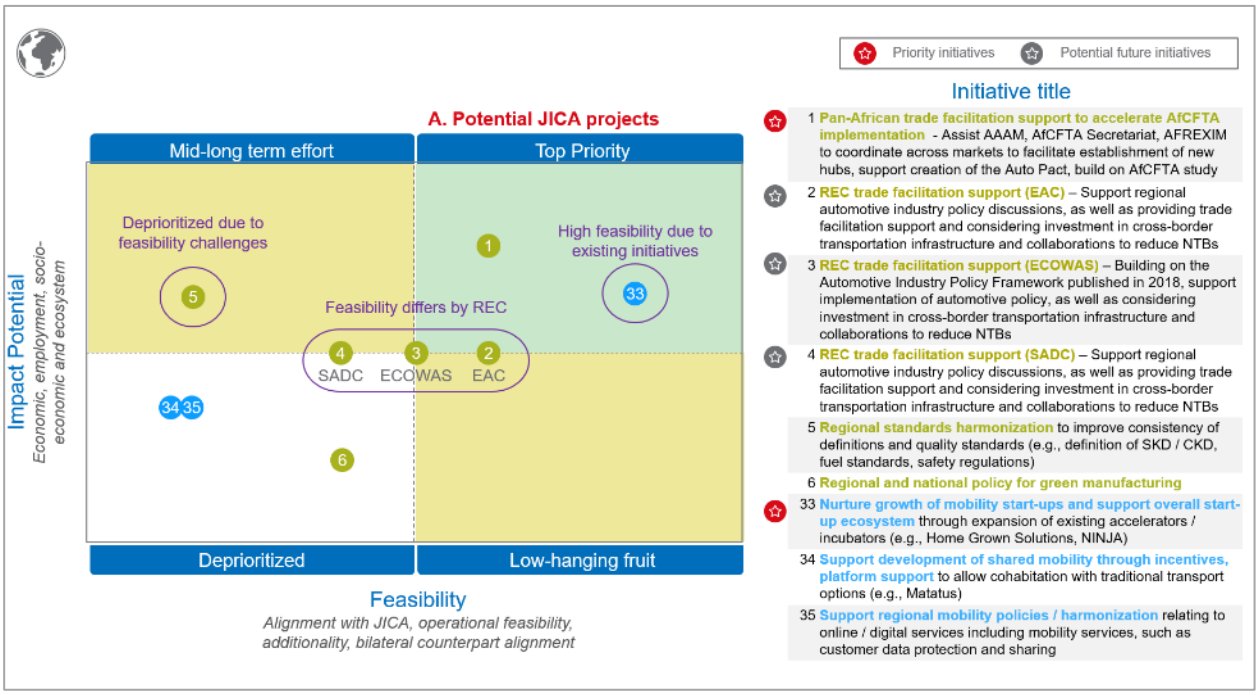
2.2 Investment promotion support	8	**Business environment evaluation in Tunisia** covering current policy and regulations (e.g., labour, investment, incentives, EPZ/SEZ/IPs) to support CBU manufacturing investment	Technical cooperation (DCS or dispatch of advisor)	Foreign Investment Promotion Agency (FIPA)	OEMs/assemblers, component manufacturers
	9	**Business environment evaluation in Egypt** covering current policy and regulations (e.g., labour, investment, incentives, EPZ/SEZ/IPs) to support manufacturing investment (including automotive sector). To be followed by **investment promotion capacity support** to attract OEMs and component manufacturers (including Japanese companies)	Technical cooperation (DCS or dispatch of advisor); potential to consider follow-on ODA loan (non-project type)	General Authority For Investments (GAFI)	OEMs/assemblers, component manufacturers
	10	**Investment promotion to attract new OEMs to Morocco** as well as component manufacturers to country (incl. Japanese companies)	Technical cooperation (DCS, dispatch of advisors or TCP)	Moroccan Investment and Export Development Agency (AMDIE)	OEMs/assemblers, component manufacturers
	11	**Trade infrastructure investment in Egypt** - Support investment in infrastructure for vehicle & part export (e.g., port terminals and/or surrounding infrastructure) in Egypt *[cross-sectoral initiative]*	ODA loan (project type)	Ministry of Transportation (MOT) / Ministry of Trade and Industry (MTI)	OEMs/assemblers, component manufacturers
2.3 Supply chain localization in South Africa	12	**Demand-driven TVET and apprenticeship programme support** - Support TVET colleges in revamping curriculum (including but not limited to NEV adaptation), training the trainer, apprenticeship programs, and Japan factory visits to develop pool of skilled workers	Technical cooperation (TCP including dispatch of advisors, trainee acceptance)	Department of Higher Education and Training (DHET), TVET colleges	OEMs / suppliers, aftersales providers, automotive workers
	13	**Quality and productivity improvement by Kaizen** - Build on existing Africa Kaizen Initiative (AKI) with AUDA-NEPAD to increase productivity and efficiency of local suppliers and manufacturers, including in NEV components / processes	Technical cooperation (DCS, TCP, dispatch of advisors, Training in Japan)	Department of Trade, Industry and Competition (DTIC) and other agencies in South Africa, AUDA-NEPAD	OEMs/assemblers, component manufacturers
2.4 NEV transition support (policy & industry) in South Africa	14	**NEV and carbon neutral policy support** – send advisor to DTIC to enable collaboration with private sector, while supporting implementation for OEMs and component manufacturers that are looking to adapt their facilities for carbon neutral production (e.g., tax incentives on CAPEX, SEZs), as well as implementation of Auto Green Paper (e.g., production incentives, local demand building)	Technical cooperation (DCS, dispatch of advisors)	Department of Trade, Industry and Competition (DTIC)	Industry associations, OEMs/assemblers, component manufacturers
	15	**NEV supply chain feasibility assessment** – assess potential and necessary technology to manufacture NEV components locally, develop recommendations to enable private sector adaptation (including design and implementation of government incentives, as well as private sector collaboration programmes)	Technical cooperation (DCS); potential for follow-on support	DTIC	Industry associations, OEMs/suppliers

3. Foster emergence of CKD assembly hubs	3.1 National automotive policy development	16	**Policy development and implementation support-** Support national policy frameworks to improve environment for automotive assemblers and component producers, including addressing barriers to trade and fiscal policy and regulations (e.g., used import limits, homologation, tax incentives) by (a) evaluating existing policy effectiveness and proposing solutions, (b) supporting development of new policies, incl. used inspection systems, (c) addressing implementation barriers, e.g., institutional capacity	Technical cooperation (technical cooperation project or dispatch of advisors); potential for ODA loan where clear automotive policy developed and strong political will	National government (relevant ministries / agencies)	OEMs, local suppliers, dealers, consumers
		17	**Review national policies and strategies for component localization -** Research feasibility of localizing manufacture of specific components for assemblers (based on scale requirements, local competitiveness, etc.), and propose policy and investment promotion recommendations that are aligned to viable areas of production	Technical cooperation (data collection survey)	National government (relevant ministries / agencies)	OEMs, tier-1 suppliers, local suppliers, dealers and prospective investors)
		18	**Strengthening existing SEZ/IP/FZ infrastructure to meet auto sector needs-** Support needed infrastructure development focused on improving offering of existing industrial parks and Free Zones, with ready infrastructure (e.g., power, road access) adapted to auto sector needs, and improve port efficiency for automotive players	Technical cooperation (data collection survey)	National government (relevant ministries / agencies)	OEMs, component manufacturers
	3.2 Testing infrastructure	19	**Testing facility feasibility assessment to lower OEM production cost-** Assess feasibility of developing local testing infrastructure across different regions in SSA; co-finance testing facilities to meet OEM standards (if shown to be feasible/ effective at reducing costs for OEMs and local suppliers by study)	Technical cooperation (data collection survey/ dispatch of advisors), ODA grant (project grants)	National government, Ministry of Transport and Standards agency	Industry associations, OEMs, Local suppliers
	3.3 Vehicle Financing	20	**Liquidity support to government to enable affordable PV/CV finance-** Partner with gov't, banks, OEM/dealers to expand access to affordable credit for PV/CVs through provision of two-step loan for financing for new vehicle purchases	ODA loan (non-project type)	National government (relevant ministries / agencies)	OEMs, Banks, Dealerships, Consumers
		21	**Vehicle financing joint product development for banks and OEMs -** including sector specific pilots and risk assessment	Technical cooperation (data collection survey)	No official counterpart; close collaboration with OEMs, Commercial Banks, Central Bank	OEMs, Commercial Banks, Dealerships, Consumers
	3.4 Skills and productivity development	22	**Auto-specific Kaizen/QPI training-** build on existing Africa Kaizen Initiative (AKI) to support local suppliers and assemblers in aspiring CKD hubs, including in NEV components / processes	*Continuation of AKI*	AUDA-NEPAD (relevant ministries / agencies)	OEMs/assemblers, part manufacturers

		23	**Auto workforce skills baseline assessment and TVET curriculum support -** planning with gov't, OEMs, TVETs and other development partners (e.g., GIZ) to map auto-sector skills need in future workforce and follow up with interventions to improve curriculum and training quality at TVETs	Technical cooperation (data collection survey)	Skills/TVET agency	OEMs/assemblers, part manufacturers, workforce
		24	**Demand-driven next generation skills development –** partner with OEMs and consult closely with government (e.g., TVET agencies) to develop and pilot training and/or apprenticeship programmes to prepare fit-for-purpose workers in assembly, manufacture, repair/maintenance of vehicles (incl. NEV, Connected) *Potential to combine with #23 above*	Technical cooperation (data collection survey)	No official counterpart; close collaboration with private sector (e.g., assemblers, dealerships) and TVET/Skills agencies	OEMs/assemblers, part manufacturers, workforce
4. Develop downstream channels across region	4.1 Professionalize distribution	25	**Scale up support to local parts producers and suppliers** including access to finance, expertise for business strategy	Technical cooperation (dispatch of advisors)	National government (relevant ministries / agencies – e.g., standards)	OEMs, local suppliers, dealers, consumers, Certified garages
		26	**Parts' regulation agencies capacity building** - Develop and support capacity of relevant agencies e.g., customs, standards bureaus to conduct inspections/validate parts that are genuine or meeting basic quality standards	Technical cooperation (dispatch of advisors)	National government (relevant ministries / agencies – e.g., standards)	OEMs, local suppliers, dealers, consumers, Certified garages
		27	**Support distributor expansion within the REC** - Provide finance or loans for large-scale national / regional distributors to expand scale nationally or regionally, or enter other markets in the same or adjacent RECs	Technical cooperation (data collection survey)	National government (relevant ministries / agencies)	OEMs, tier-1 suppliers, local suppliers, dealers and prospective investors)
	4.2 Aftersales formalization	28	**Aftersales network development - quality improvement and accreditation of SME garages in partnership with OEMs and dealerships -** assess potential, design and pilot partnership programme between OEMs and high potential informal aftersales players, including support to improve operations, standardise quality and certify garages as authorised / accredited partners	Technical cooperation (data collection survey)	Automotive agency, industry association	Aftersales suppliers, service providers and consumers, OEMs, and mechanics
		29	**Growth support for informal aftersales providers** including access to finance, expertise for business strategy	ODA loan (non-project type)	Commercial banks, government	Aftersales suppliers, service providers
	4.3 Vehicle inspections/ standards	30	**Vehicle inspection capacity development -** via digitalization and equipment to enable inspection enforcement	Technical cooperation (dispatch of advisors), technical cooperation (provision of facilities or equipment)	National government, standards agency	Consumers, suppliers and dealerships
		31	**Deep dive study on road safety & auto waste systems** including maintenance and recycling for end-of-life vehicles and parts	Technical cooperation (dispatch of advisors	National government, standards agency	Consumers, suppliers and dealerships

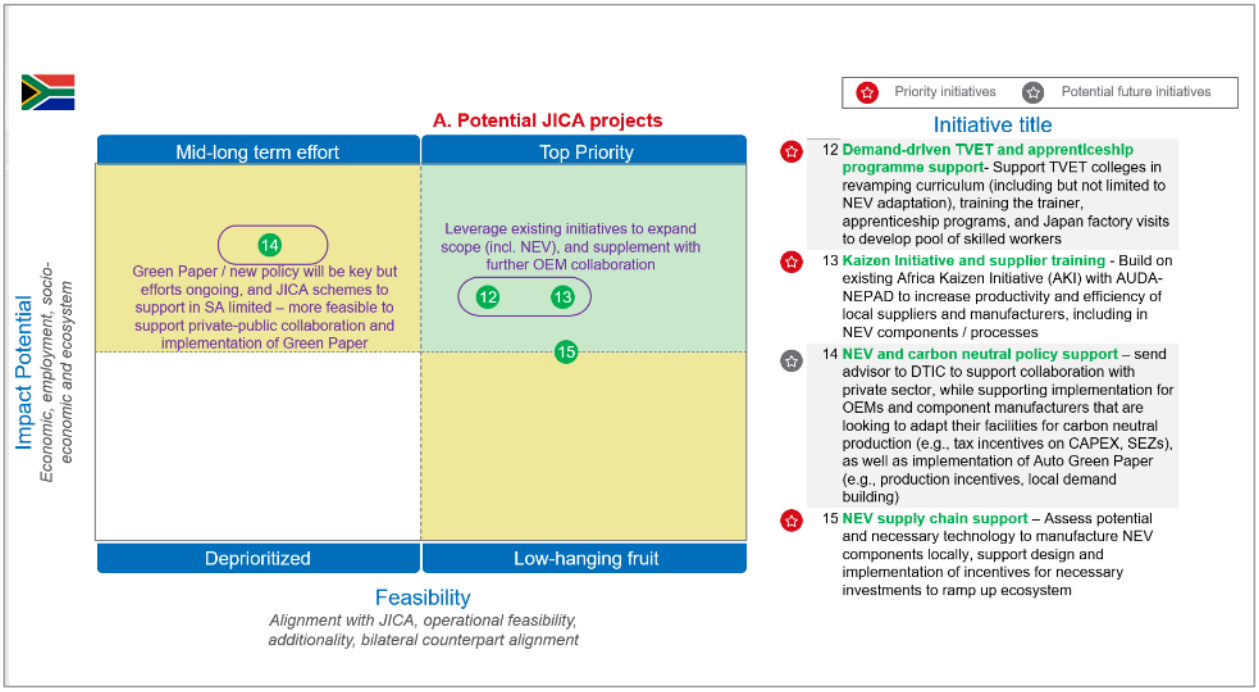
4.4 Tier 1 aftersales expansion	32	**Support tier 1 expansion into subregion - through feasibility study and pilot funding** to enable Tier 1 expansion into subregion (e.g., Denso, NGK)	PPP (SDG small business support)	National government, commercial banks	Tier 1 suppliers, after sales suppliers
4.5 start-up incubation support	33	**Incubate and accelerate high potential start ups, including collaboration with private sector investors** through expansion of existing incubators (e.g., AUDA-NEPAD Home Grown Solutions, JICA Project NINJA, private sector accelerators)	Technical cooperation (DCS)	AU (AUDA-NEPAD)	Mobility start-ups, private sector investors
	34	**Support development of shared mobility** through incentives, platform support to allow cohabitation with traditional transport options (e.g., Matatus)	Technical cooperation (DCS, dispatch of advisors), ODA loan (non-project type)	National government, relevant ministries	Mobility start-ups
	35	**Support regional mobility policies / harmonization** relating to online / digital services including mobility services, such as customer data protection and sharing	Technical cooperation (DCS, dispatch of advisors), ODA loan (non-project type)	AFCFTA secretariat, RECs, national governments	Mobility start-ups

Shortlist prioritisation by country – impact potential and feasibility matrix (Section 5.2)



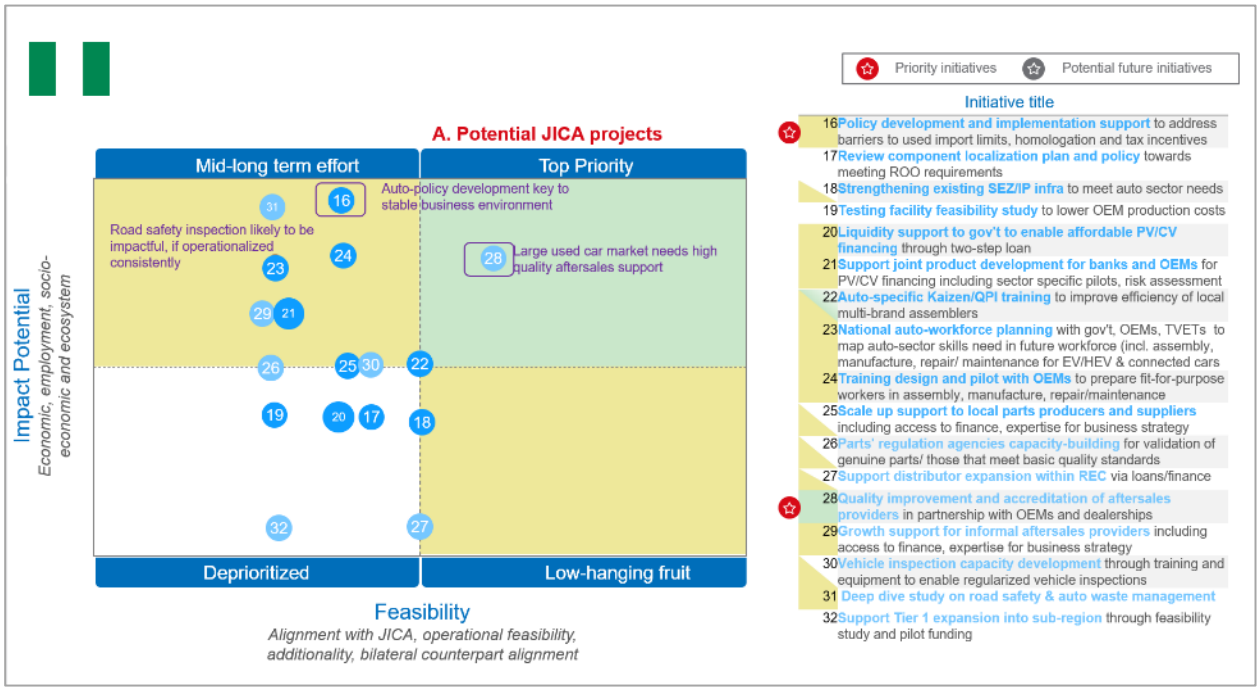
Source: Stakeholder interviews, BCG analysis

Figure B15: Prioritized Pan-Africa regional integration and innovation longlist



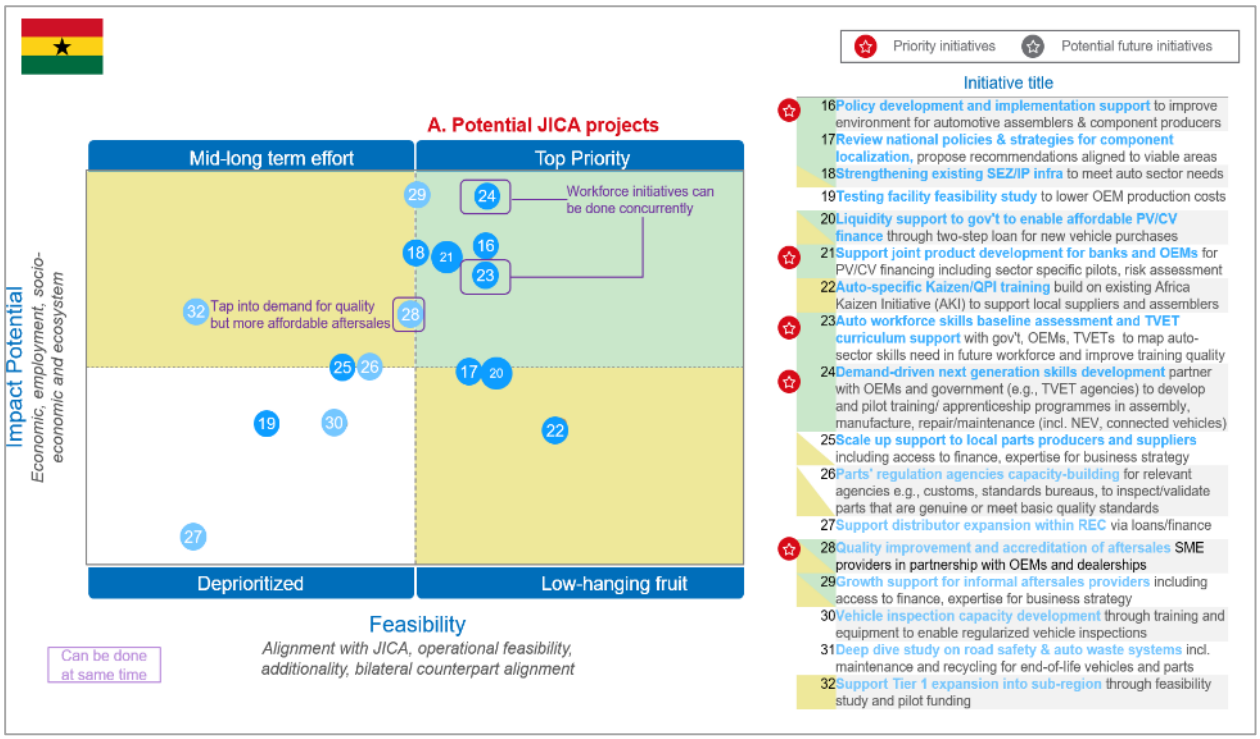
Source: Stakeholder interviews, BCG analysis

Figure B16: Prioritised longlist at country-level for South Africa



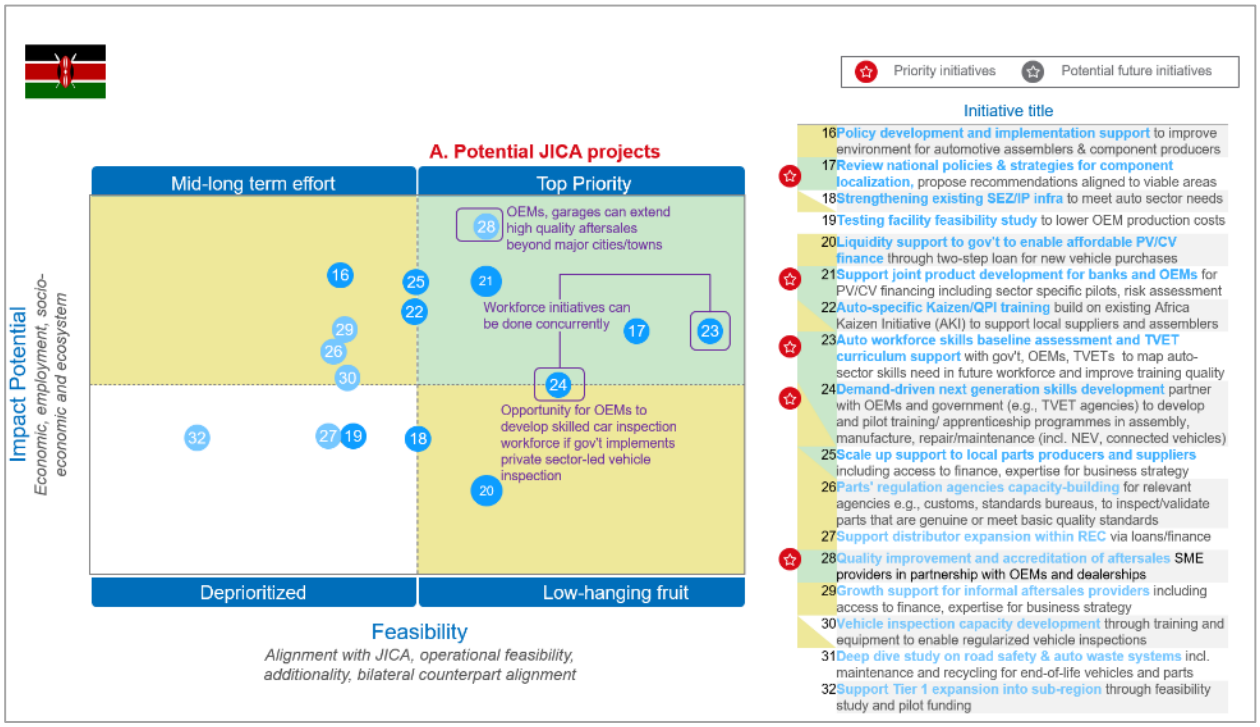
Source: Stakeholder interviews, BCG analysis

Figure B17: Prioritised longlist at country-level for Nigeria



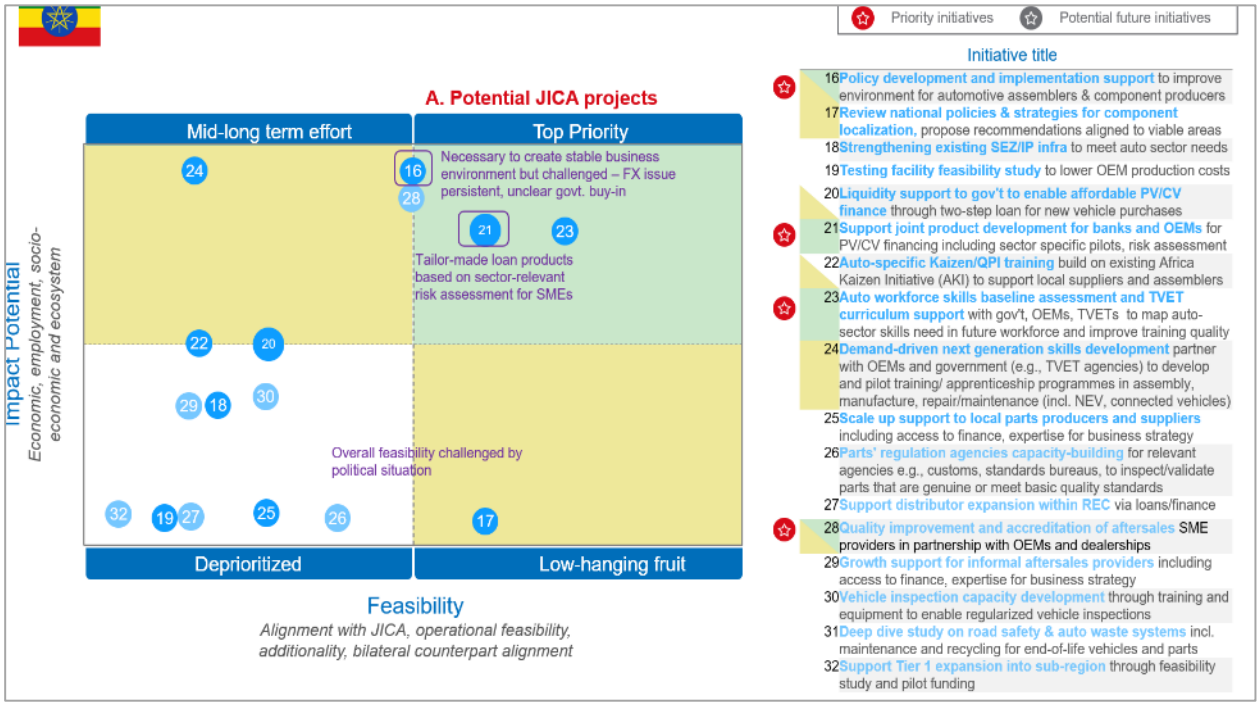
Source: Stakeholder interviews, BCG Analysis

Figure B18: Prioritised longlist at country-level for Ghana



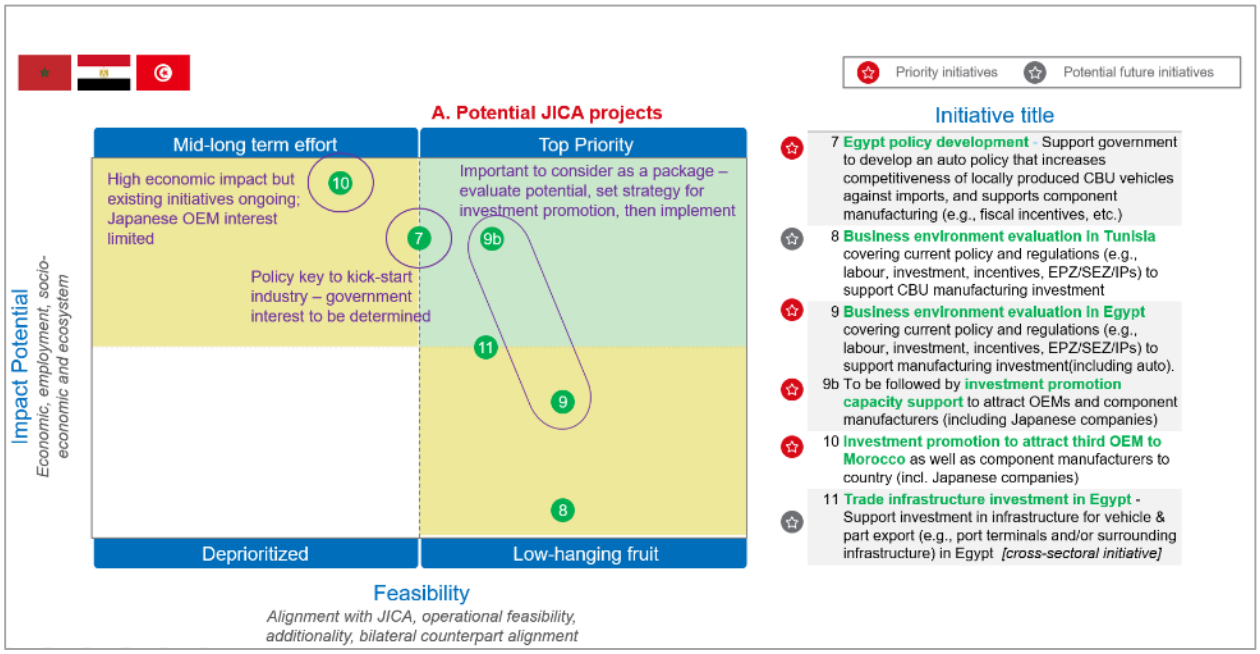
Source: Stakeholder interviews, BCG analysis

Figure B19: Prioritised longlist at country-level for Kenya



Source: Stakeholder interviews, BCG analysis

Figure B20: Prioritised longlist at country-level for Ethiopia



Source: Stakeholder interviews, BCG analysis

Figure B21: Prioritised longlist at country-level for North Africa (Egypt, Morocco, Tunisia)

Appendix C: Final Seminar report

24 January 2022

Mobilizing Africa's Automotive Industry for the future: Final Seminar for Study for the Promotion of the African Automotive industry (TICAD8 Pre-Event)

The final seminar for JICA's "Study for the Promotion of African Automotive Industry: Post-COVID 19 Supply Chain & Mobility Reform" was held online on 24 January 2022, co-hosted by JICA and the African Association of Automotive Manufacturers (AAAM). The seminar attracted nearly 400 registrations and close to 300 participants from over 20 countries in Africa and beyond, drawn from a variety of stakeholders including representatives of national government institutions, private sector automotive companies, regional and national industry associations, intergovernmental organisations and development partners.

Ms. Keiko Sano, Director General of the Economic Development Department of JICA, opened the seminar by highlighting the importance of the African automotive industry given rising demand for vehicles in the region and significant trends impacting the sector, such as the COVID-19 pandemic, CASE (Connected, Autonomous, Shared, and Electric) innovations, de-carbonization regulations and the African Continental Free Trade Area (AfCFTA). Mr. Dave Coffey, Chief Executive Officer of AAAM and co-host of the event, emphasized that the time is now for Africa to industrialize as the last major opportunity in the global automotive sector, but that this will require courageous leadership and deliberate interventions based on clear and coordinated strategies across governments.

Next, key findings from the study were presented by the research team on the status of the industry across the region. Looking to the future, the team identified four vision objectives for the industry: increased regional integration, adaptation to new technologies (e.g., new energy vehicle) by North African and South African exporters, the emergence of regional vehicle assembly hubs in the rest of Sub-Saharan Africa, and downstream transformation through aftersales formalization and innovative mobility solutions.

The seminar then turned to a panel discussion facilitated by moderator Dr. Nikolaus Lang, Managing Director and Senior Partner at the Boston Consulting Group, with five distinguished industry experts sitting on the panel. Panelist Themba Khumalo, Principal Advisor on Industrial Development at the AfCFTA Secretariat, highlighted the opportunities that a single integrated market of 1.3 billion people can provide to the automotive industry given the importance of economies of scale in manufacturing, and shared that progress is being made in ongoing negotiations to conclude Rules of Origin that support value chain development and foster industrialisation.

Mr. Dave Coffey indicated that new vehicle sales can increase from around one million pre-COVID-19 to five million over the next fifteen years with the right policies and ecosystems, but that it is important that aspiring countries have a pathway to benefit and develop. This will require a "coalition of the willing" between partners across the regions and the continent following a developmental path which is core to the Pan-African Auto Pact proposed by AAAM and AFREXIM Bank.

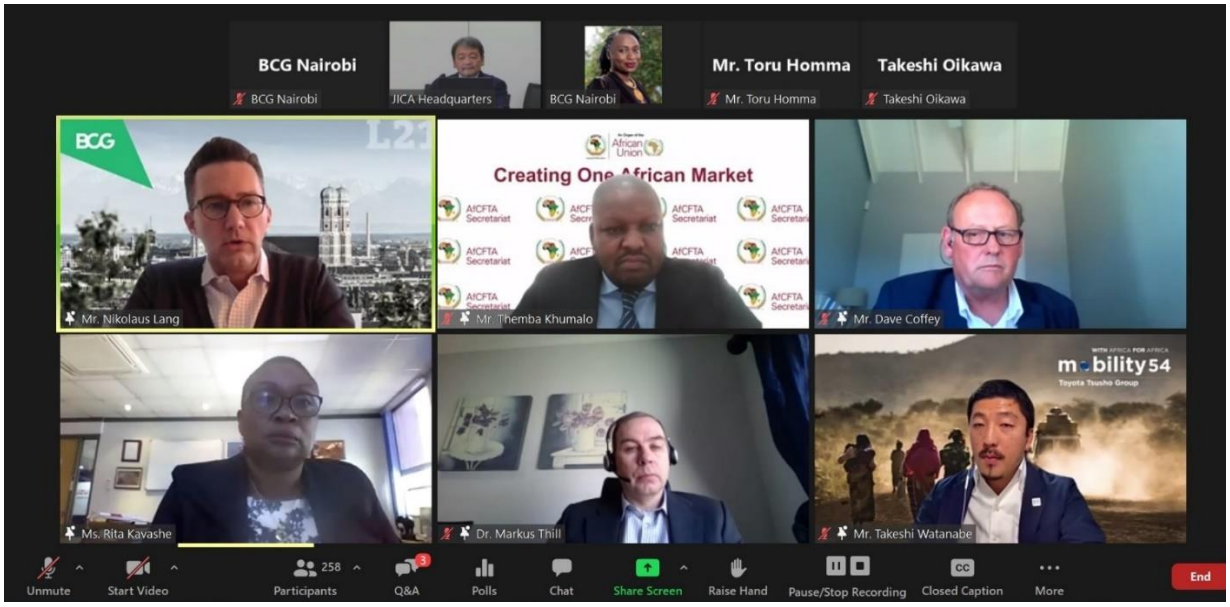
On the topic of fostering development of aspiring assembly hubs, Ms. Rita Kavashe, Managing Director of Isuzu East Africa, spoke of the importance of the private sector working in partnership with government to find solutions such as regulations of used vehicle imports, as well as the role of vehicle financing in stimulating consumer demand.

Dr. Markus Thill, President of Bosch Africa, highlighted the opportunities for professionalization and employment in the automotive aftermarket given the 50 million or more vehicles that need to be maintained annually across the region, especially given the high degree of low quality and often substandard parts.

Mr. Takeshi Watanabe, Chief Executive Officer of Mobility 54 Investment (part of Toyota Tsusho Group), drew attention to the new innovative mobility services or technologies that provide opportunities in Africa, particularly if digitalization can be used to leapfrog traditional solutions and create new jobs, services and value addition, giving the example of trade platform Sendy in Kenya.

The seminar ended with panellists taking questions from participants, discussing the importance of coordinated and phased policy approaches in the areas of trade regulations and supply chain localization, and was closed by Mr. Toru Homma, Senior Advisor on Private Sector Development from JICA who lead the study and also acted as the event moderator.

The seminar was one of the first pre-events for this year's 8th Tokyo International Conference on African Development (TICAD8). The Final Report for the Study for the Promotion of African Automotive Industry will be published on JICA's website once finalized.



Panel discussion between leading industry experts (Clockwise from top left: Dr. Nikolaus Lang (BCG), Mr. Themba Khumalo (AfCFTA Secretariat), Mr. Dave Coffey (AAAM), Mr. Takeshi Watanabe (Mobility 54), Dr. Markus Thill (Bosch Africa) and Ms. Rita Kavashe (Isuzu East Africa))

Opening remarks by Ms. Keiko Sano, Director General of the Economic Development Department of JICA

Moderator: Mr. Toru Homma, Senior Advisor of JICA