Development of component and supplier analyses in the "Compact with Africa" countries to increase the value-added activities of the German automotive industry in Africa within the framework of the special initiative "Training and Employment"

Final Report

A study by

ITCL

On behalf of

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Executive Summary

The need for jobs in Africa is high - based on the growing population and to offer the African youth an economic and social future perspective **each year 20 million new jobs are needed.** In the framework of the Marshall Plan with Africa and the G20 investment partnership Compact with Africa (CwA), the German Federal Ministry for Economic Cooperation and Development (BMZ) started the **Special Initiative (SI) on Training and Job Creation** to promote sustainable investments with high impact on employment. In the following years, the SI has set the goal to create 100.000 jobs and 30.000 apprenticeships as well as better working conditions in the focus countries: Egypt, Ethiopia, Ivory Coast, Ghana, Morocco, Rwanda, Senegal, and Tunisia. Currently projects and programmes within the framework of the SI focus on three areas, namely cluster promotion, business, and investment, and African small- and medium-sized enterprises (SMEs).
The success depends on a closely interlined cooperation between policymakers, companies, and academia. For instance, with the "**Pan African Mobility Alliance**" (PAMA) a strong collaboration of different actors in the automotive industry, academia and the GIZ is present. Goal of the Alliance is to conduct market analyses, workshops and support the implementation of pilot projects with the overall goal to build up global value chains that include African suppliers following the multi-stakeholder approach.
Within the PAMA the need for a detailed analysis on the CwA countries was recognised and for the current study **Ethiopia**, **Ghana**, and **Morocco** were selected.

Figure 1: Information sources used to gain insights in the general conditions of the country (Source: own representation)

In the **first step (country analysis)** the study aimed to determine the general conditions within the countries e.g. political and legal, infrastructural and market conditions. The methodology followed was a combination of bundling existing information and targeted enrichment through desk research and expert interviews (Figure 1).
The countries differ in many aspects. For instance, in terms of infrastructure and the automotive industry, Morocco is far more developed than Ethiopia and Ghana. However, the rich raw material deposits in Ghana and competitive textile industry in Ethiopia offer potentials for the manufacturing of automotive components. Based on the findings a qualitative evaluation for each country was conducted, resulting in a maturity level for each category and country (Figure 2). The evaluation is solely based on a comparison of the countries among themselves.

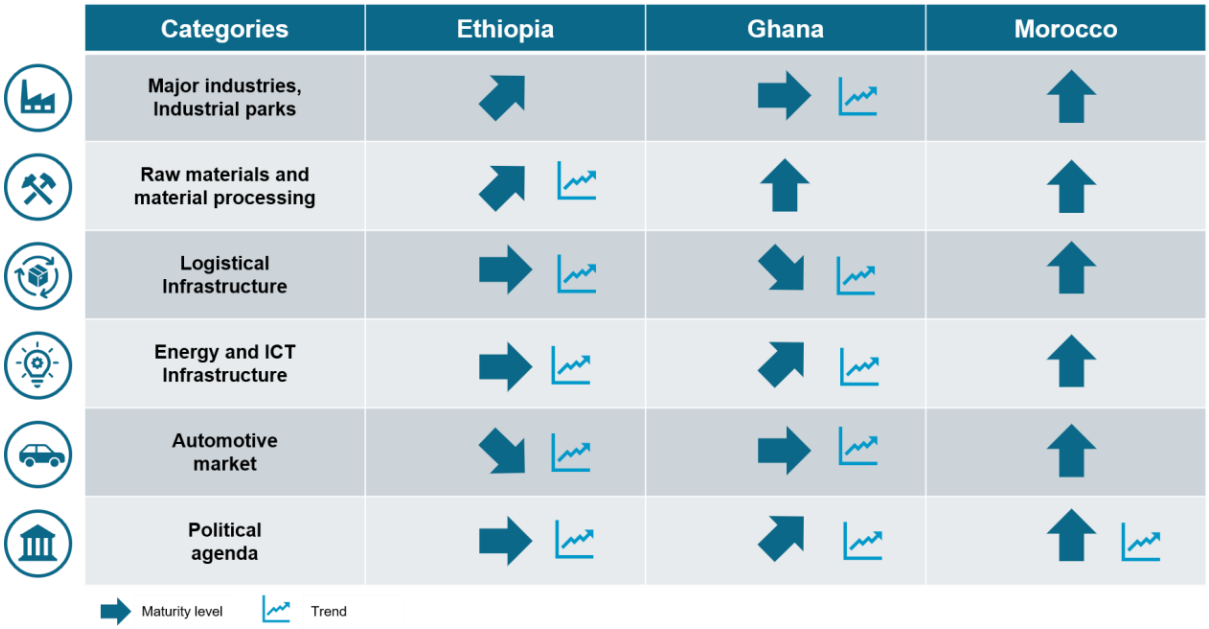

Figure 2: Results of the analysis of general conditions in the focus countries (Source: own representation)

To determine suitable components in a **second step (component analysis)** an analysis based on a three-way approach (Figure 3) was conducted and the most promising approaches for the countries were followed.

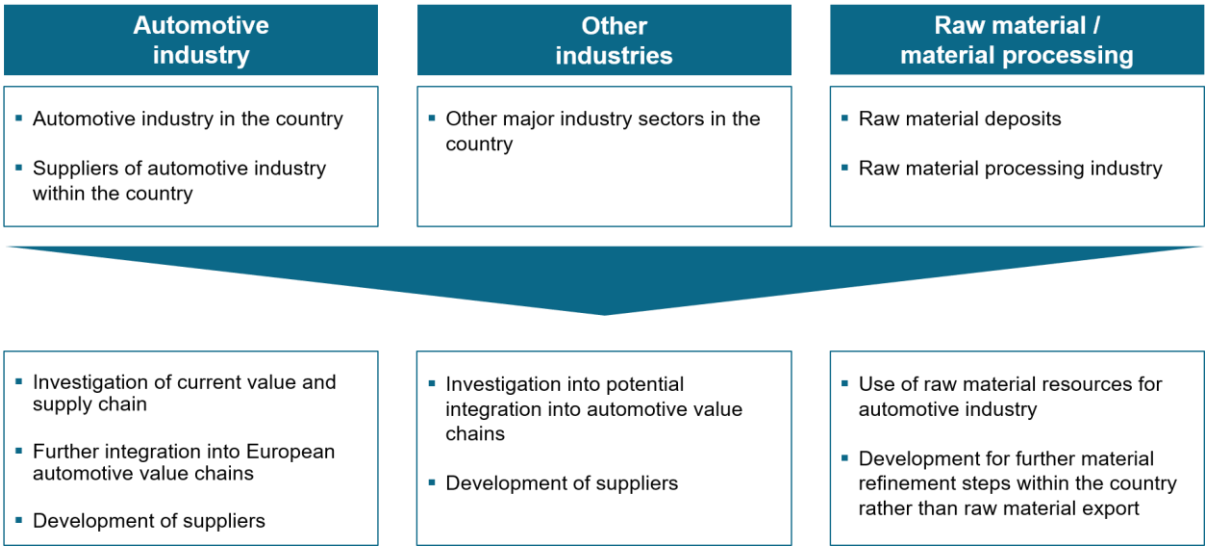

Figure 3: Three-way approach to identify suitable components for each country (Source: own representation)

As a result, for each country different components - using an automotive commodity break-down enriched with own research and conducted expert interviews - and stakeholders along the value chain were identified:

- **Ethiopia** has a competitive textile industry with integrated value chains and is attractive due to competitive wages and the ongoing development of industrial parks, however at current state the low skill level of labour force and low development level (low productivity) of the production sites are not sufficient to meet the requirements of the industry. Currently only simple and basic apparel items

are being produced. Additionally, most of the cotton needs to be imported, but a local cotton production establishment is ongoing. As a result, a possible product is seat covers. Additionally, the mining industry is in establishment, which is relevant for future scenarios regarding the sourcing of metal components. In addition, the improvement of the infrastructure is crucial for sustainable development. With ongoing development projects, the government is already addressing these problems. In a next step a more in-depth analysis of local production sites is vital. Furthermore, initiatives to support the educational and technical development are highly relevant.

- **Ghana** has major raw material deposits like bauxite, oil, and rubber. However, the main problem are the currently non-existing integrated value-chains and foreign ownership of resources by China (bauxite) and Michelin (natural rubber). A possible product for local production is tires when a production site is present and the market demand increases. Aluminium components are another option (e.g., body panels, seat frames). In addition to the establishment of integrated value chains and overcoming a Chinese monopole on bauxite, the infrastructure needs to be improved. Especially a reliable power supply is crucial for the aluminium industry. The Ghanaian oil industry is highly export oriented. With an improvement of local refinery infrastructure and re-alignment of a wide range of local plastic manufacturers from producing common goods to automotive components an integration in the automotive value chains is possible. Initiatives that address the identified obstacles and support the local industry are highly relevant to create a future market.
- **Morocco** has a well-established automotive industry and can be classified as workbench for European companies. A feasible approach is to increase the value-added actions with the evolvement of Moroccan Tier-2 to Tier-n suppliers since European Tier-1 suppliers are already present. Crucial for the development is to reach a critical mass of 1.000.000 cars per year, which is represented by the automotive policies of the Moroccan government. Raw materials and material processing are not the focus of the economic development of the country. However, integrating related industries like the aviation and electronic industry in the automotive value chain may be another approach. For this a detailed analysis of needs is crucial.

For the local production of automotive components, a specific skill level is required – where currently all countries face deficits. However, the commitment of the governments to improve the education and specific skills is given. All countries have advantages based on the high accessible labour force and competitive costs.

Based on the results of the component analysis in a **third step (supplier analysis)** possible suppliers within countries were searched. For a deeper analysis, the focus was set on Morocco as most promising country which offers already a well-established automotive industry. As a result of the analyses company profiles for identified and interested companies in Morocco were created. Completed with the derivation of challenges and potentials possible next steps were identified.

Within Morocco many companies with an already competitive maturity level are existing. They show high potential for integration into automotive value chains and are additionally highly interested and motivated. Current overall challenges they are facing are on the one hand lack of connection to automotive OEMs/suppliers or references for those industries. On the other hand, there is a need to reach a critical mass in demand in order to invest in new product lines and distribution channels. Furthermore, the detailed product and quality specifications of concrete parts is not fully known due

to missing access. The identified companies are active in different industries. For instance, a coating and a tool manufacturer were identified. Detailed results regarding possible components and identified suppliers can be found in the corresponding chapters.

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List of Abbreviations

ACE	Africa Coast to Europe
AEO	Authorized Economic Operator
AfCFTA	African Continental Free Trade Area
AHK	Außenhandelskammer
ASYCUDA	Automated System for Customs Data
AU	African Union
BIW	Body in White
BMZ	Federal Ministry for Economic Cooperation and Development (dt.: Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung)
CAGR	Compound Annual Growth Rate
COFACE	Compagnie Française d'Assurance pour le Commerce Extérieur
COMESA	Common Market for Eastern and Southern Africa
CTN	Cargo Tracking Note
CV	Commercial Vehicle
CwA	Compact with Africa
DCFTA	Deep and Comprehensive Free Trade Area
ECOWAS	Economic Community of West African States
EPZ	Export Processing Zone
ERA	Ethiopian Road Authority
ERC	Ethiopian Railways Corporation
ESW	Ethiopian Single Window
EU	European Union
FDI	Foreign Direct Investment
GADP	Ghana Automotive Development Policy
GAFTA	Greater Arab Free Trade Area
GCI	Global Competitiveness Index
GDP	Gross Domestic Product

GEDAP	Ghana Energy Development and Access Project
GIADEC	Ghana Integrated Aluminium Development Corporation
GIPC	Ghana Investment Promotion Council
GIZ	Gesellschaft für Internationale Zusammenarbeit
GSP	Generalized System of Preferences
GTAI	Germany Trade & Invest
GTP	Growth and Transformation Plan
HCV	Heavy commercial vehicle
ICT	Information and communications technology
ICUMS	Integrated Customs Management System
ISO	International Organization for Standardization
LCV	Light commercial vehicle
LPI	Logistic Performance Indicator
MENA	Middle East & North Africa
1D1F	One District One Factory
OEM	Original Equipment Manufacturer
OHSAS	Occupational Health and Safety Assessment Series
ONCF	Office National des Chemins de Fer
ONDA	Office National Des Aéroports
PAMA	Pan African Mobility Alliance
PV	Passenger vehicle
R&D	Research & Development
SAT	South Atlantic
SEA-ME-WE	South-East Asia – Middle East – Western Europe
SI	Special Initiative
SKD	Semi Knocked Down

SME	Small and Medium Enterprises
SUV	Sport Utility Vehicle
UMA	Union du Maghreb Arabe
WACS	West Africa Cable System

Context and objectives of the study

Motivation

By 2025 **1 out of 5 people will come out of Africa.** With a **growing population** to more than 2,5 billion by 2050, a **youth population** and **growing middle class**, large opportunities are given for the future.[1] Africa is the last major growth market for automotive industry,[2] which has the potential to act as main driver for **industrialisation, economic growth** and **increased employment** on the African continent.[3] Currently the motorisation rate of 42 vehicles per 1000 people is significantly lower than the global average of 180 per 1000.[4] Reasons for that are routed in a low purchasing power, lack of after sales services and high cost of new vehicles. Furthermore, a large (import) market for second-hand vehicles is present.[5]
Not only the market potential, also the large raw material deposits strengthen the role of Africa for the automotive value chains. Relocation of value-added activities can have a positive effect on industrialisation and wealth creation.[6]

In the framework of the Special Initiative (SI) Jobs and the Pan African Mobility Alliance (PAMA), the need for a detailed analysis on the Compact with Africa (CwA) countries was recognised. This study contributes with the identification of potential suppliers and components in three focus countries: **Ethiopia**, **Ghana**, and **Morocco**.

Context of the study

With the SI on Training and Job creation the BMZ is planning a comprehensive intervention to create more and better jobs in Africa. In addition to existing development approaches, the SI is intended to bring together all instruments and actors in a focused manner in medium- and short-term formats and in concrete industrial parks and clusters in a way that significant and visible results in form of jobs are created through private investment. In addition, African small- and medium-sized enterprises (SMEs) need to be strengthened with targeted measures to promote SMEs and to improve the framework within the partner countries.
When African supply chains are addressed, often time the focus is on humanitarian aid and development. But the situation is rapidly changing – supply chains and logistics in Africa offer far more possibilities. With support through cooperation between companies, academic and institutions, the potential can be used to build up future markets and at the same time strengthen mobility and create competitive and sustainable jobs for the African population. From this point of view in particular, the automotive sector is a forward-looking area, as complex and multi-level value-added chains are created here.
In order to support the European automotive industry in expanding its supply and value-added chains in Africa, a requirement analysis is to be carried out together with actors from the European automotive industry and other relevant actors from politics and industry. This offers the potential to take selected regions of the African continent

[1] Source: Volkswagen (2020).
[2] Source: Afrika Verein (2020).
[3] Ibid.
[4] Ibid.
[5] Source: Madden (2020).
[6] Source: Afrika Verein (2020).

a big step forward in terms of improved living and working conditions, infrastructure development and the education of people in relation to operational logistics activities and logistics management.
An approach can be used which enables potential partner companies in Africa to successively build up along the value-added pyramid from raw material suppliers to component manufacturers to system and module suppliers.
Based on the findings of the PAMA, which was founded for this purpose, it was concluded that there is a need for more specific market studies for each CwA. In a first study on Ethiopia, insights were gained into possible industries and supply parts in this country. Further market analyses will be required if pilot projects in the other CwA countries are expanded and concretised. Much of the relevant information is already available from institutions, governments, locally active companies and above all in the GIZ country subsidiaries. Through structured queries and consolidation, this information can be transferred into suitable market studies and classified in the value and technology chains of the automotive industry. The PAMA in its role as a mediator between industry, politics and science can play a decisive role in the processing and dissemination of this information. Thus, the PAMA can mediate between anchor investors and partner companies in Africa and enable them to raise Africa's share in global value creation.

Methodology and Objectives

The present study for the development of component and supplier analyses can be used as a basis for the preparation of business cases regarding availability, costs, quantities and quality of specific components and the associated job-creating investments regarding concrete supply sources in the CwA countries.
The vision is to identify and successively expand new development paths for sustainable supply and value networks.
One of the goals of the study was to analyse already existing information in different institutions, to identify information gaps and an enrichment of the information with own desk research. The methodology for this step is shown in Figure 4. Through desk research the study is highly dependent on freely available information, information provided by the country representations and through expert interviews. Therefore, the sources may differ from country to country.

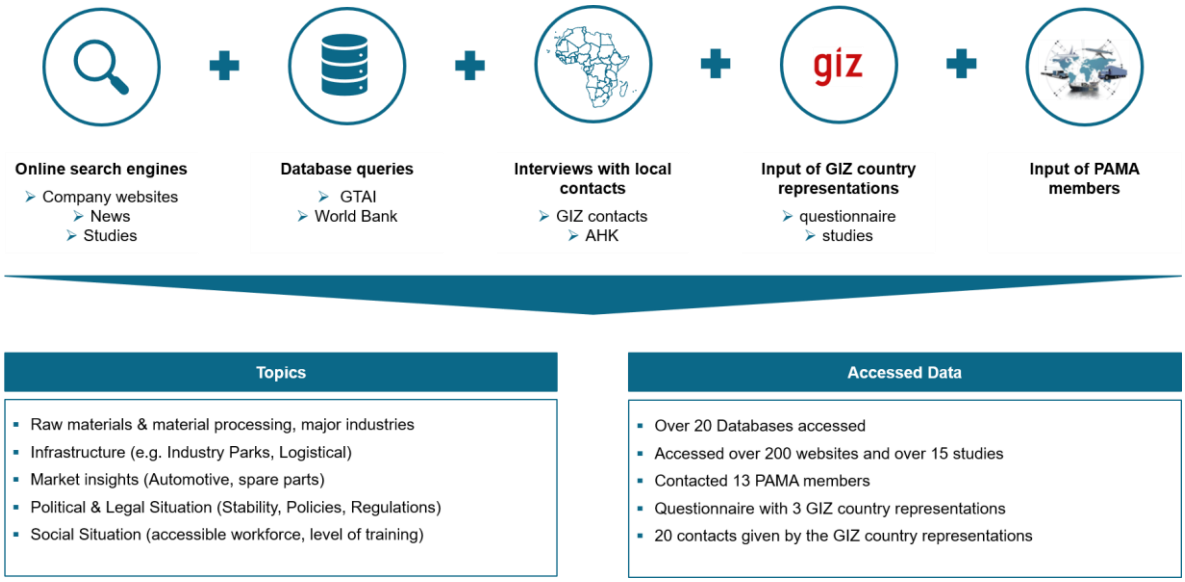

Figure 4: Methodology - Desk Research (Source: own representation)

As overall result the study for the focus countries Ethiopia, Ghana, and Morocco produced the following deliverables:

- **Overview of the general conditions:** Characterisation of the local conditions in the fields of politics, industry, infrastructure, regulations, and market conditions for each country.
- **Overview of automotive components:** Analysis of local value chains and identification of components that can be produced within the countries with a special focus on the existing automotive industry. Focus also on other familiar industries with a potential for integration, raw material deposits and their processing industry. The analysis was top-down oriented on the purchasing structure of OEMs (Commodities) and was later analysed in detail regarding specific components.
- **Identification of possible suppliers:** Based on the identified components and other local factors companies within the countries were analysed to derivate their maturity level and current challenges in order to identify possible development and integration paths for the future. The analysis was completed by an audit to get deeper insights into the company processes.

Analysis of the general conditions in the focus countries with focus on the advantages for the automotive industry

As result of a detailed analysis of different categories a maturity level for each category and country was derived (Figure 5).
Of the three focus countries, **Morocco** is the best developed in all considered categories. Every study differs between the MENA and Sub-Saharan region; therefore, a comparison of **Ethiopia** and **Ghana** is more suitable to picture out potentials for the future. Each of the countries has its strength and weaknesses in different categories. For instance, raw materials and material processing are better developed in **Ghana** than in **Ethiopia**. However, in the fields of major industries, industrials parks and logistical **Ethiopia** is better developed through a high commitment and investment from the government side. In both countries the automotive market is hardly noticeable, but with high potential in the future not only in this specific field but also in other categories as well. A detailed analysis for each country is pictured in the following sections.

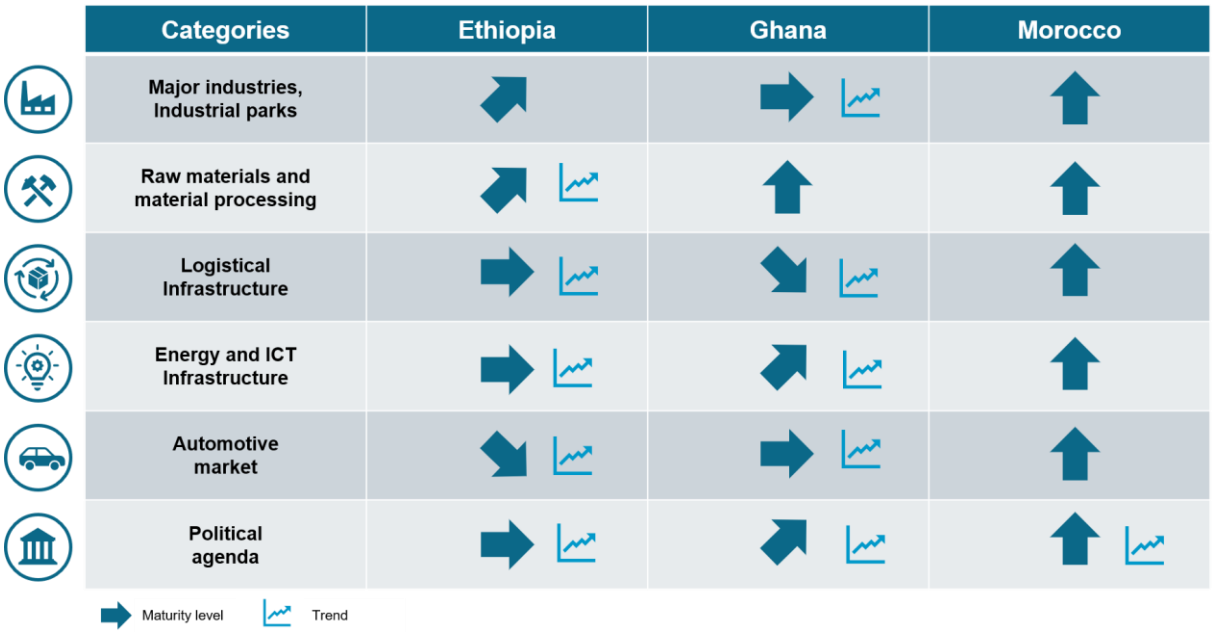

Figure 5: Maturity level of different categories in comparison (Source: own representation)

Main questions which guided the country analyses were:

- How are the general conditions within the focus countries?
  - What are the major industries in the countries?
  - Are their Industrial Parks / Specific Economic Zones represented in the countries?
  - Are there significant resources of raw materials in the country and if so, which ones?
  - Is there a raw material processing/ refining industry resident in the country?
  - How is the logistical infrastructure within the countries?
  - How is the energy supply and digital infrastructure?
  - How complex are the import/export processes/regulations?
  - How is the purchasing power and local sales market with regard to automotive/supply parts?

Main country insights: Ethiopia

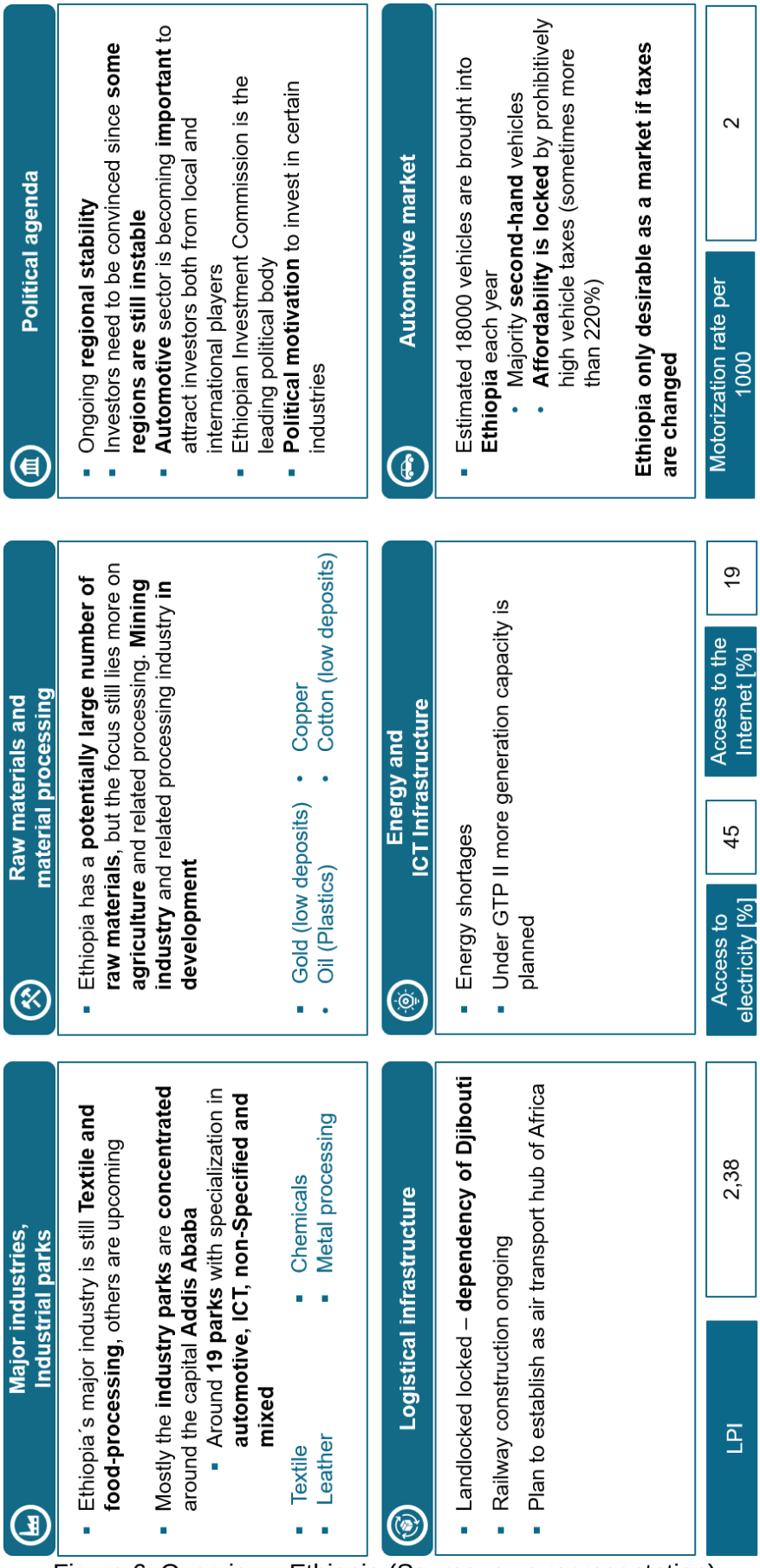

Figure 6: Overview - Ethiopia (Source: own representation)

Major industries, Industrial Parks

Ethiopia has competitive major industries, especially in the fields of **food processing** and **textiles** (garments, leather).[7] The agriculture industry still is the basis of the Ethiopian economy and main source of sustainable growth. Other industries are upcoming, like the **metal processing**, **chemicals,** and **cement** industry[8] - the government supports the development of these industries through the Growth and Transformation Plan (GTP) II to achieve the vision that Ethiopia becomes low middle-income country by 2025.[9]

Following the vision to make Ethiopia a **leading manufacturing hub** in Africa by 2025 the government highly focus on the development and expansion of industrial parks.[10] Most of the current industry parks are specialized for the textile sector and a high concentration around the capital Addis Ababa is given (see Figure 7).[11] All the existing and planned parks are located along key development corridors and have distinct specialty in priority sectors.

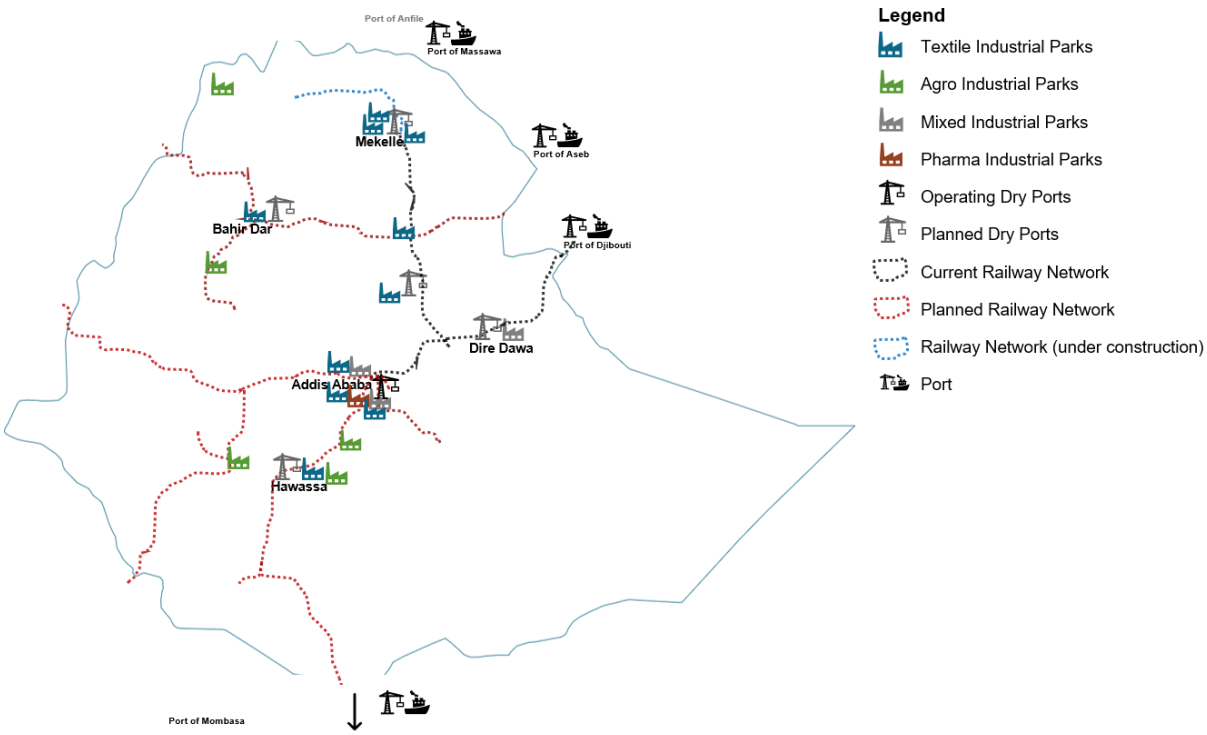

Figure 7: Industrial parks (operation or under planning) in Ethiopia (Source: own representation based on Straube et al. (2020))

As of December 2019, **seven industrial parks are operational,** six are nearly finished, and ten are under planning or starting construction.[12] Mostly the organizer is the Ethiopian government, but some are organized by Chinese companies and are restricted to Chinese brands.[13] In Figure 8 only operational, governmental parks are listed. A complete list can be found in the appendix.

[7] Sources: CIA (2020a), GTAI (2020a).
[8] Sources: CIA (2020a).
[9] Source: National Planning Commission (ed.) (2016).
[10] Ibid.
[11] Source: African Business Partners (2020), Jobs Creation Commission Ethiopia (2020).
[12] Ibid.
[13] Ibid.

Name (Location)	Specializations
Bole Lemi Phase 1 (Addis Abab)	Garment
Hawassa Phase 1 (SNNPR)	Garment
Mekele Industrial Park (Tigray)	Garment
Jimma Industrial Park (Oromia)	Garment
Kombolcha Industrial park (Anhara)	Garment
Adama Industrial Park (Oromia)	Garment
Kombolcha (Amhara)	Garment

Figure 8: List of operational Industrial parks owned by the government in Ethiopia (Based on Jobs Creation Commission Ethiopia (2020))

***Info box:* Growth and Transformation Plan (GTP) II**
The major objective is to serve as springboard toward realizing the vision of becoming a low middle-income country by 2025 *[Desie (n.d.)]*. Under the predecessor GTP I (2010-2015) massive industrial and infrastructure projects were conducted, for instance to provide basic infrastructure in four industrial cluster zones and to increase the road network. In the follow up GTP II (2015-2019) the implementation bottlenecks are addressed, and major infrastructure investments are/were conducted. The major pillars are the Economic Development Sector Plan, Economic Infrastructure, Human Development and Technology Capacity Building, Developmental Good Governance and Building Democratic System, and Cross Cutting Issues

[Source: National Planning Commission (ed.) (2016)]

Ethiopia offers important industries like textiles, chemicals, and metal processing. However, at current state only the textile industry has a competitive advantage against other countries and other industries are still in development. This will possibly change as effect of the GTP II. The distribution industry parks in different specializations represents the dominance of the textile industry.

Raw materials and material processing

Ethiopia has potentially large number of **raw materials** (Figure 10, left side) however the mining industry and related material processing is still under development. Ethiopia is the only producer of **opal** and emerging in the field of **oil and gas** exploration.[14] Other raw materials located within the country are **cotton**, **platinum**, **copper**, **silver**, **potassium carbonate**, **tantalum,** and low deposits of **gold**.[15] The government seeks foreign investments for large-scale mining projects.[16] Figure 9 represents some quantities of raw materials that were produced in 2016.

[14] Source: EIC (2017).
[15] Sources: CIA (2020a), EIC (2017).
[16] Source: EIC (2017).

Raw materials	Quantity
Gold	8.577 kg
Iron	690.000 kg
Tantalum	63.000 kg
Silver	1.000 kg
Cotton	45000 metric tons

Figure 9: Extract of production quantities in 2016 (Raw materials) (Source: own representation)[17]

Material processing (Figure 10, right side) is given in the fields of metal processing, plastics, textile, and pharma.[18] Several fibre & yarn spinning, and textile manufacturing companies are present in Ethiopia.[19] In the field of leather production local companies mainly produce processed leather and further processing takes place after export.[20]

Raw materials
Opal
Oil and Gas
Cotton
Platinum
Copper
Silver
Potassium carbonate
Tantalum
Gold

Material processing
Metal processing
Plastics
Textile
Pharma

Figure 10: Raw materials and material processing industries in Ethiopia (Source: own representation)

Regarding the objective of the study, it is striking that Ethiopia offers various raw materials, however only few of them are important for the automotive industry (cotton, oil, copper, gold). Additionally, the material processing sector offers important activities that can be used for the manufacturing of automotive components except for the pharma industry. The textile industry is to be highlighted as competitive.

[17] Source: Data from the Yager (2016).
[18] Sources: EIC (2017), Expert interview (AHK ET 2020).
[19] Source: Expert interview (AHK ET 2020).
[20] Source: McKinsey (2020).

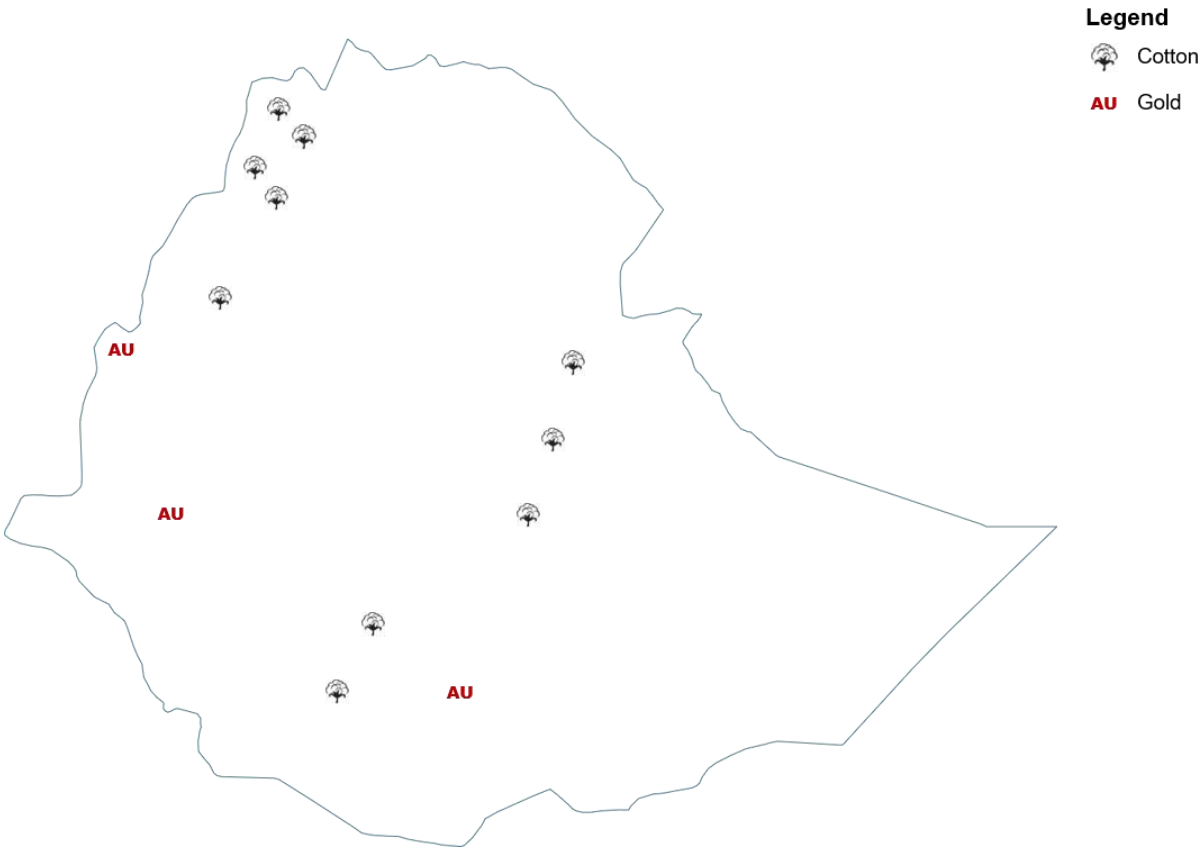

Figure 11: Deposits of Cotton and Gold in Ethiopia (Source: own representation based on Straube et al. (2020))

***Info box*: Cotton – production and material processing**
Textile is one of the key sectors in the GTP II and many foreign firms are active in the sector. Currently there are 175 textile & garment factories (processing like ginning, spinning, weaving, knitting). Most of the companies are foreign owned and case controlled by Chinese, Indian and Turkish investors.

***Production**:*
45000 metric tons of cotton were produced in 2016/17, however the quantity does not match the local demand and therefore high imports of cotton is the result. For the plantations only **3%** of suitable land was used. **65%** of the production falls on medium to large-scale commercial firms.
Processing (ginning):
Within Ethiopia **21** ginneries exist and operate only with **35%** of the possible production capacity.
Processing (garns):
Five spinning miles and eight factories which include the major steps of the cotton value-chain exist within the country, however only **50%** of the capacity is used.
Readymade garments:
Only simples and bases apparel items are produced.

[Source: Expert interview (AHK ET 2020)]

Infrastructure – Logistical

Ethiopia as land-locked country is highly dependent of the harbour infrastructure of Djibouti and the main rail line is connecting the capital Addis Ababa and Djibouti. In 2006, Ethiopia signed a multi-modal transport agreement with Djibouti which allows Ethiopia the usage of the port of Djibouti for the coming 20 years combined with door-to-door cargo transit between the countries.[21] With more of 95% of the foreign trade being processed through Djibouti a high dependency is given and the government plans to minimise it with a higher import and export over the ports of Sudan and Berbera (one of the objects of the GTP II).[22]

Ethiopia ranks # **126th out of 141** (Figure 12) in the *Global Competitiveness Report* and achieved a score of 34,9 (out of 100) in the field of Transport Infrastructure (rank 121 out of 141). This can mainly be explained through the **low railroad density, road connectivity and quality of the road infrastructure**.[23] However, Ethiopia is ranked 71 in the field of **airport connectivity**.[24]

The *Logistics Performance Index (LPI)* is used as second indicator and is a benchmarking tool to help countries identify challenges and opportunities with regard their performance in trade logistics.[25] The index allows the comparison of 160 countries, is based on a worldwide survey of global freight forwarders and express carriers and "*[…] is supplemented with quantitative data on the performance of key components of the logistic chains*"[26].

Infrastructure	Indicator	Ethiopia
Indicators (general)	Logistic Performance Index (LPI) (2016)	2,38
	Global Competitiveness Index (GCI) (2019)	#126 of 141 (Points: 44)
	Infrastructure	#123 of 141 (Points: 43)
	ICT adoption	#137 of 141 (Points: 20)
Logistical	Paved roads [km]	120.071 (2018)
	Rail network [km]	659 (2017)
	Dominating mode of transport	Road (90%)

Figure 12: Key Facts Ethiopia - Indicators and Logistical (Sources: MOTR (2013), Arvis et al. (2018), Schwab (2019), GTAI (2020a))

[21] Source: UNCTAD (2018).
[22] Source: Böll (2017), National Planning Commission (2016).
[23] Source: Schwab (2019).
[24] Ibid.
[25] Source: LPI (2018).
[26] LPI (2018).

The LPI is calculated through six indicators[27] (see Figure 13 for the values for Ethiopia):

1. The efficiency of customs and border management clearance
2. The quality of trade- and transport-related infrastructure
3. The ease of arranging competitively priced international shipments
4. The competence and quality of logistics services
5. The ability to track and trace consignments
6. The frequency with which shipments reach consignees within the scheduled or expected delivery time

Ethiopia with a LPI **score of 2,38** can be rated as **logistics unfriendly on the verge to become a partial performer**.[28]

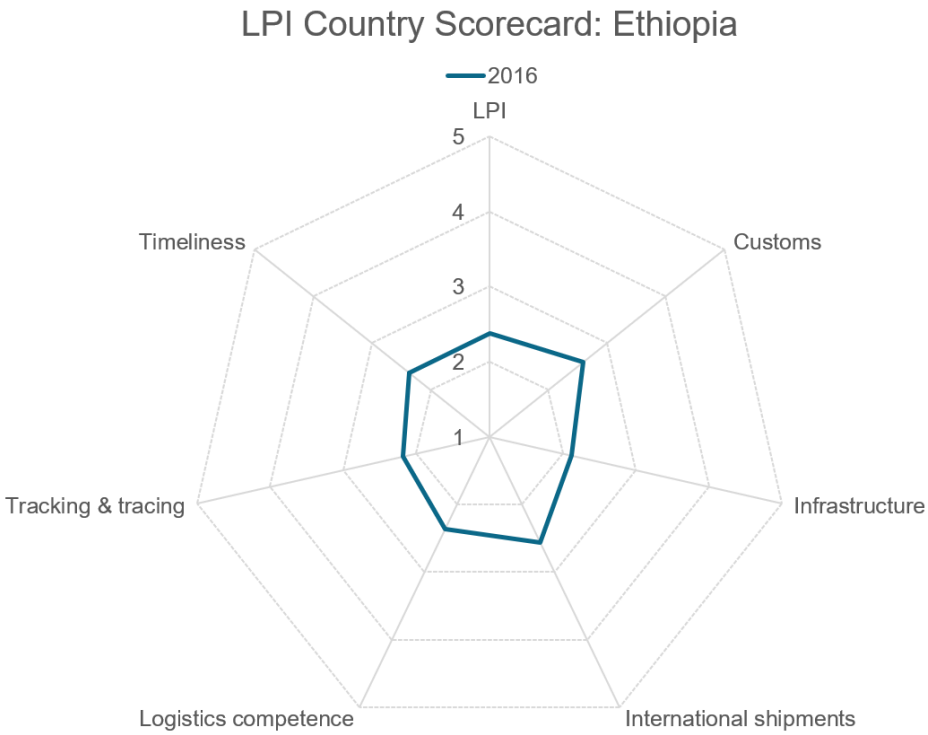

Figure 13: LPI Performance of Ethiopia (Source: own representation based on LPI (2018))

So far, the railway network was planned, constructed, and operated by the state-owned Ethiopian Railways Corporation (ERC) – a privatisation process is ongoing.[29] Currently only one railway between Addis Ababa and Djibouti - with freight stations in Indode Mofe, Adama and Nagad station - is operational.[30] The construction of new connections under the GTP II is ongoing (Figure 15), like a north-south rail connection and connection to South Sudan and Kenya.[31] Figure 14 shows the current and planned railway connections. The total rail network (as of 2017) covers 659 km.[32]

[27] Source: Arvis et al. (2018), p. 8.
[28] Source: According to Classification based on LPI see Arvis et al. (2018), p.13.
[29] Source: Böll (2017).
[30] Sources: Böll (2017), EDR (2020), Logcluster (2019).
[31] Sources: Böll (2017), Höner/Kempf (2019), Logcluster (2019), RDN Global (nd.).
[32] Source: GTAI (2020a).

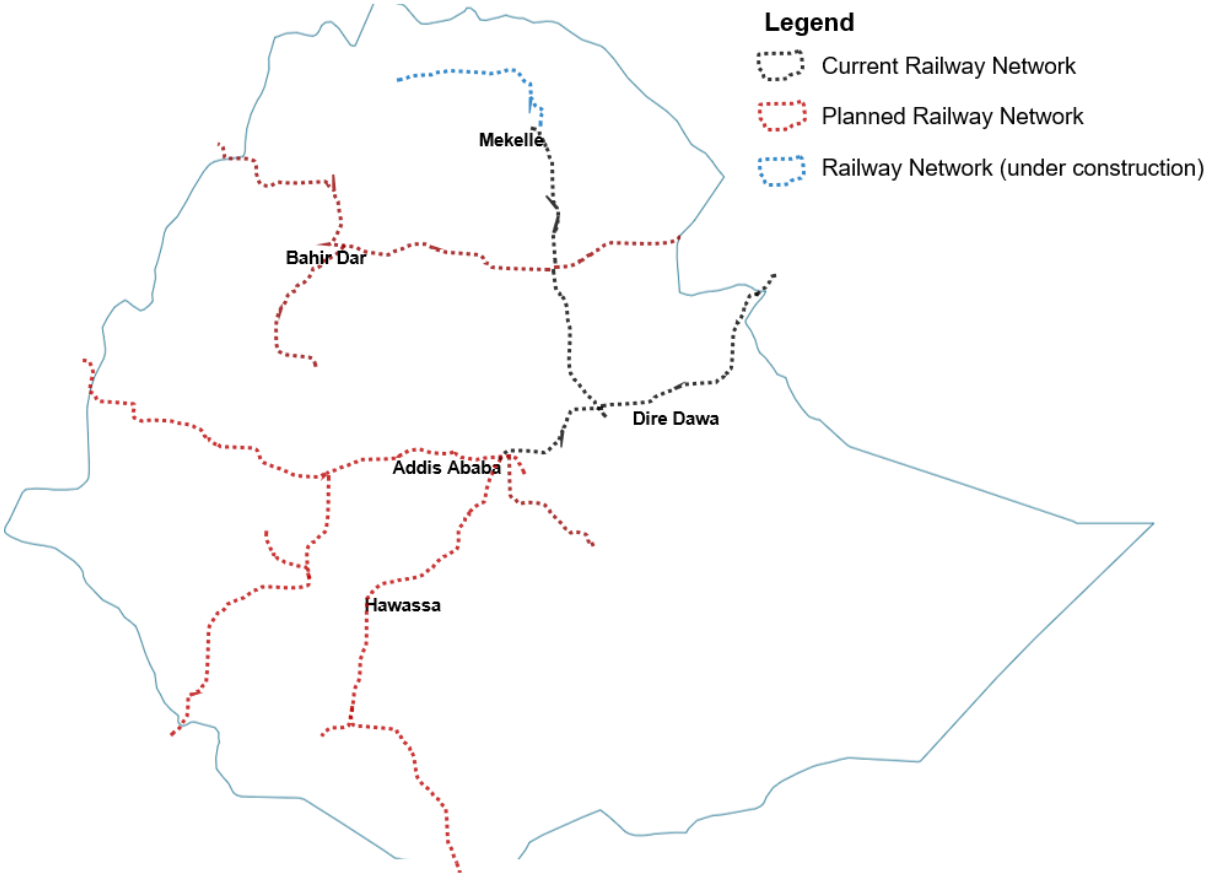

Figure 14: Current and upcoming railway connections in Ethiopia (Source: own representation based on Straube et al. (2020))

Planned railways	Length [km]
Mekele - Hara Gebeya	268
Hara Gebeya – Assayta	229
Assayta – Tajura Port	210
Awash – Hara Gebeya	389
Addis Ababa/Sebeta – Ejaji – Jimma – Bedele – Tepi – Dima	740
Mojo – Hawasa – Weyto - Moyale	905

Figure 15: Planned railways under the GTP II (Source: own representation based on Böll (2017))

The road is the dominant mode of transport with 90 % of all transport[33] and as of 2018 the paved network covers 120.171 km and connects the major cities[34] (Figure 16). With the GTP II the government wants to nearly double the length of the road network to 220.000 km by 2020 with the goal to achieve an average travel time of 45 min to

[33] Source: MOTR (2013).
[34] Source: GTAI (2020a).

reach the nearest all-weather road.[35] In charge of administration of roads is the Ethiopian Road Authority (ERA).[36] However, the construction of new infrastructure faces difficulties due to the topography of the country.
Important for the logistic flows within Ethiopia are the use of dry ports (eight currently completed) across the country.[37] Inland water transport plays an unimportant role as the only river for transport is the Baro river and it is only usable in the rainy season.[38]

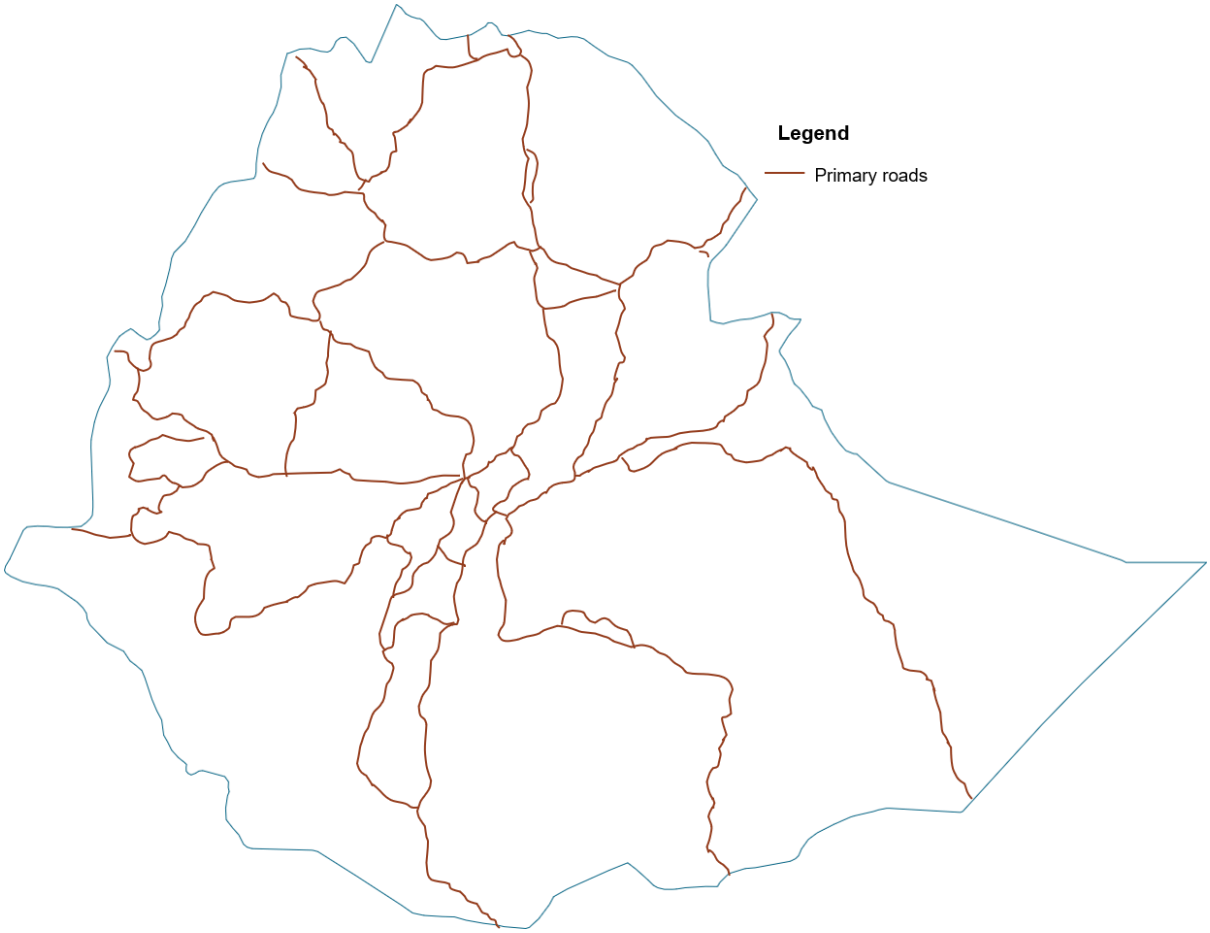

Figure 16: Primary road network of Ethiopia (Source: own representation base on Logcluster (2021))

The country has two international airports – Addis Ababa and Dire Dawa, and a further 80 airports and airstrips (as of 2005), 14 of the are paved.[39] Addis Ababa is established as an **air transport hub of Africa** and Ethiopian Airlines plays as state-owned airline an important role.[40]

[35] Source: National Planning Commission (2016).
[36] Source: Logcluster (2019).
[37] Sources: 2Merkato (2009), John (2019).
[38] Source: Logcluster(2019).
[39] Source: Logcluster (2019).
[40] Sources: Expert interview, National Planning Commission (2016).

Infrastructure – Energy and ICT

Infrastructure	Indicator	Ethiopia
Energy	Time required to get electricity [days] (2019)	95
	Access to electricity [% of population] (2018)	45
ICT	Mean download speed broadband [Mbps] (2020)	1,12
	Individuals using the Internet [% of population]	19 (2017)

Figure 17: Key Facts Ethiopia - Energy and ICT (Sources: Cable (2020), WorldBank (2018a, 2018b, 2019a))

With more and more new mega power plants being built, Ethiopia wants to become the leading electricity exporter in Africa.[41] By 2022 the government has planned to increase the installed generation capacity by additional 5.000 MW to 17.000 MW of generation capacities.[42] The country already has the **largest hydropower capacity** with 4.300 MW in Africa on grid. Despite Hydropower with 159 TWh p.a. production other renewable resources are explored like geothermal, solar and wind power.[43] **Main producers and suppliers** are the **state-owned companies** Ethiopian Electric Power and Ethiopian Electricity Utility.[44]
Despite the energy potential, Ethiopia experienced **energy shortages and load shedding** over the years as it struggles to serve the demand of the growing population with an estimated electricity demand grow by 30 % per year.[45] As of 2018 only 45% of the population as access to electricity.[46] However, government strives to build up the infrastructure under the **National Electrification Program** – by 2025 all households are going to be connected to the grid.[47] According the Doing Business project it currently takes 95 days to gain access to electricity.[48]

[41] Sources: Expert interview, ITA (2019a).
[42] Sources: ERG (nd.), National Planning Commission (2016).
[43] Sources: ERG (nd.), ITA (2019a).
[44] Ibid.
[45] Source: ITA (2019a).
[46] Source: WorldBank (2018a).
[47] Source: WorldBank 2018).
[48] Source: WorldBank (2019a).

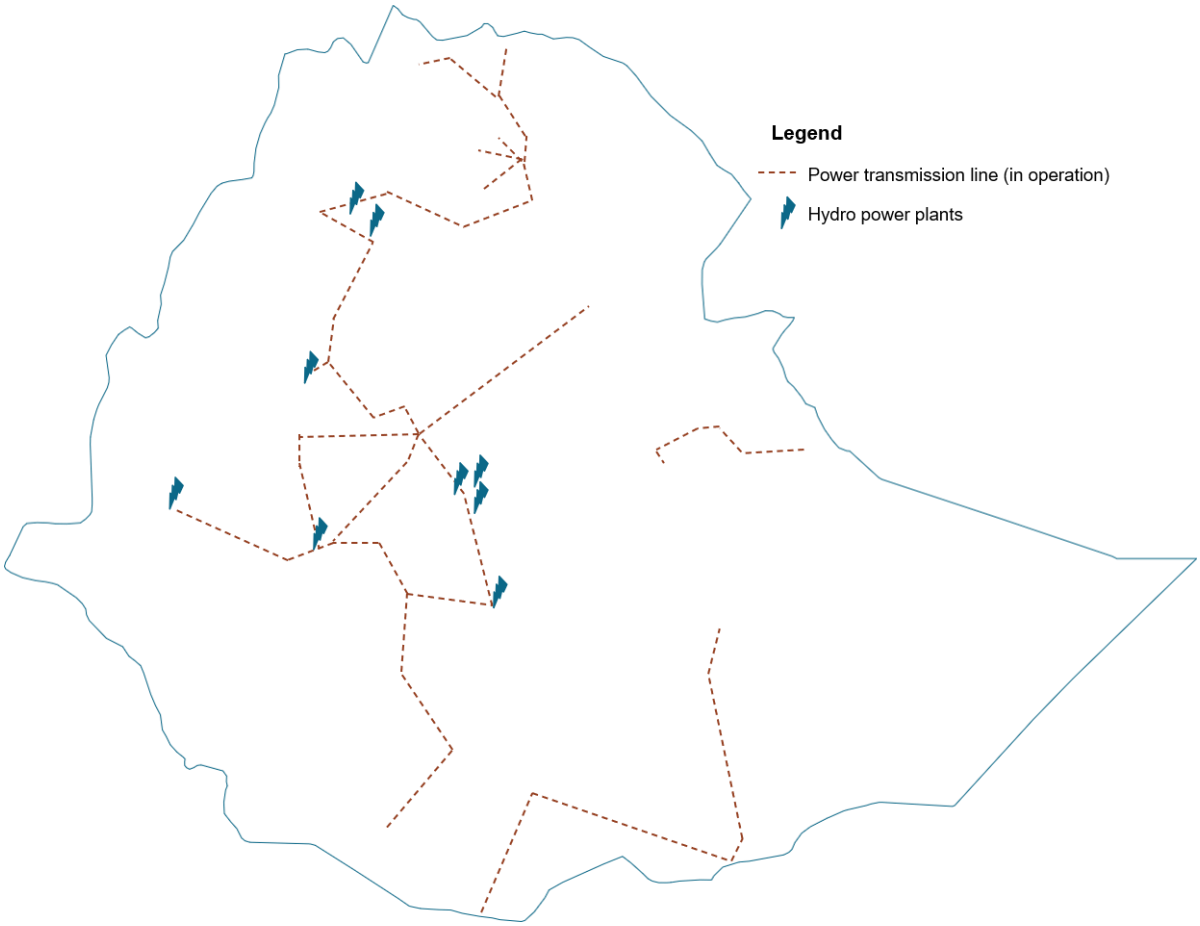

Figure 18: Schematic overview of Ethiopia´s energy grid and hydro-power plants (Source: own representation based on GENI (n.d.))

Till 2019 the state-owned **Ethio Telecom** maintained a monopoly over telecommunication services until recently the government opened the market to competition (ongoing liberalization of ICT sector).[49] Under the GTP II the ICT coverage will be expanded, and a competitive and productive ICT infrastructure being provided.[50] Only 19 % of the population uses the internet and with a mean broadband download speed of 1,12 Mbps the connection in comparison to other countries is very slow and in some cases the connections can be hardly used.[51] In addition to the technical restrictions, the pronounced internet censorship in Ethiopia impairs free access to content.[52] With only 37 (per 100) mobile cellular subscriptions and one (per 100 people) fixed telephone subscription less market diffusion is given.[53]

Political Situation, Social situation, Investment climate

Over the last years Ethiopia is characterised by an ongoing regional stability, but still investors needed to be convinced since some regions are still instable.[54] In November 2020, a new conflict in the region of Tigray in the northern part of the country came up.

[49] Source: CIA (2020a).
[50] Source: National Planning Commission (2016).
[51] Sources: Cable (2020), WorldBank (2018b).
[52] Source: Expert interview.
[53] Source: WorldBank (2018c, d).
[54] Source: Expert interview (GIZ ET).

Ethiopia maintains a good social stability with the transformation process from an authoritarian form of government to openness and democratic processes.[55]

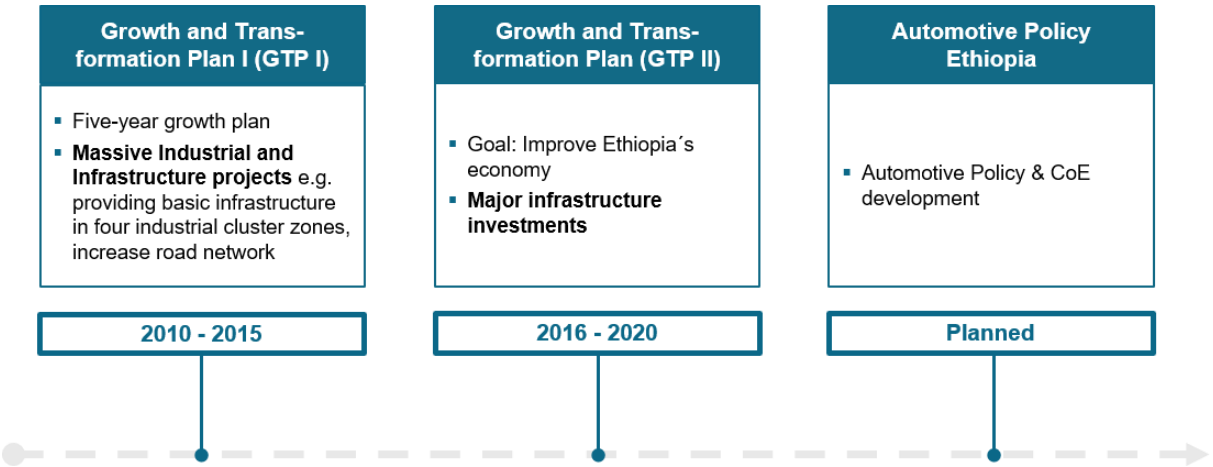

Figure 19: Roadmap of important development plans in Ethiopia (Source: own representation)

With the GTP I and II major industrial and infrastructure projects with the goal to improve Ethiopia's economy were implemented or are still ongoing. Political motivation to invest in certain industries is given.[56] The automotive sector is becoming important to attract investors and the government selected the manufacturing sector as high priority sector, additionally an automotive policy is in the pipeline.[57]
The Ethiopian economy in general is transitional and controlled by big organisations.[58] A privatisation process is ongoing.
The government seeks for Foreign and Direct Investments (FDI) with income tax breaks, on-site custom inspections, tax exemption on machine import and available land and buildings at industrial parks. Foreign investors can invest in sectors listed in the *Investment Proclamation No. 769/2012* and *Regulation No. 270/2012*, some sectors are reserved for domestic investors only.[59] A minimum capital requirement on foreign investors is set:[60]

- For a single investment project: **200.000 USD**
- Joint investment with domestic investor: **150.000 USD**
- Investment on architectural or engineering works or related technical consultancy services etc. and owned by only the foreign investor: **100.000 USD** (Joint Investment: **50.000 USD**)
- No requirements for reinvestment of profit/dividend

Land in Ethiopia for investment is available on leasehold and rental basis.

Automotive market

Over the last years the automotive market grew and with a low motorization rate of 2 per 1000 people (2015)[61] a high potential is given. In comparison the motorisation rate in Germany has a rate of 593 and South Africa a rate of 176, therefore there is a long

[55] Source: Bertelsmann Stiftung (2020a).
[56] Source: Expert interview (GIZ ET).
[57] Ibid.
[58] Source: Expert interview (AHK ET).
[59] Source: EIC (2017).
[60] Ibid.
[61] Source: OICA (2015) newest data as of 11/12/2020.

way to go.[62] With the continent´s second largest population and a growing middle class will lead to increasing demand in the coming years; however, the affordability is locked by prohibitively high vehicle taxes (sometime more than 220 % depending on age and horsepower).[63] As of 2017 831.265 vehicles are registered and 18.000 new vehicles were sold in 2015, however used vehicle make most of the vehicles (85 %).[64]

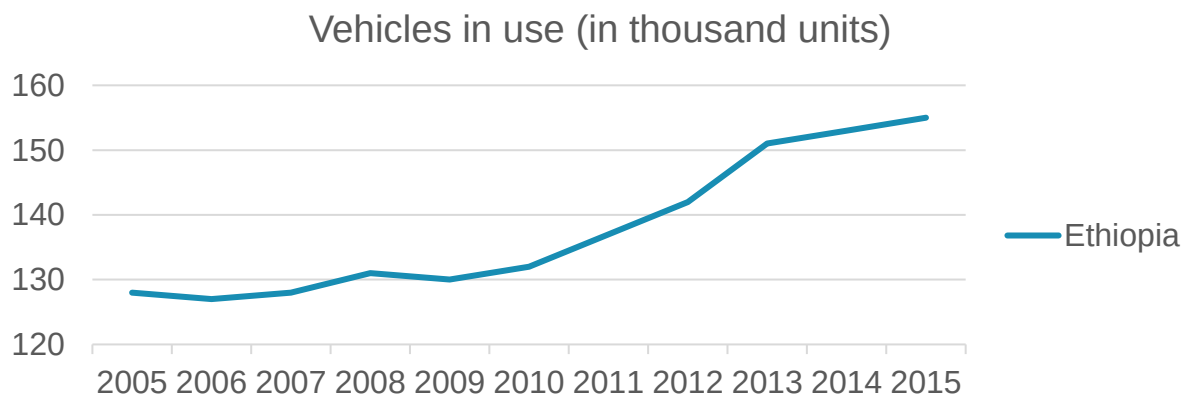

Figure 20: Vehicles in use (Ethiopia 2015) (Source: own representation based on OICA (2015))

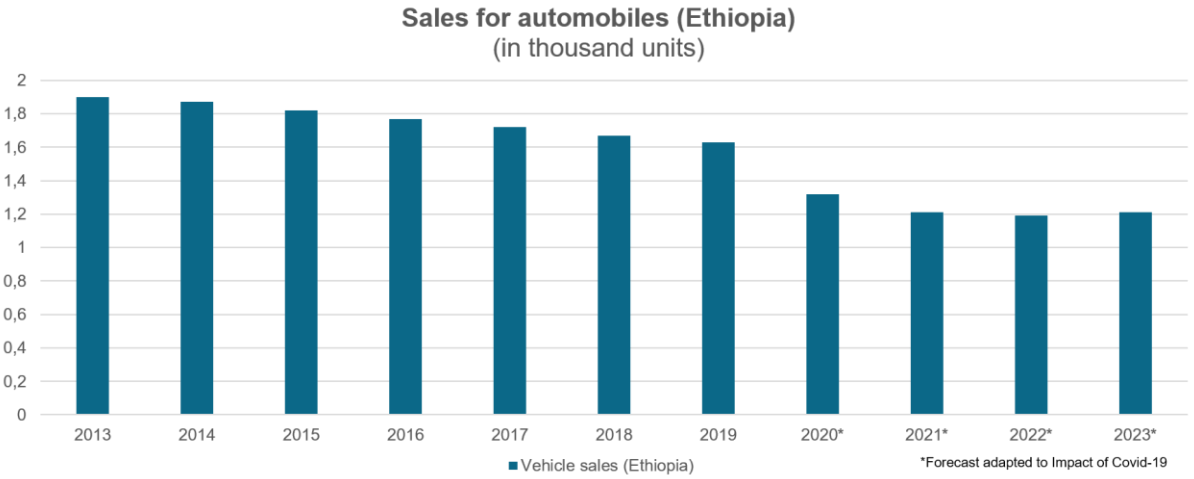

Figure 21: Automotive sales in Ethiopia (Source: own representation based on Statista (2020a))

Figure 21 shows the evolution of automotive sales in Ethiopia between 2013 and 2023. Important to mention is here the resulting decrease from 2019 to 2020 based on an adoption of the forecast to the Impact of the Covid-19 pandemic. The sales are compared to other countries relatively low and therefore with the ongoing improvement of the way of life and easier access to financial credits a larger market is expected. Similar information is represented in Figure 22 with the evolution of the revenues. However, the new vehicle market is still upcoming and second-hand vehicle dominate the market. The average price per vehicle (all classes) varies in the considered time frame between 28.721€ and 32.406€.[65]

[62] Source: OICA (2015).
[63] Source: Africa-Business (2020).
[64] Source: Deloitte (2018).
[65] Source: Statista (2020a).

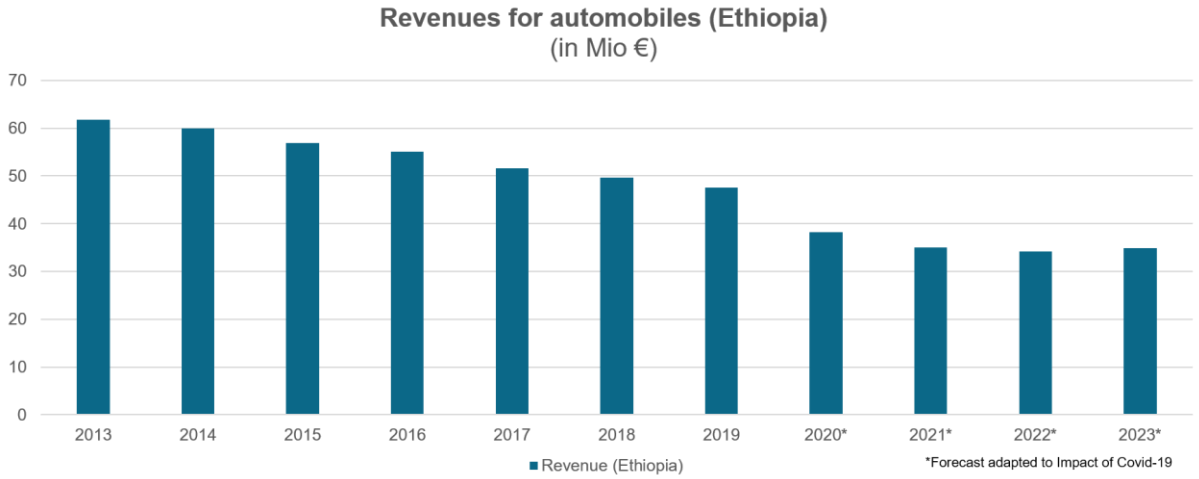

Figure 22: Automotive revenue in Ethiopia (Source: own representation based on Statista (2020a))

The vehicle production in Ethiopia (Figure 23) increased from 8.000 (2016) to 10.000 units (2019) and includes all production activities incl. assembly, manufacture of vehicles and production of small parts and accessories.[66] The market is mainly dominated by Chinese brands.[67]

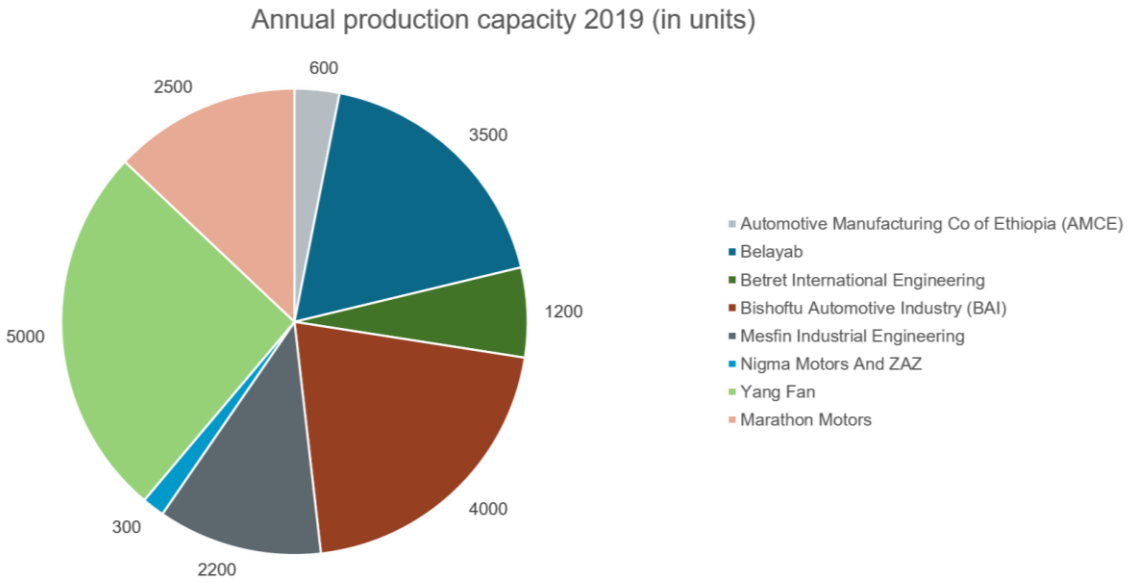

Figure 23: Production capacity in Ethiopia 2019 (Source: own representation based on Deloitte (2019b), p. 23)

The following figure assigns OEMs and vehicle types to the domestic assemblers (Figure 24).

[66] Source: Deloitte (2019b).
[67] Ibid.

Domestic assembler	OEM	Vehicle types[68]
AMCE	IVECO	HCV
Belayab	FAW, Kia	HCV, PV
Betret International Engineering	BYD Auto	PV
BAI	Bishoftu, FAW	PV, LCV, HCV
Mesfin Industrial Engineering	Geely, Peugeot, Sonalika	PV
Nigma Motors and ZAZ	Nigma (Daewoo, Chevrolet under license)	PV
Yang Fan	Lifan	PV
Marathon Motors	Hyundai	CV

Figure 24: Overview Domestic assembler and their connection to OEMs (Source: own representation based on Deloitte (2019), p. 23)

When the sales of new automotive are increasing, the spare part market is also likely to increase. However, no clear information on the spare part market is given.

Import and Export Regulations

The general legal basis is given by the Customs Proclamation No. 859/2014.[69] In January 2020, the Ethiopian Single Window (ESW) to facilitate import procedures upon its full implementation[70] and integration in the customs system from Djibouti are discussed but not implemented yet. The goal with the launch of ESW is the implementation of paperless processes and to achieve more efficient processes to reduce the clearance time from 44 days to 13 days and in the future to three days.[71] Ethiopia is member state of the African Continental Free Trade Area (AfCFTA) and Common Market for Eastern and Southern Africa (COMESA), where 15 out of 21 members reduced their custom duties.[72] The EU grant unilaterally duty-free market access for Ethiopian products (not for products under custom chapter 93) under the Generalized System of Preferences (GSP).[73]

Figure 25 represents the results of the *Trading across borders* study as part of the *Doing Business* report conducted by the World Bank. "**Trading across borders**" records the **time and cost associated with the logistical process of exporting and importing goods** to oversea and regional partners excluding tariffs.[74] A higher "Trading across borders" score is better. The data are gathered through questionnaire answered by local freight forwarders, customs brokers, port authorities and traders.[75] **Documentary compliance** includes time and cost for obtaining, preparing, processing, presenting, and submitting all required documents of all government agencies of the origin, destination, and transit economies.[76] **Border compliance** includes time

[68] HCV = Heavy commercial vehicle, PV = passenger vehicle and LCV = Light commercial vehicle.
[69] Source: Mack (2019).
[70] Source: GTAI (2020).
[71] Source: GTAI (2020).
[72] Source: Mack (2019).
[73] Ibid.
[74] Source: World Bank (2019b).
[75] Ibid.
[76] Ibid.

and cost regarding with compliance with custom regulations and other inspections that are mandatory in order for shipment as well handling at ports and borders.[77]

Import/Export		Ethiopia
Trading across borders	*Score*	56
Border compliance	*Time to Export [hours]*	51
	Cost to Export [USD]	172
	Time to import [hours]	72
	Cost to import [USD]	120
Documentary compliance	*Time to Export [hours]*	76
	Cost to export [USD]	175
	Time to import [hours]	194
	Cost to import [USD]	750

Figure 25: Trading across borders score (Ethiopia) (Source: World Bank (2019b))

Trading companies must be registered in the commercial register for obtaining a trade license, which the importer must apply for.[78] Deliveries processed by Letter of Credit must be carried out by the state-owned shipping company Ethiopian Shipping Lines, if transported by sea and by state airline Ethiopian airlines for airfreight transport.[79] Trustworthy and reliable companies can apply for the status of an Authorized Economic Operator (AEO) for a simplification in custom clearance and duty collection.[80] Good declaration can be processed in written form or electronic over the automated custom system ASYCUDA++ (Automated System for Customs Data).[81] For a group of goods special regulations for the protection of humans, animals, plants, and environment need a permit by the responsible authority (some examples are given in Figure 26). Some goods (e.g. batteries) need a Certificate of Conformity conducted by authorized organisations like SGS, Intertek, Bureau Veritas and Cotecna to prove the compliance with applicable standards.[82]

Good categories	Responsible Authority
Communication devices	Information Network Security Agency (INSA)
Telecommunication and network equipment	Ministry of Communication and Information Technology (MCIT)
Vehicles	Ethiopian Transport Authority

Figure 26: Goods subject to approval in Ethiopia (examples) (Source: based on Mack (2019))

[77] Source: World Bank (2019b).
[78] Source: Mack (2019).
[79] Ibid.
[80] Ibid.
[81] Ibid.
[82] Ibid.

Info box: **The Common Market for Eastern and Southern Africa (COMESA) and African Continental Free Trade Area (AfCFTA)**

The **COMESA** was established in 1994 with the goal to create a common market and currently has 21 member states (Burundi, Comoros, D.R Congo, Djibouti, Egypt, Eritrea, Eswatini, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Somalia, Sudan, Tunisia, Uganda, Zambia, and Zimbabwe). The Priority Areas include establishment a Free Trade Area, Customs Union, and Trade Promotion.

The **AfCFTA** has the vision to establish a common market for all 55 member states of the African Union for the industrialisation of the continent. With a scope of 1,2 billion people and bundled economic output of 2,5 trillion USD it has the potential to be the largest Free Trade Area in the world. The goals are: Enabling growth by opening new markets while promoting better resource allocation, reduce non-tariff barriers to intra-Africa trade, increased trade flows and terms of trade, contribution to value addition and growth in Africa. Areas of the AfCFTA are trade in goods, services, investment, and intellectual property rights.

[Sources: AU (2018), AUC/OECD (2019), AUC/UNECA (n.d.), GIZ (n.d.), Schmieg (2016)]

Conclusion – Ethiopia

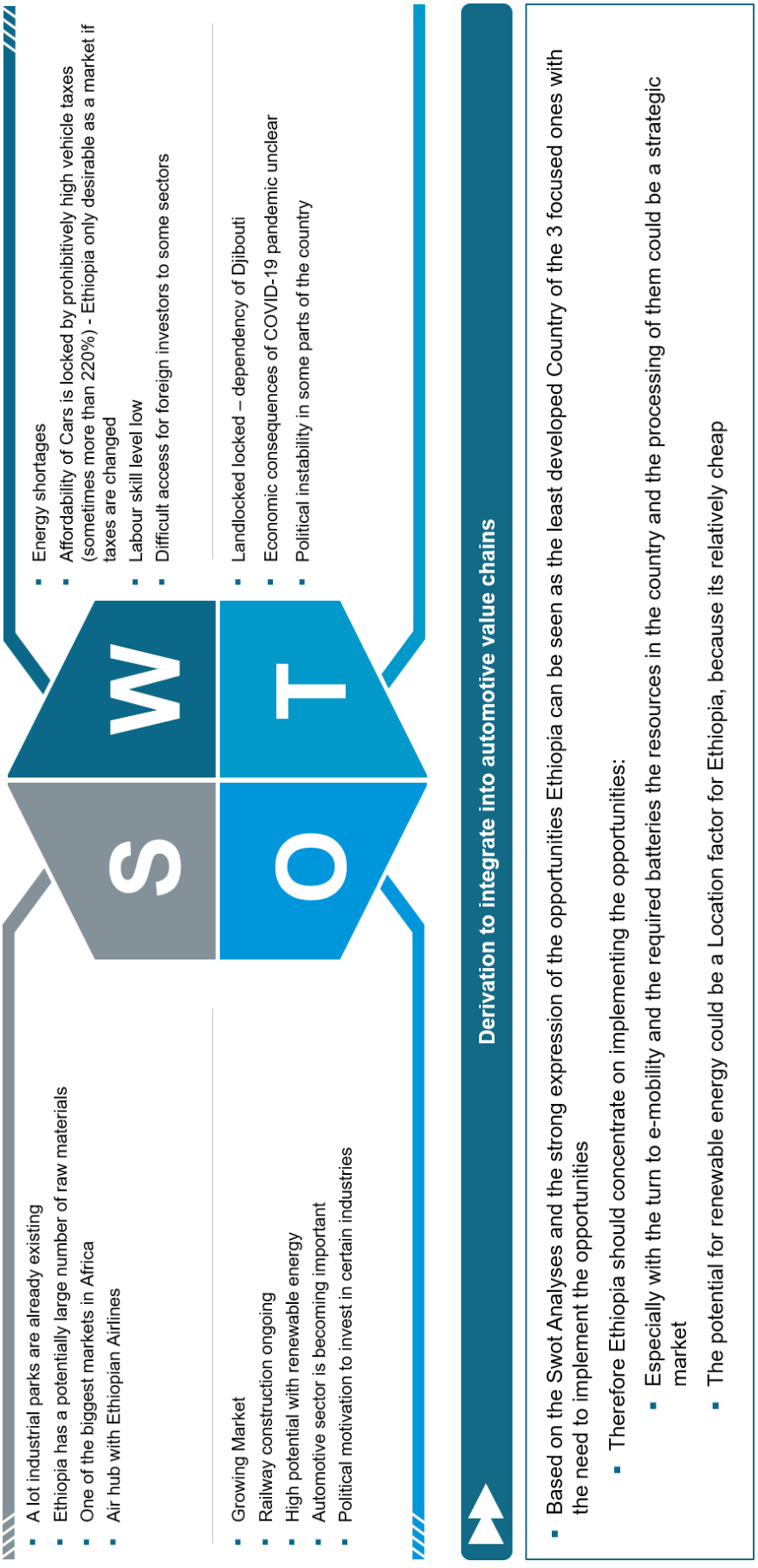

Figure 27: SWOT Derivation - Ethiopia (Source: own representation)

Main country insights: Ghana

Figure 28: Overview - Ghana (Source: own representation)

Major industries, Industrial Parks

The agriculture sector makes only a quarter of the annual Ghanaian GDP, but still half of labour force works there.[83] Additionally, Ghana is a traditional mining country (major pillar of the Ghanaian economy)[84], where the government searches for major investments to expand mining activities. Beside the traditional industries an ICT industry is represented as well. Other major industries are cement, lumbering, light manufacturing, aluminium smelting, small commercial ship building and petroleum.[85] However, no clear information about the exact size and development level of the industry is given.
The government identified the following anchor industries to support the growth of the economy[86]:

- Petrochemicals
- Pharmaceuticals
- Iron and steel
- Cement
- Aluminium
- Salt
- Vehicle assembly
- Manufacture of heavy machinery, equipment, and machine parts
- Agro-processing
- Garments and textiles
- Assembly of electronics and light machinery

Regarding the ongoing economic transformation, the government identified the need to establish industrial parks across the country and follows the plan to establish at least one per district ("One District One Factory", 1D1F).[87] Sector specific industrial parks are planned, e.g. as:

- Agric-Processing Park(s)
- Pharmaceutical Park(s)
- Automobile & Vehicle Assembly Park(s)
- Textiles, Garment and Apparel Park(s)
- Petrochemical Park(s)
- Food Processing Zones
- Information Technology Park(s)
- Equipment and Electronic Park(s)

Currently only two industrial parks are operational (Tema Processing Zone, Agility Warehouse Park). Under development are seven and three more are planned, but no construction work started yet.[88] The industrial parks are predominantly located in the Southern part of the country with good connection to the major seaports.
All the operational parks are aligned to the key sectors defined in the industrial transformation agenda.[89]

[83] Source: KfW (n.d.).
[84] Source: Afrika Verein (2019).
[85] Sources: CIA (2020b), GTAI (2020b).
[86] Sources: GIPC (2017), MOTI (n.d. b).
[87] Sources: GIPC (2017), MOTI (2020).
[88] Source: Deloitte (2019a).
[89] Ibid.

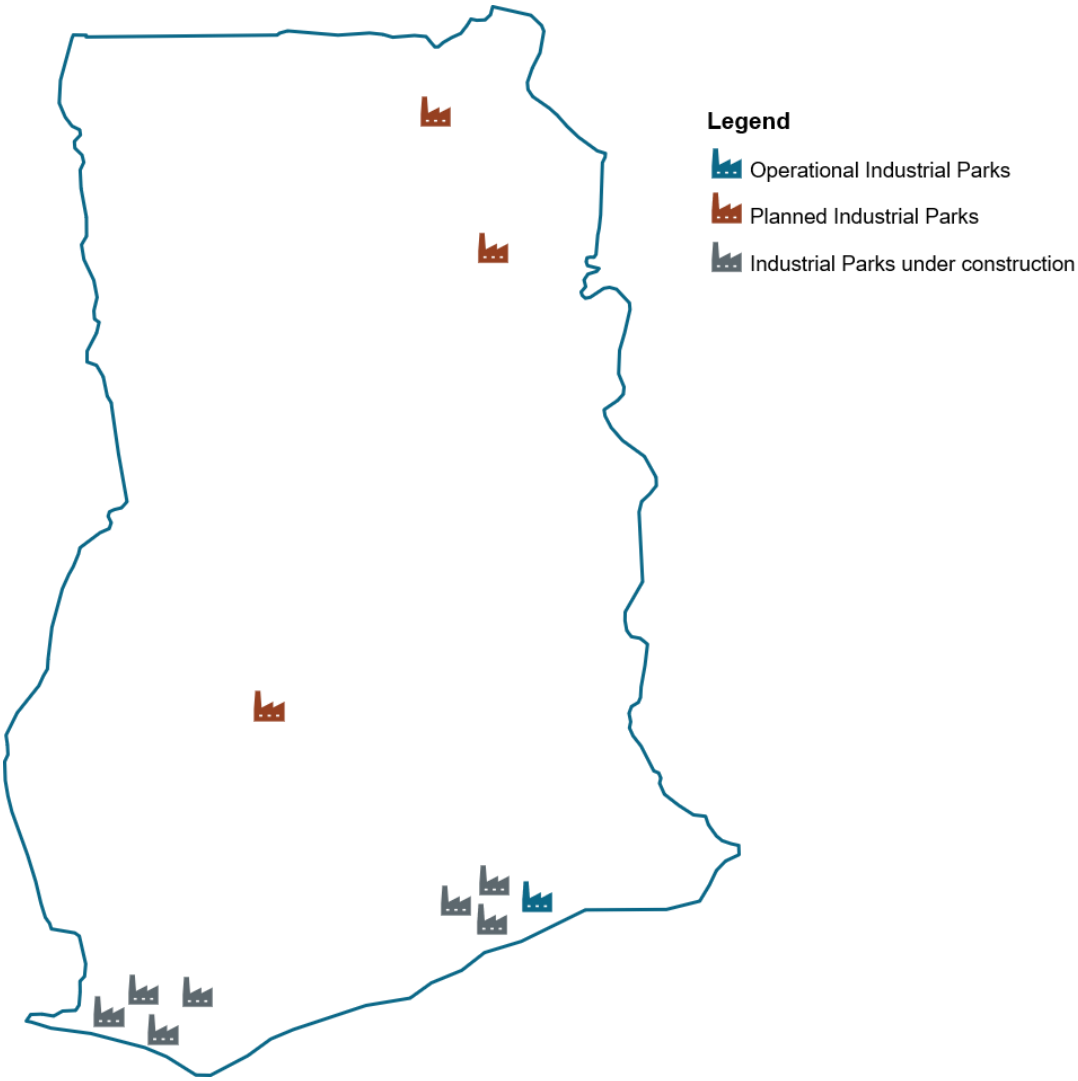

Figure 29: Location and status of Industrial Parks in Ghana (Source: own representation based on Deloitte (2019))

Name (Location)	Status	Focus Sectors
Tema Export Processing Zone (Tema)	Operational	Food Processing, Building Materials, Light manufacturing, Logistics, Plant& Equipment, Textiles& Garments, Auto Manufacturing
Agility Warehouse park (Tema)	Operational	All industry verticals
Dawa Industrial Park (Accra)	Under development	All sectors

Name (Location)	Status	Focus Sectors
West Park Limited (Sharma district)	Under development	Textiles & garments, Automotive, Construction, Health, Oil& Gas, Manufacturing, Chemical, Warehouse &Storage
Apolonia Industrial Park (Greater Accra Region)	Under development	Logistics & Warehousing, Food & Beverages, Agro-Processing, Building materials, Shared Services & Data Centers, Textiles & Garments, Plastics & Chemicals
Petronia City Industrical Platform	Under development	Agro-processing, Mining & industrial equipment, Automobile & Motorcycle, Food Processing
Ashanti Technology Park (Ejisu)	Planned	ICT, cacao processing, light industry, heavy industry, warehouse and logistics, social welfare services, biotechnology development
Sekondi Industrial Park (Sekondi-Takoradi)	Under development	Mineral Processing, Petroleum refining industry and related services industries

Name (Location)	Status	Focus Sectors
Bright International Free Zones	Operational	Multiple e.g. agro
Shama EPZ (Shama)	Under development	Petrochemical activities, Oil & Gas
Dawa Industrial City		Agro-processing, Garments & Textiles, Logistics, Materials & Metal fabrication sectors

Figure 30: List of some Industrial parks in Ghana (Source: own representation based on Deloitte (2019a), GFZA, NewsGhana (2019), GIPC (2017))

Ghana offers many relevant industries that can be used for the manufacturing of automotive components like mining, aluminium, agriculture, petrochemical, and ICT. With the implementation of industrial parks across Ghana the focus on the key sectors can be highlighted. Especially a growing commitment to mining and vehicle assembly are relevant for the later analysis.

Raw materials and material processing

Ghana is rich in raw materials (Figure 33, left side) and major exporter of **gold[90], bauxite, manganese, rubber**, and **diamonds** (10th largest exporter of Gold and 17th largest exporter of rubber in the world)[91]. Currently natural rubber is exclusively exported for Michelin and the bauxite mining is controlled by Chinese companies.[92] Industrial minerals like kaolin, quartz sand and mica are mined in small quantities for the local industry.[93] Other given raw materials in the country are **oil, salt, silver, iron ore, tantalum, feldspar**, **limestone** and in lesser extent **ilmenite, magnetite, and rutile**.[94] However raw materials have not been fully explored and exploited (mainly mining activity in western and central regions) and therefore the production and supply are still inadequate.[95] Facing this situation the government encourages exploitation of mineral deposits and provide incentives to attract investments. In Figure 31 the major quantities from 2017 to 2019 are represented. As of 2019 over 14 large scale mines exist in Ghana, with 12 gold mines, one bauxite and one manganese mine (Figure 32).[96]

[90] Largest gold producer in Africa (Source: Afrika Verein (2019)).
[91] Source: OEC (2018).
[92] Source: Expert interview (AHK Ghana 2020).
[93] Source: Afrika Verein (2019).
[94] Sources: CIA (2020b), GTAI (2020b).
[95] Sources: GIPC (2017), MOTI (n.d. a).
[96] Sources: Afrika Verein (2019), Ghana Chamber of Mines (2019).

Year	Gold (Ounces)	Diamond (Carats)	Bauxite (M/t)	Manganese (M/t)
2017	4.222.410	86.925	1.476.966	3.003.580
2018	4.792.287	57.531	1.011.302	4.551.754
2019	4.577.637	33.789	1.116.334	5.383.014

Figure 31: Major minerals production in Ghana (Source: own representation) based on Ghana Chamber of Mines (2019))

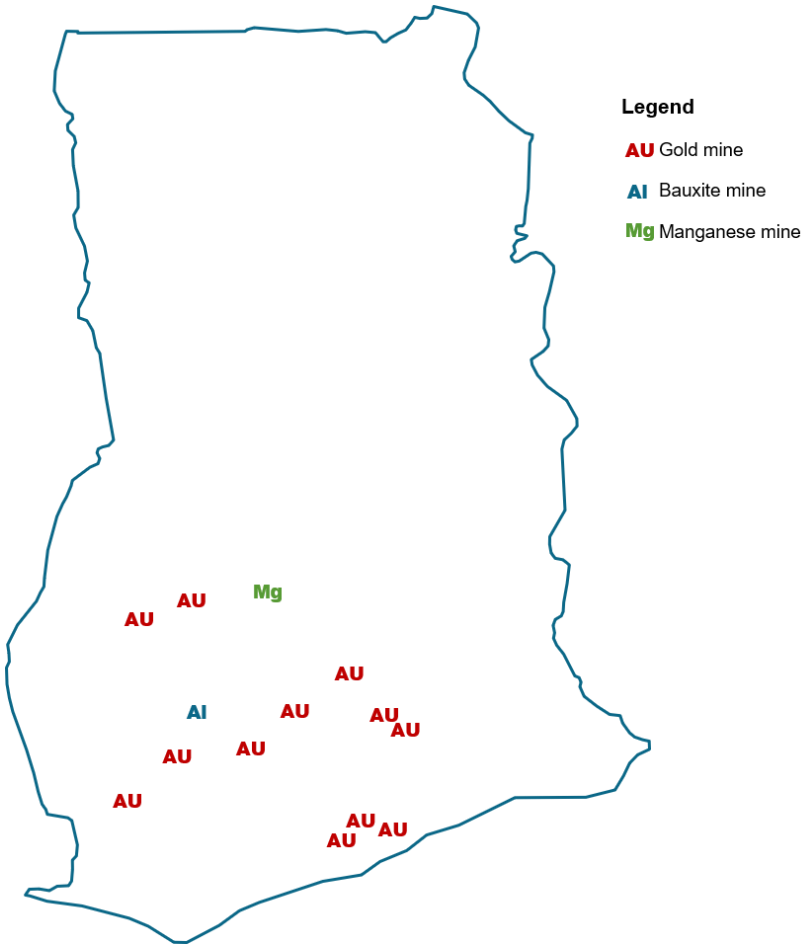

Figure 32: Bauxite, Gold and Manganese mines in Ghana (Source: own representation based on Afrika Verein (2019), p. 22, Consmin (n.d.), Gawu et al. (2012), Gbadamosi (2020))

To use the raw materials, especially gold, bauxite, and oil, for the automotive industry material processing industry (Figure 33, right side) within the country is needed. At current state no major **material processing** industry is given – only a few material processing companies exist like an **aluminium smelter (VALCO), oil refinery and a metal manufacturing** company.[97] However, an ongoing development to increase material processing within Ghana can be mentioned, for instance with the foundation of the Ghana Integrated Aluminium Development Corporation (GIADEC) the government

[97] Sources: Dan & Bradstreet (2020), Ghana Web (2018), Kastning (2011), Valco (n.d.).

identified the need of an integrated aluminium Industry as major pillar for transformation of the Ghanaian economy.[98]

Raw materials
Gold
Bauxite
Manganese
Rubber
Diamonds
Oil
Salt
Silver
Iron ore
Tantalum
Feldspar
Limestone
Ilmenite
Magnetite
Rutile

Material processing
Oil refinery
Aluminium smelting
Metal processing

Figure 33: List of raw materials and material processing in Ghana (Source: own representation)

Ghana offers many raw materials to use in the automotive industry, especially the high deposits of bauxite, gold and rubber will offer great opportunities. However, the control of the bauxite and rubber mining by foreign stakeholders are the largest barrier. Additionally, a lack of competitive material processing actors hinders the process to build up a competitive manufacturing hub. The strong commitment of the government to invest in the expansion of the mining industry is likely to have a positive impact for the future.

Infrastructure – Logistical

Ghana aims to serve as transportation and logistics hub for West Africa with providing air, road, rail, and sea linkage to other countries in the region and especially to landlocked neighbour countries.[99]
The major logistical infrastructure with roads, railways and harbours is in the south of Ghana, a highway network connects all parts of the country but differs in terms of quality from region to region. Railways only exist in the southern part and are in bad conditions.[100] The main seaports in Tema and Takoradi are large in comparison to

[98] Source: GIADEC (n.d.).
[99] Source: AfDB (2019).
[100] Sources: GIPC (n.d. a), Logcluster (2018a).

other African countries to the size of the country.[101] Major part of air cargo is handled at the Kotoka International Airport in Accra.[102]
Ghana offers with the two existing harbours great opportunities for import and export of goods.[103] With connection to the landlocked neighbour countries the government follows the plan to establish Ghana as maritime hub for West-Africa.[104] Recent years have seen a rapid increase in cargo through Tema.[105]
Main entry point to Ghana by air is the Kotoka International Airport in Accra.[106] Plans to build another international airport at Ningo-Prampram exist[107], however no detailed information is given. The main mode of transport remains the road with 96% of passenger and freight traffic and a road network of 63.122 km is linking the entire country, however only 50 % of the roads are in good conditions.[108] These reflects in the infrastructure score of Ghana in the *Global Competitiveness Report* 2019 **with 46,6 out of 100** (Place 118 out of 141) (Figure 34).[109]
The *Logistics Performance Index (LPI)* is a benchmarking tool to help countries identify challenges and opportunities with regard their performance in trade logistics.[110] The index allows the comparison of 160 countries, is based on a worldwide survey of global freight forwarders and express carriers and "[…] is supplemented with quantitative data on the performance of key components of the logistic chains"[111]. The LPI is calculated through six indicators[112] (see Figure 35 for the values for Ghana):

1. The efficiency of customs and border management clearance
2. The quality of trade- and transport-related infrastructure
3. The ease of arranging competitively priced international shipments
4. The competence and quality of logistics services
5. The ability to track and trace consignments
6. The frequency with which shipments reach consignees within the scheduled or expected delivery time

With a *Logistic Performance Index (LPI)* **Score of 2,57**, Ghana is ranked 106 out of 160 and can be classified as **partial performer**. [113]

***Info box:* The Global Competitiveness Report by the World Economic Forum**
Is a benchmark which "*maps the competitiveness landscape of 141 economies through 103 indicators organized into 12 themes. Each indicator, using a scale from 0 to 100, shows how close an economy is to the ideal state or "frontier" of competitiveness. The pillars, which cover broad socio-economic elements are: institutions, infrastructure, ICT adaption, macroeconomic stability, health, skills, product market, labour market, the financial system, market size, business dynamism and innovation capability*."

[Source: WEF (2019)]

[101] Source: Afrika Verein (2019).
[102] Source: GIPC (n.d. c).
[103] Sources: Afrika Verein (2019), GIPC (n.d. c).
[104] Ibid.
[105] Ibid.
[106] Ibid.
[107] Source: GIPC (2017).
[108] Sources: GIPC (n.d. a), GIPC (n.d. c).
[109] Source: Schwab (2019).
[110] Source: LPI (2018).
[111] LPI (2018).
[112] Source: Arvis et al. (2018), p. 8.
[113] Source: According to Classification based on LPI see Arvis et al. (2018), p.13.

Infrastructure	Indicator	Ghana
Indicators (general)	Logistic Performance Index (LPI) (2018)	2,57
	Global Competitiveness Index (GCI) (2019)	#111 of 141 (Points: 51)
	Infrastructure	#118 of 141 (Points:47)
	ICT adoption	#90 of 141 (Points: 49)
Logistical	Paved roads [km]	13787 (2009)
	Rail network [km]	947 (2014)
	Dominating mode of transport	Road (96%)

Figure 34: Key Facts Ghana - Indicators and Logistical (Sources: Arvis et al. (2018), GIPC (n.d. a,c), GTAI (2020b), Schwab (2019))

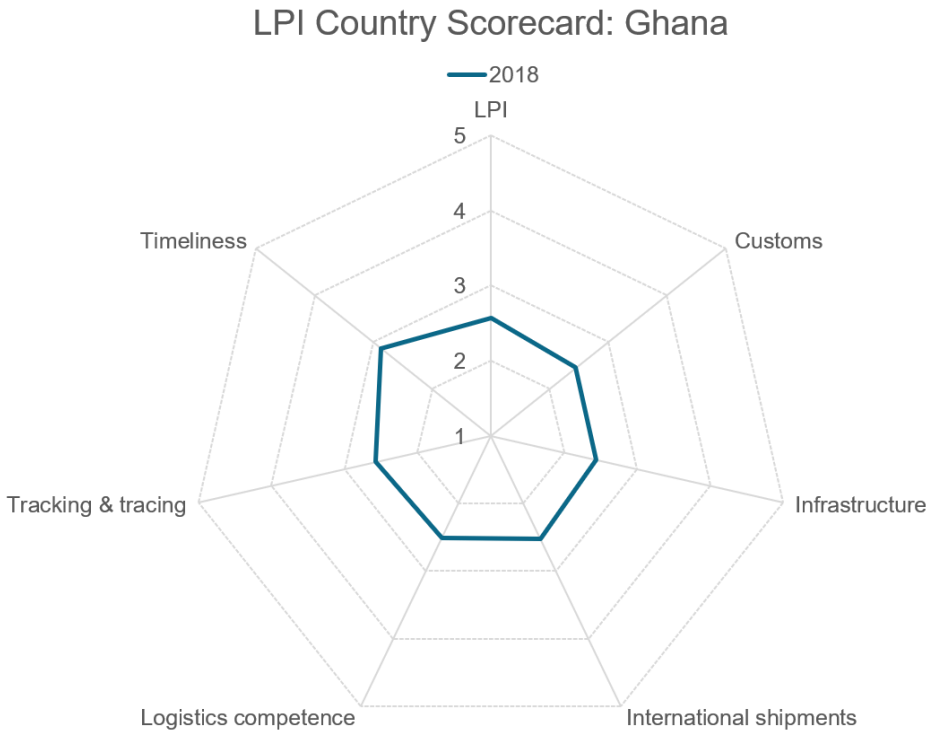

Figure 35: LPI Performance of Ghana (Source: own representation based on LPI (2018))

The **Eastern corridor road development programme** focus beside the link of major commercial centres in south to potential breadbaskets in the north, also on a vital connection for trade with landlocked neighbour countries and is one of the main north-

south corridors.[114] In long term beside the five existing road corridors – coastal, central, eastern, western and northern, four additional lateral corridors linking Togo to Cote d´Ivoire are planned by Ghana Highways Authority.[115] Road transit transport facilitates intraregional trade though an infrastructure mix: east-west, Abidjan-Lagos corridor (Highway corridor); north-south routes from Tema to landlocked neighbour countries incl. 795 km to Burkina Faso and Accra to Lagos by rail.[116]
Another on-going development project is the Trans-African Highway, which is a multi-country road network, which links Ghana to neighbour countries through an east-west highway in the south.[117]

***Info box:* Eastern corridor road development programme**
The Eastern corridor in Ghana represents one of the main north-south corridors, links major commercial centres in the south with potential breadbaskets in the north and is a vital connection for trade with landlocked neighbour countries. The overall objective of the Development programme is to "*contribute towards an efficient transportation system that promotes Ghana´s ports and corridors to enhance inclusiveness, stimulate socio-economic development, and facilitate domestic and regional trade and integration.*" Within the programme it is planned to construct two new road sections: Dufor Adidome – Asikuma Junction (39,2 km) (Section 3) and Asutuare – Aveyime (23.9km) (Sectiom 4)

[Source: AfDB (2020)]

The railway network only is existent in the south of Ghana forming three lines: **Western** (Takoradi-Kumasi), **Eastern** (Accra-Kumasi), and **Central line** (from Huni valley to Kotoku) and building a triangular network which connects Kumasi, Takoradi and Accra-Tema.[118] Not all of the 1.300 km track length is still operational and mainly serve the purpose of hauling materials, cocoa, and timber.[119] The Western line mainly dedicated to mineral transport and Eastern line mainly focus on passenger traffic.[120] The government is actively seeking private sector for the rehabilitation of existing rail lines, mostly from the colonisation time, and the construction of new ones are ongoing (e.g. Kojokrom-Tarkwa, Kojokrom-Manso, Achimota-Nsawam).[121] To support the transport of raw materials on rails the government classified the Western Rail Line as priority project and push ahead the expansion plans in the coming years.[122] The state maintains a monopoly over rail and inland water transport.[123]
Regarding the inland water transport the Volta Lake is an useful and competitive cost alternative to the traffic modes road and rail between the northern and southern region ("Ghana Corridor"), responsible for the transport is the Volta Lake Transport Company.[124] The Volta Lake is the largest man-made lake in the world stretching 415 km

[114] Source: AfDB (2019).
[115] Source: GIPC (2017).
[116] Source: AfDB (2019).
[117] Source: GIPC (2017).
[118] Sources: GIPC (n.d. a), GRDA (2018).
[119] Sources: GIPC (n.d. a), GIPC (n.d. c), GTAI (2020b).
[120] Ibid.
[121] Source: Afrika Verein (2019).
[122] Ibid.
[123] Source: GIPC (n.d. c).
[124] Ibid.

from Akosombo 101 km north of Accra, to Buipe in northern Ghana, about 200 km from Ghana's border with Burkina Faso.[125] A new inland port being constructed at Boankra near Kumasi and is expected to be important in transit for goods to neighbouring land-locked countries.[126]

Infrastructure – Energy and ICT

Infrastructure	Indicator	Ghana
Energy	Time required to get electricity [days] (2019)	55
	Access to electricity [% of population] (2018)	82,39
ICT	Mean download speed broadband [Mbps] (2020)	5,46
	Individuals using the Internet [% of population]	38 (2017)

Figure 36: Key Facts Ghana - Energy and ICT (Sources: Cable (2020), World Bank (2018a, 2018b, 2019a))

The total installed electricity generation capacity in Ghana has gradually increased over the past with now installed 4.420 MW and total dependable capacity of 3.877 MW, the governments medium target is an increase to 5.000 MW generation capacity.[127] Ghana has a diversified energy mix and hosts the largest hydropower project in West Africa.[128] Additionally the energy production is covered by thermal plants and the use of power ships.[129] Renewable energies currently make a small part of the overall capacity but the share is increasing.[130] According to **the Doing Business project** it takes 55 days to gain access to electricity.[131] The energy grid connects the major cities (industry areas) (Figure 37) and **over 80% of the population**[132] has access to electricity. With the National Electrification Scheme and the Ghana Energy Development and Access Project (GEDAP), the government follows the plan to achieve universal access to electricity by the end of 2020 and improve the efficiency of the distribution system.[133]

[125] Source: GIPC (n.d. c).
[126] Source: GIPC (n.d. a).
[127] Source: GIPC (n.d. a). It should be noted that the information may differ depending on the source.
[128] Source: IEA (2018).
[129] Source: Afrika Verein (2019).
[130] Source: IEA (2018).
[131] Source: World Bank (2019a).
[132] Source: World Bank (2018a).
[133] Source: Kumi (2017), also for detailed information about the Projects and electricity situation in Ghana.

In addition to the projects the government initiated the program “One Village, One Dam” to improve the water and electricity supply in under supplied regions.[134]

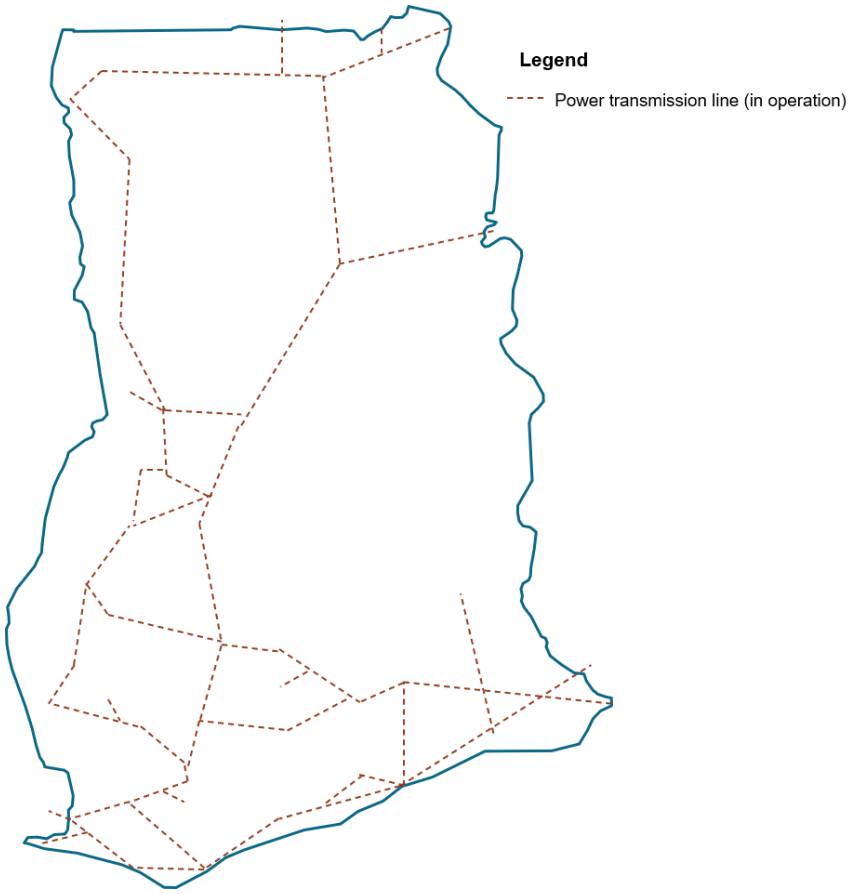

Figure 37: Schematic overview of the energy transmission grid in Ghana (Source: own representation based on ECOWAS (2017))

Info box: **Doing Business**
The project provides “*objective measures of business regulations and their enforcement across 190 economies and selected cities at the subnational and regional level.*” Doing Business provides 11 indicator sets to the following topics: **Starting a business**, **Getting a location** (Dealing with construction permits, Getting electricity, Registering property), **Accessing finance** (Getting credit, Protecting minority investors), **Dealing with day-to-day operations** (Paying taxes, Trading across borders, Contracting with the government) and **Operating in a secure business environment** (Enforcing contracts, Resolving insolvency)

[Source: Doing Business (n.d).]

However, Ghana has experienced severe electricity supply challenges (power rationing/load shedding) over the last decade, which was mainly caused by high level of losses in the distribution system and significant grow of electricity demand (between 2006 and 2016 the demand increased by about 52 %).[135] Other factors include problem in the supply of fuel for the generation facilities and high dependency on the

[134] Source: Afrika Verein (2019).
[135] Source: Kumi (2017).

Akosombo Dam with variability in the water level.[136] Due to these difficulties companies faces major challenges, like VALCO which faced a complete shutdown in 2004 and resumed production back in 2011 with only a part of potential capacity.[137] However the quality of the distribution system and electricity supply increased.[138]
Ghana was the second country in Sub-Saharan Africa to roll out internet connection[139] and with a mean broadband download speed of 5,46 Mbps[140] a good setting is given to fulfil the growing demand for good internet connections in the industry. The telecommunication sector was one of the first sector to be liberalised (privatisation of Ghana Telecom in 1996).[141] With investments on Eastern and Western corridor fibre projects more effort to establish a reliable internet connection in rural communities is given.[142] Ghana is one of the most active mobile markets in Africa[143] and the telecom subsector is characterized by vibrant competition and innovative products and services.[144] Currently six mobile operators are registered, and the market continues to grow, with a subscriber base that more than doubled between 2010 and 2018.[145] With landing points for fibre-optic submarine cables (e.g. ACE, SAT-3, WACS) connectivity to West and South Africa, and Europe is provided (Figure 38).[146]

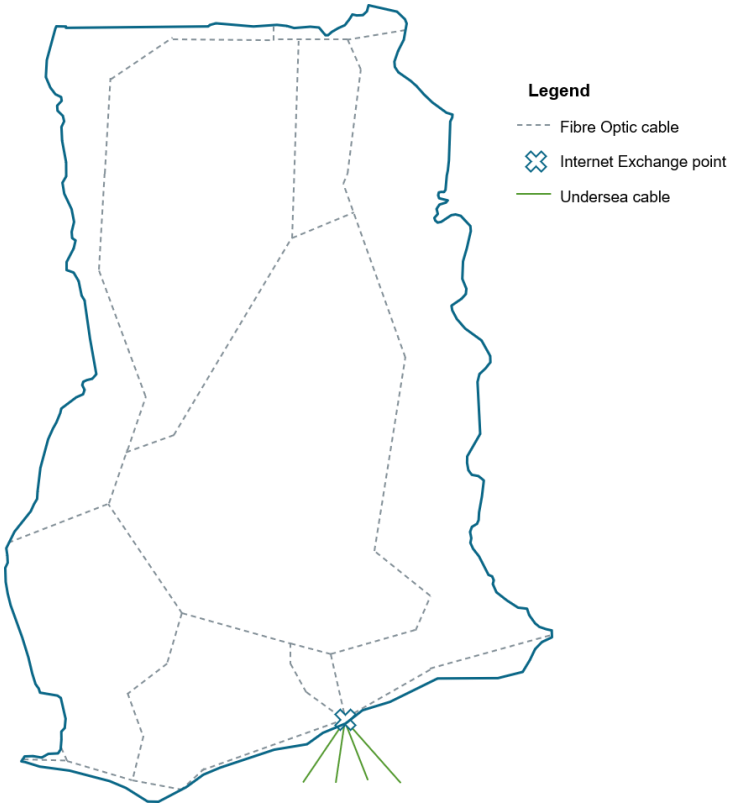

Figure 38: Transmission Network in Ghana (Source: own representation based on ITU (n.d.))

[136] Source: Afrika Verein (2019).
[137] Source: Valco (n.d.).
[138] Source: Afrika Verein (2019).
[139] Source: Xceed (2020).
[140] Source: Cable (2020).
[141] Source: Lancaster (2015).
[142] Ibid.
[143] Source: CIA (2020b).
[144] Source: GIPC (n.d. b).
[145] Ibid.
[146] Sources: CIA (2020b), GIPC (n.d. b).

Political Situation, Social situation, Investment climate

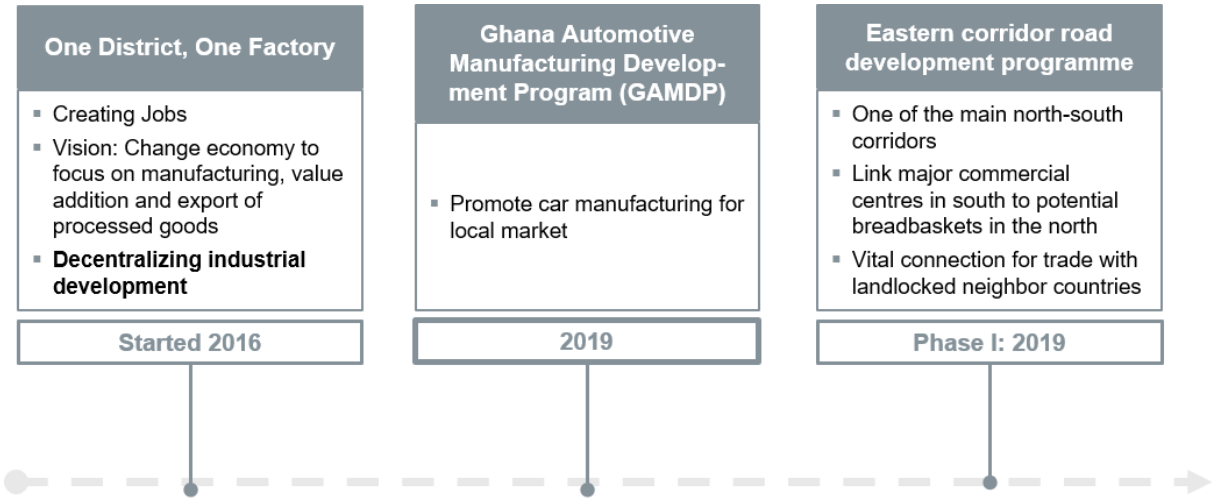

Figure 39: Roadmap of important development plans (Source: own representation)

Ghana is considered one of the most stable countries in West Africa[147] (score of 7,85 (out of 10, Place #20) in the Bertelsmann Stiftung´s Transformation Index (BTI) 2020. This is represented in overall good values in the fields of public institutions and governance.[148] Additionally, Ghana is one of the fastest growing economies in Africa.[149] A strong governmental commitment to support certain industries is given[150], as for instance the initiative "**One District One Factory (1D1F)**" as part of the Industrial Transformational Agenda and the "**Ghana Automotive Development Policy (GADP)**" show.

The **Industrial Transformational Agenda** includes ten pillars[151]:

1. National Revitalisation Programme
2. One District One Factory
3. Strategic Anchor Industries
4. Industrial Parks & Special Economic Zones
5. Development of small and medium-scale enterprises
6. Export Development Programme
7. Enhancing Domestic Retail Infrastructure
8. Business Regulatory Reforms
9. Industrial sub-contracting exchange
10. Improving Public-Private sector Dialogue

With **1D1F** the government follows the goal of changing the Ghanaian economy to one to increase value adding actions within Ghana and so promote the export of processed goods.[152]

In 2018 the Ghanaian government proposed **GADP** which provides a workable framework for establishing a vehicle assembly industry within the country as one of the new strategic anchor industries.[153]

[147] Source: Expert interview (GIZ GH 2020).
[148] Source: Bertelsmann Stiftung (2020b).
[149] Source: Afrika Verein (2019).
[150] Source: Expert interview (GIZ GH 2020).
[151] Sources: Deloitte (2019), GIPC (2017).
[152] Sources: GIPC (2017), MOTI (2020).
[153] Source: MOTI (n.d. c).

Following the vision to make Ghana a **fully integrated** and **competitive industrial hub** for the automotive industry in the West-Africa sub region[154] the policy focus on the following areas[155]:
The GADP follows the **strategy** to establish an industrial hub in cooperation with the private sector, to generate highly skilled jobs and introduce an asset-based vehicle financing scheme. The most interesting areas are the introduction of an **incentive and regulatory framework** which grant firms within the GADP tax holidays, lower import duties and a value-based duty rebate scheme. **Market development and trade facilitation** is another interesting part which includes topics like Government procurement, vehicle financing scheme, streamlined processes in the field of import and export and as well as export development. The government want to facilitate the **access to industrial infrastructure** with the construction of specialized automotive Industrial parks. Another field addressed in the GADP is the **automotive skills and technology upgrading** where OEMS and education collaborate for training and skills development and to provide hands-on training. The development of a local component supply chain is supported and upgraded.
Volkswagen Ghana is the first OEM which registered under the GADP and their assembly plant was inaugurated in August 2020.[156]
Through the political stability and, in regional comparison, easy business environment Ghana is attractive for FDIs and settlement of international companies.[157] The overall investment climate is better than the Sub-Saharan average.[158] Furthermore, Ghana is well located for exports and imports in the region and in cooperation with other nations. Generally, investment activities are regulated by the Ghana Investment Promotion Centre Act.[159] Investment risks are given by corruption, growing protectionism, and exchange rate fluctuations.[160] Foreign investors have the option to fund a wholly foreign-owned enterprise and external companies in Ghana. However, there are hurdles in the creation of foreign distribution companies to keep the trade within Ghana.[161] Through the creation of a “One Stop Shop” a centralised location for foreign investors was created.[162] A general problem is the restricted access to affordable loans.[163]
Some activities are reserved for locals and regulated in Section 27 of the GIPC Act. Additionally, for enterprises some minimum foreign capital investment requirements are regulated (Section 28)[164]:

- “Joint enterprise with a partner who is a citizen, invests a foreign capital of not less than US$ 200.000 in cash or capital goods relevant to the investment or a combination of both by way of equity participation and the partner who is a citizen does not have less than 10% equity participation in the joint enterprise, or
- Wholly owned by that person, invests a foreign capital of not less than US$ 500.000 in cash or capital goods relevant to the investment or a combination of both by way of equity capital in the enterprise

[154] Source: MOTI (2019).
[155] For the following paragraphs see MOTI (2019, n.d. c).
[156] Source: Expert interview (GIZ GH 2020).
[157] Source: Afrika Verein (2019).
[158] Ibid.
[159] Source: GIPC (2017).
[160] Source: Afrika Verein (2019).
[161] Ibid.
[162] Ibid.
[163] Source: Afrika Verein (2019) for detailed information.
[164] The following information is taken from GIPC (2017).

- For a trading enterprise, not less than US$ 1.000.000 in cash or goods and services relevant to the investments"

In the field of portfolio investment or companies solely for export trading and manufacturing the capital requirements are not given.
Land can be acquired in Ghana throughout agencies and landlords; however, no permanent ownership agreement is possible. It can be only done as a lease-hold agreement with a limited duration (for expatriates: 50 years; locals: 99 years).[165]

Automotive market

Through the last years the automotive market is **growing** and with a low motorisation rate of 32 per 1000 people (below African average of 42 vehicles per 1000 persons and well below global average of 182, growing at CAGR[166] of nearly 18% between 2005 to 2015[167]), Ghana has **massive opportunities for the future** since most of consumers currently belong to the affluent class.[168] With the ongoing industrialisation and thereby emerging **burgeoning middle class** (growing purchasing power) in combination with the sizable population the automotive market offers massive opportunities for the future.[169] However, the lack of financial inclusion hinders the growth of the sector[170] – the government is addressing this problem with the GADP. As a side effect of the lack of financial inclusion and high cost of ownership of new vehicles, the customers have been encouraged to buy second-hand vehicles (see Figure 42), therefore a low demand for new vehicles is given (Figure 41).

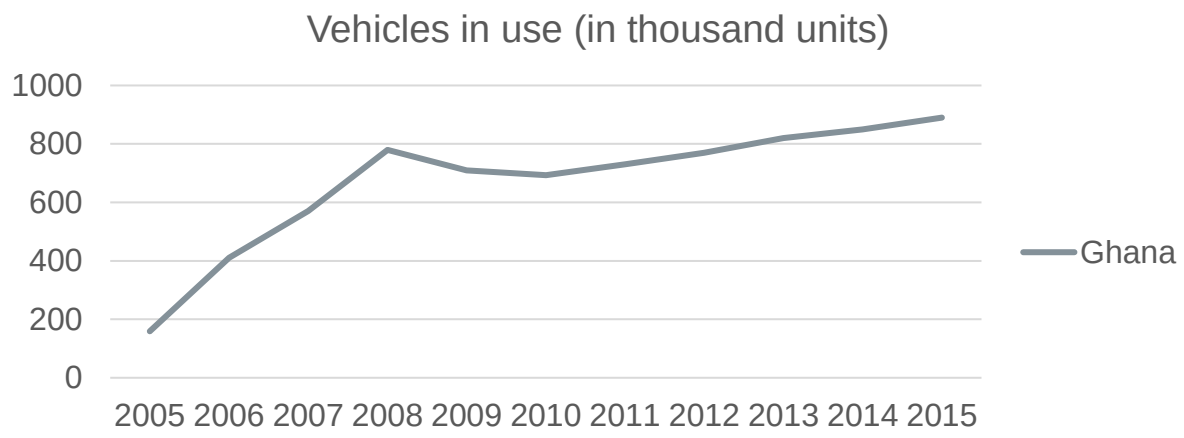

Figure 40: Vehicles in use from 2005 till 2015 for Ghana (Source: own representation)[171]

The market is mostly dominated by larger sized vehicles such as SUVs, pickups, and Vans, with ongoing popularity of limousines.[172] The long-term growth of sales is estimated with 1,7 % over the next 10 years.[173] Used cars take 70 % of the overall car

[165] Source: GIPC (2017).
[166] CAGR = Compound Annual Growth Rate, describes the average annual growth rate.
[167] Source: DFID (2018).
[168] Source: Africa Automotive News (2019).
[169] Sources: Africa Automotive News (2019), DFID (2018).
[170] Source: Africa Automotive News (2019).
[171] Source: Data acquired from OICA (2015).
[172] Source: DFID (2018).
[173] Source: Expert interview.

sales and 30 % fall on new cars which results in estimated 10.000 new cars per annual.[174] With an import ban on cars older than ten years and increased duties on used cars included in the new GADP, the sales of new cars are expected to increase.[175]
Given the location within West African and access to the ECOWAS market a sub-regional market of 300 million people can be accessed.[176]
It can be concluded that the aftermarket demand will grow with a growing car park and when more OEMs settle in Ghana (with increased value-added actions). [177] Currently only a negligible presence of auto and auto components manufacturing units is given.[178]

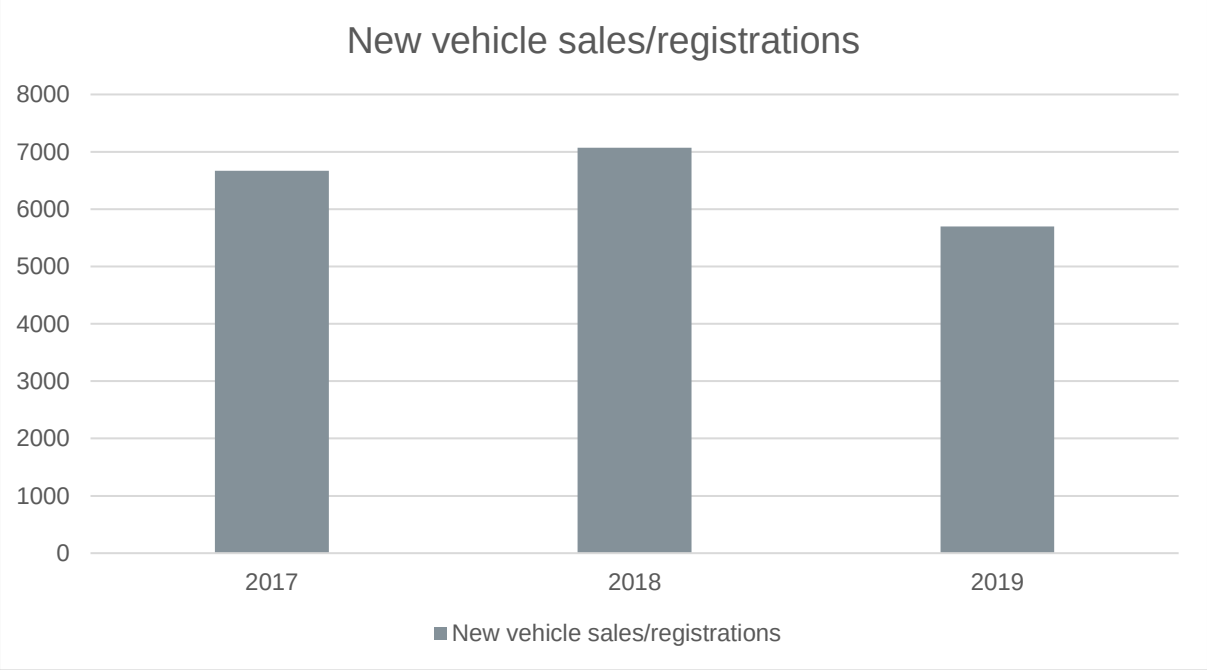

Figure 41: New vehicle sales and registration from 2017 to 2019 (Source: own representation)[179]

Imports in 2015	
Vehicle Type	**Value in thousand USD**
New	285.320
Used	726.273
Total	1.011.593

Figure 42: Imports by Vehicle type in 2015 (Source: own representation based on DFID (2018))

[174] Source: Expert interview.
[175] Ibid.
[176] Source: GIPC (2017).
[177] Source: Expert interview.
[178] Source: DFID (2018).
[179] Source: Data accessed from OICA (2019).

Import and Export Regulations

The general legal basis is manifested in the Exports and Imports Act 1995 (503).[180] Since June 1st, 2020, the new Integrated Customs Management System (ICUMS) replaces the old GCNet-System and is designated as Single-Window-System which offers the opportunity to submit all needed Import- and Export documents to only one contact point.[181]
Figure 43 represents the results of the *Trading across borders* study as part of the *Doing Business* report conducted by the World Bank. "**Trading across borders**" records the **time and cost associated with the logistical process of exporting and importing goods** to oversea and regional partners excluding tariffs.[182] A higher "Trading across borders" score is better. The data are gathered through questionnaire answered by local freight forwarders, customs brokers, port authorities and traders.[183] **Documentary compliance** includes time and cost for obtaining, preparing, processing, presenting, and submitting all required documents of all government agencies of the origin, destination, and transit economies.[184] **Border compliance** includes time and cost regarding with compliance with custom regulations and other inspections that are mandatory in order for shipment as well handling at ports and borders.[185]

Import/Export		Ghana
Trading across borders	*Score*	54,8
Border compliance	*Time to Export [hours]*	108
	Cost to Export [USD]	490
	Time to import [hours]	80
	Cost to import [USD]	553
Documentary compliance	*Time to Export [hours]*	89
	Cost to export [USD]	155
	Time to import [hours]	36
	Cost to import [USD]	474

Figure 43: Trading across borders - Ghana (Source: World Bank (2019b))

An inspection of imported goods (destination inspection) and since October 15th, 2018 an electronic pre-notification Cargo Tracking Note (CTN) is mandatory for ocean freight shipments.[186] In 2015 the Customs Act, 2015 (Act 891) was adopted and a mandatory customs information on the classification, origin and customs value of goods imported was introduced.[187] Trustworthy companies can apply for the status of an AEO, which

[180] Source: Mack (2019a).
[181] Source: GTAI (2020c).
[182] Source: World Bank (2019b).
[183] Ibid.
[184] Ibid.
[185] Ibid.
[186] Source: Mack (2019a).
[187] Ibid.

provides simplifications in customs clearance and duty collection.[188] Reforms were announced and a conversion can be assumed to facilitate business activities and improve the country´s business environment.[189]
Ghana offers Export Processing Zones (EPZ) in Tema, Sekondi and Shama. Goods imported for the use in these EPZs are exempt of duties and taxes.[190] With the membership in the Economic Community of West African States (ECOWAS)[191] a tax-free market with others is given and there is potential to establish a shared production of relevant components for the automotive sector in West Africa[192]. Through the ratification of the African Continental Free Trade Area (AfCFTA)[193] it can be expanded to the whole African continent. A trade agreement with the EU provides Ghana duty-free and quota-free access to the European market, in exchange Ghana must open the domestic market for 80% of EU imports in the next 15 years.[194]
Regarding the "**Trading across borders" Score of 54,8** out of 100 provided by the World Bank (Figure 43) Ghana has a high time to export/import and cost in the fields of border and documentary compliance especially in the context of countries where no trade agreement with Ghana is given.

***Info box:* Economic Community of West African States (ECOWAS) and African Continental Free Trade Area (AfCFTA)**

The **ECOWAS** was established in 1975 and has 15 member states (Benin, Burkina Faso, Cape Verde, Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo). One of the pillars was to set up the "*ideal of collective self-sufficiency for its member states*" and has the vision to create a "*borderless region where the population has access to the […] resources and is able to exploit same through creation of opportunities […]*". Areas are free movement, access to efficient education and health system and engage in economic and commercial activities. *[Source: ECOWAS (2016)]*

The **AfCFTA** has the vision to establish a common market for all 55 member states of the African Union for the industrialisation of the continent. With a scope of 1,2 billion people and bundled economic output of 2,5 trillion USD it has the potential to be the largest Free Trade Area in the world. The goals are: Enabling growth by opening new markets while promoting better resource allocation, reduce non-tariff barriers to intra-Africa trade, increased trade flows and terms of trade, contribution to value addition and growth in Africa. Areas of the AfCFTA are trade in goods, services, investment, and intellectual property rights.

[Sources: AU (2018), AUC/OECD (2019), AUC/UNECA (n.d.), GIZ (n.d.), Schmieg (2016)]

[188] Source: Mack (2019a).
[189] Ibid.
[190] Ibid.
[191] Ibid.
[192] Source: Expert interview (AAAM 2020).
[193] Source: Mack (2019a).
[194] Ibid.

Conclusion – Ghana

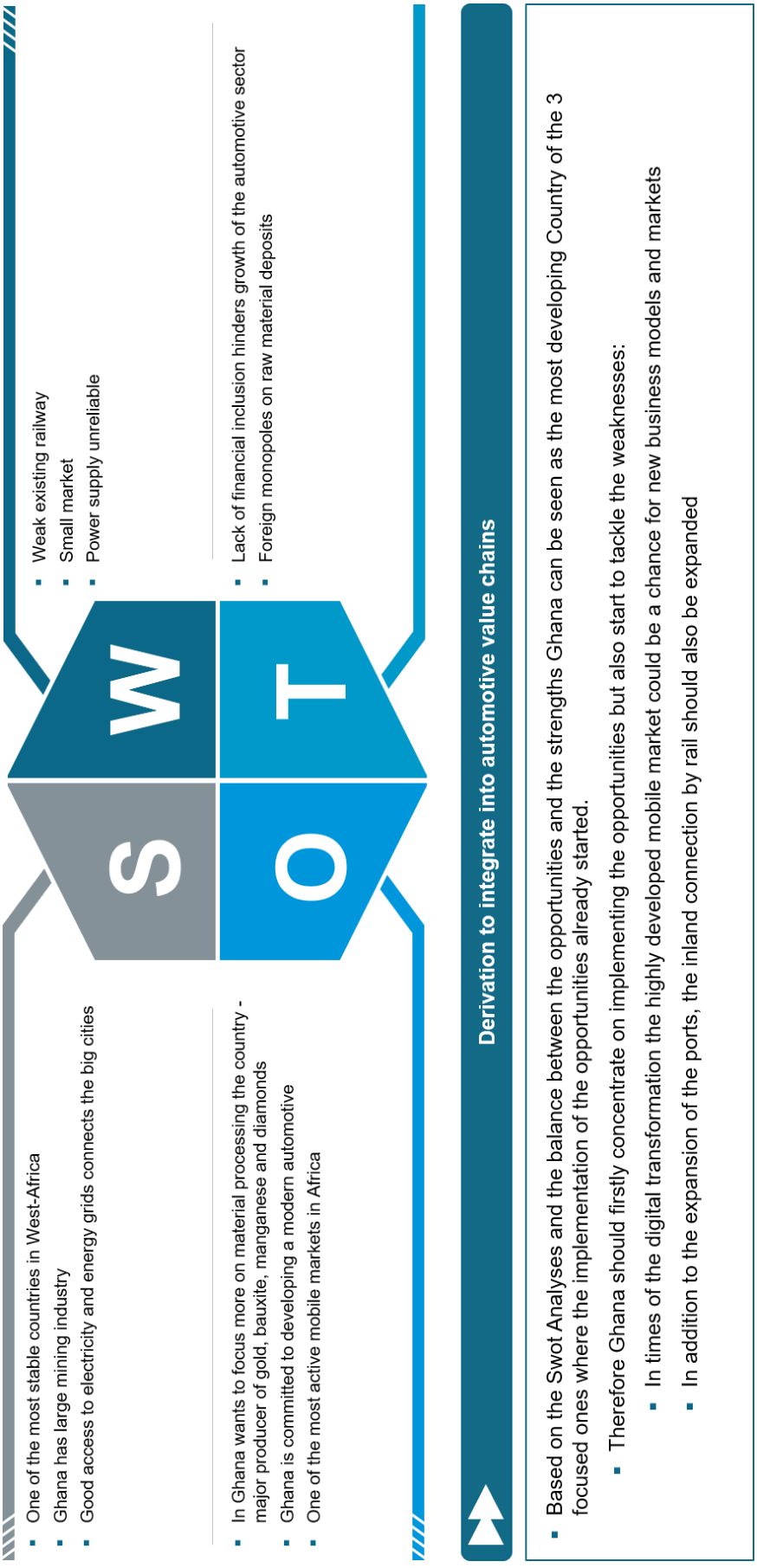

Figure 44: SWOT Derivation - Ghana (Source: own representation)

Main country insights: Morocco

Figure 45: Overview - Morocco (Source: own representation)

Major industries, Industrial Parks

Morocco is the home for a competitive automotive industry. Other related industries are well established, and the textile industry also plays an important role within the country.[195]

The industries represented within the country are[196]:

- Leather
- Chemical
- Mechanical & metallurgical
- Aeronautical
- Electronics
- Electric
- Pharmaceuticals
- Building materials
- Renewable Energy
- And Offshoring

To facilitate the industrial potential of regions the government established several (over 100[197]) industrial zones across the country, a large number is dedicated especially to the automotive sector. Figure 46 presents some of the relevant industry parks[198].

Name	Location	Industry
Tangier Free Zone	Tangier	Automotive, Aviation, Textile
Tanger Automotive City	Tanger-Assilah	Automotive
Atlantic Free Zone	Kénitra	Automotive, Electronics
Midparc	Casablanca	Aeronautics and connected industries
Ait Melloul Industrial Zone	Agadir	Agriculture, Metal, Chemical und Building
P2I Technopole Qujda	Oujda Angad	Electronics
The Industrial Park of Selouane	Nador	Unknown
The Industrial Park Tetouanpark	Tetouan	Light industry and processing industry, Trade, Logistics
The Technopolis Free Zone	Sale	Unknown

[195] Source: Expert Interview (AHK MA 2020).
[196] Sources: CIA (2020c), MCInet (n.d. a).
[197] Source: Oxford Business Group (n.d.).
[198] A complete list can be accessed through: MCInet (2016).

Name	Location	Industry
The Industrial Park Jorf Lasfar	El Jadida	Chemical, Energy, Metal
The Industrial Park Settapark	Settat	Unknown
Ecoparc Berrechid	Berrechid	Unknown
Mohammed Vi Tangiers Tech City		Automotive, Aviation, Textile, Electronics

Figure 46: Some industry parks in Morocco (Source: own representation based on Data from MCInet (2016))

Morocco offers a variety of options to manufacture automotive components, the automotive industry is well presented and additionally related industries like the aeronautical and electronics industry can be used in the process. With the variety of industrial parks, the competitiveness of the country is increasing. Great opportunities to manufacture within Morocco are given.

Raw materials and material processing

Morocco holds 75 % of the worldwide **phosphate** reserves[199] and in 2020 BMW signed a contract with the Moroccan Managem Group to source **cobalt** from Morocco for battery cells[200].
Other raw materials (Figure 48, left side) deposits given within Morocco are **salt**, **silver**, **manganese**, **iron ore**, **lead**, **zinc**, **baryte** and **copper** are degraded in small volume.[201] The focus of Morocco does not lie on the mining of raw materials.[202] The largest mining company is the Managem group which operates seven mines within the country.[203] See Figure 47 for quantities of major raw materials.

Raw materials	Quantity
Cobalt	22.460 metric tons
Cooper	73.170 metric tons
Iron ore	17.860 metric tons
Phosphate	80.890 thousand metric tons

Figure 47: Exemplary quantities of raw materials in Morocco in 2015 (Source: own representation)[204]

[199] Source: Daily Morocco (2018).
[200] Source: BMW (2020).
[201] Sources: CIA (2020c), Expert interview (AHK MA 2020).
[202] Source: Expert interview (AHK MA 2020).
[203] Source: Managem (n.d.).
[204] Source: Data from Taib (2015).

Material processing (Figure 48, right side) is given within the country like phosphate fertilizer production, oil refineries and steel production.[205]
With focus on the component analysis the raw materials in Morocco are not worth mentioning, mainly because the government self-did not identify the mining industry as key sector[206],and so will not considered more in detail.

Raw materials
Phosphate
Cobalt
Salt
Silver
Manganese
Iron ore
Lead
Zinc
Baryte
Cooper

Material processing
Phosphate fertilizer production
Oil refineries
Steel production

Figure 48: Raw materials and material processing in Morocco (Source: own representation)

Infrastructure – Logistical

Morocco has one of the best road and rail systems in the continent.[207] The general logistical infrastructure is comparable with southern Europe conditions.[208] With the given advanced harbour infrastructure[209], a good connection to other countries regarding import and export is given. For instance, the proximity to the European market facilitates trade between.
Morocco ranks **# 75th out of 141** in the *Global Competitiveness Report* (Figure 49) and achieved a score of 73 (out of 100) in the field of infrastructure, which can be mainly explained by the **high road connectivity** score (88,5) and the **good liner shipping connectivity** (71,5).[210] High commitment of the government to improve the basic infrastructure is given (air, harbour, road, rail).[211] For instance, the connection of major economic and residential centres by road (planned Investment of around 23 billion euros in road construction up to 2035) and integration of ports in urban environment are sub-tasks.[212]

[205] Sources: AFP (2019), Kasraoui (2020), SMS Group (n.d.).
[206] Source: Expert interview (AHK MA 2020).
[207] Sources: MCInet (n.d. b), S-GE (2017).
[208] Source: Expert interview (AHK MA 2020).
[209] Sources: ANP (2012), ITA (2019c).
[210] Source: Schwab (2019).
[211] Sources: ITA (2019b), ITA (2019c), MCInet (n.d. b).
[212] Sources: MCInet (n.d. c), S-GE (2017).

Infrastructure	Indicator	Morocco
Indicators (general)	Logistic Performance Index (LPI) (2018)	2,54
	Global Competitiveness Index (GCI) (2019)	#75 of 141 (Points: 60)
	Infrastructure*	#53 of 141 (Points: 73)
	ICT adoption**	#97 of 141 (Points: 46)
Logistical	Paved roads [km]	57.300 (2018)
	Rail network [km]	3657 (2017)
	Dominating mode of transport	Road and Rail important

Figure 49: Key Facts Morocco - Indicators and Logistical (Sources: Arvis et al. (2018), GTAI (2020c), S-GE (2017), Schwab (2019))

The *Logistics Performance Index (LPI)* is a benchmarking tool to help countries identify challenges and opportunities with regard their performance in trade logistics.[213] The index allows the comparison of 160 countries, is based on a worldwide survey of global freight forwarders and express carriers and "[…] is supplemented with quantitative data on the performance of key components of the logistic chains"[214]. The LPI is calculated through six indicators[215] (see Figure 50 for the values for Morocco):

1. The efficiency of customs and border management clearance
2. The quality of trade- and transport-related infrastructure
3. The ease of arranging competitively priced international shipments
4. The competence and quality of logistics services
5. The ability to track and trace consignments
6. The frequency with which shipments reach consignees within the scheduled or expected delivery time

With a *Logistic Performance Index (LPI)* **Score of 2,54**, Morocco is ranked 109 out of 160 and can be classified as **partial performer**.[216]

[213] Source: LPI (2018).
[214] LPI (2018).
[215] Source: Arvis et al. (2018), p. 8.
[216] Source: According to Classification based on LPI see Arvis et al. (2018), p.13.

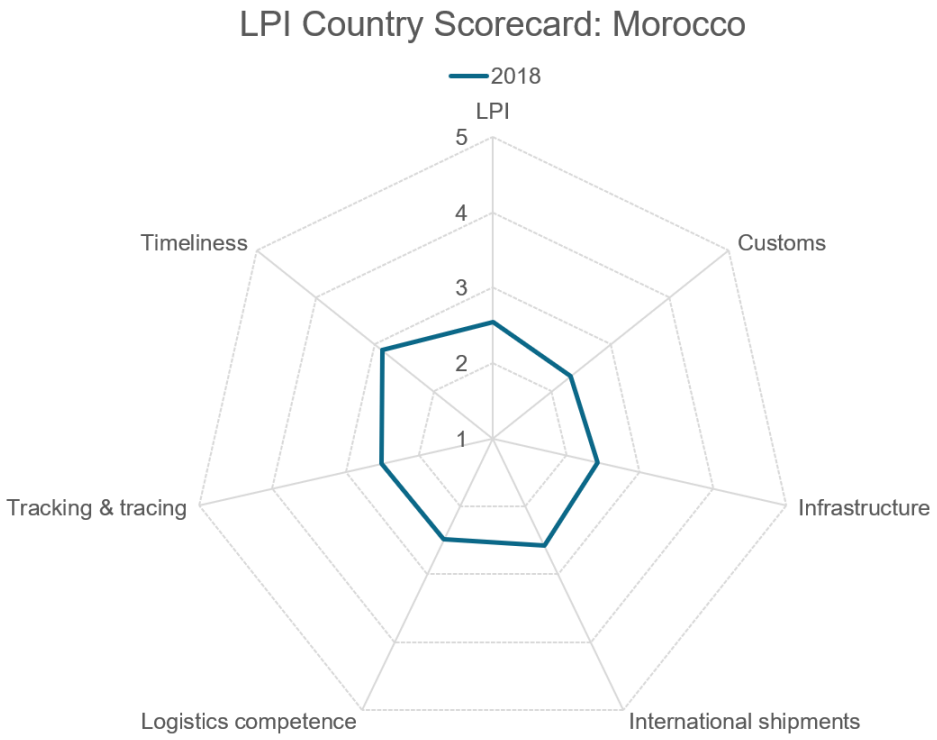

Figure 50: LPI Performance of Morocco (Source: own representation based on LPI (2018))

Morocco has one of the best roads systems in Africa and over the past 20 years 1.770 km of roads which connect most major cities via expressways have been built.[217] By 2030 the Ministry of Equipment, Transport, Logistics and Water plans to build additional 3.380 km of expressways and 2.092 km of highway.[218]
The rail infrastructure also is one of best on the continent and covers a total length of 3.657 km (2.238 km are electrified).[219] The freight transport is managed by the National Office of Railroads (ONCF) and is primary used to transport agricultural produce and products, automotive products, energy supply materials (coal, fuel), construction materials and chemicals.[220] The freight activity without phosphates totalled US$ 50,6 million in 2016.[221] The rail network is currently being expanded to connect all major economic areas and ports.[222]
Morocco´s location with a large Atlantic coastline in the west and in the north the coastline to the Mediterranean sea facilitate maritime trade - with 27 commercial ports (Figure 51) and total processed 80,15 tons in merchandise traffics (2017).[223] With the 2030 National Port Strategy the existing ports are going to be upgraded and expanded and five new ports will be built to strengthen Morocco's position.[224]

[217] Source: MCInet (n.d. c).
[218] Source: ITA (2019c).
[219] Source: S-GE (2017), Value may vary depending on source.
[220] Source: ITA (2019c).
[221] Ibid.
[222] Source: ONCF (n.d.).
[223] Source: ANP (2012), ANP (2017), ITA (2019c).
[224] Source: ITA (2019c).

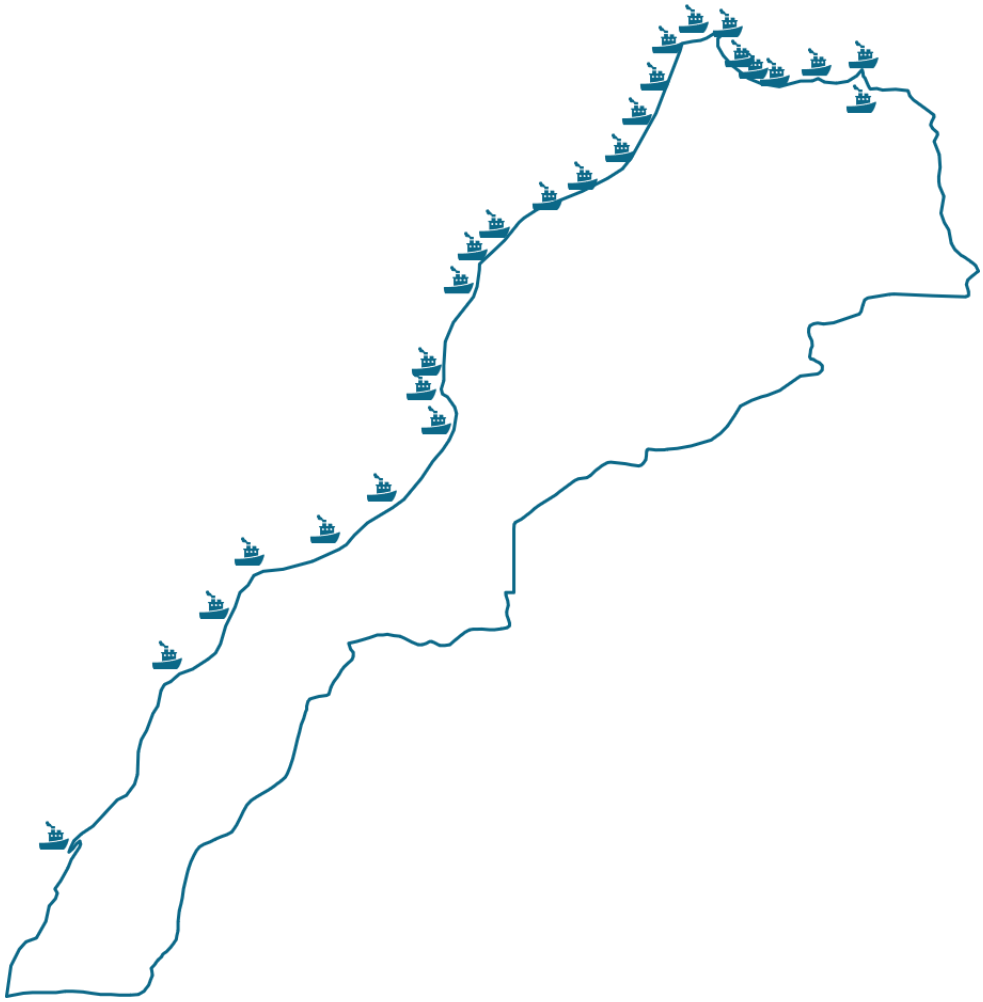

Figure 51: Ports of Morocco (Source: own representation based on ANP (2012))

Regarding the ***Global Competitiveness Report* 2019** the efficiency of air transport service is ranked 38 out of 141 and the airport connectivity is ranked 52 out of 141.[225] Achieved is this performance with 16 international airports and eight national airports managed by the Office National Des Aéroports (ONDA).[226] Regarding passenger numbers the biggest airports as of 2019 are: Casablanca-Mohammed V, Marrakech, Agadir, Fez and Tangiers.[227] In the next years ONDA plans to expand the airports in Rabat, Nador, Essaouira, Oujda and Al Hoceima and building of an second airport in Marrakech.[228] The goal is to reach 14 million passenger demand.[229]

Infrastructure – Energy and ICT

Morocco has regarding ICT one of the most state-of-the-art markets in Africa and provides great internet connection to Europe.[230] With the national strategy “Maroc Digital 2020” the government wants to accelerate the digital transformation within the country

[225] Source: Schwab (2019).
[226] Source: ONDA (n.d.).
[227] ONDA (2019).
[228] Source: ITA (2019c).
[229] Ibid.
[230] Source: CIA (2020c).

and establish as regional digital hub.[231] The country also provides a reliable electricity infrastructure and 100% of the population has access to it.[232]

Infrastructure	Indicator	Morocco
Energy	Time required to get electricity [days] (2019)	31
	Access to electricity [% of population] (2018)	100
ICT	Mean download speed broadband [Mbps] (2020)	6,55
	Individuals using the Internet [% of population]	74 (2019)

Figure 52: Key Facts Morocco - Energy and ICT (Sources: Cable (2020), World Bank (2018a, 2018b, 2019a))

The government has launched reforms in the energy sector to increase the share of renewable energy supplies on total supply.[233] With **20,59 Mtoe** total primary energy supply provided.[234]
The ICT infrastructure is well established and provide a mean broadband download speed **6,55 Mbps** (2020).[235] The country is connected to all major undersea cables (e.g. Atlas-Offshore, Estepona-Tetouan, SEA-ME-WE-3), which provide connectivity to Asia, Africa, Middle East and Europe. Morocco improves the LTE reach and capabilities, and mobile internet accounts are responsible for 93,2 % of all internet connections.[236] As of 2018 Morocco provides a 4G mobile broadband penetration rate of 23 %.[237]

[231] Source: Guerraoui (2019).
[232] Sources: GENI (2014), IEA (2019), WorldBank (2018a).
[233] Source: IEA (2019).
[234] Ibid.
[235] Source: Cable (2020).
[236] Source: CIA (2020c).
[237] Source: Broadband Commission (2019).

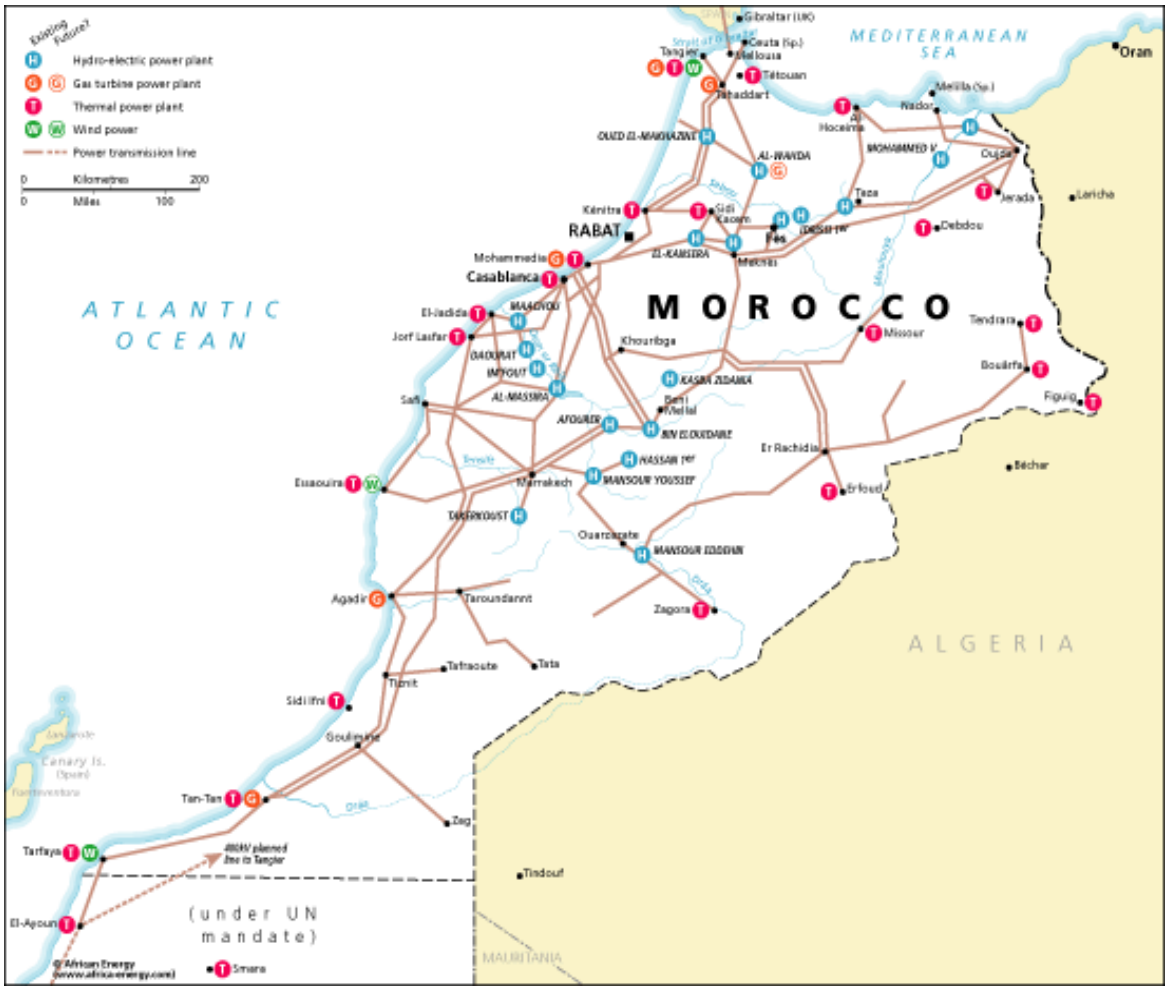

Figure 53: Morocco´s energy grid (Source: GENI (2014))[238]

Political Situation, Social situation, Investment climate

Morocco is the most stable country in North-Africa and no need to convince investors is given.[239] A highly motivation to invest in certain industries is present and regarding the automotive sector certain incentive for foreign companies exist to settle within the country, e.g. free zones with tax advantages.[240]

The effort of the government in the fields of economic liberalization, further reducing tariffs and strengthening investor protections is ongoing.[241]

Elections are held regularly with a control mechanism of the monarchy. Many sectors of the economy are dominated by the royal family and associated families.[242]

According the Doing Business report Morocco has continuously improved is position to 60 out of 190 in 2019. However, according the Global Competitiveness Report of 2017/2018 the most problematic factors for doing business were corruption, inefficient government bureaucracy, access to financing, tax rates and inadequately educated workforce.[243] Rapid industrialisation in Morocco did not go hand in hand with fitting

[238] As of 29/01/2021 newest accessible map of the national energy grid.
[239] Source: Expert interview (GIZ MA 2020).
[240] Ibid.
[241] Source: Bertelsmann Stiftung (2020b).
[242] Ibid.
[243] Ibid.

educational programmes and vocational training often does not meet the market demand.[244] Training lacks behind on soft-skill, language and technical level and companies face difficult to find competent staff. High investment by the government in education and training given.[245] First approaches by companies to improve the training with technical focus to improve the situation exist.[246] The country is characterized with a high youth employment.[247]

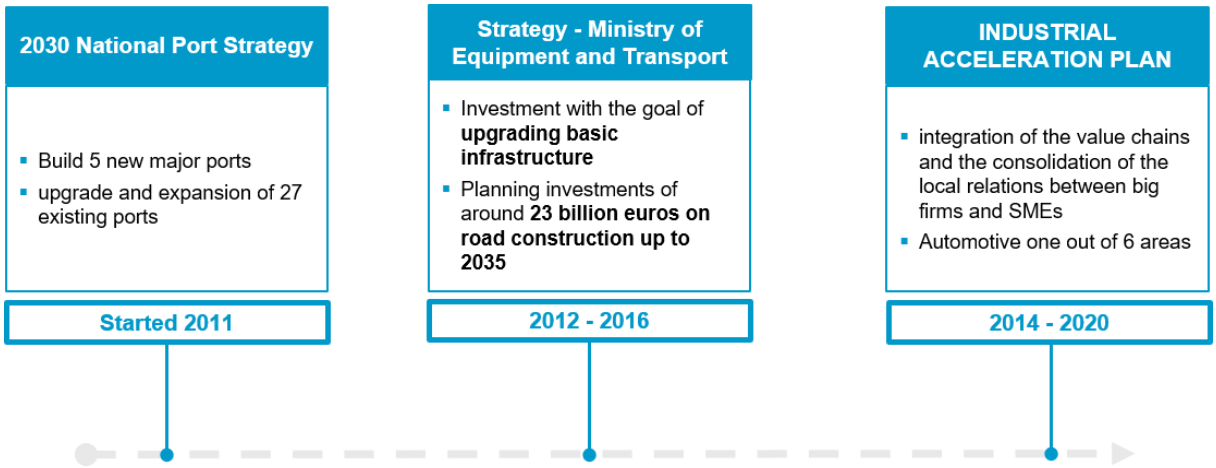

Figure 54: Politcal Roadmap - Morocco (Source: own representation)

Over the past the government started plans to improve the infrastructure and accelerate key sectors of the industry.[248] For instance, the 2030 National Port Strategy aims to improve current harbour infrastructure and build five new ports.[249] Upgrading basic infrastructure e.g. road construction and liberalization/introduction in various modes of transport was conducted under the Strategy of the Ministry of Equipment and Transport between 2012 and 2016.[250] The Industrial Acceleration Plan between 2014 and 2020 has the goal to improve the industries within in 6 key areas – automotive is one of them.[251] A new plan shall focus more on small and middle-sized companies and improve R&D activities within the country and is planned to start in 2021.[252]

Automotive market

Morocco is one of the two major automotive hubs in Africa[253] and an automotive market is already present within the country (motorization rate of 104 per 1000 people in 2015[254]). However, the production is export orientated[255] and the domestic demand for cars remains limited with an **average of 130.000 units per year** for a population of

[244] Source: Expert Interview (GIZ MA 2020).
[245] Source: Expert Interview (AHK MA 2020).
[246] Ibid.
[247] Ibid.
[248] Sources: Hatim (2020), ITA (2019c), MCInet (2014), MCInet (n.d. b).
[249] Source: ITA (2019c).
[250] Source: MCInet (n.d. b).
[251] Source: MCInet (2014).
[252] Source: Sauermost (2020).
[253] Sources: DHL (2019), Straube et al. (2020).
[254] Source: OICA (2015) newest data as of 11/12/2020.
[255] Sources: Industry Research (2019), Straube et al. (2020).

32,3 million people.[256] In 2012 the French brands (Renault, PSA) accounted for nearly 50 % of the market share.[257]

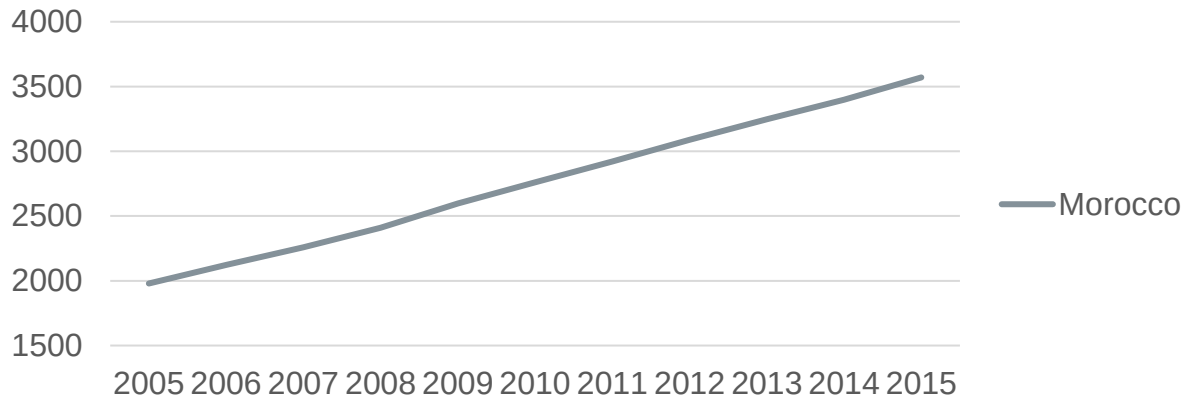

Figure 55: Vehicles in use (Morocco 2015) (Source: own representation based on OICA (2015))

The automotive industry in Morocco is expected to grow at a CAGR[258] if 5.6 % between 2019 and 2024.[259] In 2018 the industry produced estimated 480.000 vehicles per year (planned for 2020: 580.000).[260] In Figure 56 it can be seen that the sales/registrations continuously grew over the past ten years and there is still potential to grow.

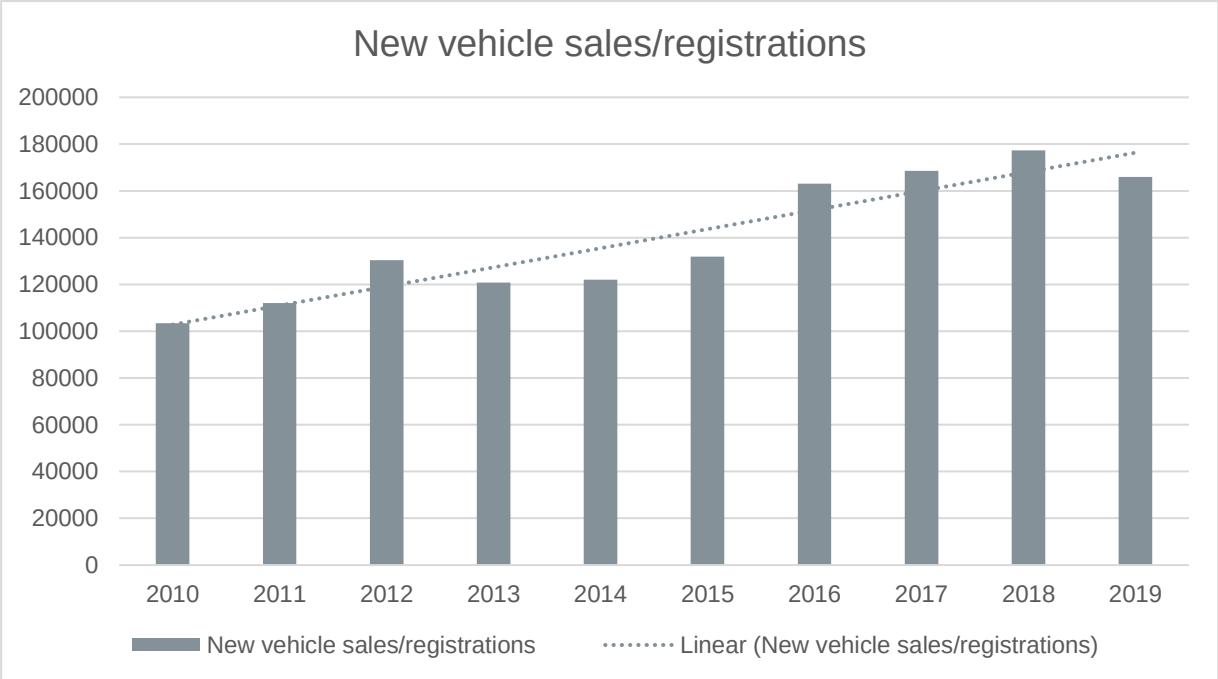

Figure 56: New vehicles sales/registrations in Morocco from 2010 to 2019 (Source: own representation)[261]

[256] Source: Haddach et al. (2017), p. 77.
[257] Ibid.
[258] CAGR = Compound Annual Growth Rate, describes the average annual growth rate.
[259] Source: Industry Research (2019).
[260] Source: Straube et al. (2020).
[261] Source: Data source from OICA (2019).

Figure 57 is based on other sources but also represents a growing automotive market in Morocco were a continuously increase of automotive sales can be observed. The market in Morocco is already present but with view on the current Covid-19 pandemic between 2019 and 2020 the sales are likely to drop in the upcoming years. Similar information is represented in Figure 58 where the automotive revenues are shown. The average price per vehicle (all classes) varies in the considered time frame between 27.711€ and 29.039€.[262]

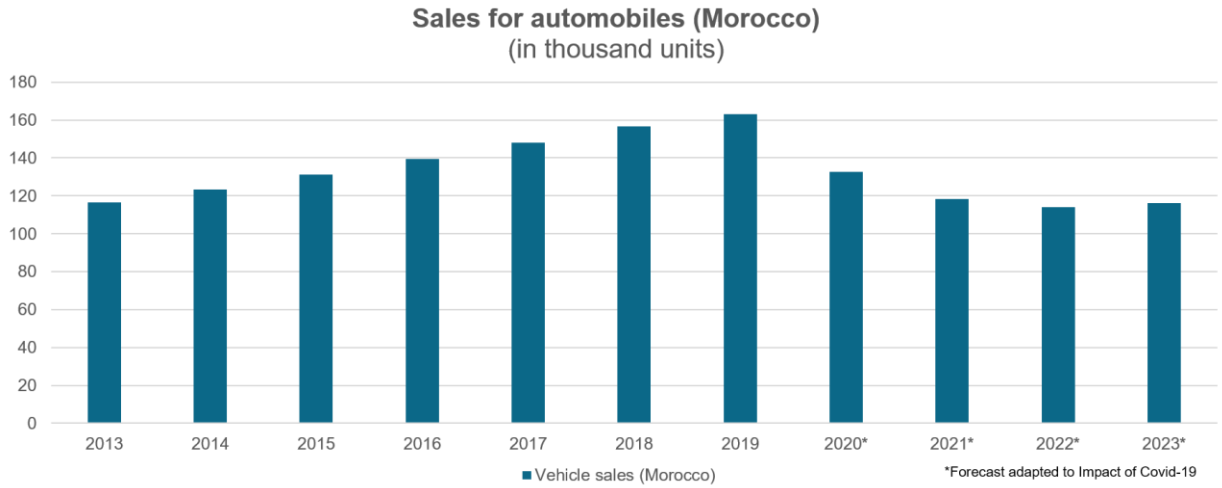

Figure 57: Automotive sales in Morocco (Source: own representation based on Statista (2020b))

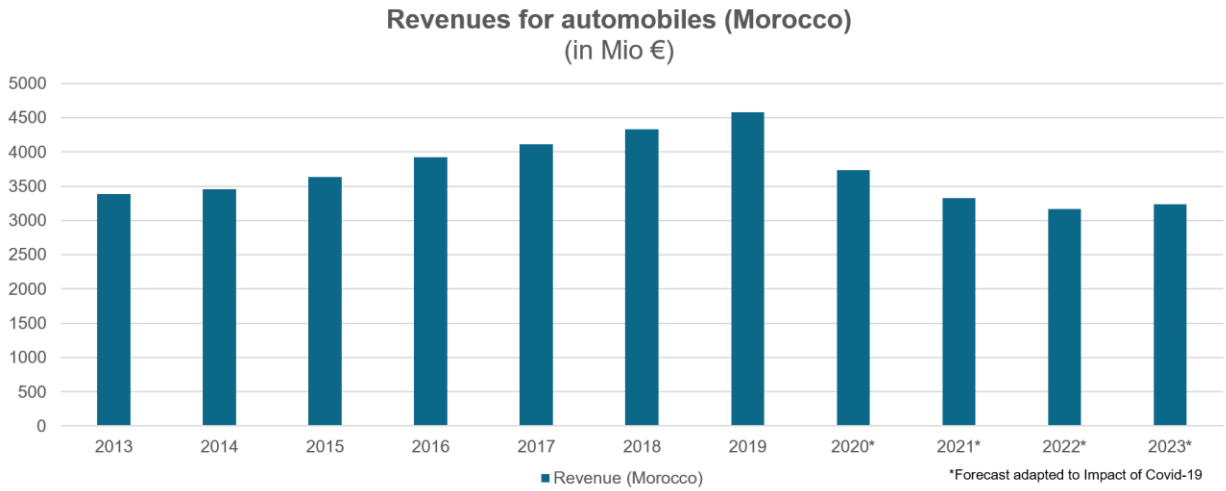

Figure 58: Automotive revenues in Morocco (Source: own representation based on Statista (2020b))

A potential market regarding supply parts can be calculated. For instance, a possible demand of 1.740.000 seats can be estimated and therefore a possible market for production of seat covers.[263] Therefore, the total market for textile can be estimated to 23.838.000 m^2.[264]

[262] Source: Statista (2020b).
[263] Source: Soliman Conseil (2018).
[264] Ibid.

Import and Export Regulations

The common custom regulation of Morocco are manifested in the law No. 1-77-339 from 1977 ("Code des Douanes et Impôts Indirects") and supplemented by directives.[265] Generally all goods need to be registered within 24 hours after arrival at the responsible customs office and since 2012 a mandatory entry summary declaration for sea and air freight is implemented (since 2019 additionally the companies identification number need to be added).[266] All importers need to be registered at the **Centre Régional d'Investissement (CRI)** and since 2015 for all imports the Single Window-System **PortNet** can be used.[267] Trustworthy companies can apply for the status of an AEO, which provides simplifications in customs clearance and duty collection.[268] For the foreign investment promotion currently five free zones are implemented with tax reliefs and exemptions.[269]

Companies have the option to apply special customs procedures which enables some facilitations.[270] The possible options[271] are:

- release for free circulation
- customs warehousing
- Industrial free warehouse
- Inward processing
- Temporary admission
- Outward processing
- Temporary export
- Customs transit
- Transformation

For the import of specific goods, the importer needs to apply for an import license.[272] Additionally, for a variety of products a certificate of conformity of Moroccan norms and quality standards, for frequent deliveries an exemption is possible, and since 2019 compulsory labelling for some technical devices is given.[273]

Fundamental of the trade between Morocco and the European Union is the **Euro-Mediterranean Association Agreement** signed in 1996 and entry in force March 2000.[274] Key objective of the partnership agreement is the implementation of a Euro-Mediterranean Free Trade Area with the goal to remove barriers to trade and invest.[275] Since 2012 EU goods from the customs chapters 25 to 97 can be exported free of duty to Morocco.[276] Negotiations on a comprehensive trade agreement (Deep and Comprehensive Free Trade Agreement – DCFTA) started in 2013 and will gradually add topics, like services, public procurement, competition, intellectual property, and investment protection.[277] Overall goal is the harmonisation of norms and regulations to integrate Morocco in the European domestic market in the future.[278]

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[265] Source: Ghazi (2019).
[266] Ibid.
[267] Ibid.
[268] Ibid.
[269] Ibid.
[270] Ibid.
[271] Detailed can be found in Ghazi (2019).
[272] Source: Ghazi (2019).
[273] Ibid.
[274] Source: European Commission (2020).
[275] Ibid.
[276] Source: Ghazi (2019).
[277] Ibid.
[278] Ibid.

Regarding the African continent, Morocco is also member of **Greater Arab Free Trade Area (GAFTA)**, **the Union du Maghreb Arabe (UMA)** and the starting **African Continental Free Trade Area (AfCFTA)**.[279]
Figure 59 represents the results of the *Trading across borders* study as part of the *Doing Business* report conducted by the World Bank. "**Trading across borders**" records the **time and cost associated with the logistical process of exporting and importing goods** to oversea and regional partners excluding tariffs.[280] A higher "Trading across borders" score is better. The data are gathered through questionnaire answered by local freight forwarders, customs brokers, port authorities and traders.[281] **Documentary compliance** includes time and cost for obtaining, preparing, processing, presenting, and submitting all required documents of all government agencies of the origin, destination, and transit economies.[282] **Border compliance** includes time and cost regarding with compliance with custom regulations and other inspections that are mandatory in order for shipment as well handling at ports and borders.[283]

Import/Export		Morocco
Trading across borders	*Score*	85,6
Border compliance	*Time to Export [hours]*	6
	Cost to Export [USD]	156
	Time to import [hours]	57
	Cost to import [USD]	228
Documentary compliance	*Time to Export [hours]*	26
	Cost to export [USD]	67
	Time to import [hours]	26
	Cost to import [USD]	116

Figure 59: Trading across borders score (Morocco) (Source: World Bank (2019b))

***Info box:* African Continental Free Trade Area (AfCFTA)**
The **AfCFTA** has the vision to establish a common market for all 55 member states of the African Union for the industrialisation of the continent. With a scope of 1,2 billion people and bundled economic output of 2,5 trillion USD it has the potential to be the largest Free Trade Area in the world. The goals are: Enabling growth by opening new markets while promoting better resource allocation, reduce non-tariff barriers to intra-Africa trade, increased trade flows and terms of trade, contribution to value addition and growth in Africa. Areas of the AfCFTA are trade in goods, services, investment, and intellectual property rights.

[Sources: AU (2018), AUC/OECD (2019), AUC/UNECA (n.d.), GIZ (n.d.), Schmieg (2016)]

[279] Source: Ghazi (2019).
[280] Source: World Bank (2019b).
[281] Ibid.
[282] Ibid.
[283] Ibid.

Conclusion – Morocco

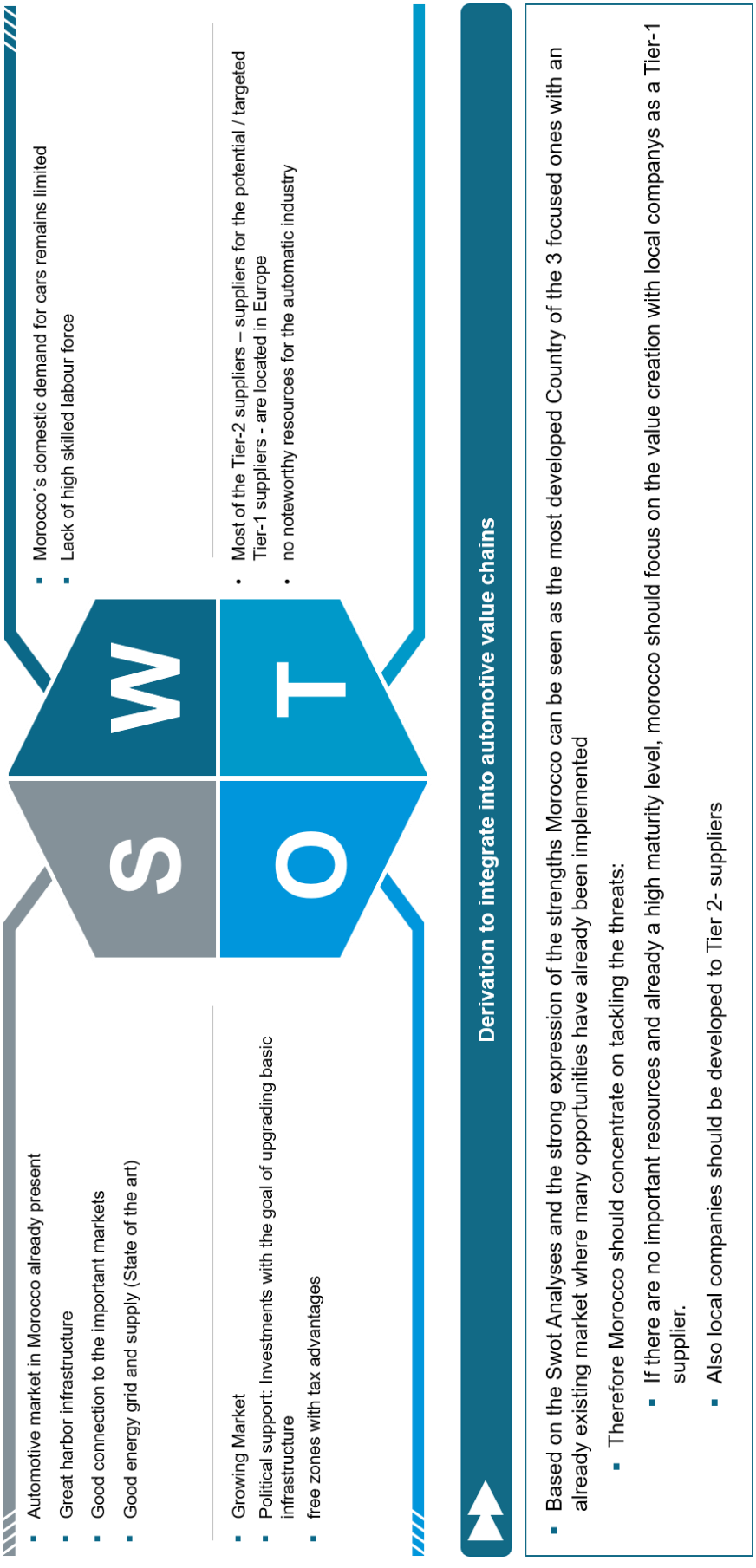

Figure 60: SWOT Derivation - Morocco (Source: own representation)

Component analysis and the formation of possible technology clusters for the automotive industry

Methodology

The following component analysis is based on a three-way approach with the goal to identify possible development paths of industries within the countries or already existing local suppliers and their integration options into the automotive value chain. The approach (Figure 61) is structured as followed and is orientated on three main questions:

1. Are there already suppliers of the automotive industry in the country?
2. Are there other suitable industries within the country which produce products with similarity to automotive components?
3. Are their raw material deposits and material processing industries available which are usable for the automotive sector (see Figure 63 for an overview of used materials in an automobile)?

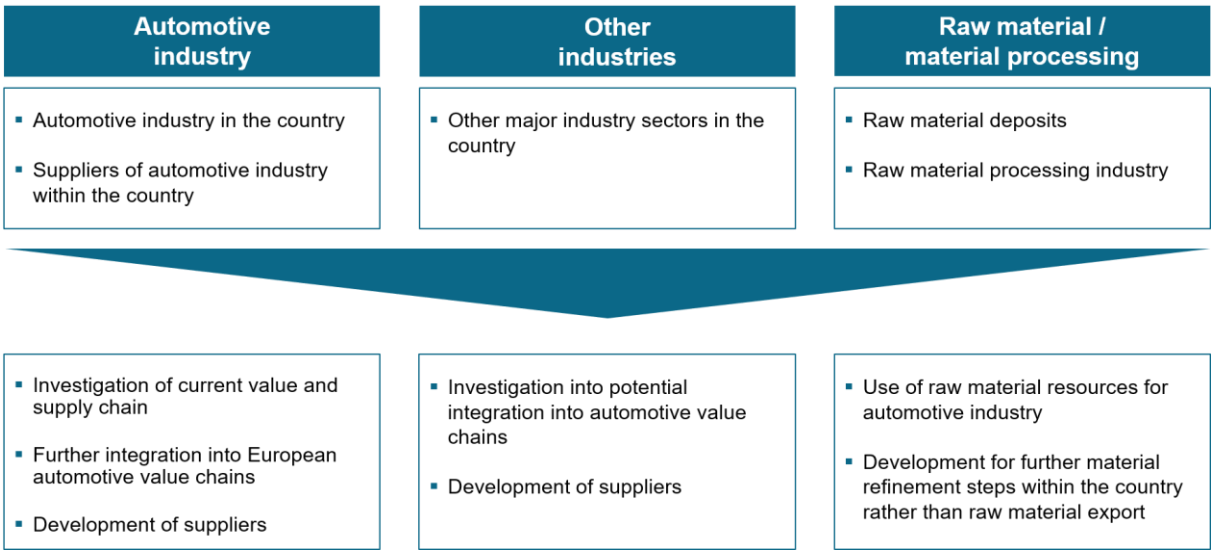

Figure 61: The component analysis was based on a three-way approach (Source: own representation)

For the further analysis of possible components and future steps an evaluation with focus on three key question was conducted:

- What can be produced within the countries?
- Which competences exist and which investments are needed?
- Are their possible alternative approaches?

Automotive industry

In countries where industries exist that are already suppliers to the automotive sector, the competitiveness and available components were analysed.

Other industries

In case that no industry with connection to the automotive sector is present, possible other major industries are analysed. In a **first step** a list of relevant industries for automotive manufacturing was identified. In a **second step** the allocation of possible

commodities that can be produced through these industries were conducted. In a **third step** possible development options regarding the material groups within the commodities were identified.

Raw materials and material processing

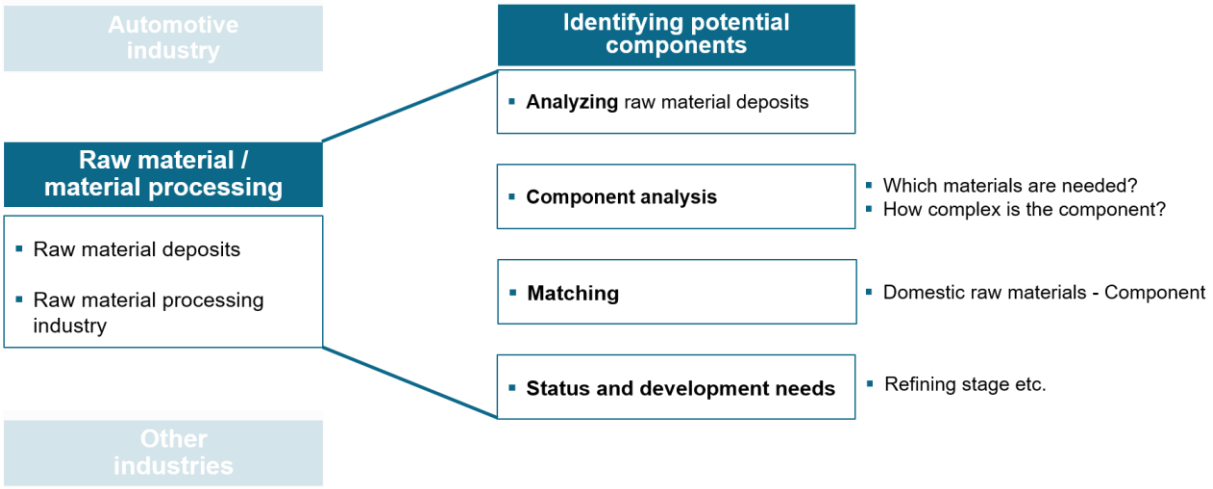

Figure 62: Approach for component analysis regarding Raw materials (Source: own representation)

As result of the country analyses and through the conducted aggregation of information from different sources (GIZ, AHKs, desk research, expert interviews), the given raw material deposits within the countries were analysed. As **second step** the required raw materials for the automotive industry were identified through the analysis of Commodities from automotive OEMs and the linked value chains were analysed. As **last step** the focus laid on the evaluation of competitiveness and produced quantities of the material processing and mining industry.
Figure 63 guided the selection process of potential materials that are needed in the production of a standard model.

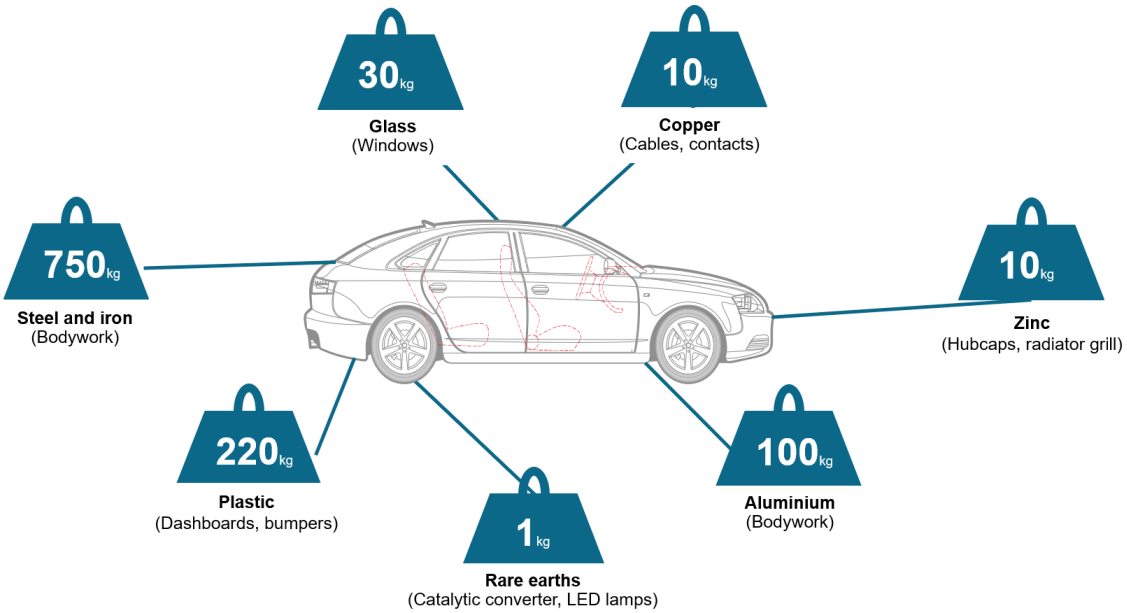

Figure 63: Used materials to produce a standard car (Source: own representation)[284]

Component short list

Based on the eligible components and as preparation for the supplier analyses a short list was created to evaluate the components. In a **first step** the components were classified based on typical **commodities and materials groups** (Figure 64) from OEMs.

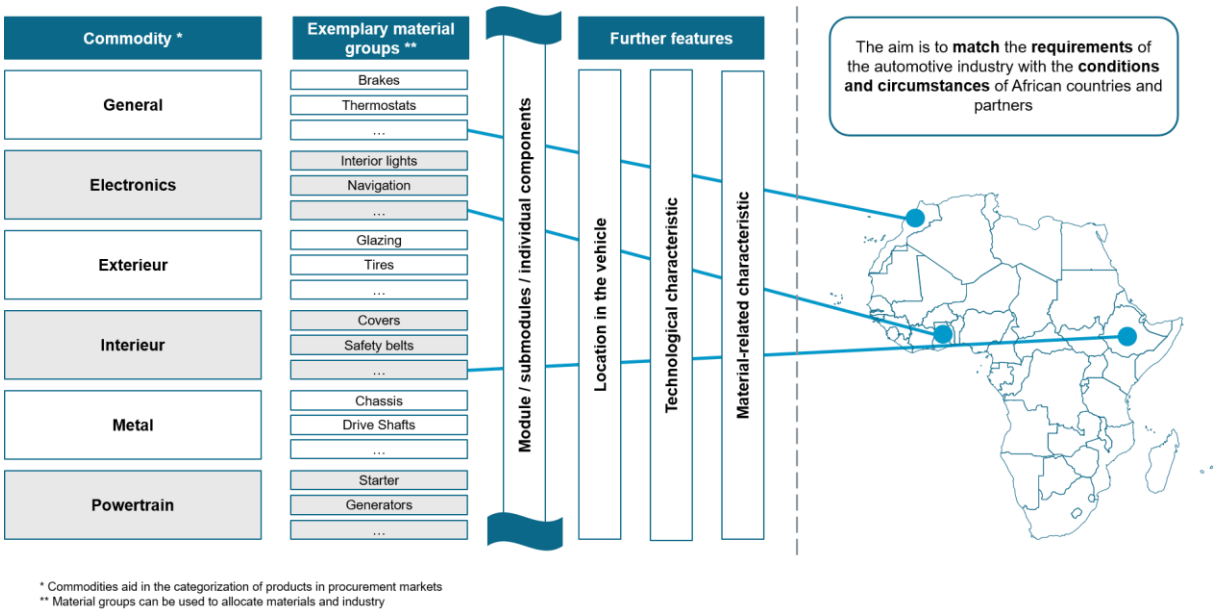

Figure 64: Purchasing structure OEMs - Commodities, material groups (Source: own representation)

In the **second step** the components were **evaluated based on different criteria** (Figure 65). The evaluation is based on expert knowledge enriched with desk research.

[284] Data acquired from: Kerkow et al. (2012) and Worldsteel Association (2020).

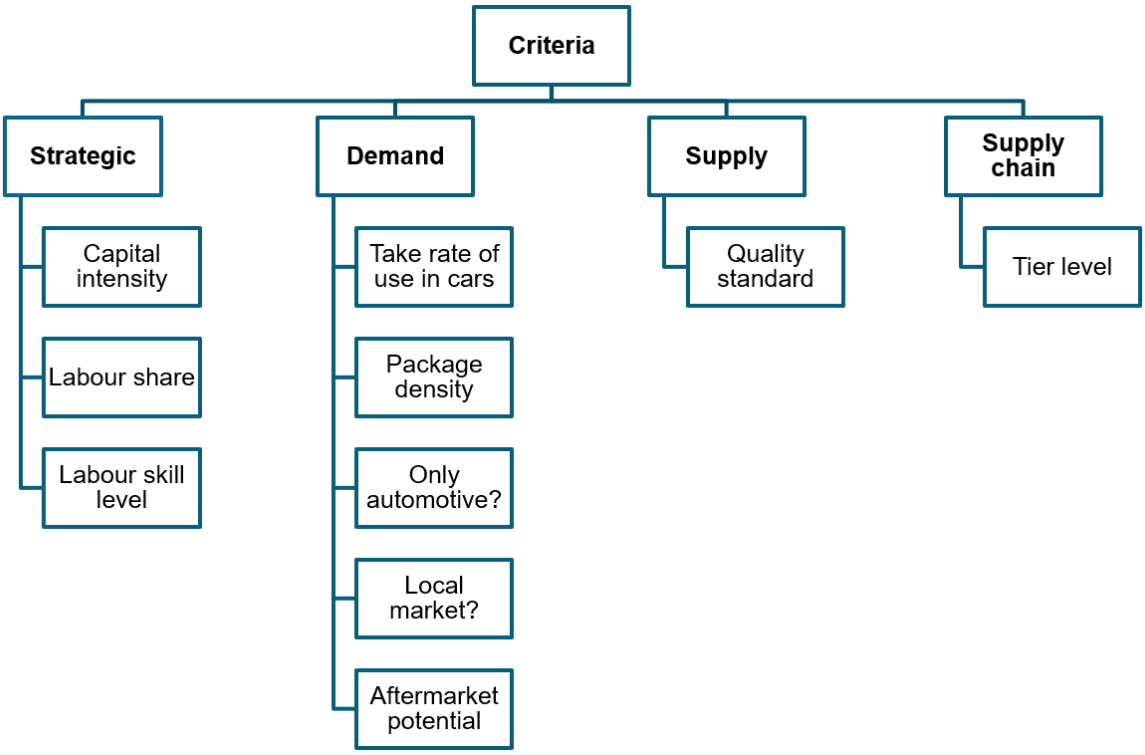

Figure 65: Evaluation criteria (Source: own representation)

The criteria can be clustered in four main fields: **Strategic**, **Demand**, **Supply**, and **Supply Chain**.

- *Strategic* includes **capital intensity** (needed investment, dependency on automatization level of production), and **labour share/skill** level (degree of labour intensity and needed skills).
- The *Demand* category includes **take rate [of use in cars]** (quantity used in vehicle production), **component packaging density** (quantity of components can be packed in standard logistical load carrier), **only automotive** (or also usable in other productions), **local market** (local demand for the part within the country) and **aftermarket potential**.
- *Supply* includes **Quality standard requirement** (Degree of needed quality).
- *Supply chain* category includes **Tier level** (system/module, component, or parts supplier).

Identified options for each country

Not all the approaches are suitable for every country. So, after evaluating the information sources and conducting expert interviews only those approaches will be presented that were most promising. An overview of the approaches pursued can be seen in Figure 66. Based on the selected approaches the value chains of identified components were analysed. Depending on the development stage within the country the most promising components are presented in the later developed component list.

Country	Automotive industry	Other industries	Raw materials
Ethiopia		X	X
Ghana		X	X
Morocco	X	X	

Figure 66: Followed approaches in the focus countries (Source: own representation)

Possible components in Ethiopia

Since currently no mentionable automotive industry is present in Ethiopia, the most promising approach is a combination of the **usage of raw materials** (iron ore, copper ore, oil, cotton, and leather), and **processing and manufacturing** in industries that are related to the Automotive Industry (see Figure 70). It is important to mention that at current state there is not a mentionable production in Ethiopia present for all components. Therefore, only the most promising components are part of the following analysis.

For instance, the **textile** industry already plays an important role within the country[285] and with usage of local sourced cotton and leather, possible components like seat covers could be created. Following the approach that part of the value creation for the automotive industry can take place in Ethiopia, which would provide a possibility to create jobs.

At current state, the **mining** industry is under development.[286] As a result, no competitive mining and processing of raw materials, like iron, copper, and oil, is given at the moment. Therefore, to undertake later steps for the manufacturing of automotive components a previous development step needs to be considered. Suitable for sustainable automotive value creation within the countries is a bottom-up approach (Figure 68). Starting with the fundamental development of the mining industry over material processing (Tier-n) to automotive suppliers of components, modules, or systems (Tier-3 to 1) in order to facilitate economic development and job creation. At the top of the pyramid OEMs could transfer whole production sites (CKD, SKD) to the country. Tier-n levels at the beginning of the value chain promise an easier development while simultaneously providing opportunities for a larger workforce compared to Tier-n closer to the final product.

Figure 67 represents the **cotton value chain** and shows possible takeover of steps within Ethiopia supplemented with given companies for each step. The presence of production sites, owned by major international textile companies (textile manufacturing), facilitated the establishment of all steps along the value chain in an integrated manner (see Figure 68 for an exemplary integrative approach).

Companies

- 57,000 Ethiopian small farmers
- Over 1000 large farmers
- Amibara Agricultural Development P.L.C. (Addis Ababa)
- Omo Valley Agro Industry Plc (Addis Ababa)
- Hiwot Agricultural Mechanization (Addis Ababa)
- …

- Nova Star Garment, Plc. (Addis Ababa)
- G-Seven Trading & Industr, Plc. (Addis Ababa)
- MAA Garment and Textiles (Mekelle)
- Hawassa Textile Factory (Hawassa)
- ETUR Textile PLC (Addis Ababa)
- Almeda Textile PLC (Adwa)
- Bahir Dar Textile (Bahir Dar)
- Arbaminch Textiles S.C. (Arba Minch)

Figure 67: Possible Cotton value-chain in Ethiopia (Source: own representation)[287]

However, Ethiopia´s supply of cotton does not match the current local demand; therefore, a large amount of cotton is imported from other countries like India, Pakistan, and

[285] Source: Expert interview (AHK ET 2020 – Report Textile Sector).
[286] Source: EIC (2017).
[287] Information from Altex (n.d.), D´heur (2016), ENA (2020), ETUR (n.d.), Henkaus et al. (2019), Hilbert et al (2018), MAATextiles (n.d.), McKinsey (2020).

China.[288] Main reason for the small amount of cotton production areas is the low support from the government side, therefore for the farmers cultivation of millet, sugar cane or bananas is more lucrative.[289] However, a growing support from the government for the cotton sector can be observed and an increase in the area can be expected.[290] Currently mainly simple and basis apparel items are being produced (T-shirts, trousers etc.) (see Info box **Cotton – production and material processing** in the previous chapter). Ethiopia is attractive for foreign firms because of the ongoing development of industrial parks, tax exemptions and cheap labour force. Problems that the firms face are a low development stage of the production sites (low productivity), educational gaps and poor governance.[291]
Figure 68 represents an exemplary (cotton) supply chain for Ethiopia related to the Tier level of the suppliers. Additionally, it shows that a higher creation of jobs is possible in lower Tier level (further from OEMs).

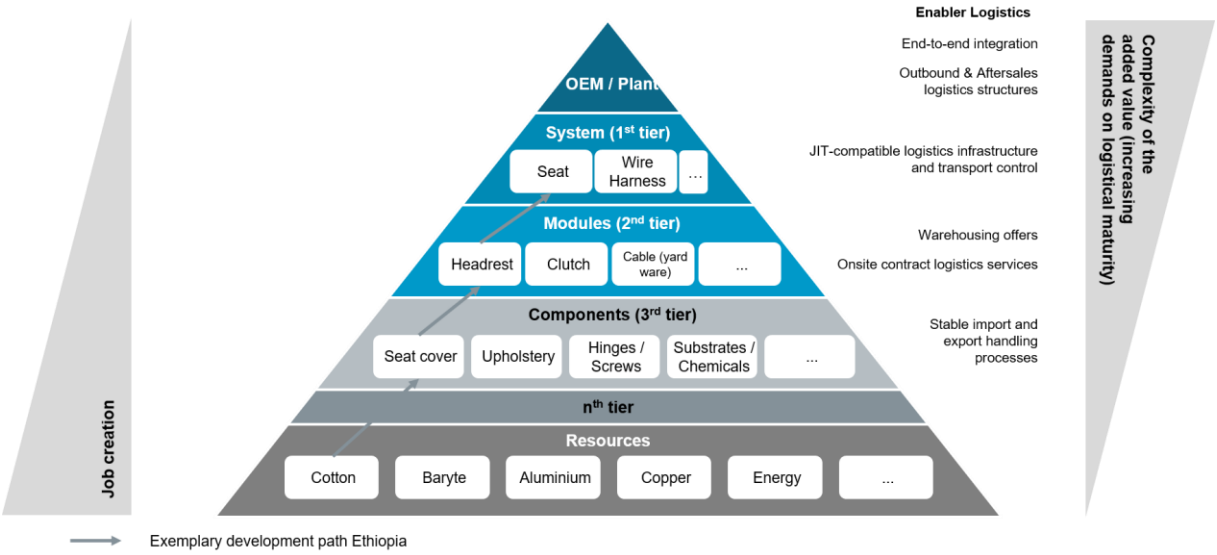

Figure 68: Exemplary integrative supply chain for Ethiopia (Source: PAMA workshop)

Another competitive light industry in Ethiopia is the **leather processing industry**. All important steps of the value chain are represented within the country, however local companies mainly produce processed leather. Further processing is done after the export.[292] Additionally an Ethiopian bovine (cattle leather) hide measures only around one m^2 and therefore larger leather elements can only be manufactured using several parts.[293] The reason is that *"[…] the hides of Ethiopian cattle must be separated in the middle of the back for further processing due to the pronounced deformation caused by the protruding spine."*[294] No information regarding the competitiveness and size of the companies are given.

[288] Source: Expert interview (AHK ET 2020).
[289] Source: Expert interview (AHK ET 2020 – Report Textile Sector).
[290] Ibid.
[291] Source: Expert interview (AHK ET 2020).
[292] Source: McKinsey (2020).
[293] Ibid.
[294] McKinsey (2020).

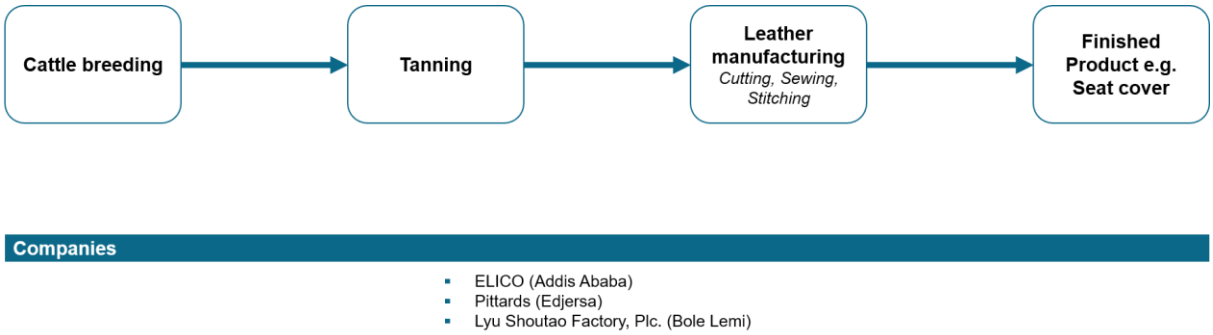

Figure 69: Possible Leather value-chain in Ethiopia (Source: own representation)[295]

With focus on the two analysed value chains – **cotton and leather** – Ethiopia can be stated as a country with high potential to take over important steps of the production of seats covers. However**, textile manufacturing companies** need to adapt production processes and training programs to improve the skills of the work force and meet the needs of the industry.[296]
As a result of the analysis for Ethiopia the following Figure 70 shows possible components to be sourced from Ethiopia short- or medium-term. A detailed analysis of the different components is shown later in Figure 77 to Figure 82.

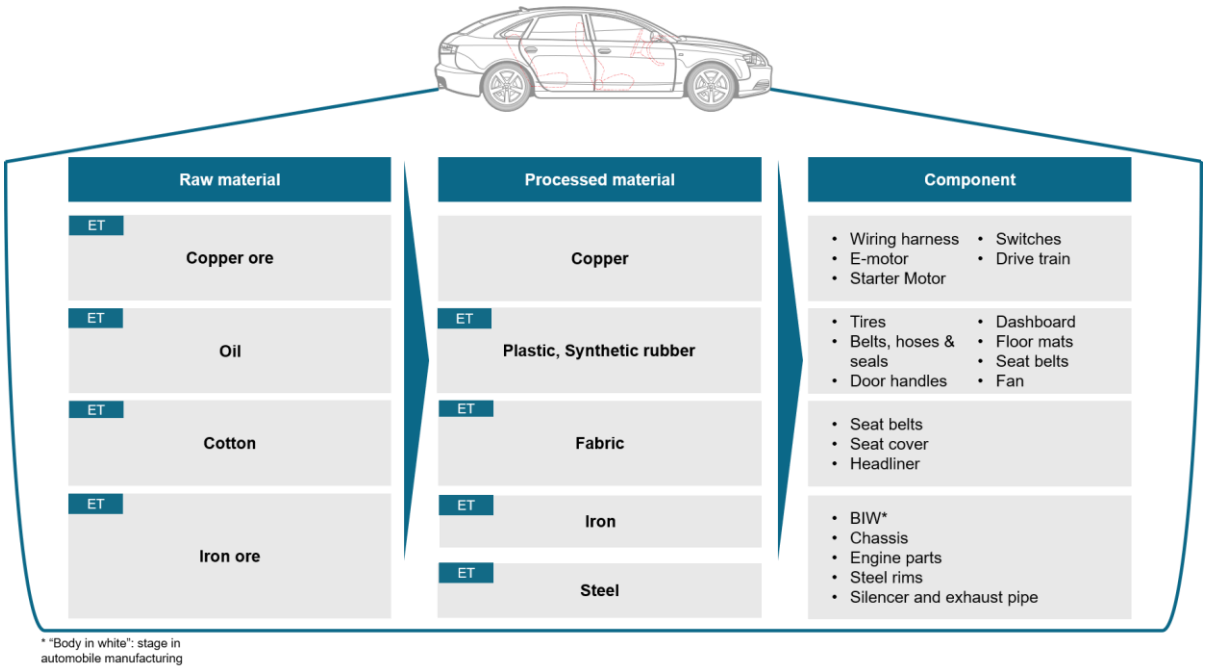

Figure 70: Result Ethiopia - Analysis of possible components based on material deposits within the country (Source: own representation)[297]

[295] Information from ELICO (n.d.), McKinsey (2020), Pittards (n.d.).
[296] Sources: Expert interview (AHK ET 2020 – Report Textile Sector), Expert interview (GIZ ET 2020), McKinsey (2020).
[297] Sources: u.a. Continental (n.s.), Fentahum/ Savaş (2018), Geroge (n.s.), Maverick (2020), Schulte (2019), Wirtschaftswoche (2018).

Possible components in Ghana

Within the country only one automotive component manufacturer exists, and the automotive industry only assembles SKDs kits. Therefore, the focus was not on analysing the current state of automotive manufacturing.[298] It is important to mention that at current state not for all identified components (Figure 74) a mentionable production is located within Ghana. Therefore, only the most promising components are part of the following analysis.

Ghana is the 17th largest producer of **rubber**[299], therefore a detailed analysis of the rubber value chain (Figure 71) was conducted. Except "Manufacturing", all major steps are represented within Ghana, however the harvested natural rubber is reserved for Michelin (Ghana Rubber Estates Ltd. for example is a French monopole).[300]

The business case consists in providing financial resources to farmers and in reverse the debts must be paid off by supplying rubber.[301] In the past a tire factory was present but was closed due to the limited market share.[302] With regard to the limited market shares tire companies will only settle down when the market grows. For instance, increasing the value-added actions within Ghana and the settlement of an OEM is crucial. Secondly, important components for the tire production (carbon black) need to be imported.[303]

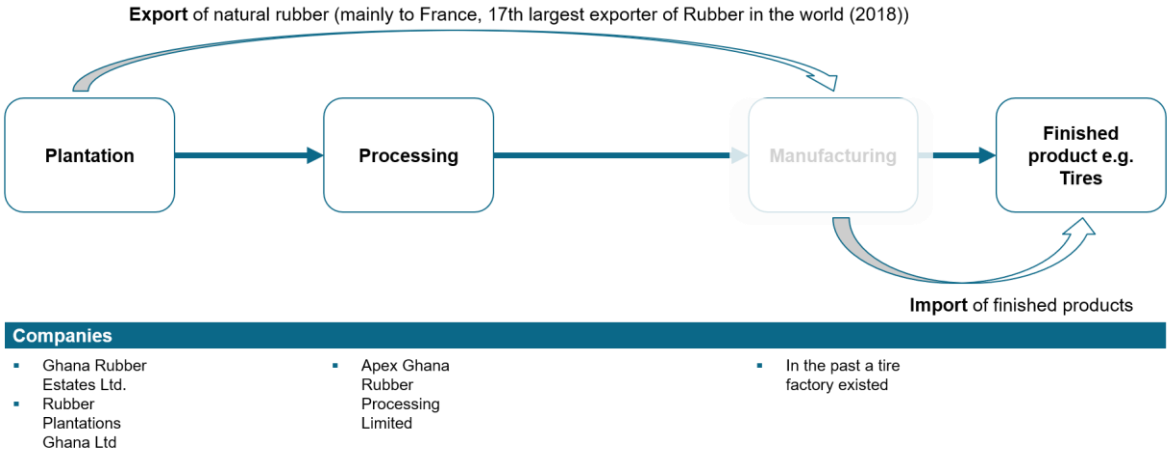

Figure 71: Possible Rubber value-chain in Ghana (Source: own representation)[304]

Aluminium is produced out of Bauxite, which is represented in a high quantity within Ghana.[305] The analysis of the value chain (Figure 72) showed that nearly all steps are represented within the county, but not in an integrated manner.[306] The bauxite mining is mainly controlled by Chinese companies.[307] Other general problems which need to be faced are the **lack of alumina plants, unstable electricity supply and poor logistical infrastructure**. The unstable electricity supply is a major problem, since the

[298] Source: Expert interview.
[299] Source: OEC (2018).
[300] Sources: Expert interview (AHK GH 2020), GREL (n.d.).
[301] Ibid.
[302] Source: Expert interview (AHK GH 2020).
[303] Source: Expert interview.
[304] Sources: Agribiz (2017), Apex (n.d.), Expert interview (AHK GH 2020), GREL (n.d.), Halcyon (n.d.), OEC (2018).
[305] Source: Ghana Chamber of Mines (2019).
[306] Source: e.g. GIADEC (n.d.).
[307] Source: Aluminium Insider (2020), Expert interview (AHK GH 2020).

refining of bauxite to produce alumina (Bayer process) needs a large amount of energy – for that reason companies like VALCO have not enough energy available to operate all possible production lines.[308] The government of Ghana follows the plan to increase value adding actions within the country, as result the "Ghana Integrated Aluminium Development Corporation (GIADEC)" was established in August 2018, through Act of Parliament.[309] The company has the goal to promote and develop an integrated aluminium industry through the expanding of existing operations in bauxite mining and aluminium smelting and introduction of alumina refining within the country.[310]

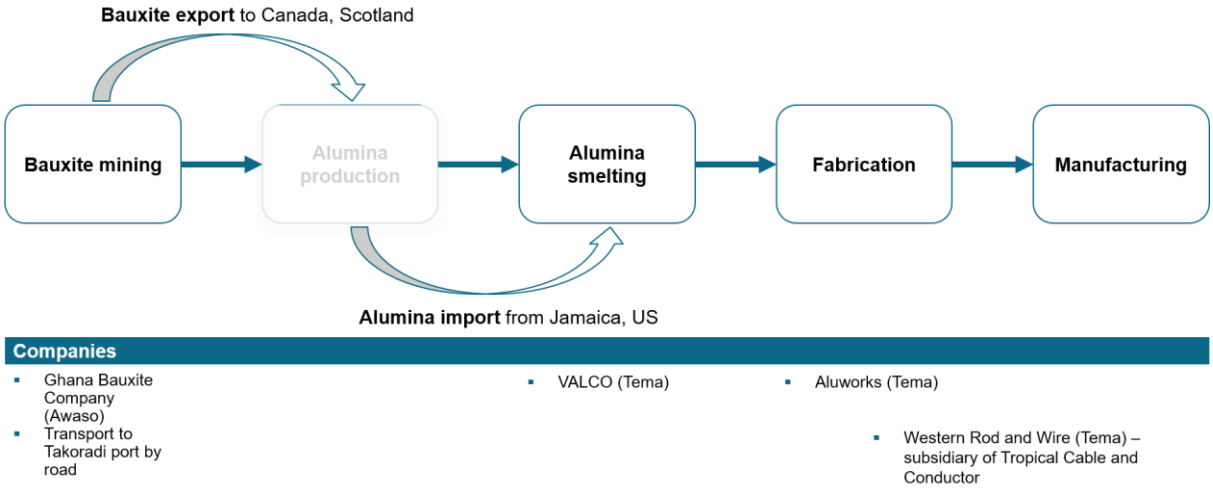

Figure 72: Possible Aluminium Value-chain in Ghana (Source: own representation)[311]

A third promising raw material is **oil**, which can be used to produce **plastic** (value chain, Figure 73). In Ghana mainly foreign firms are exploring and extracting oil using offshore platforms.[312]
In 2018 the second most exported good in Ghana was crude oil, which can be explained with the poor refinery infrastructure. At current state **only two refineries** are located in Ghana.[313] No information is given whether synthesis can be done or not in the country. Due to the oil reserves, the presence of plastic manufacturers and lack of alignment to the automotive market, Ghana may offer a potential in the future to produce plastic components for the automotive sector. However, the lack of a competitive oil refinery infrastructure led to major import of refined petroleum (most imported good in 2018[314]). The competitive knowledge to process plastic is existing as local companies like Decorplast (company in Accra which produces houseware) or Duraplast (company which is specialized in the production of plastic pipes) show.[315] Only the lack of orientation to the automotive sector hinders a short-term integration in the automotive value chain.

[308] Source: Valco (n.d.).
[309] Source: GIADEC (n.d.).
[310] Ibid.
[311] Information from Aluworks (n.d.), Fonnov (n.d.), Hulamin (2017), OECD (2019), Valco (n.d.), Westernrod (n.d.).
[312] Source: e.g. ReportingOilAndGas (n.d.).
[313] Sources: Ghana Web (2020), OEC (2018), PlatonGasOil (n.d.), Tor (n.d.).
[314] Source: OEC (2018).
[315] Sources: Decorplast (n.d.), Durplast (n.d.).

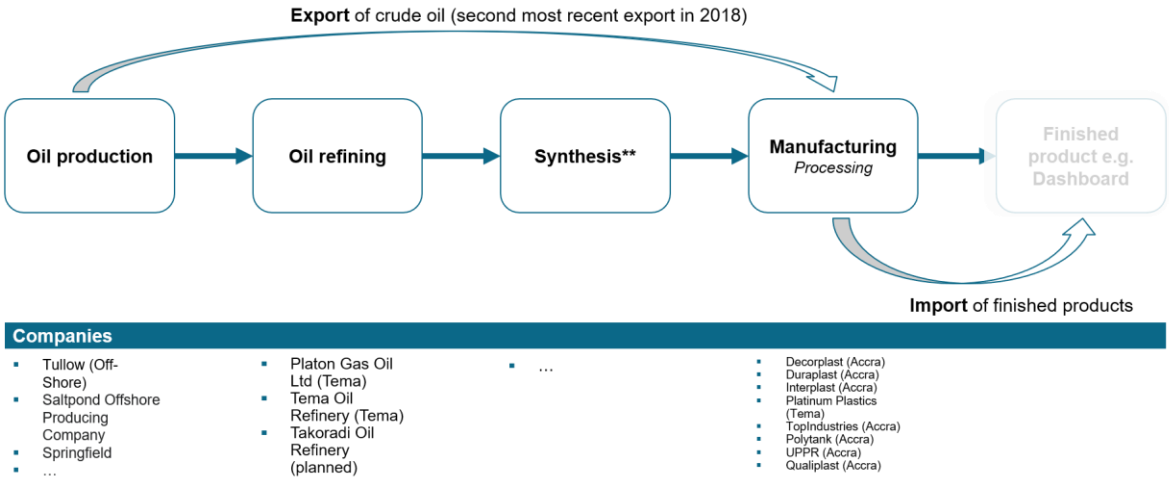

Figure 73: Possible Plastic value-chain in Ghana (Source: own representation)[316]

As a result of the analysis for Ghana the following Figure 74 shows possible components to be sourced from Ghana short- or medium-term. A detailed analysis of the different components is shown later in Figure 77 to Figure 82.

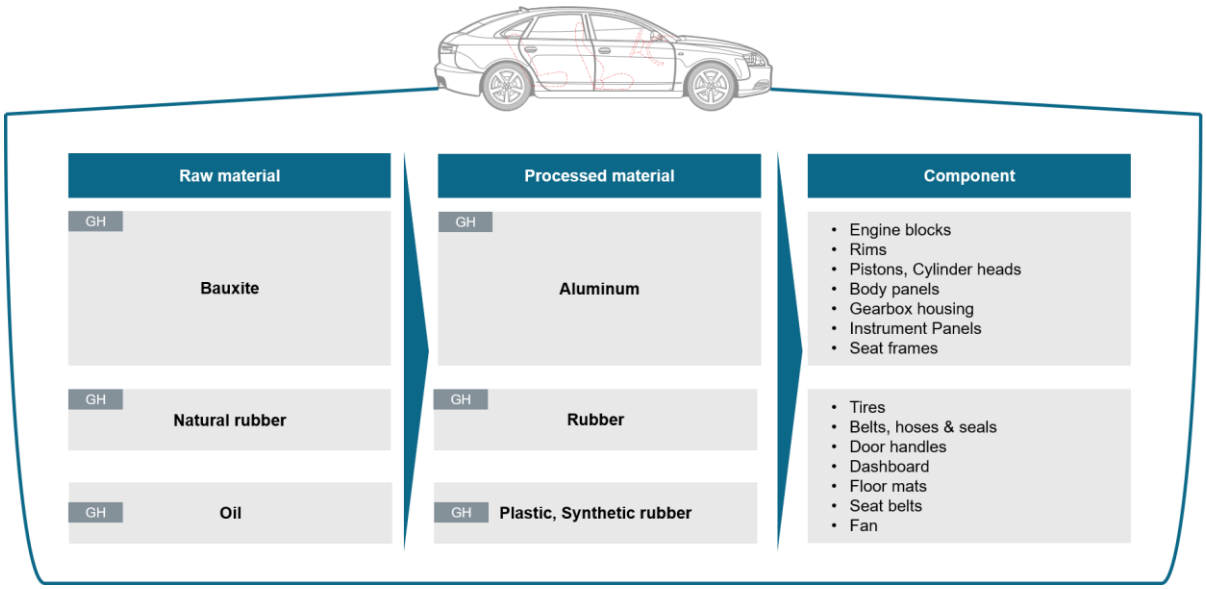

Figure 74: Result Ghana - Analysis of possible components based on material deposits within the country (Source: own representation)[317]

Possible components in Morocco

Morocco serves as an automotive hub in Africa and as extended workbench (competitive labour cost with good skill level of workforce) mainly for French OEMs, which have

[316] Information from ACC (n.d.), Decorplast (n.d.), Duraplast (n.d.), GEPA (n.d.), GNPC (n.d.), Grosdidier (2019), Hydrocol (2018), Interplast (n.d.), Lexology (n.d.), OEC (2018), PlasticsEurope (n.d.), PlatinumPlastics (n.d.), SpringfieldGroup (2019), TakoradiOilRefiniery (n.d.), Tor (n.d.), TullowOil (n.d.), UPPR (n.d.), Qualiplast (n.d.).

[317] Sources: u.a. Continental (n.s.), Fentahum/ Savaş (2018), Geroge (n.s.), Maverick (2020), Schulte (2019), Wirtschaftswoche (2018).

production sites in Kenitra and Tangier. As a result, Tier-1 suppliers (primarily European) are presented within the country. However, needed supply parts from Tier-2 suppliers are currently mostly imported from Europe.[318] It is worth mentioning that other industries also play an important role in Morocco, mainly driven by the implementation of industrial parks and the Industrial Acceleration Plan. For instance, the aviation industry serves as flagship sector for Morocco, and electronics industry also is well established.[319] Raw material export on the other side do not play an important role in the country or on the political agenda[320]. Therefore, the following will not focus on this approach and will primarily analyse the automotive and other industries that are already well established within Morocco.

Regarding the represented automotive industry, and the low local supply with mostly Tier-1 suppliers in Morocco, a suitable approach is the establishment of local Tier-2 to Tier-n and sourcing from Morocco (see Figure 75).[321] With this approach a higher number of value-added actions can be conducted within the country. For instance, companies (Tier-1) like Kromberg&Schubert, Leoni, Delphi, Lear and Aptive are already represented in the Moroccan automotive market.[322] In the case of Kromberg&Schubert around seven of their European suppliers are also located in Morocco. Other suppliers within the country are a Moroccan company named Taico, which produces harnesses, and Coffee cup, a Tunisian company with a production site in Morocco.[323]

Derived from an expert interview, a possible further path implicates a business case analyses and more in-depth market research. Given that possible synergy effects and a critical mass for investment are present.[324]

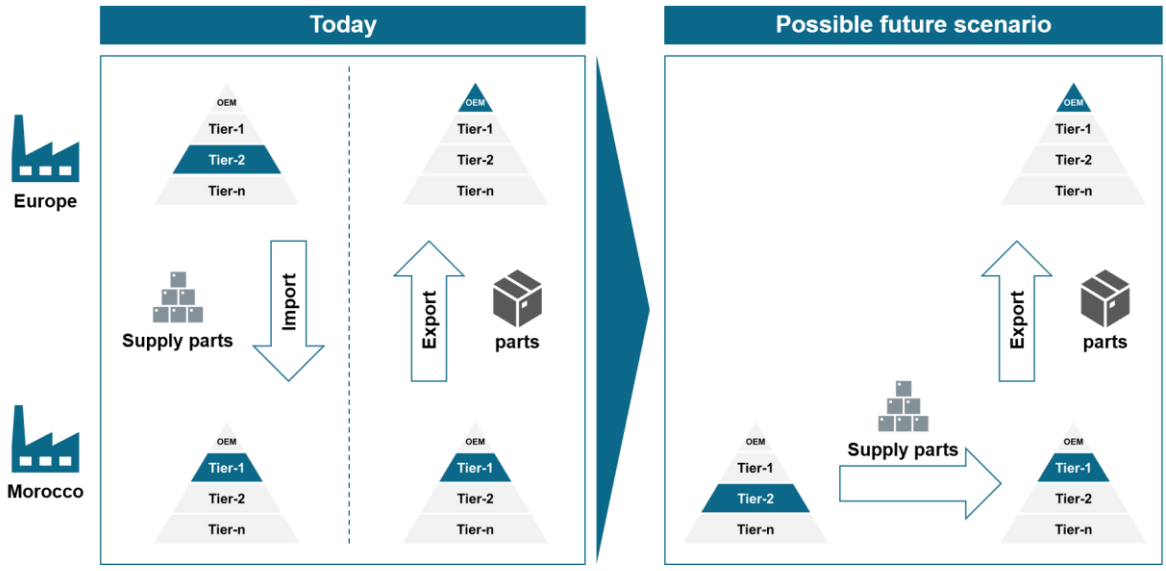

Figure 75: Establishment of local Tier-2 suppliers for the automotive industry (Source: own representation)

[318] Source: Expert interview (AHK MA 2020).
[319] Ibid.
[320] Source: Expert interview (AHK MA 2020).
[321] Ibid.
[322] Source: Expert interview (Kromberg&Schubert 2020).
[323] Ibid.
[324] Ibid.

A second interview provided similar approaches in the field of coating.[325] Local suppliers like Colorado and Atlas are already present but not integrated in the automotive coating value chain. Therefore, 20 – 30 % of added value could be transferred to Morocco.[326] For the suppliers the major problem to establish a local production is the lack of critical mass. This would be rather possible if the goal to produce one million cars per year is reached (see political agenda Morocco).[327] Therefore, in further steps measures need to be conducted to achieve that goal. However, the local suppliers face other challenges[328] like lack of technical expertise in product specification, funding to get their product approved by the OEM, and the access to European market.
For instance, a possible candidate like **Colorado**, a Moroccan production company for paints and varnishes, can be supported to adapt the product portfolio to add a focus on automotive components like automotive coating.[329] To implement a local production for the automotive industry, the companies need support in the elaboration of automotive products (transfer of know-how), access to OEMs (e.g. references) and initial support for ramp-up.[330] Following the approach allows the creation of jobs with settlement of Tier-2 (till Tier-n) suppliers with a production in Morocco.

Other Moroccan industries like the **aviation industry** have high technical know-how and quality level. In addition to that the industry faces uncertainties due to Corona.[331] Therefore, motivations are given to develop alternative use cases for companies settled within the sector. A possible approach is the usage of production sites, technical know-how and skilled labour force to produce supply parts for the automotive sector.

Figure 76 represents the existing supplier structure of the OEMs Renault and Somaca in Morocco based on a study conducted by Soliman Conseil[332] for textile products like seat covers.

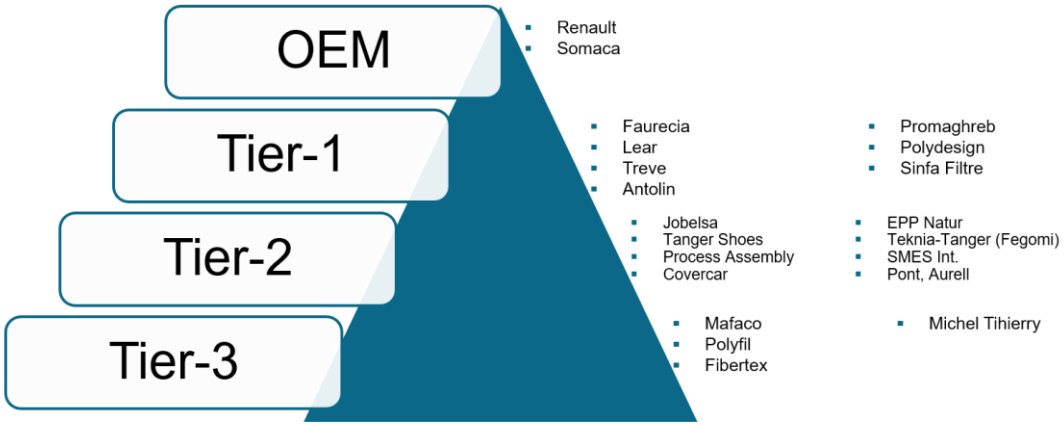

Figure 76: Possible Suppliers - Textile Morocco (Source: own representation)[333]

[325] Source: Expert interview (BASF 2020).
[326] Ibid.
[327] Ibid.
[328] Source: Expert interview (BASF 2020).
[329] Sources: Expert interview (BASF 2020, Colorado 2020).
[330] Source: Expert interview (Colorado 2020).
[331] Source: Expert interview (AHK MA 2020).
[332] Source: Soliman Conseil (2018).
[333] Based on information of Soliman Conseil (2018).

The automotive sector is structured around Renault and export markets to Europe and seven Tier-1 suppliers for textile products are located within the country.[334] The identified Tier-1 suppliers source materials from eight Tier-2 and four Tier-3 suppliers. However, this is exemplary and does not represent a comprehensive market overview.[335] Regarding this information it can be derived that suppliers with high maturity level and focus on automotive sector are already present within Morocco, therefore a possible integration in other OEMs supply chains can be a possible next step.

Results: Component short list

As result of the component analysis a short list was conducted and is presented in the following Figures. Figure 77 represents the classification of the components in the purchasing structure of OEMs. Figure 78 to Figure 82 present the evaluation based on different criteria (their explanation can be found in the previous chapter “Component short list”). Based on these findings promising components for deeper research can be derived. For a better and easier comparison between the identified components a **qualitative** (ordinal) scale was selected. The scale includes **low**, **medium**, and **high**. Some criteria include a binary (**yes/no**) scale, and the take rate uses a **quantitative** (metric) scale. Countries were identified based on available raw material resources (see chapter “Identified options for each country” for detailed information).

Commodities, Material groups and identified components

Commodity	Material group	Component
Electronics	Electr. pump, mechn. pump, water pump etc.	Fuel pump
	Electr. pump, mechn. pump, water pump etc.	Pump (others)
Exterior	Tires	Tires
	Rims	Alu Rims
	Rims	Steel rims
	Plastic pipe	Pipe
	Plastic fuel tank	Fuel tank
General	Belts, hoses & seals	Belts, hoses & seals (Rubber)
	Exhaust system	Silencer and exhaust
	Switches	Switches
	Brakes	Brakes
	Brake pads	Brake pads

[334] Source: Soliman Conseil (2018).
[335] Ibid.

Commodity	Material group	Component
General	Brake disc	Metal Brake discs
	Brake hose	Plastic hoses
		Electromechanical brake booster
	Fuel/Servo hoses	Fuel hoses
	Electric Steering	Electric steering
Interior	Safety belts	Seat belts
	Covers	Seat cover
	Moulded headlining	Headliner
	Door handle (inside)	Door handles
	Covers	Instrument panels
	Seat Subassemblies	Seat frames
	Covers	Dashboard
	Covers	Floor mats
	Steering wheel	Plastic steering wheel
Metal	ALUMINIUM CASTINGS BODY-WORK	Body panels
		BIW
		Chassis
	Gas springs, shock absorbers	Springs and Absorbers
	Chassis bearing (wheel bearing)	Wheel bearing
Powertrain	Light metal casting	Engine blocks
	Light metal cast cylinder heads, Piston	Pistons, Cylinder heads
	Gearbox	Gearbox housing
	Iron cast engine parts	Engine parts
		Wiring harness
		E-motor
	Starter	Starter motor
	Cooler	Fan
		Drive train

Figure 77: Classification of identified components in the purchasing structures of OEMs (Source: own representation)

Strategic evaluation of the identified components

Component	Country	Capital intensity	Labour share	Labour skill level
Fuel pump	ET	High	medium	high
Pump (others)	ET	high	medium	high
Tires	ET, GH	high	low	high
Alu Rims	GH	high	low	medium
Steel rims	ET	high	low	medium
Pipe	ET	medium	medium	medium
Fuel tank	ET, GH	high	medium	low
Belts, hoses & seals (Rubber)	ET, GH	medium	medium	medium
Silencer and exhaust	ET	medium	medium	medium
Switches	ET	medium	medium	medium
Brakes	ET	high	medium	medium
Brake pads	ET	high	medium	medium
Metal Brake discs	ET	high	medium	medium
Plastic hoses	ET, GH	medium	medium	medium
Electromechanical brake booster	ET	medium	medium	high
Fuel hoses	ET, GH	medium	medium	medium
Electric steering	ET	high	medium	high
Seat belts	ET	low	medium	medium
Seat cover	ET	low	high	low
Headliner	ET	low	high	low

Figure 78: Identified components and their strategic evaluation (I) (Source: own representation)

Component	Country	Capital intensity	Labour share	Labour skill level
Door handles	ET, GH	low	medium	medium
Instrument panels	GH	medium	high	medium
Seat frames	GH	medium	medium	medium
Dashboard	ET, GH	high	high	medium
Floor mats	ET, GH	medium	medium	low
Plastic steering wheel	ET, GH	medium	low	low
Body panels	GH	medium	medium	low
BIW	ET	high	medium	high
Chassis	ET	high	medium	high
Springs and Absorbers	ET	medium	medium	medium
Wheel bearing	ET, GH	high	medium	high
Engine blocks	GH	high	medium	high
Pistons, Cylinder heads	GH	high	low	medium
Gearbox housing	GH	high	low	medium
Engine parts	ET	high	medium	high
Wiring harness	ET	low	high	low
E-motor	ET	high	medium	high
Starter motor	ET	medium	medium	high
Fan	ET, GH	high	medium	medium
Drive train	ET	high	medium	high

Figure 79: Identified components and their strategic evaluation (II) (Source: own representation)

Evaluation of identified components: Demand

Component	Take rate	Packaging density	Only automotive?	Local market?	Aftermarket potential
Fuel pump	1	middle	no	yes	middle
Pump (others)	many	middle	no	yes	middle
Tires	4	middle	no	yes (ET)	high
Alu Rims	4	middle	yes	yes	middle
Steel rims	4	middle	yes	yes	high
Pipe	many	high	no	yes	middle
Fuel tank	1	low	no	yes (ET)	low
Belts, hoses & seals (Rubber)	many	high	no	yes	high
Silencer and exhaust	1	high	yes	yes	high
Switches	many	high	no	yes	high
Brakes	4	middle	no	yes	middle
Brake pads	8	high	no	yes	high
Metal Brake discs	4	high	no	yes	high
Plastic hoses	many	low	no	yes	high
Electromechanical brake booster	1	middle	no	no	middle
Fuel hoses	many	high	no	yes	high
Electric steering	1	low	no	yes	low
Seat belts	5	high	no	yes	middle
Seat cover	5	middle	no	yes	high
Headliner	1	middle	no	yes	low

Figure 80: Identified components and their demand evaluation (I) (Source: own representation)

Component	Take rate	Packaging density	Only automo-	Local market?	Aftermarket potential
Door handles	4	high	no	yes	middle
Instrument panels	1	low	yes	yes	low
Seat frames	5	middle	no	no	middle
Dashboard	1	low	yes	yes	low
Floor mats	4 to 5	high	no	yes	high
Plastic steering wheel	1	high	no	yes (ET)	middle
Body panels	~19	low	no	yes	high
BIW	1	low	yes	no	low
Chassis	1	low	yes	yes	low
Springs and Absorbers	Min. 4	middle	no	yes	low
Wheel bearing	many	high	no	no	low
Engine blocks	1	low	yes	no	low
Pistons, Cylinder heads	3 to 6	middle	no	no	middle
Gearbox housing	1	middle	yes	no	low
Engine parts	many	middle	no	no	middle
Wiring harness	many	high	no	yes	low
E-motor	1	low	no	no	middle
Starter motor	1	middle	no	no	high
Fan	many	high	no	yes	high
Drive train	many	middle	yes	no	low

Figure 81: Identified components and their demand evaluation (II) (Source: own representation)

Evaluation identified components: Supply and Supply chain

Component	Quality standard	Tier-X part
Fuel pump	high	1 to n
Pump (others)	high	1 to n
Tires	high	1
Alu Rims	middle	3
Steel rims	middle	3
Pipe	middle	3
Fuel tank	high	1 to n
Belts, hoses & seals (Rubber)	high	3
Silencer and exhaust	high	1
Switches	middle	3
Brakes	high	1
Brake pads	middle	2
Metal Brake discs	high	2
Plastic hoses	high	3
Electromechanical brake booster	high	1 to n
Fuel hoses	high	3
Electric steering	high	1 to n
Seat belts	high	3
Seat cover	middle	3
Headliner	middle	2
Door handles	middle	2
Instrument panels	middle	1
Seat frames	high	2
Dashboard	middle	1
Floor mats	low	3
Plastic steering wheel	high	1 to n
Body panels	high	2
BIW	high	OEM/1
Chassis	high	1

Component	Quality standard	Tier-X part
Springs and Absorbers	high	1 to n
Wheel bearing	high	1 to n
Engine blocks	high	2
Pistons, Cylinder heads	high	3
Gearbox housing	high	2
Engine parts	high	2
Wiring harness	high	1 to n
E-motor	high	1
Starter motor	high	1 to n
Fan	middle	3
Drive train	high	OEM/1

Figure 82: Identified components and their supply (chain) evaluation (Source: own representation)

Promising components

Components that are suitable to be produced in the focus countries, especially Ethiopia and Ghana, follow the argumentation line that mainly labour-intensive manufacturing process, which do not require a high skill level, are shifted to low-wage countries to gain a competitive advantage. A summary of the most promising components at a current state is given in Figure 83.

Therefore, possible components for **Ethiopia** are seat covers, headliners and wiring harnesses. All three components have a **low capital intensity** and **labour skill level** and are **labour-intensive**. In combination with a competitive textile industry these components can be produced within the country. **Ghana**´s bauxite reserves are predestined for the manufacturing of aluminium components. For instance, body panels and seat frames are possible components with a **medium labour share** and **medium needed labour skill level**. Additionally, **medium capital intensity** implies a lower primary investment. With a **potential local (after-) market** and higher production rates in Ghana a production will be suitable. However, due to the **low/middle packing density** an only exported oriented production may not be profitable.

For Morocco, it was already possible to identify and analyse specific local suppliers with whom possible pilot projects could be started. The concrete options are described in the following chapter.

Africa has a high potential to serve as a reliable supplier for the automotive industry. Besides the identified components other “standard” components are also suitable for a production in the focus countries (multi-sourcing strategy). Based on the shortlist additional components can be selected. In general, detailed feasibility studies are necessary to identify further needs.

Country	Possible components
Ethiopia	Seat covers Headliner Wiring harness
Ghana	Body panels Seat frames
Morocco	See next chapter

Figure 83: Summary of promising components (Source: own representation)

Supplier analysis

The component analysis has shown that Morocco offers already a well-established automotive industry and was therefore chosen for the deeper analysis of possible supplier structures. Based on local contacts from PAMA (automotive industry) and the AHK Morocco companies were identified that 1. already are automotive suppliers or 2. are interested to work with the automotive industry and were motivated to cooperate. However, the current situation hinders on-site validation of identified companies. In cooperation with the AHK Morocco and the Moroccan companies a virtual audit was conducted. As result of the supplier analyses, **company profiles** were created and in addition challenges and potentials were derived to **identify possible next steps**.

Company profile: Colorado

One of the identified companies, Colorado, is a **manufacturing company** in the field of **paints, coating, and varnishes**. Currently no integration in the automotive value chain is present, but automotive refinish paints (sold to local workshops) already are in the product portfolio. Regarding to the company representatives the lack of know-how automotive product specifications, requirements and certifications, and references are currently hindering the company to enter the automotive market as a supplier. To enter the automotive supplier market a committed minimum guarantee of sales is crucial.

Company profile	Colorado
Moroccan **manufacturing company**, specialized in **production and distribution of various types of paints, coatings, and varnishes** **Only public company in Morocco for coating**	
Products	- building paints - **automotive refinish paints (bodywork and repair)** - industrial/ ecological/ functional paints
Sales (2019)	EUR 50 Mio.
Employees (2019)	471
Production and logistics sites	- 5 laboratories (3 R&D, 2 Quality Control) - 2 plants (Ain Sebaa & Dar Bouazza, max. capacity of 100 thousand tons a year) - Logistics platforms (Casablanca, Dar Bouzza, Ain Sebba, Kenitra) ○ Distribution of more than 45 thousand tons a year
Certifications	- ISO 9001 - ISO 26000 - ISO 14001 - ISO 45001 - COFACE @@@ Rating - ECOLABEL - OHSAS 18001
Possible approaches	Add a product focus on automotive coating: - Additives - Resins - Anti-corrosives
Challenges	**General** - OEM paint supplied by 5 big players over the world - A lot of sales need to be insured in order to build and maintain plant - No plant in Africa

	Colorado
	- Know-how of
	  ○ Automotive product requirements
	  ○ Product specifications and certification support
	- No references for automotive
	- Committed minimum guarantee of sales (before research and investment)

Figure 84: Company profile - Colorado (Source: own representation)

The following images (Figure 85 to Figure 88) illustrate the production and storage of the products.

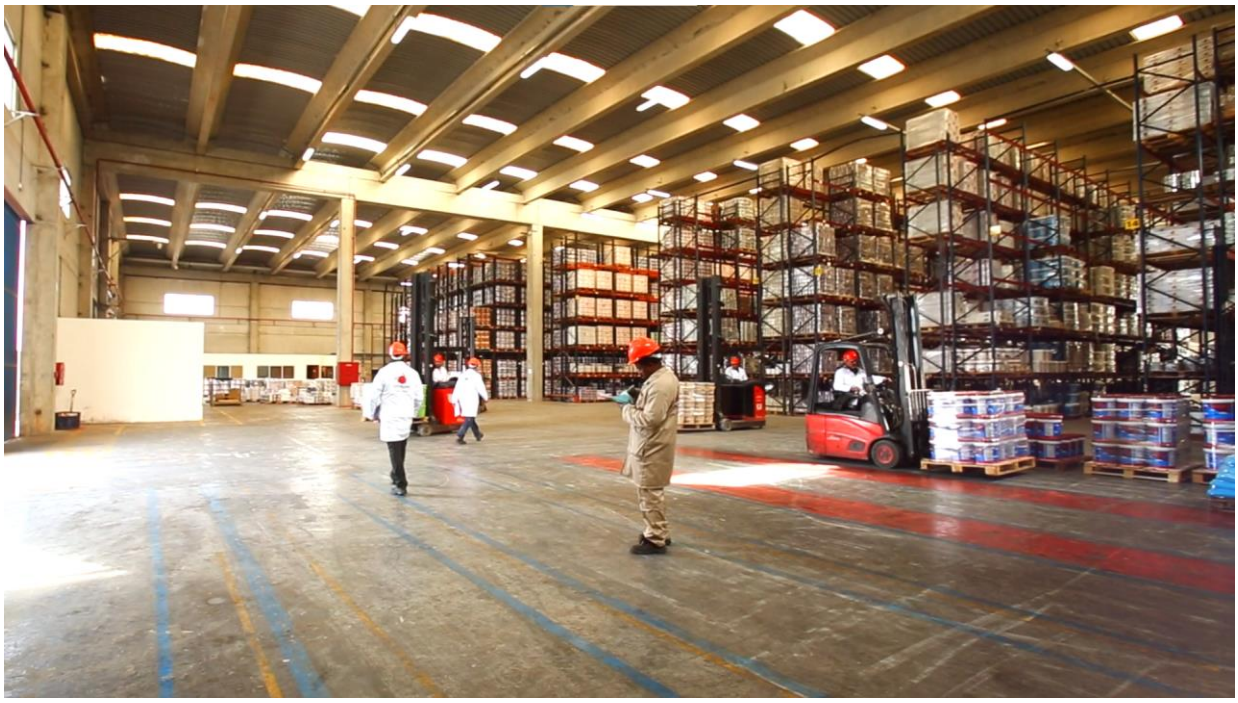

Figure 85: Colorado warehouse (Source: Colorado)

Figure 86: Packaging at Colorado site (Source: Colorado)

Figure 87: Colorado Production I (Source: Colorado)

Figure 88: Colorado Production II (Source: Colorado)

Company profile: ITMC

ITMC is a consulting company in the field of automotive and start-up industry with an own production unit for automotive tools, tool design and precision engineering workshop. They work together with several other local companies regarding consultation on improvement processes, quality and market access which gives them a broad network of local Tier-n suppliers (automotive and other industries) with a motivation to expand into new markets.

Company profile	ITMC
Moroccan **consulting company**, specialized in **automotive and start-up industry consulting,** has **own production unit** for tools **Only public company in Morocco for coating**	

Business segments	- Consulting:
	  ○ Strategy
	  ○ Technologies 4.0
	  ○ Business Development
	  ○ Operational Excellence
	- Interim Management (Management de Transition)
	  ○ Strategic management
	  ○ Operational Management
	  ○ Positions
	  ○ Management Relay
	- Precision mechanics and toolmaking
	  ○ Maintenance
	  ○ Conception
	  ○ Realisation, Setting

Sales	EUR 93.620 (MAD 1.000.000)
Employees	14 (incl. 6 freelancer and 5 mechanics)
Technical equipment	- Mikron Milling Machine / Victor Lathe / Single Precision & Jones & Shipman Surface Grinders / Lifting Crane 1.250kg - CAS/CAM/CFAO-Software
Certifications	- …
Possible approaches	- …
Challenges	- … - …

Figure 89: Company profile - ITMC (Source: own representation)

The following Figure 90 summarizes the audit results. The audit was structured in the categories **Customer orientation and process understanding** (Part I), **Logistics and IT** (Part II), and **Management and Employees** (Part III).

On-Site Audit	ITMC
Customer Orientation	
Understanding of the customer´s request	Customer need understanding procedure existent Questionnaire for CR manager

Measurement & Improvement of customer satisfaction	Customer complaint processing procedure Steps: - Centralized & personalized complaint management - Standardisation processing of types of complaints
Product and Processes	
General product development & introduction	**Product offer formulation procedure** 1. Framework of the service offer 2. Description of the approach and the work 3. Member of the team of consultants 4. Cost estimate 5. Work schedule 6. The deliverable 7. Contractual conditions 8. Design and manufacture of precision tools 9. Engineering of automated system
General process development & implementation process	**Procedure: Presenting customer offer** 1. Company presentation 2. The approach adopted to identify customer needs 3. Overview of the business sector and the need of the company 4. Determination of the needs 5. The consolidation
Process control and production system	Design/Expression of need (Manufacturing agreement) → Production & manufacturing process→ Quality control (Delivery agreement)
Cleanliness, Order, Structure and Condition of machinery	**5S standard** implemented Old equipment but well maintained
Logistic process	
Supplier management	External experts for strategic and operation part used
Procurement of materials	Resources involved after customer order (mainly because of specificities of both activities Consulting and Engineering)

Quality management	
Quality Management system and control	Evaluation forms used for evaluation of program training Engineering: Result culture, product delivered only with customer acceptation
Occupational safety and environmental standards	
Occupational safety training and guidelines	5S Standard Protective equipment for employees, sensibilized to safety behaviours/accident prevention
Leadership and Employees	
Employee qualification measures, continuous improvement	Continuously done
General skill level of labour force	Highly qualified

Figure 90: Extract of on-site validation questionnaire ITMC (Source: own representation)

Company profile: [PLACEHOLDER] Additional companies

At the time of submission of this study, not all information were available. There are other companies within the process of the audit. However, the current situation hinders the possibility of full on-site visits. All outstanding information will be provided as soon as possible.

Company profile	[PLACEHOLDER]
[Short company description]	
Business segments/Products	○ …
Sales	EUR XX
Employees	XX
Technical equipment	- …
Certifications	- …
Possible approaches	- …
Challenges	- …
	- …

Figure 91: Company profile – [PLACEHOLDER] (Source: own representation)

The following summarizes the audit results. The audit was structured in the categories **Customer orientation and process understanding** (Part I), **Logistics and IT** (Part II), and **Management and Employees** (Part III).

On-Site Audit	[PLACEHOLDER]
Customer Orientation	
Understanding of the customer´s request	
Measurement & Improvement of customer satisfaction	
Product and Processes	
General product development & introduction	
General process development & implementation process	
Process control and production system	
Cleanliness, Order, Structure and Condition of machinery	
Logistic process	
Supplier management	
Inbound and outbound process	
Procurement of materials	
IT	
Availability of IT infrastructure	
IT Interfaces to other companies	
Quality management	
Quality Management system and control	
Occupational safety and environmental standards	
Occupational safety training and guidelines	
Certification of environmental management system	

Leadership and Employees	
Employee qualification measures, continuous improvement	
General skill level of labour force	

Figure 92: Extract of on-site validation questionnaire [PLACEHOLDER] (Source: own representation)

Next steps

The study analysed the general conditions in the three focus countries and identified possible components that could be manufactured within. As desk research has its limitations, some questions could not be sufficiently answered (see Figure 93). To further close the gap in further studies or projects, a detailed analysis of the identified topics is recommended.

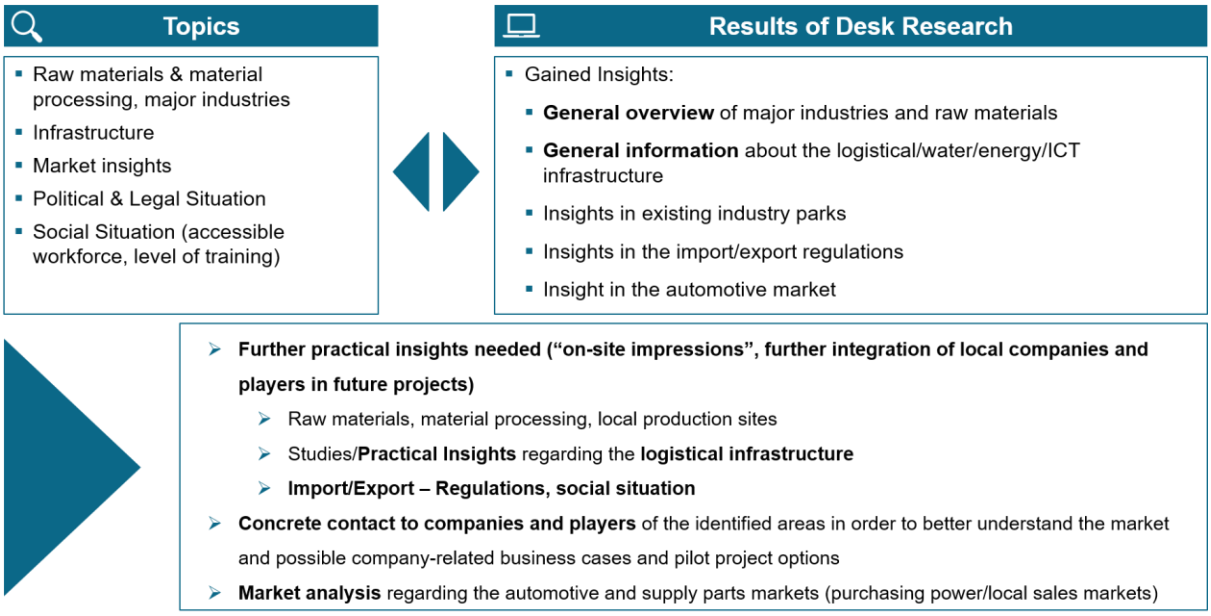

Figure 93: Information gaps – country analyses (Source: own representation)

Additionally, the identified companies within the component analysis need to be further inspected to verify the information and on-site visits are recommended to gain full information on the development level and capacities (information gaps of the component analysis). Especially Morocco is predestined for on-site visits to close the gap within the supplier analysis. For Ethiopia and Ghana in a previous step a better information network within the countries is needed to identify promising companies for detailed analyses and later on-site visits.
Despite the limitations, the main findings regarding the component analysis are:

The **Ethiopian** market is a promising market in the future, at current state **no mentionable automotive industry** is represented within the country. Therefore, the key focus of the component analysis was the analysis of related industries that can be used for the integration in the automotive value chains. The analysis has shown that the **textile sector** is the most promising industry as it already has a high relevance, and many companies (e.g., Almeda Textile, Shints ETP Garment, DBL Group) maintain production sites within the country. Therefore, **seat cover** could be manufactured in Ethiopia. Detailed insights have shown that many problems need to be addressed in a first step. For instance, at current state the **low skill level of the labour force** and **development level of the production sites** are not sufficient to meet the requirements of the industry. Also, the bad infrastructure condition hinders the economic development. Additionally, the local cotton supply does not meet the market demand and the industry is depending on cotton imports. The mining industry has shown potential for the future, but additional investments are needed. In a next step, initiatives to support the educational and technical development are highly relevant. Additionally, a

more in-depth analysis of the local sites is vital to follow the approach to integrate the industries in the global automotive value chains further. Furthermore, the ongoing development of the logistics is crucial to be able to effectively achieve an integration.
Ghana has no mentionable presence of automotive suppliers and OEMs; a first step is given with the inauguration of the first SKD assembly plant by Volkswagen in August 2020. Therefore, the component analysis mainly focused on raw material deposits and related industries. One possible component that can be manufactured within the country are **tires**, mainly because of the **high presence of natural rubber** (Ghana is the 17th major rubber exporter of the world). Problems that need to be addressed are the **low demand** and **missing** tire **production sites** (in the past already one existed). Additionally, most of the **rubber is reserved** for Michelin, a French tire manufacture. A second option is to use of the local **aluminium** industry to produce various components (e.g., body panels, rims). However, an in-depth analysis has highlighted several obstacles: The main bauxite mining is controlled by Chinese companies, **no integrated aluminium industry** is given (the government already faces this problem with the GIADEC), **poor logistical infrastructure** hinders an efficient transport within the country and the **electric infrastructure** cannot sufficiently cover the demand, which is needed for stable alumina refining. A third option is the manufacturing of plastic components (like dashboards). Ghana offers high raw oil deposits near the coast and many foreign firms already extract oil. The analysis of the value chain has shown that currently Ghana´s **oil industry is export orientated** (raw oil) and offers a **wide range of plastic manufacturers** (mainly active in the fields of common goods) but only a **poor refinery infrastructure** is represented within the country. Therefore, in **next steps** initiatives (addressing all identified obstacles) are needed to provide a springboard for further endeavour by the automotive industry. When this is reached governmental incentives will succeed and a local market demand can be created. For example, Volkswagen may expand their local activities to have a higher share of value-added actions within the country.
Of the focus countries, **Morocco** is the most developed one and already has a notable automotive industry for mainly French OEMs (second largest production hub in Africa after South Africa). The country can be classified as workbench for European companies. Raw materials are also available in large quantities, but the focus of the study regarding Morocco was rather on the analysis of the automotive-related industry and already existing (automotive) suppliers with a high maturity level. The feasible approach is to support the **development of local companies** (e.g., product portfolio, certification) to supply parts for the automotive sector (Tier-n supplier). Within Morocco several suppliers with a high maturity level and possibility to serve as automotive suppliers is given. For instance, **Colorado** has been identified a possible supplier for the coating production of BASF. For the development, a market analysis is crucial and only achievable when a **critical mass of 1.000.000 cars per year** can be reached. When this is reached, value added actions can be transferred to Morocco. Another possible option is the **development of the aviation and electronic industry** as automotive suppliers. Both industries are characterized by a high technical know-how and quality requirements, which fits the automotive value chain. Especially the aviation industry is a strategic investment area of the Moroccan government but is currently facing demand uncertainties due to the Corona-crisis which leads to capacity flexibilities and a high motivation for alternative demand sources. For both approaches a further and detailed analysis of requirements and development paths is important.
Additional information about other companies is outstanding. For details see chapter “Company profile: [PLACEHOLDER] Additional companies”.

It is imported to implement the foundation with suppliers and skilled labour force for the later market entry of OEMs and Tier-1 suppliers. Therefore, the following steps can be summarised as:

- **Feasibility studies in cooperation with OEMs and suppliers:** Identification of further needs and detailed requirements as well as conducting an in-depth study suited to the specific companies and business cases.
- **In-depth analysis of local companies** and potential development of suppliers (e.g., Morocco)
- **Education and skill development** to meet the industries requirements (important for all countries)
- Implementation of **pilot projects**

All approaches depend on a sufficient local demand to reach the critical mass to develop the countries as automotive hubs. Possible approaches are the implementation of **Pan African value-chains** (Figure 94) to increase the overall market and let each country focus on their strengths and specific areas of the market. Several steps are needed to reach the vison of a Pan-African production. Starting with automotive polices within the countries to facilitate a local automotive production. As a next step cooperation within regional trade areas like ECOWAS. And as an overall goal a Pan- African production strategy. For instance, **Ethiopia** could produce leather seats and other components, **Ghana** delivers seat frames, and in **Morocco** the located OEMs assembles the cars. Essential are matching policies and improvement of the logistical infrastructure in the country and across borders.

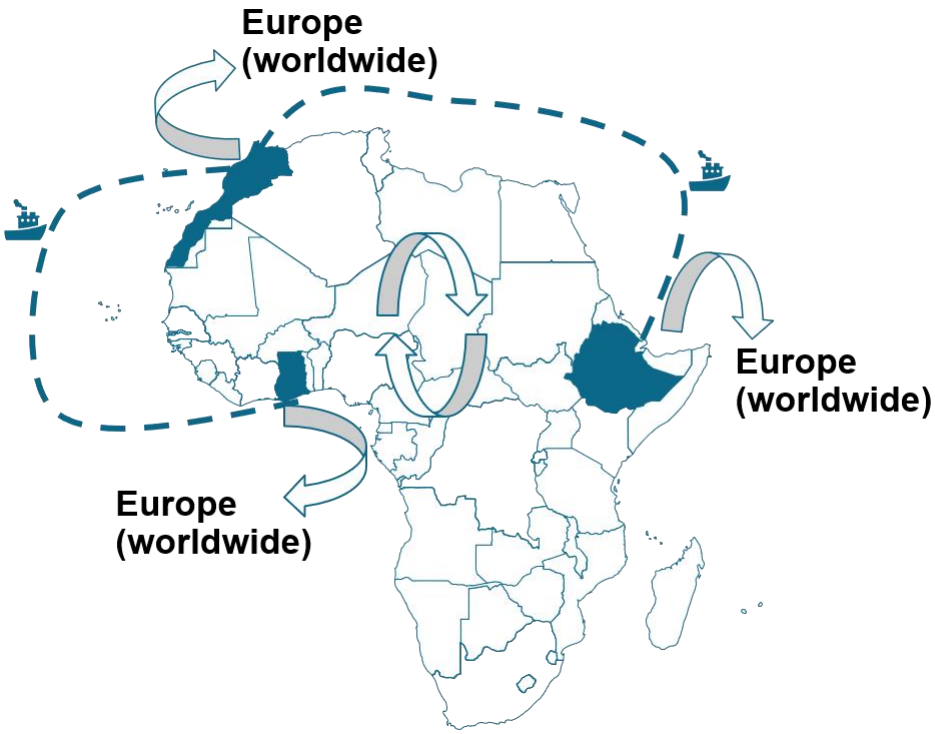

Figure 94: Pan-African Value Chains (Source: own representation)

Despite a focused view on components and suppliers for automotive, possible future research studies and projects were identified:

- Mobility demand in Africa is increasing, therefore an in-depth analysis of possible car sharing concepts in the focus countries could be conducted.

- Deeper insights in electromobility recycling: in ten years recycling of batteries will become relevant, intensive, and skilled labour needed. Identification of potential recycling locations in Africa (e.g. Morocco is already well connected to Europe)[336]
- Identification of other industries beside the automotive sector.
- Further development of local owned mining industry (Ethiopia, Ghana)
- Support of local cotton production (Ethiopia)
- Jobs training with focus on demands of automotive or other promising industries (all countries)
- Involvement of AAAM and VDA for in-depth customer, market, and aftermarket analysis (all countries)
- Establishment of contact and on-site visits of potential firms to evaluate current maturity level, Potential pilot projects in cooperation with OEMs and suppliers (all countries)

With the next steps and identification of future directions the study contributes to the overall goal: Identify and successively expand new development pathways for sustainable supply and value chains while creating good and sustainable new jobs in the CwA countries.

[336] Source: Expert interview (BASF 2020).

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Appendix

Complete list of industrial parks in Ethiopia

Table 1: Complete list of operational industrial parks (Source: own representation based on African Business Partner (2020)).

Name (Location)	Specializations
Bole Lemi Phase 1 (Addis Abab)	Garment
Hawassa Phase 1 (SNNPR)	Garment
Mekele Industrial Park (Tigray)	Garment
Jimma Industrial Park (Oromia)	Garment
Kombolcha Industrial park (Anhara)	Garment
Adama Industrial Park (Oromia)	Garment
Kombolcha (Amhara)	Garment
Easter Industry Zone (Oromia Dukem)	Chinese company
Mekelle Industrial Park (Tigray)	Garment
Adama Industrial Park (Oromia)	Garment
Debre Birhan Industrial Park (Amhara)	Garment
Bahir Dar Industrial Park (Amhara)	Garment
Arerti Industrial Park (Amhara)	Constriction products, Home appliance

Table 2: List of industrial parks nearing completion or under planning (Source: own representation based on African Business Partners (2020)).

Name (Location)	Specializations
Bole Lemi Industrial Park 2 (Addis Ababa)	Garment
Kilinto Industrial Park (Akaki, Addis Abab)	Pharma, medical equipment
Dire Dawa Industrial Park (Dire Dawa)	Assembling, Garment, Foods
Ayasha Industrial Park (Somali)	
Airlines and Logistics Park (Addis Ababa)	Transportation
Kingdom Linen Industry Zone (Dire Dawa)	Linen

Name (Location)	Specializations
Bure Integrated Agro-Industrial Zone (Amhara)	Agro processing
Bulbula Integrated Agro-Industrial Park (Oromia)	Agro processing
Yirgalem Integrated Agro-Industrial Park (SNNPR)	Agro processing
Baeker Integrated Agro-Industrial Park (Tigray)	Agro Processing
Adama Industrial Park 2 (Oromia)	Garment
Semera Industrial Park (Afar)	Garment
Assosa Industrial Park (Benishangul-Gumuz)	Garment