

**AAAM AUTOMOTIVE FORUM AT
IATF2021**

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INFRASTRUCTURE AND SUPPLY CHAIN

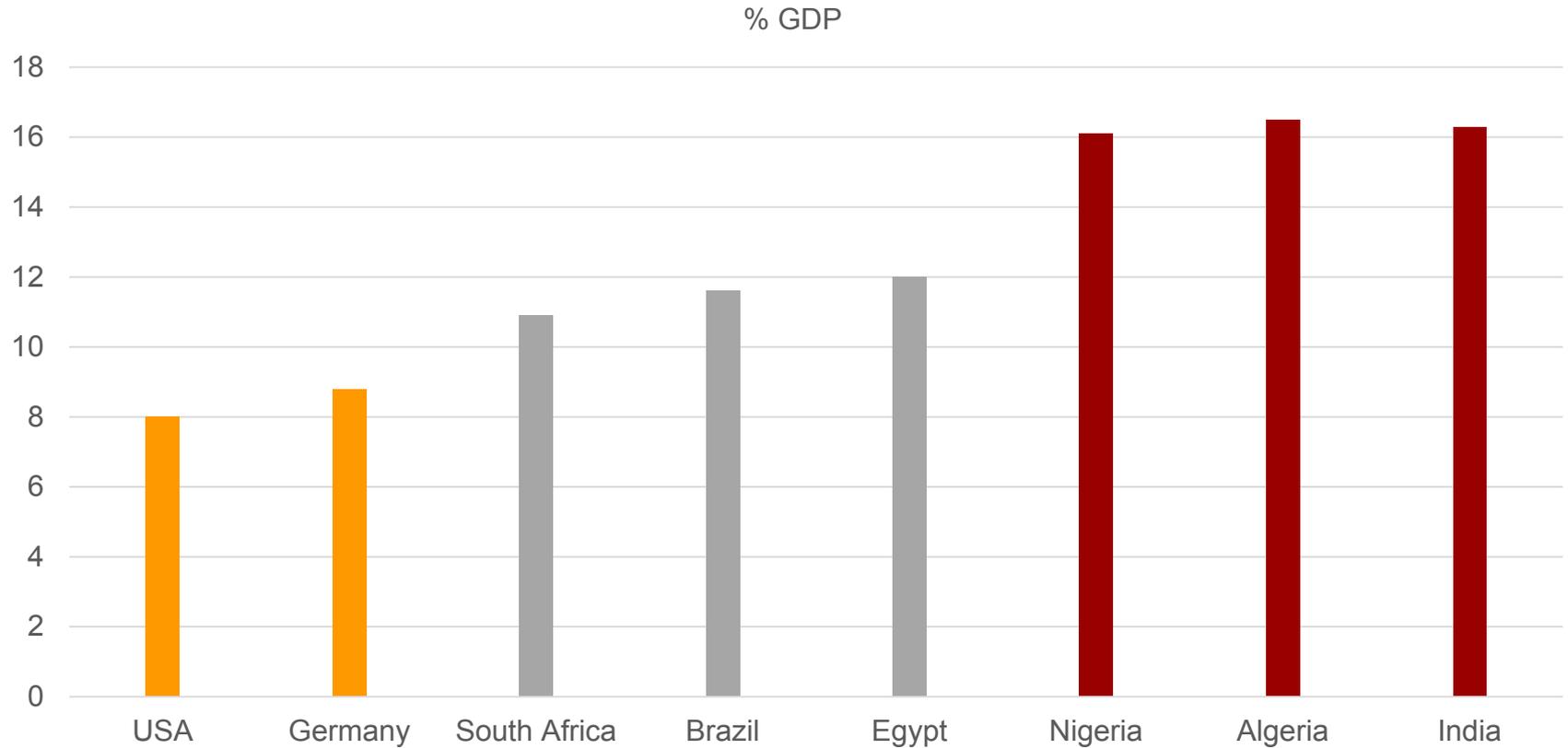


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Logistics costs | The ratio of logistics costs to economic performance (GDP) varies widely across the globe



Europe
9,5 %

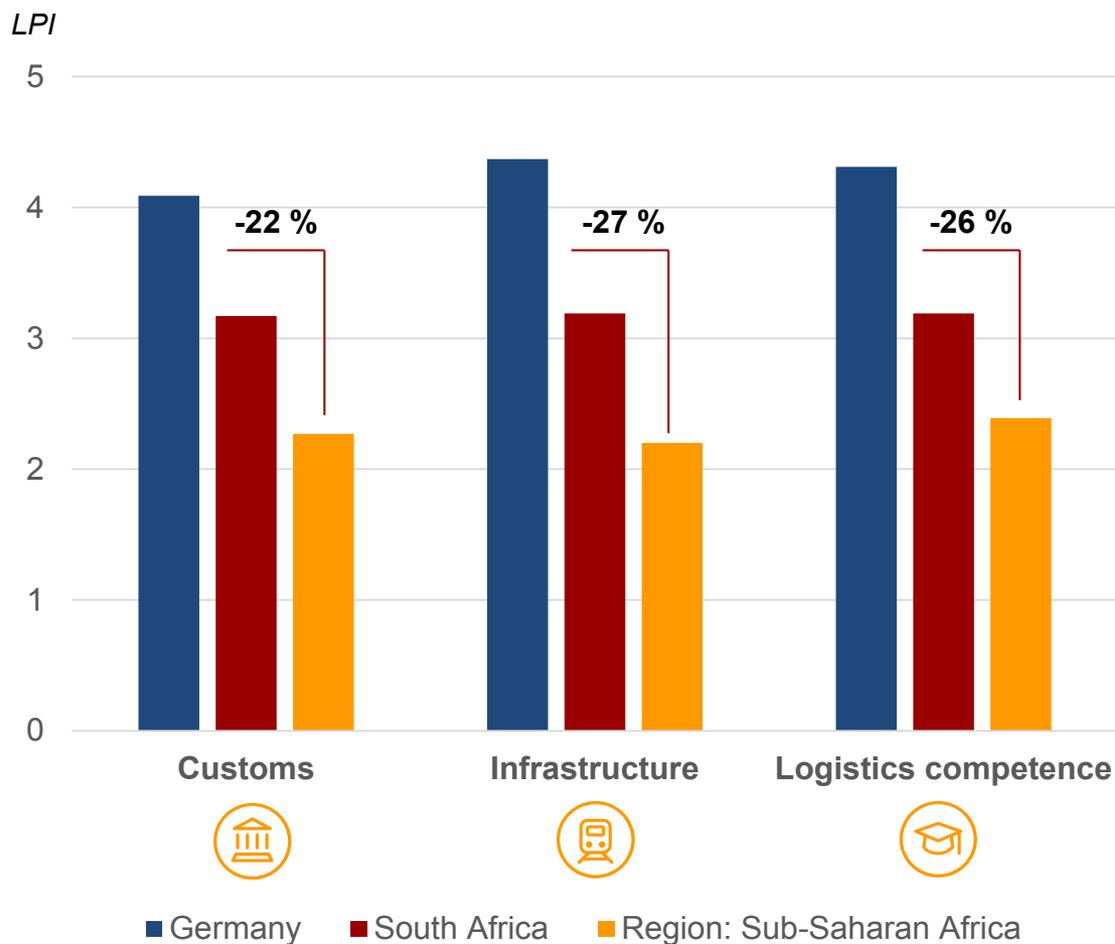
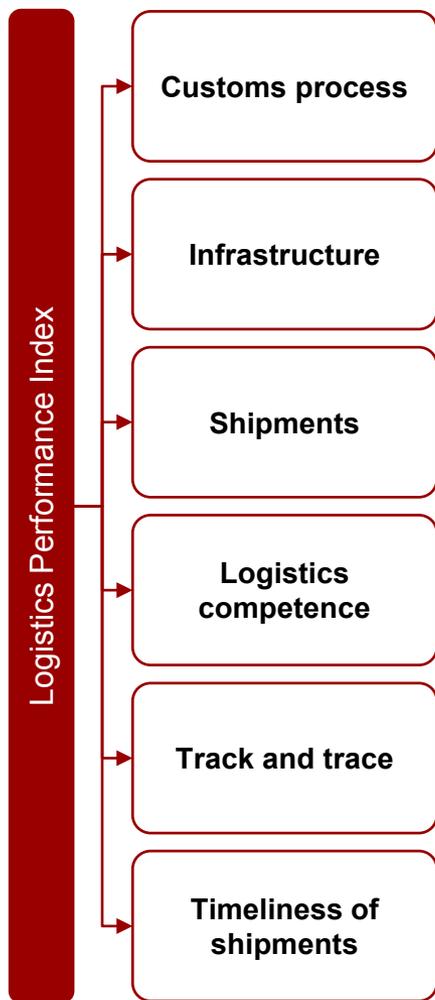
North America
8,4 %

Asia / Pacific
12,7%

South America
12,1%

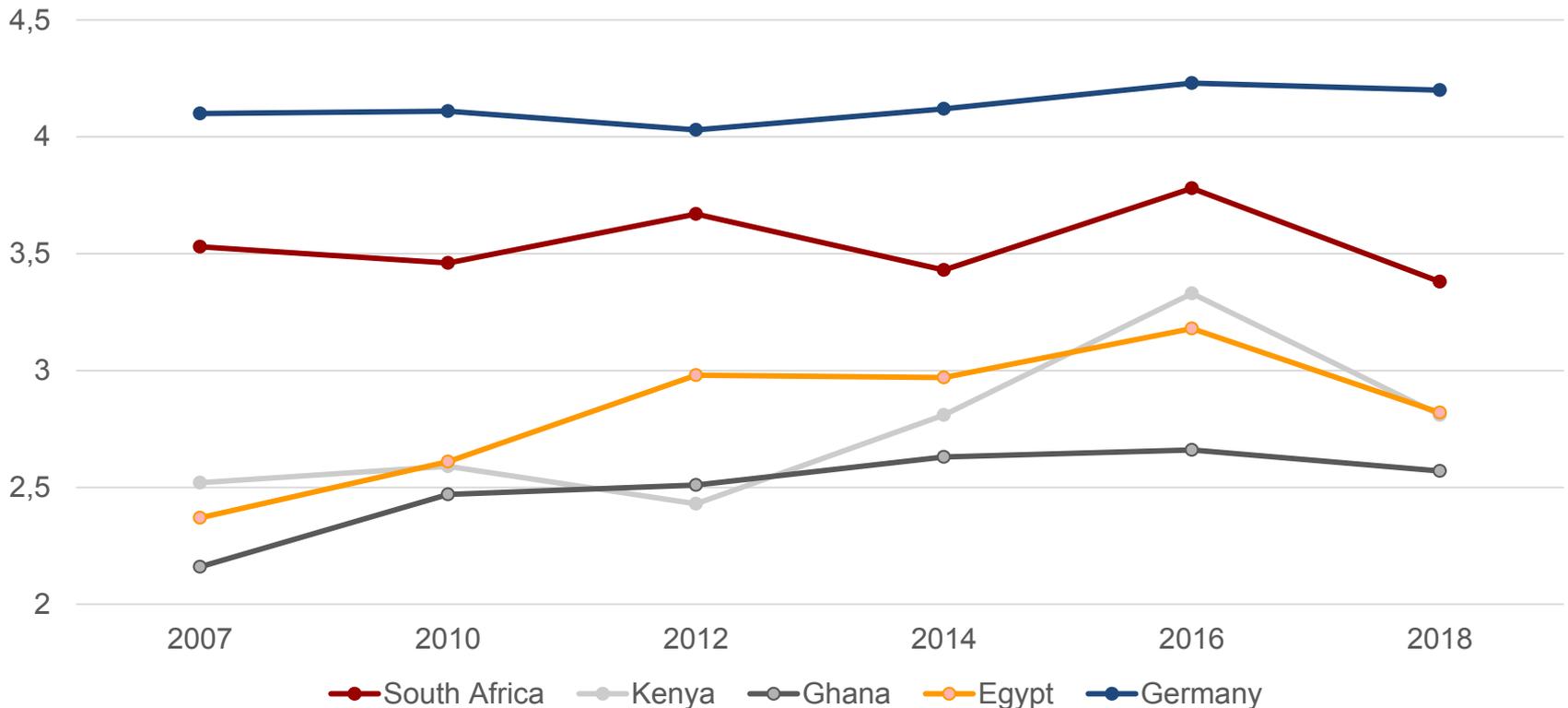
Africa
14,7 %

Logistics Performance Index | The international score uses six key dimensions to benchmark countries' logistics performance



LPI development for selected African countries

Overall LPI



Countries that have shown a relevant increase in LPI in recent years have improved their key performance indicators, especially in the areas of **customs, infrastructure, tracking & tracing** (Egypt) and **logistics competence** (Ghana).

Market analysis | The African automotive market offers great potential for job creation and vehicle sales



80 Mio inhabitants



570 cars / 1000 inhabitants



3.5 Mio cars produced in Germany per year



1 Bn inhabitants



21 cars / 1000 inhabitants



1.1 Mio cars produced in Africa per year expected to **grow to 5 Mio**

Further Data

- 3% of the GDP with 800,000 employees in the automotive industry
- appr. 8% in the logistics sector → 64.000 employees

Example South Africa:

- 7.1% of the GDP with 470,000 employees in the automotive industry



72.000 – 240.000 jobs can be created in the logistics sector of automotive industry on the continent

Excerpt of logistics challenges in Africa | African markets pose a variety of challenges for logistics

ROAD- AND RAIL-RELATED CHALLENGES



- Transport **cost**
- Road **availability and conditions**
- Long and volatile **transport times**
- **No efficient connection of railway**

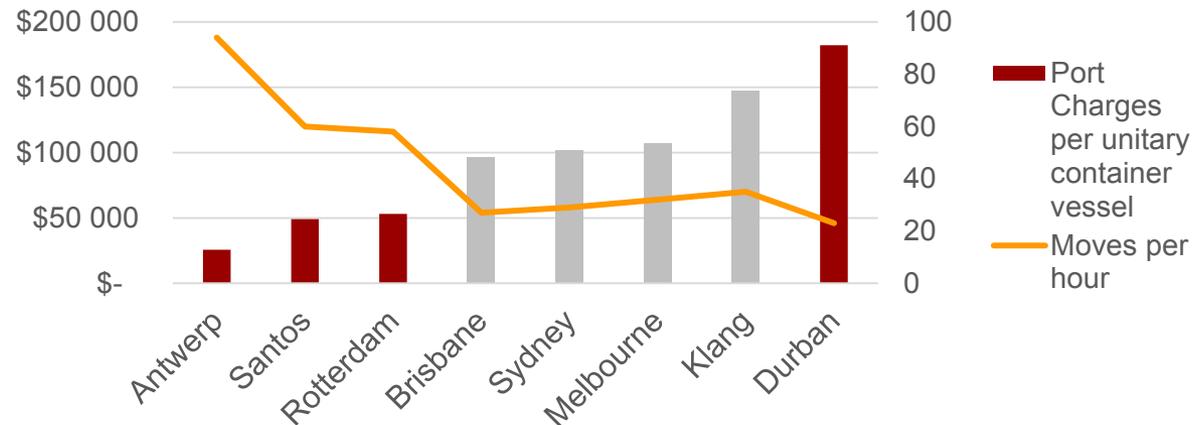
COMMUNICATIONAL CHALLENGES



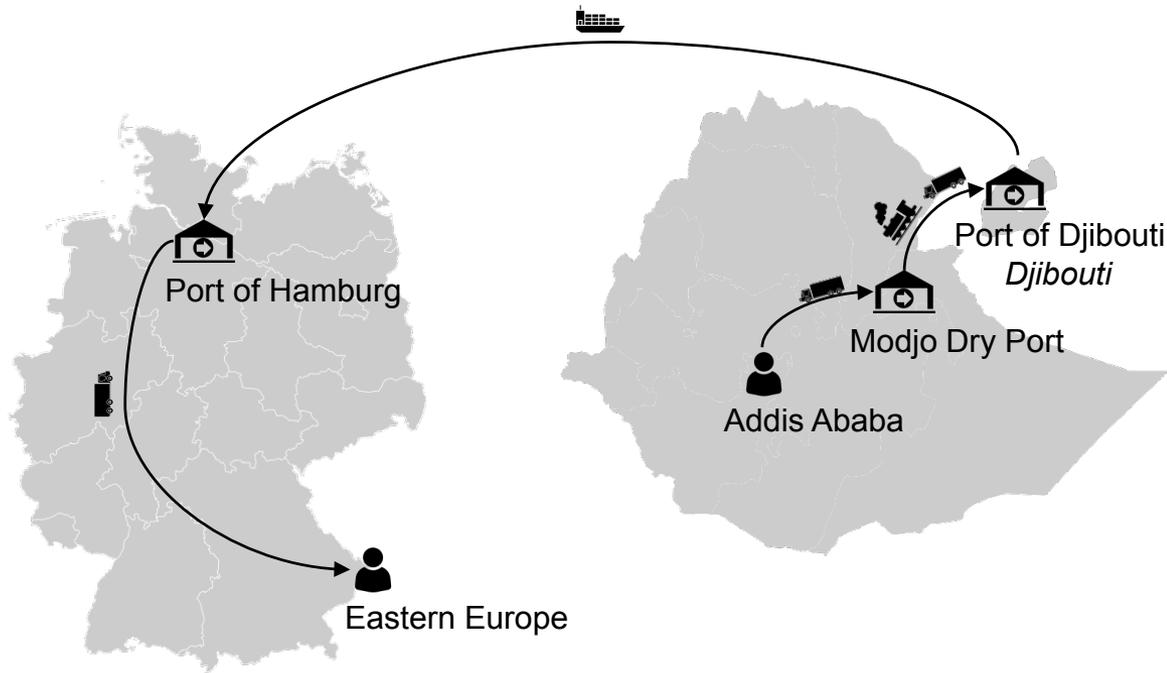
- Missing cooperation
- **Missing transparency**
- Missing processes to **integrate transport modes and systems**

INEFFICIENT PORT INFRASTRUCTURE

- Long **waiting** and process **times**
- **Delayed for up to 20 days** (other international ports 3 to 4 days)



Estimated logistics cost structure for transport from Europe to Ethiopia



Clearance and handling of cargo at Djibouti port

- 3-20 days | 910 USD/TEU

Benchmark

Port of Hamburg

- 40 hours | 150 USD/TEU

Transportation from Addis

- 350 - 450 USD / 100km via truck

Benchmark:

Transportation from Port of Hamburg

- 100 USD / 100km via truck

Warehousing & handling cost based on labor rate in Ethiopia

- 72 USD/month

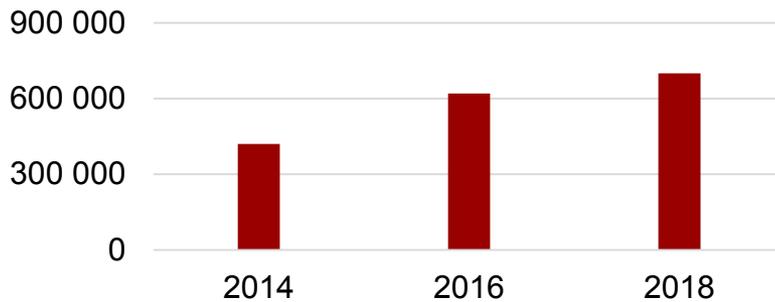
Eastern Europe

- Bulgaria: 375 USD / month

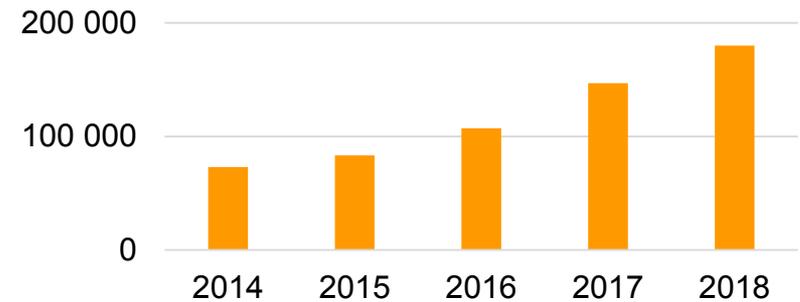
Good practice approach Morocco | Automotive sector evolution to enhance production volume and create local jobs



Production capacity



Jobs created



- Coordination between **politics and industry**
- Incentives for foreign companies to settle in Morocco (e.g. **free zones with tax advantages**)



Continuous development in Africa | Decoupling economic growth and environmental impact for a green path to industrialization

CO2 emissions per capita per year



Transport-related emissions

25% of worldwide CO2 emissions are transport-related

CO2 > GDP growth

1 e.g. India, Brazil

CO2 = GDP growth

2 e.g. Russia, China

CO2 < GDP growth

3 e.g. Germany, France, UK

Current decoupling factor of transport and GDP growth worldwide

1,6x



Logistics training and education



Integrated African transport networks



E2E cost efficient, fast & green logistics solutions



E-mobility and decentralization

Outlook & workshop topics | For the success of the automotive industry in African markets, efficient logistics is crucial



SCM & Infrastructure

Port development

Integrated transport

Planning & scheduling
in networks

Sustainable
development

Adoption of artificial
intelligence

Production and logistics
concepts