The Potential of Africa to Capture Technology-Intensive Global Supply Chains
Background
Global economy prone to shocks

• The global supply chains ecosystem has been disrupted by unprecedented trade turbulence due to *economic uncertainty*, *geopolitical events* and *natural disasters*.

• But African economies are poorly integrated into global supply chains.

• This notwithstanding, disruptions in global supply chains have a disproportionate effect on African economies.
Africa’s economy was not spared with GDP declining from 4.5% in 2021 to 3.7% in 2022.
Africa: Gross domestic product growth by region, 2022–2024

GLOBAL SUPPLY CHAIN VULNERABILITIES CALL FOR MORE DIVERSIFIED SUPPLIERS AND CONSUMERS

The cost of shipping a 40-foot container from Shanghai to New York rose 5X in just three years.

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,325</td>
<td>$11,778</td>
</tr>
<tr>
<td>IN SEPTEMBER 2019</td>
<td>IN SEPTEMBER 2021</td>
</tr>
</tbody>
</table>

This resulted in higher prices for:

- Sourcing inputs and materials
- Manufacturing products
- Supplying and delivering goods to consumers
Concepts in Supply Chain Diversification

1. Supply base diversification and customer base diversification
   • Supply base diversification – diversification in number of suppliers
   • Customer base diversification – diversification in number of customers

2. Supply chain flexibility
   • Supply chains responsiveness to customer needs

3. Supply chain resilience
   • Diversification and flexibility ensure resilience
   • the ability of a supply chain to return to its original state or move to a more desirable state after being disrupted
Features of supply chain diversification

Supply chain diversification

- Diversified supply base (suppliers)
- Diversified customer base (customers)
- Supply chain flexibility
- Diversified goods and services

Source: UNCTAD.
## Difference between a supply chain and a value chain

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Supply Chain</th>
<th>Value Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Businesses, people and activities involved in the procurement, logistics, transformation and delivery of finished goods.</td>
<td>Activities involved in analysing customer needs, planning production and adding value at each step of the process.</td>
</tr>
<tr>
<td>Goal</td>
<td>To produce and distribute goods so as to increase customer satisfaction.</td>
<td>To increase the value of a good so as to create competitive advantage.</td>
</tr>
<tr>
<td>Processes</td>
<td>Operational management.</td>
<td>Business management.</td>
</tr>
<tr>
<td>Main activity</td>
<td>Facilitating production and distribution of a good.</td>
<td>Adding value to a good during each step of the process.</td>
</tr>
<tr>
<td>Stages</td>
<td>Begins with a request from suppliers for a specific good and ends with its delivery.</td>
<td>Begins with a customer’s request and ends with the development of a specific good.</td>
</tr>
</tbody>
</table>
Turning disruptions into opportunity
Turning disruptions into opportunity

- Two birds, one stone: Does the crisis provide opportunity for Africa and a solution for global supply chains?

  - Are there prospects for African countries to integrate into higher-value knowledge and technology-intensive supply chain activities?
  - What policies should be adopted to strengthen prospects for integration into supply chains?
  - What would be the role of regional integration in fostering entry into supply chains?
Inherent and linkage factors of the supply chain

Source: UNCTAD.

Supply chain factors

Inherent factors
- Procurement (suppliers)
- Production (manufacturing)
- Distribution

Linkage factors
- Technology, innovation and financial services
- Policies

Raw materials
- Technology
- Labour
- Capital
- Spatial factors
- Transport
- Warehousing
- Retailers
- Wholesalers
- Demand

Source: UNCTAD.
Inherent Factors
Procurement

• Global production patterns are expected to evolve, taking into account climate change, by lowering greenhouse gas (GHG) emissions, in the low carbon transition.
• Dynamic production processes will require alternative inputs, with low carbon technologies expected to increase significantly.
• Consequently, there will be a rise in demand for specific metals with utility in the low carbon transition, for instance lithium, aluminum, copper, manganese and cobalt.
• Africa is a key source of metals for the carbon transition, in 2022, Copper, cobalt, natural graphite and lithium amongst other metals were produced in African countries – Zambia, DRC, Madagascar, Mozambique, Burundi.
• African countries also hold large reserves – For instance Zambia and DRC hold 59 % of copper reserves globally (chapter 2: battery manufacture).
Global increase in CO2 emissions, 1990–2019

Source: UNCTAD calculations, based on data from the World Development Indicators database (World Bank).
Cobalt and manganese reserves in selected African countries

Source: UNCTAD calculations, based on data from the Knoema database, 2023.

(a) Cobalt Reserves

<table>
<thead>
<tr>
<th>Year</th>
<th>Democratic Republic of the Congo</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>3.4</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>3.6</td>
<td>1</td>
</tr>
<tr>
<td>2020</td>
<td>3.6</td>
<td>2</td>
</tr>
<tr>
<td>2021</td>
<td>3.6</td>
<td>3</td>
</tr>
<tr>
<td>2022</td>
<td>3.5</td>
<td>4</td>
</tr>
</tbody>
</table>

(b) Manganese Reserves

<table>
<thead>
<tr>
<th>Year</th>
<th>South Africa</th>
<th>Rest of the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>230</td>
<td>530</td>
</tr>
<tr>
<td>2019</td>
<td>260</td>
<td>550</td>
</tr>
<tr>
<td>2020</td>
<td>520</td>
<td>780</td>
</tr>
<tr>
<td>2021</td>
<td>520</td>
<td>780</td>
</tr>
<tr>
<td>2022</td>
<td>640</td>
<td>860</td>
</tr>
</tbody>
</table>
Production

Africa’s comparative advantage:

- Demographic make up!
- However, production technology is reliant on capital and labor, low on technology.
- For instance, the level of transformation of raw materials for high-skill technology-intensive manufactures is low, limiting opportunities for value capture.

Policy solutions:

- A recalibration of factor inputs, such as substituting labor for capital where possible, in addition to utilizing technology services in the production process, could increase productivity, providing employment opportunities.
Growth rate of factor inputs

Source: UNCTAD calculations, based on data from the World Development Indicators database (World Bank).

In 2015, the capital growth in low-income countries was higher than that in lower-middle-income countries. The labor productivity in both groups showed a similar trend, but the absolute values in low-income countries were higher. Human capital showed a decreasing trend in both groups, but the absolute values in lower-middle-income countries were higher.
Contribution to output growth

Source: UNCTAD calculations, based on data from the World Development Indicators database (World Bank).
Labour productivity growth in selected African countries, 2001–2019

**Source:** UNCTAD calculations, based on data from the International Labour Organization and UNCTADstat databases.
Average monthly earnings in selected African countries and by gender, 2019

Source: UNCTAD calculations, based on data from the ILOSTAT database (International Labour Organization).
Distribution

Hard Infrastructure the worst performing category in Africa logistics:
• South Africa, Cote d’Ivoire, Rwanda, Egypt and Kenya the top performing countries in infrastructure (LPI, 2018).
• Hard Infrastructure worst performing category, while areas with technology have improved – a sign that governments are investing in IT technology.

Key issues to note:
• African countries, through Programme for Infrastructure Development in Africa (PIDA), are investing in Infrastructure. E.g. Ports (Box 4)
• Demographic growth could bolster future growth potential for consumer markets in Africa, which are increasingly young, sophisticated, globalized and cost conscious.
Logistics performance index score, 2018

Source: UNCTAD calculations, based on the World Bank logistics performance index.

(a) Selected African countries

(b) Africa as a whole
Trade Policies and Incentives

• Trade agreements such as AGOA have been shown to be beneficial for some African countries.
• In addition, South-South cooperation has improved immensely over the last two decades though initiatives such as BRICS and the Silk Road Economic Belt and 21st Century Maritime Silk Road (over 94% membership from Africa).
• Trade (2018 – 2020): China and India remain important trading partners, while the European Union is a key trading Partner for Africa (France, Germany, Italy and Spain).
• AfCFTA: likely to have immense benefits for Africa (SDG 1 and SDG 8). Also a de facto industrial policy (Country specific AfCFTA strategies), that is likely to strengthen green economic diversification.
Top trading partners of Africa, 2018–2020

Source: UNCTAD calculations, based on data from the United Nations Comtrade and World Integrated Trade Solution databases.
In Focus: Mozambique

- As at 2022, Mozambique was one of the world’s leading suppliers of graphite, producing 30,000 tons per year, with an estimated 25 million tons in reserves.
- At 2028 demand levels, indicates a capability to meet global needs for 12 years as a solo supplier of graphite.
- Graphite is used in battery anodes, with demand expected to exceed 2 million tons by 2028.
- Although graphite is not used in conventional vehicles, about 66.3 kilograms of the mineral are used in electric vehicles.
- Since 2013, the Government of Mozambique has ramped up spending on infrastructure aimed at increasing the efficiency of inland infrastructure.
- The extensive and accessible coastline of Mozambique makes it an excellent trade gateway to the rest of Africa, as well as to Asia and Europe.
Growth of factor inputs in Mozambique

Source: UNCTAD calculations, based on data from the World Development Indicators database (World Bank).
Contribution of factor inputs to growth in Mozambique

Source: UNCTAD calculations, based on data from the World Development Indicators database (World Bank).
Conclusion
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• Going forward, disruption of supply chains is going to become the norm, rather than the exception.
• Discourse on near or friend shoring of supply chains could provide an opportunity for African countries to diversify their economies.
• Factors inherent to the supply chain can be divided into three stages, namely, procurement, production and distribution. Within all three stages, we find that African countries provide opportunities for near and friend shoring.
• Trade plays an important role in Africa – Trade agreements and trade Partners matter.
• Finally, a key advantage for Africa as a supply chain frontier is its relatively low carbon emissions.
THANK YOU
MERCI