

Supply Chain Resilience in Africa

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Study Aim and Objectives

Aim:

- To develop viable interventions that harness the opportunities of specific country and regional value chains on the African Continent

Objectives:

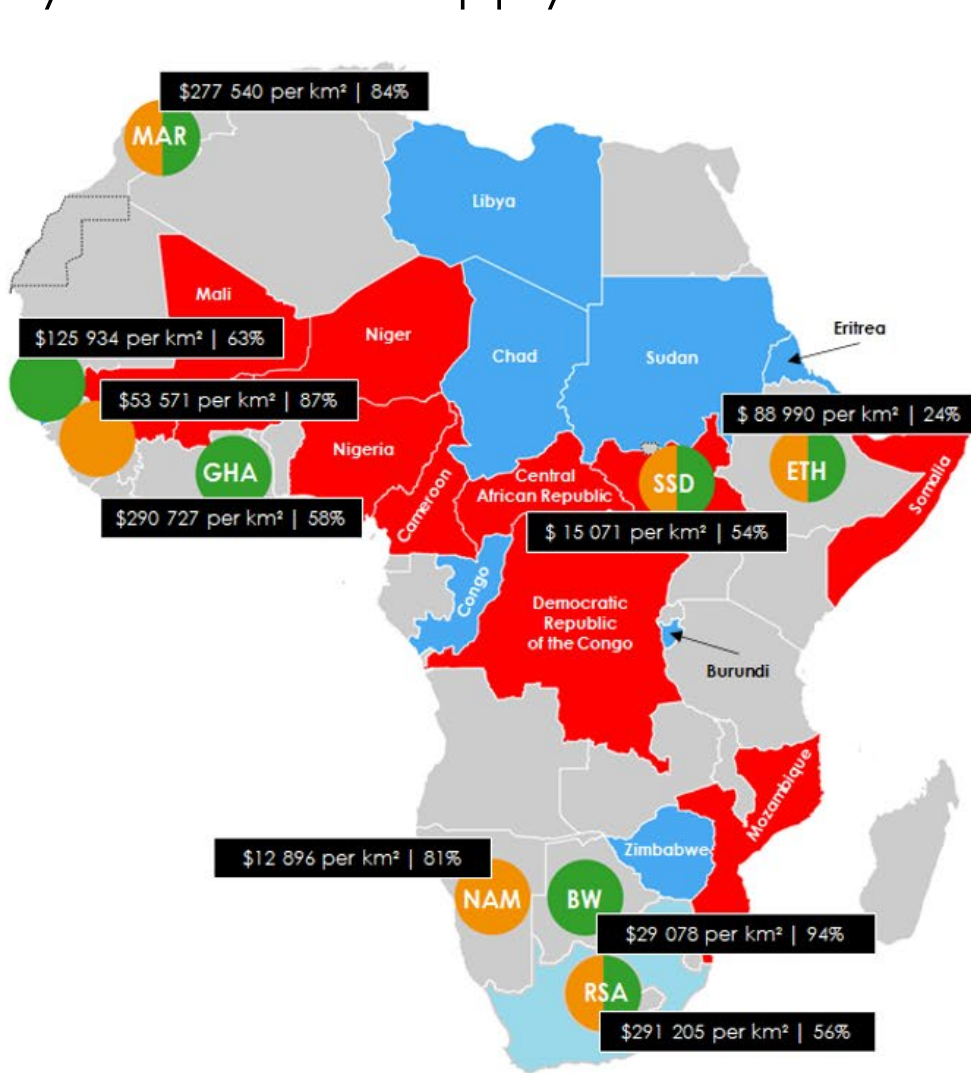
- To classify supply chain typologies in Regions of Africa → macro-economic, trade, production, infrastructure and logistics
- To identify country / region exposure and vulnerability to supply chain risks and shocks
- To apply data driven freight flow modelling to identify explicit country and inter-country value chains for increased resilience and advancement
- To evaluate the macrologistics resilience – gaps, weaknesses, opportunities – of focal country and key regional supply / value chains
- To create innovative interventions for a particular country / regional supply chain that could be implemented by Government and business to mitigate risk, enhance resilience and harness opportunities for socio-economic development



Practical knowledge gap: Practical application of knowledge and theory to real situations in Africa

Why resilience of supply chains in Africa matters?

The **true size of Africa** - disproportionate **economic density** and **trade openness**

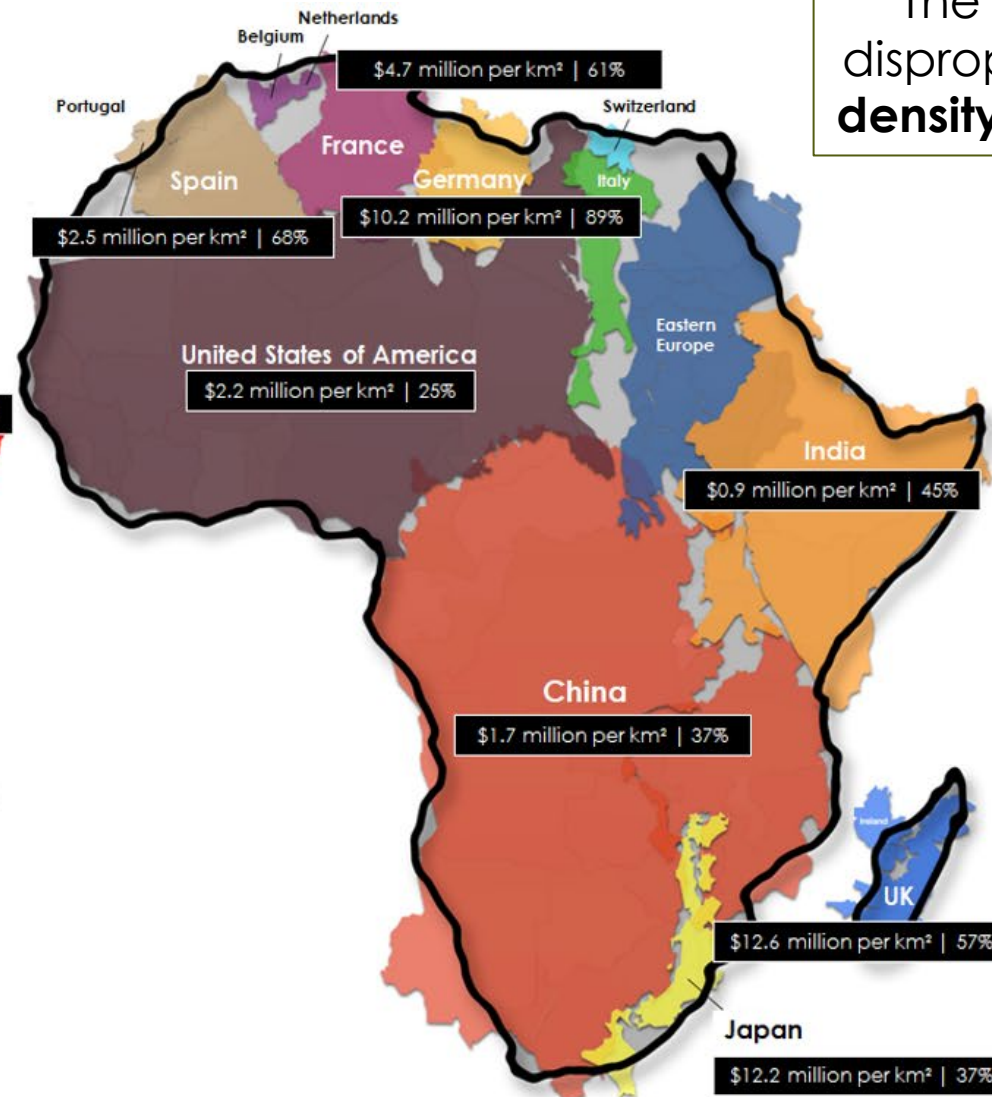


Legend: **Conflict-affected countries**

● Case study countries

Countries with institutional and social fragility

● Supply chain map countries



Sources:

Created by authors by adapting Krause (2020) and incorporating the country classification used in the report.

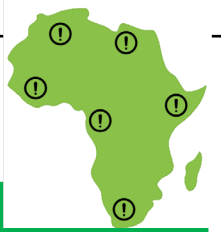
This classification will be discussed in this presentation.

Economic density data is based on 2021 GDP and landmass data from Trading Economics and the World Bank.

Trade openness data is based on 2021 GDP and trade data from Trading Economics, UNCTAD, the World Bank and the World Trade Organization.

Manage risks, improve resilience and harness the potential of Africa

Unique characteristics of Supply Chains in Africa



Themes	African Supply Chains
Design & Function	Mining and agricultural networks designed and built to exploit raw materials extraction . Less developed supply chains for beneficiated, processed, consumer goods
Sourcing	Vital foodstuffs and product imports from the East necessitated the evolution of import supply chains . Inter-regional sourcing not optimised .
Transform	Established, long, yet relatively simple supply chains for exports . Less developed food and regional supply chain.
Use	Regional chains and secure food distribution hinder informal economy access to markets; stimulate industrialisation
Governance & Compliance	Increased awareness of and pressure to adopt sustainable practices and allocate accountability . Support provided by international agencies. Some countries encourage “Triple Bottom Line” reporting.
Sustainability	Supply chain development to address humanitarian crises and food security . Planning to address transport system decongestion and improved living conditions in cities and rural areas.
Digitalisation	<ul style="list-style-type: none"> • Growing connectivity – also for more remote areas. More developed African economies building expertise. Development of cloud-based online freight platforms, (e.g. KOBO 360 in Nigeria; Line Booker; Live Fr8) primarily used for load-matching but could also improve resilience. • Blockchain Technology evolving • Vulnerability to cyber attacks

Generate and direct specific Africa SCR interventions

Why resilience of supply chains in Africa matters?

**Currently African intra-regional trade is low,
~10,5% of tonnes and 6.2% of value of total trade¹**

AfCFTA agreements gaining momentum – requires readiness & macrologistics resilience for intra-& inter-regional trade growth

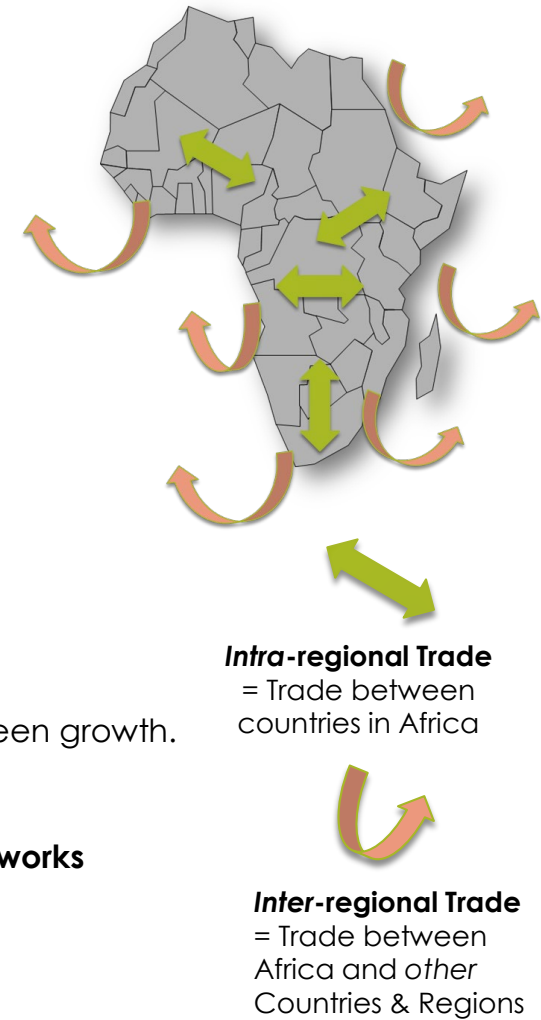
Resilience

Undeveloped or underdeveloped regional value chains. New developments must be made efficient and resilient.

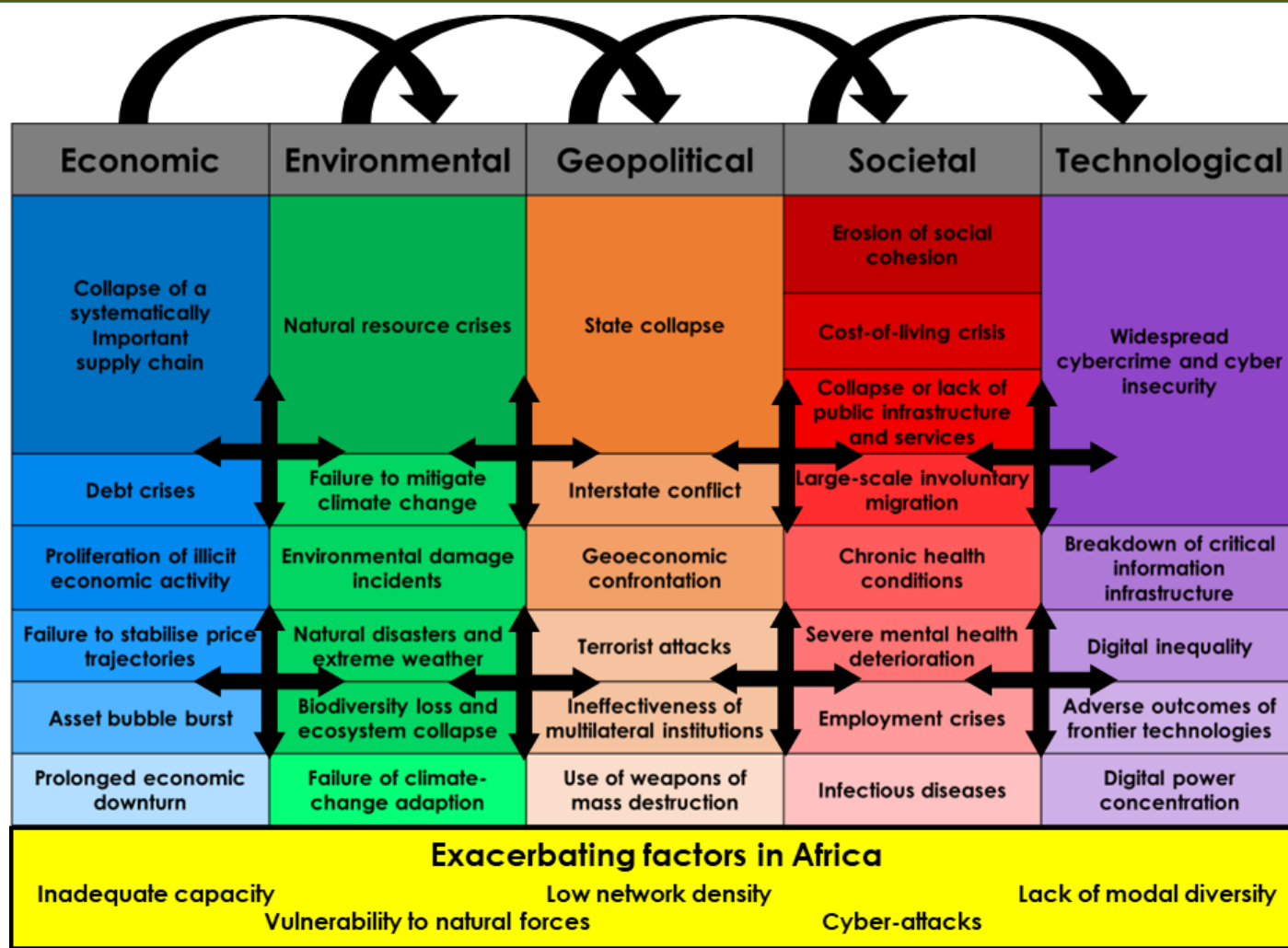
Regional value chains for a sustainable recovery of Africa's economies means:

- Developing **production linkages** across countries and regions to unleash stronger, more inclusive and sustainable green growth.
- **Integrating value chains** will accelerate the **productive transformation** and create more quality jobs; growth
- African value chains approach for productive transformation enables firms to grow through **regional production networks**

¹ Based on ongoing freight demand modelling by the authors



Why Resilience of Supply Chains?



Build resilience to mitigate exposure to, and recovery from risks and shocks

Improve country self-sufficiency

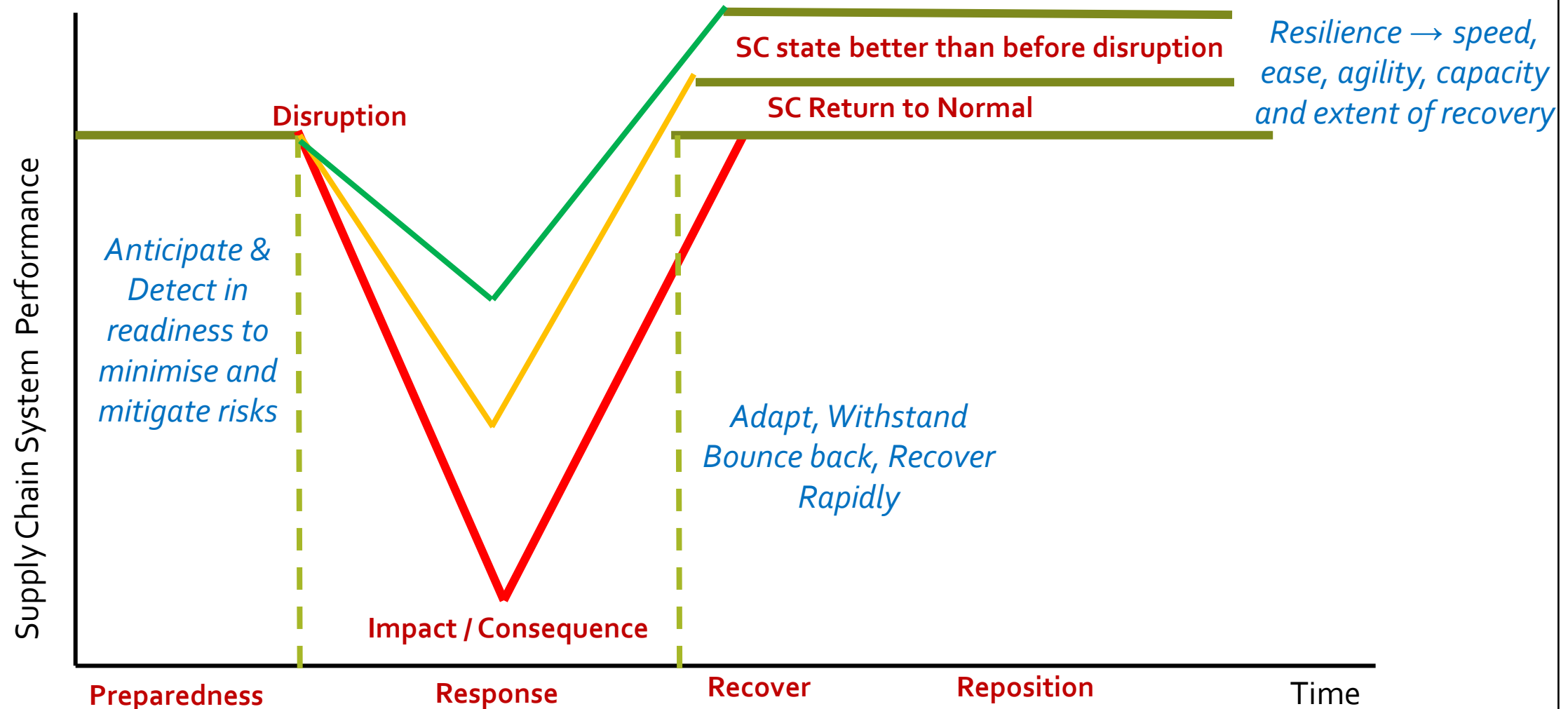
Harness opportunities – economic growth, trade, social development



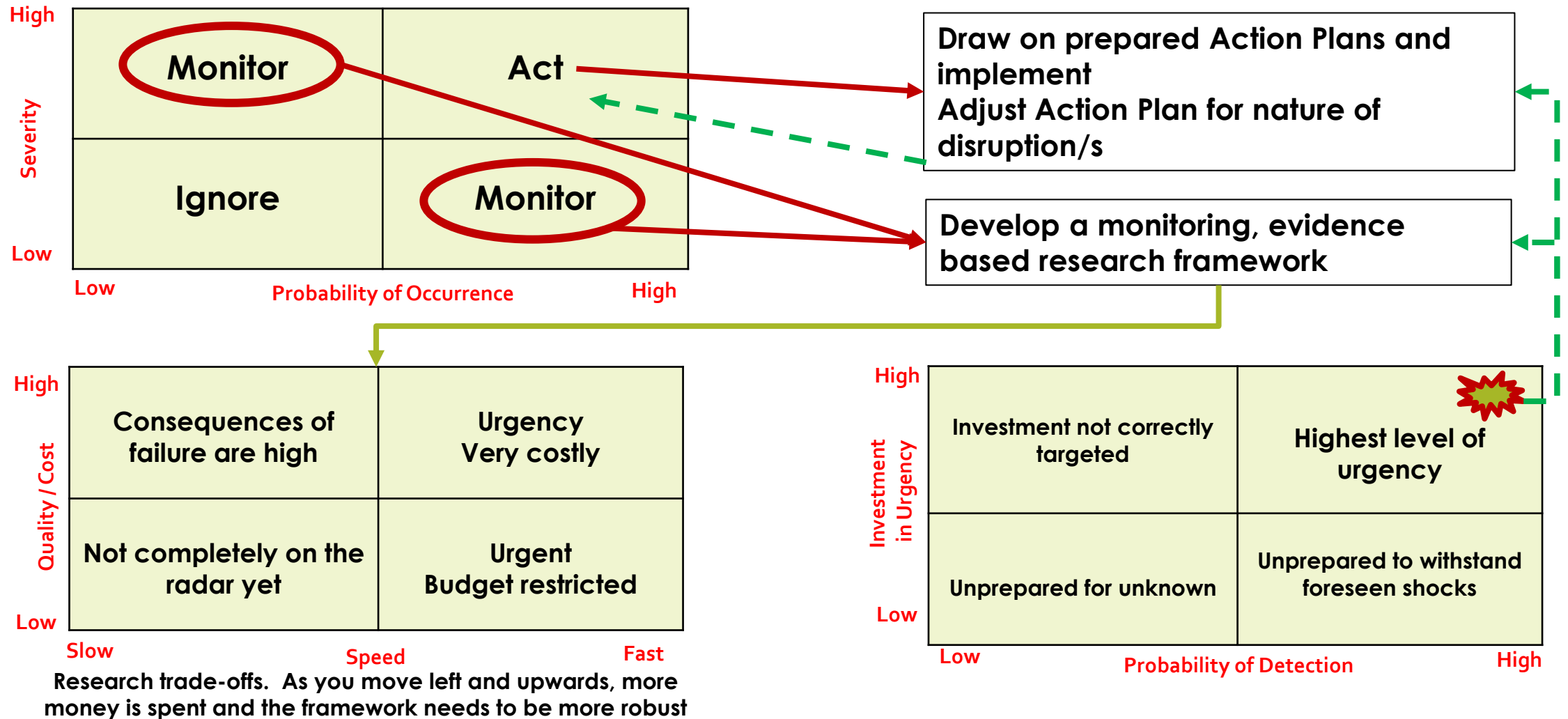
Freight Flows - Transport & Logistics Networks

Source: Created by authors based on global risks interconnections map in the World Economic Forum's Global Risk Report (2023).

Reducing Vulnerability, Building Resilient Supply Chains

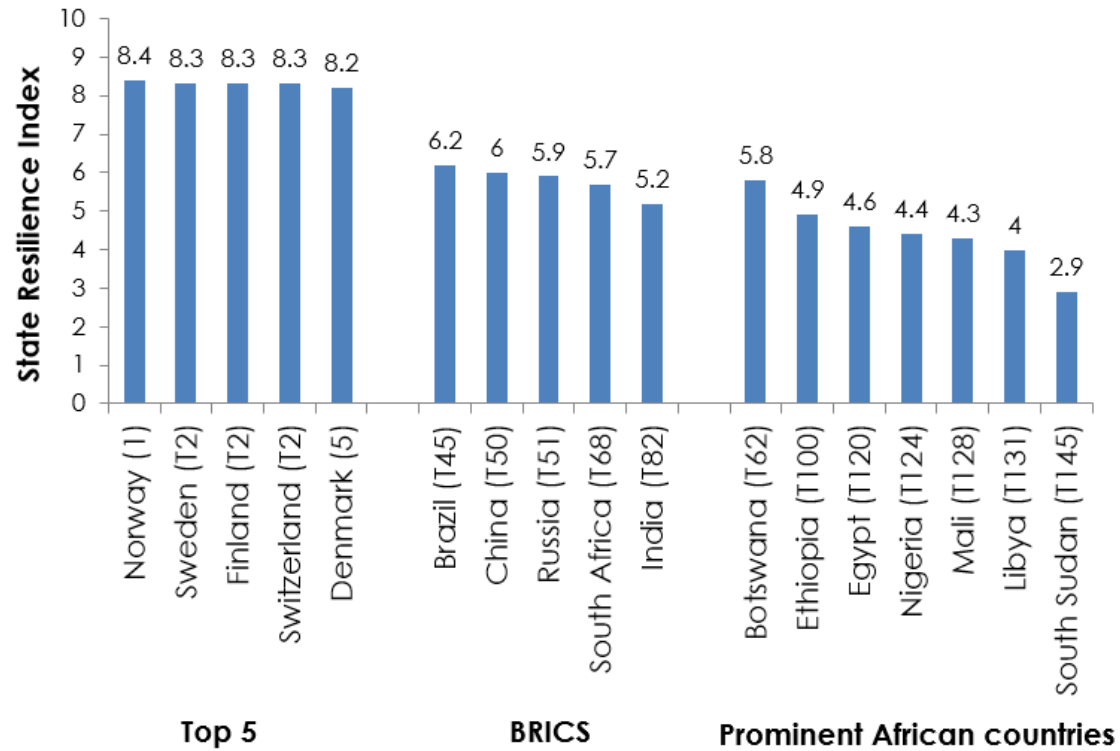


Assessing and Preparing for Risks and Shocks

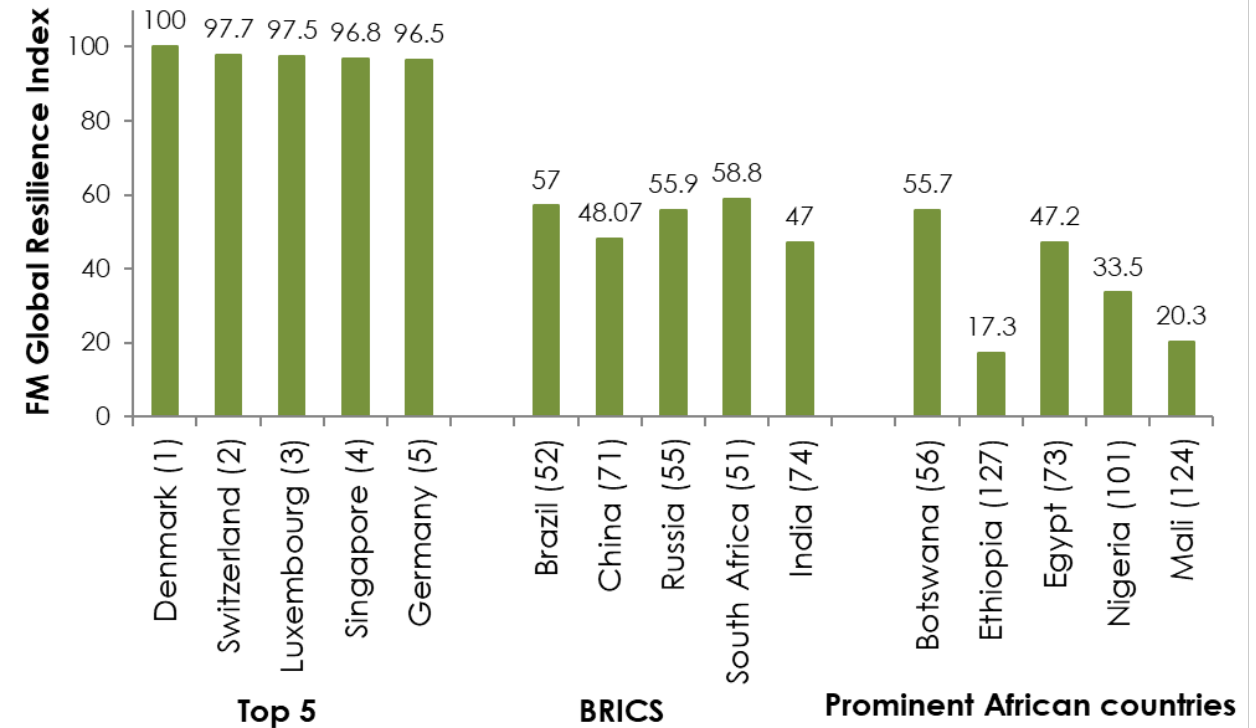


Consequence of economic challenges across the African continent – weak state-level and supply chain resilience

State Resilience Index¹



FM Global Resilience Index – Supply chain²

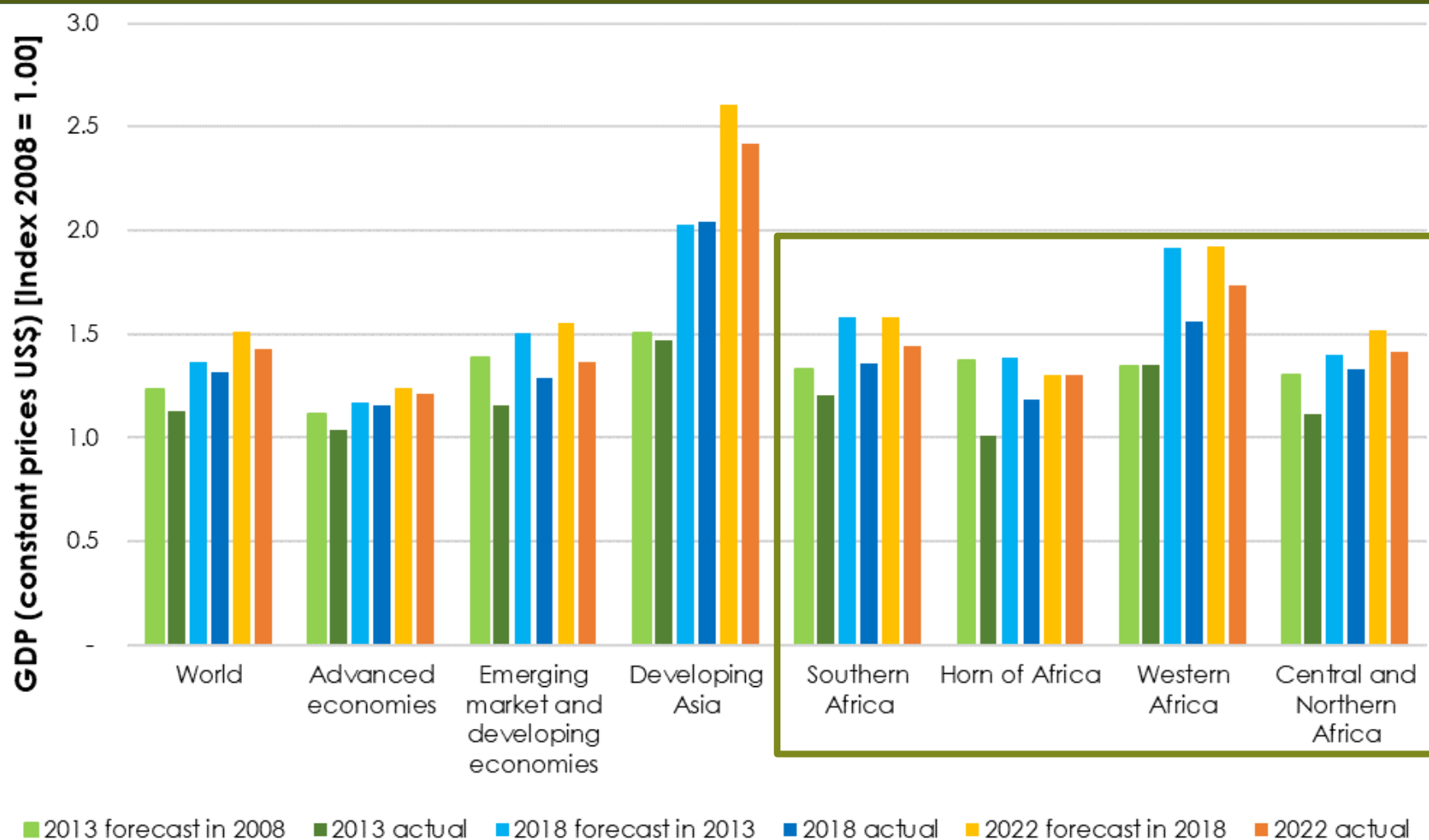


Sources:

¹ Adapted from Fund for Peace (2022). The number in brackets is the country's ranking out of 154 countries, T = tied for that rank.

² Adapted from FM Global (2022). The number in brackets is the country's ranking out of 130 countries.

GDP growth of selected regions – all years compared to a 2008 base

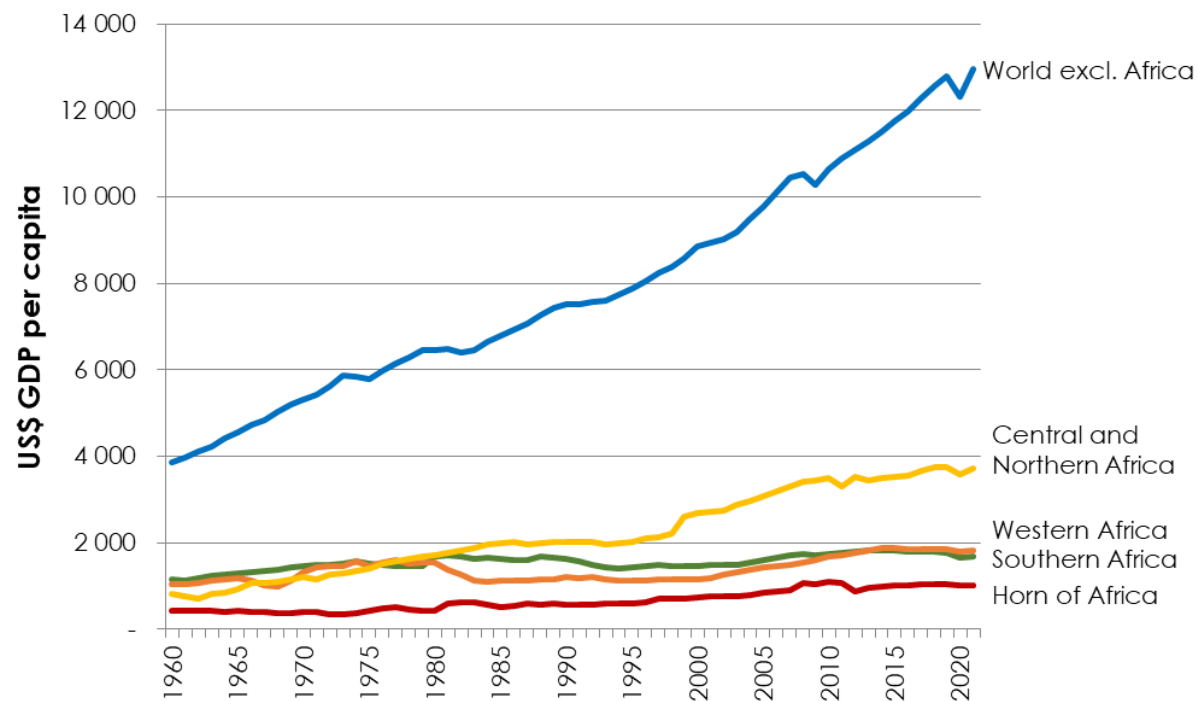


Sources:

Created by authors with 2008, 2013, 2018 and 2022 actual and forecasted GDP constant prices data from the IMF's World Economic Outlook, with supporting GDP constant prices data from the World Bank.

Economic challenges hinder food security

GDP per capita growth – African regions vs. the rest of the world¹

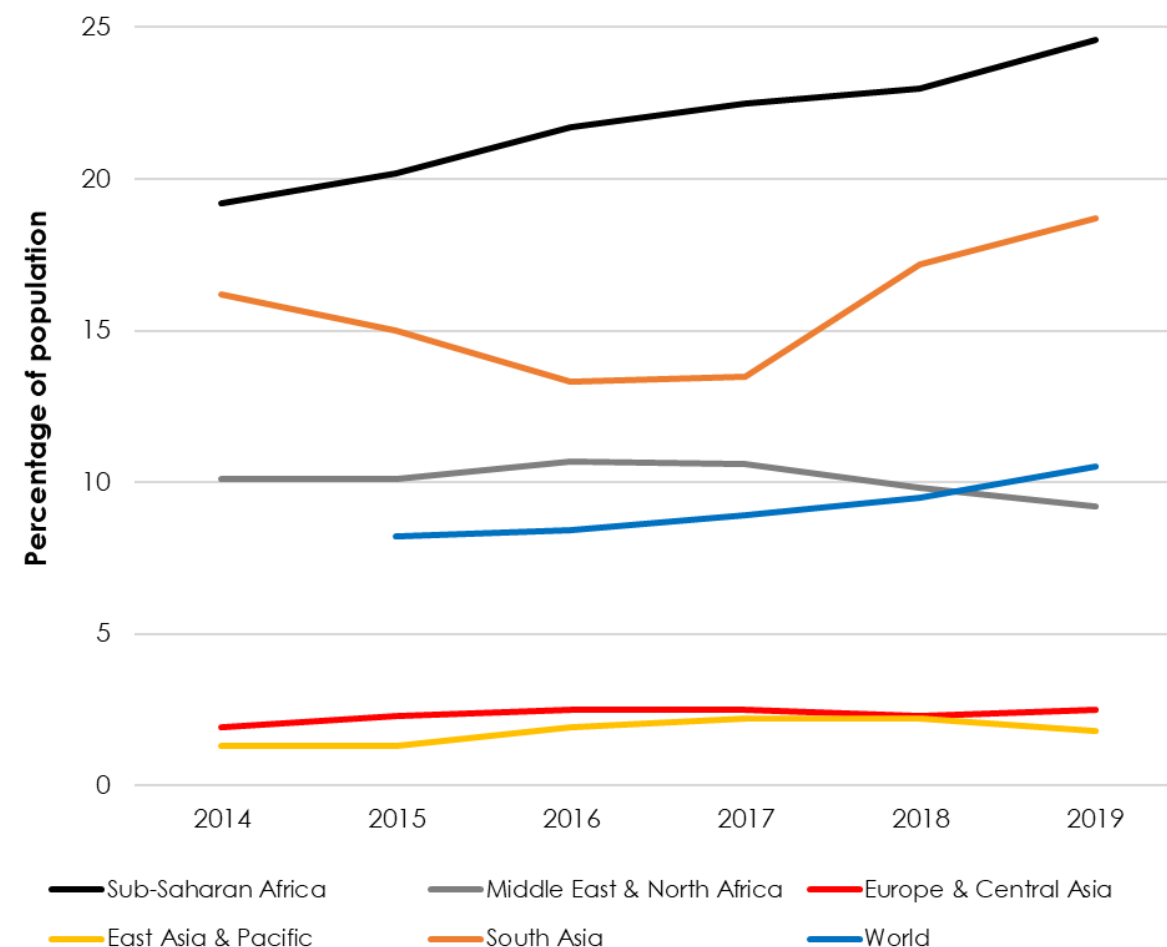


Sources:

¹ Created by authors based on World Bank population and constant GDP growth rate data.

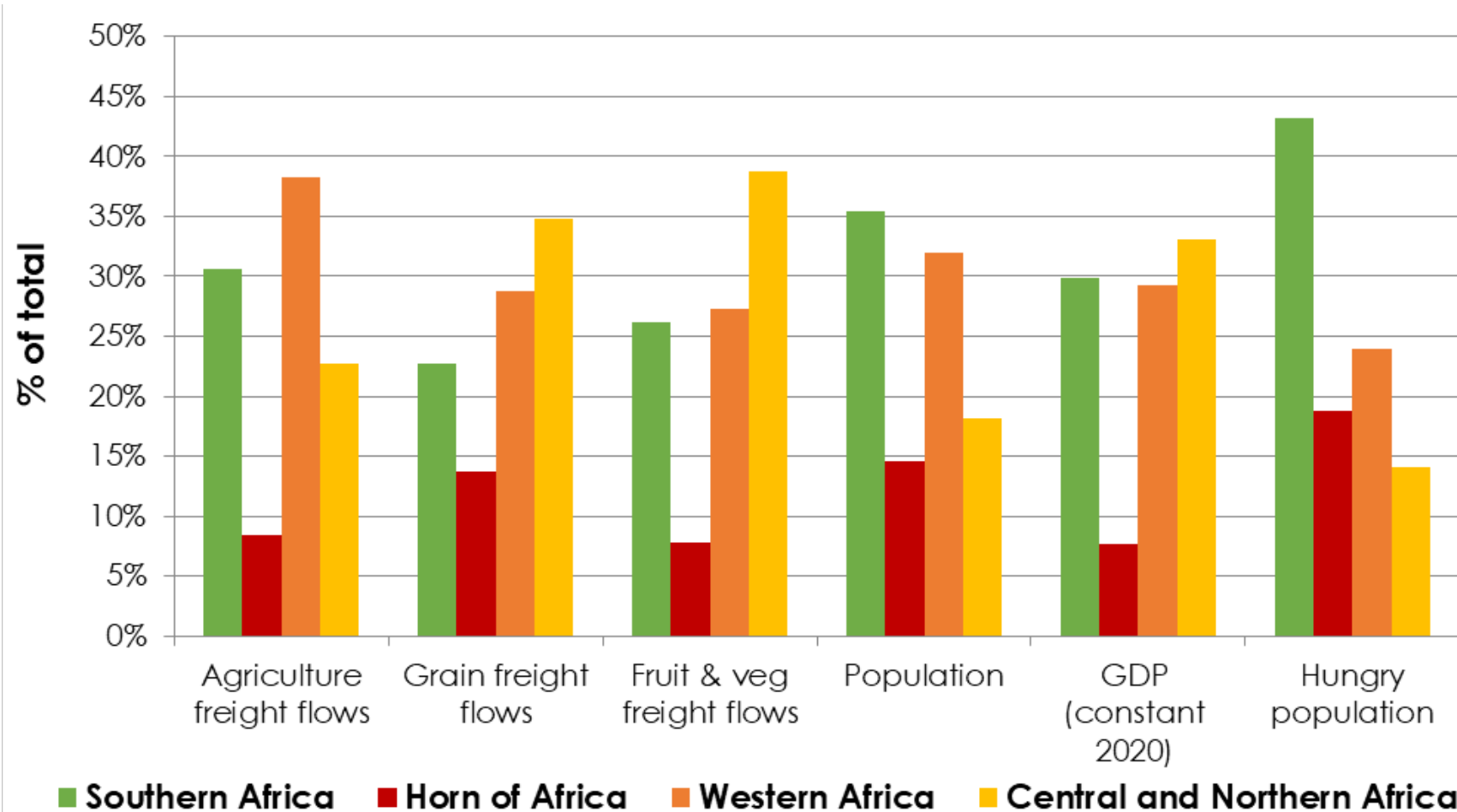
² Created by authors based on FAO food insecurity data (percentage of the population).

Prevalence of severe food insecurity (% of the population)²



² The information shown for the regions, apart from that of 'South Asia' and the 'World', exclude their high-income population as per the FAO data.

Regional freight flows for growth, population and food



Sources:

Created by the authors based on freight flow data from the GAIN FDM™ (2020) and RAFA (2022), along with population, GDP and hungry population data from COUNTRYMETERS.INFO, STATISTA, TRADING ECONOMICS, WORLD BANK, WORLD ECONOMIC FORUM, and WORLD TRADE ORGANIZATION (2020)

Uniqueness of African Countries and Regions

Regions	Included countries
Southern Africa	Angola, Botswana, Burundi, Eswatini, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Tanzania, The Democratic Republic of the Congo, The Republic of the Congo, Uganda, Zambia, Zimbabwe
Horn of Africa	Djibouti, Eritrea, Ethiopia, Somalia, South Sudan, Sudan
Western Africa	Benin, Burkina Faso, Chad, Cote D'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, The Gambia, Togo
Central and Northern Africa	Algeria, Arab Republic of Egypt, Cameroon, Central African Republic, Equatorial Guinea, Gabon, Libya, Morocco, Tunisia
African Island Nations #	Cabo Verde, Comoros, Madagascar, Mauritius, Sao Tome and Principe, Seychelles

Excluded for analysis purposes

Sources:

Created by authors based on 2021 analysis of economic density and trade openness.

Conflicted / fragile countries based on World Bank classification.

	High trade openness	Low trade openness
High economic density	Equatorial Guinea Morocco ● ● Tunisia	Arab Republic of Egypt Eswatini Ghana ● Nigeria Rwanda South Africa ● ●
Low economic density	Botswana ● Chad Eritrea Gabon Guinea ● Lesotho Libya Mali Namibia ● Somalia The DRC The Republic of Congo Zambia Zimbabwe	Algeria Angola Benin Burkina Faso Burundi Cameroon Central African Republic Cote d'Ivoire Ethiopia ● ● Guinea-Bissau Kenya Liberia Malawi Mauritania Mozambique Niger Senegal ● Sierra Leone South Sudan ● ● Sudan Tanzania The Gambia Togo Uganda

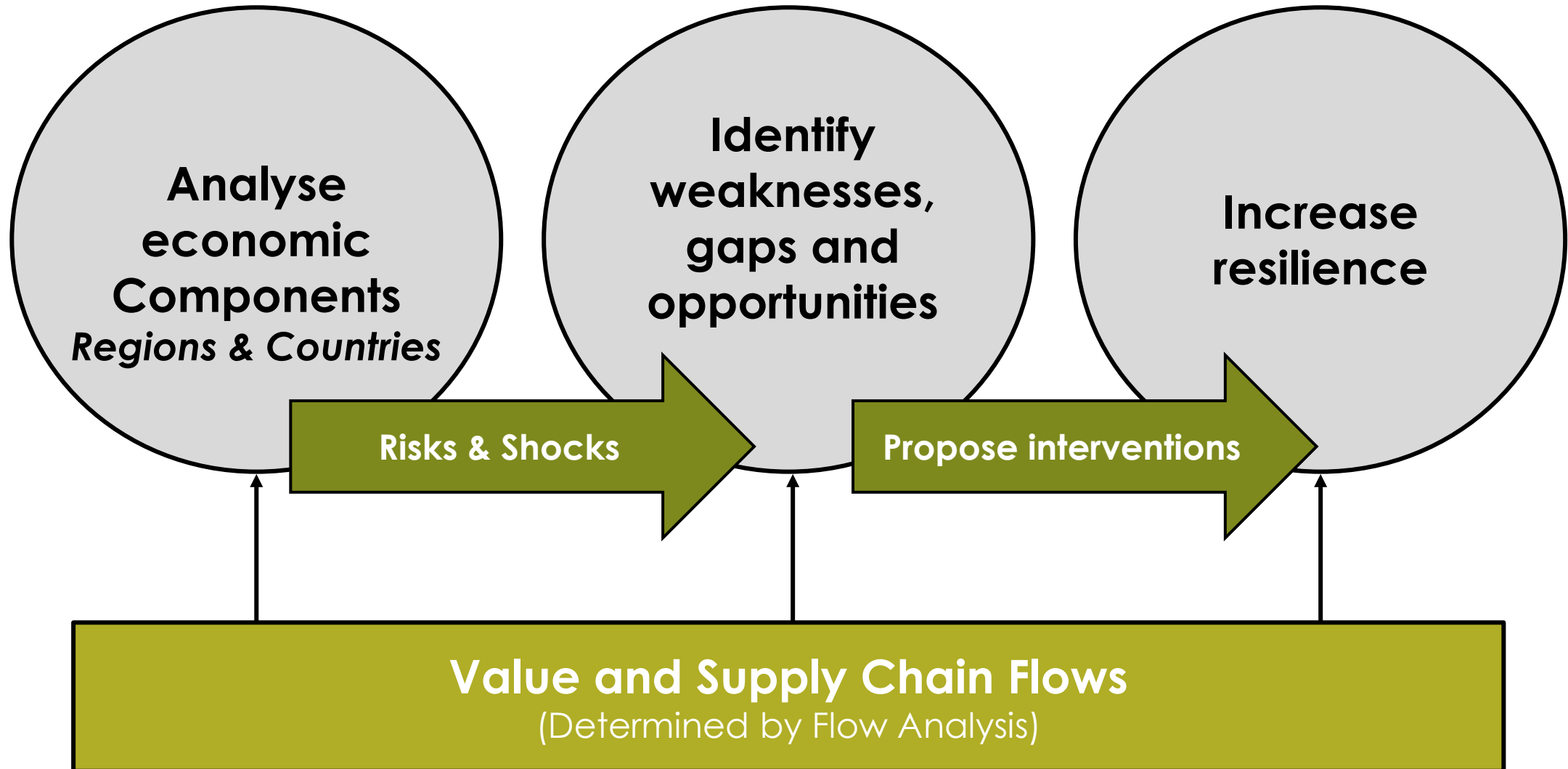
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Countries with institutional and social fragility

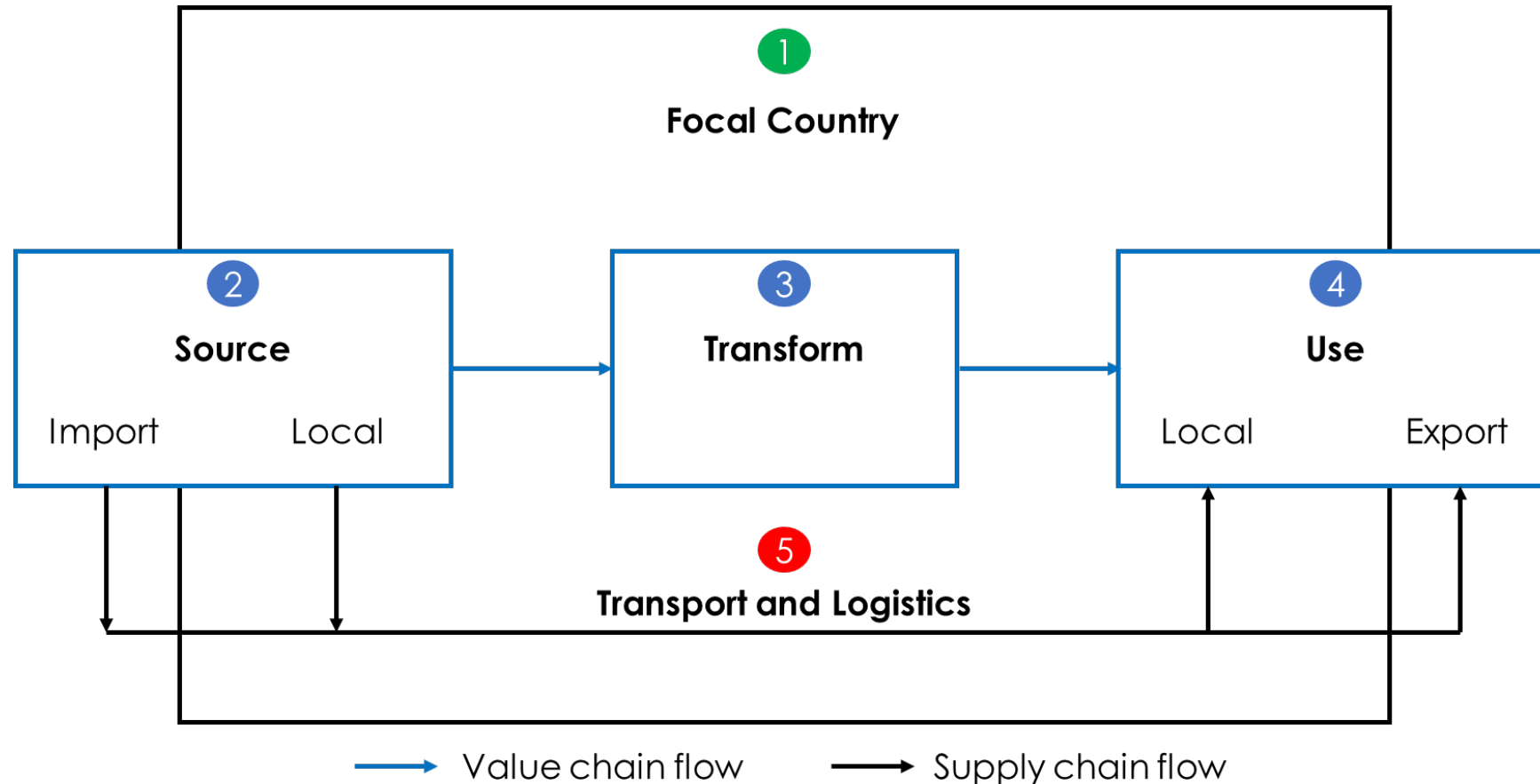
● Supply chain map countries

Macrologistics Resilience - Research approach

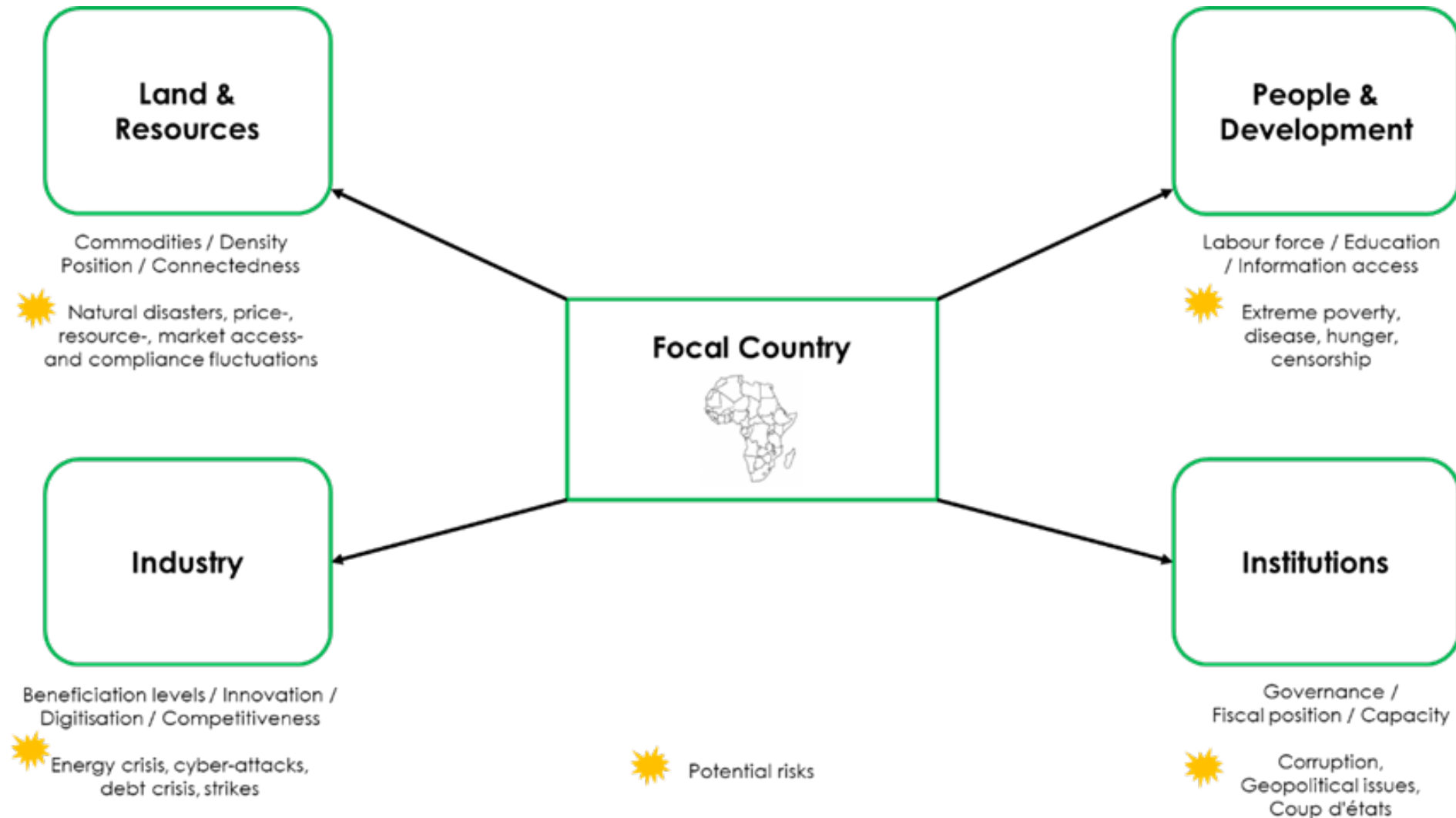


Source: Created by the authors

Macrologistics value chain and supply chain

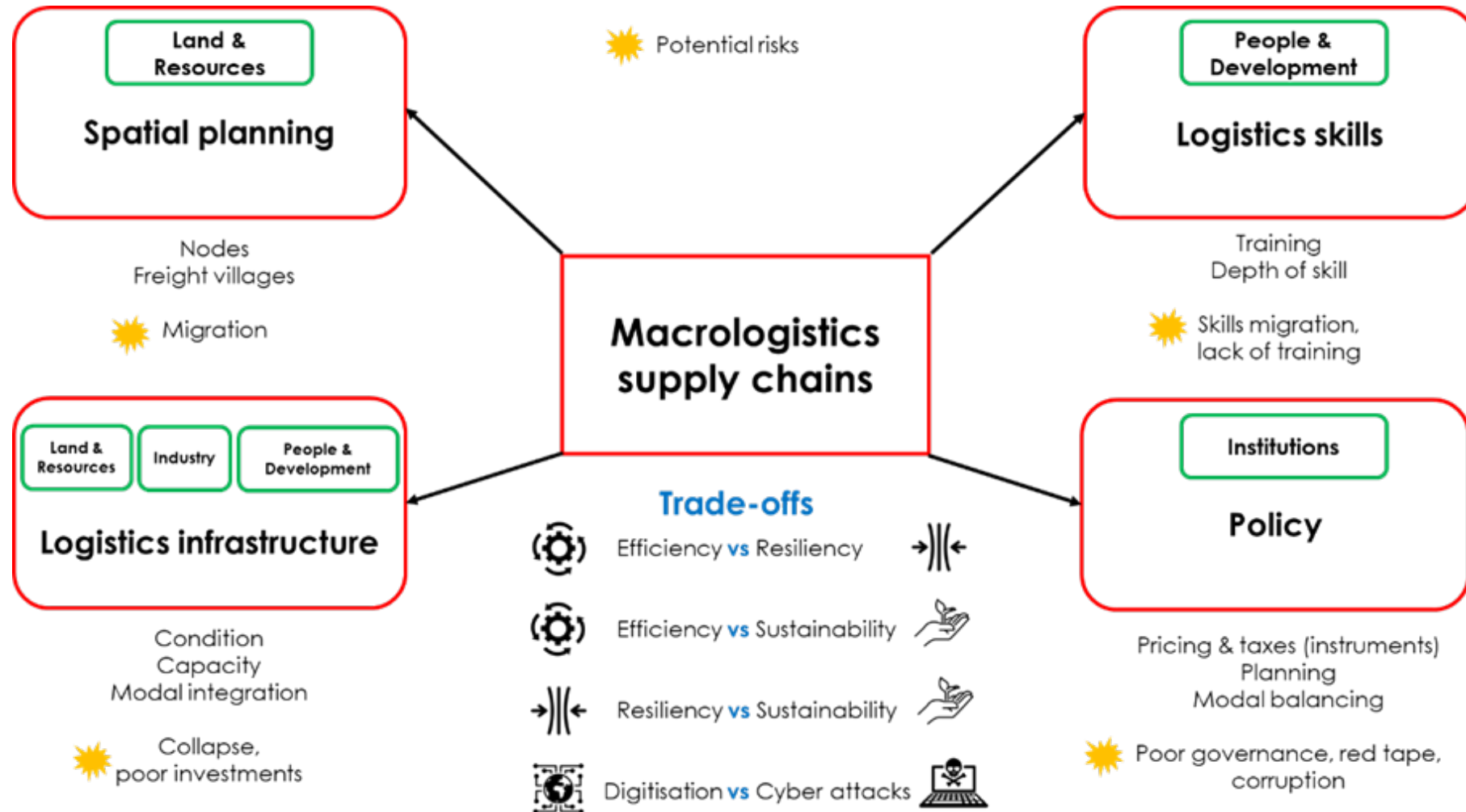


Focal country production factors and risks

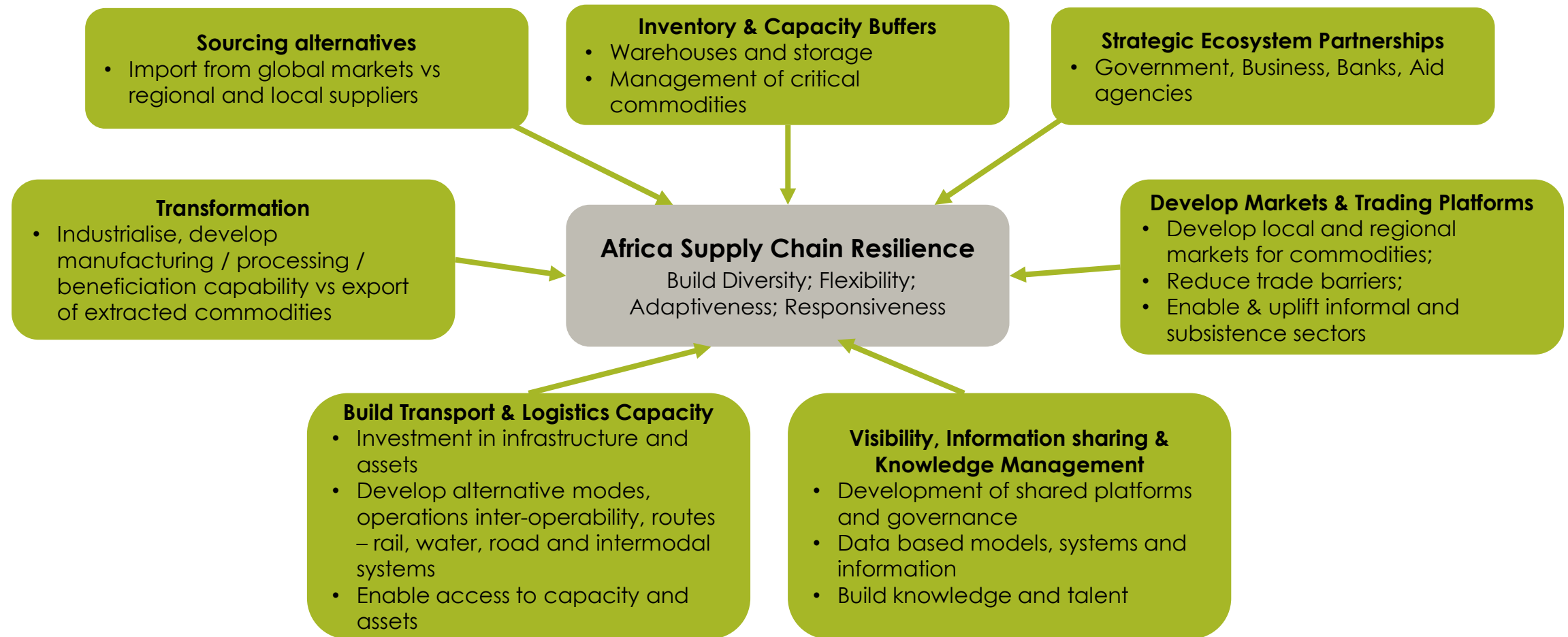


Source: Created by the authors

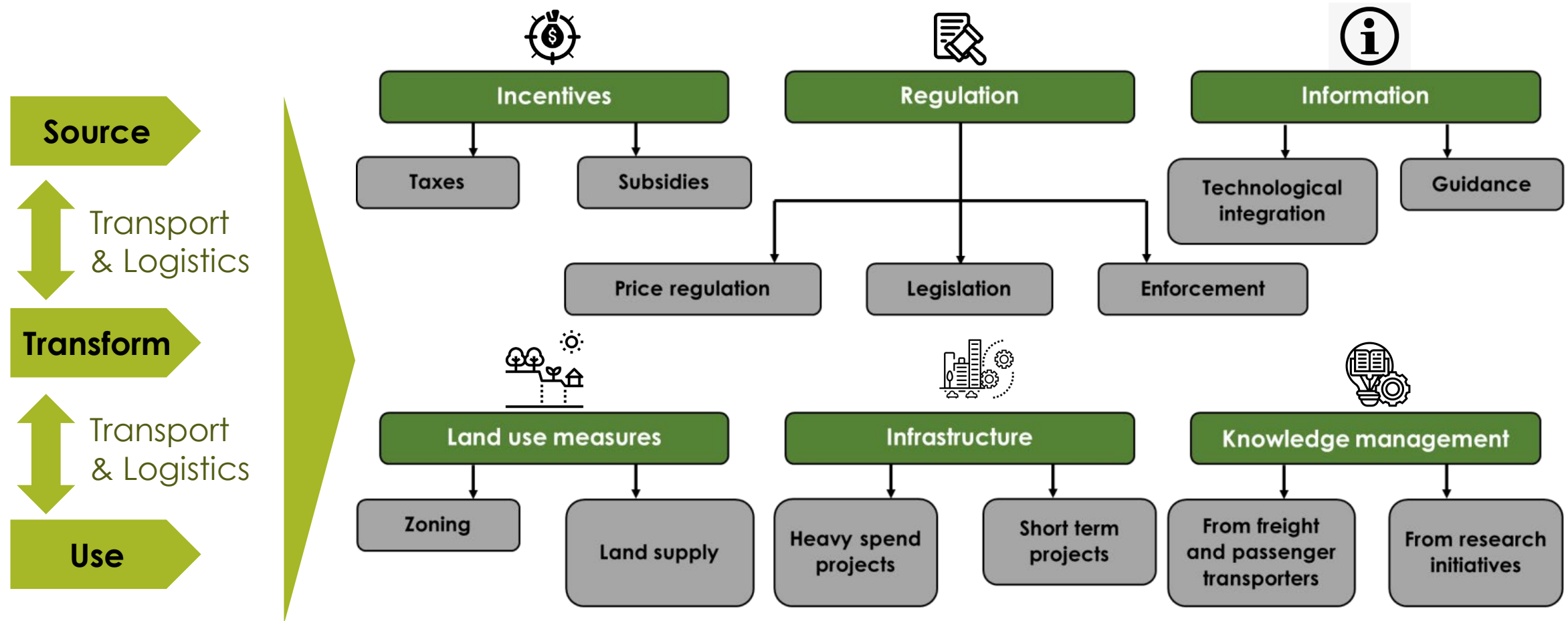
Macrologistic supply chains – dimensions and risks



Strategies for Africa Supply Chain Resilience



Policy and Strategy instruments to support supply chain resilience



Economic and Financial Implications

- **Cost of improving resilience** vs Benefits
 - Social Benefits eg. food security, population well-being
 - Environmental Benefits
 - Economic Benefits
- **Invest** in resilience to reduce / mitigate the cost of future potential shocks, threats and disruptions – especially in countries with **high debt** and **limited means to finance resilience** interventions
- Macrologistics view with freight flow modelling assists in identifying the gaps and nature of support → **escalate, prioritise and fund** the required interventions
- Develop **Funding mechanisms**



Conclusion

- **Significant valuable theories and knowledge of the need to build resilient supply chains in Africa**
 - Practical levers for prioritization and implementation often lacking
- **Why Resilience of Supply Chains**
 - Requirements for risk mitigation, recovery, growth
- **Why Resilience of Supply Chains in Africa Matters**
 - Growing population, sustainable economic growth, food security, harness potential, reduce dependence
- **Unique characteristics of Supply Chains in Africa?**
 - Less developed, vulnerable, raw material export oriented, limited informal sector access to markets
- **Typology of Supply Chains in Africa – Not generic solutions**
 - Unique commodity supply and demand, specific freight flows, value chains lack connectivity, different levels of vulnerability
- **How supply chain configuration increases vulnerability and reduces resilience**
 - Improve resilience through focus on Supply Chain Sources, Commodity Transformation, Use and consumption
 - And transport and logistics to optimize the Flow of Freight
- **Specific innovation interventions**
 - Leverage Strategies and Policies for implementation

