

CHAPTER 5

Conclusions and policy recommendations

5.1 An opportune global situation

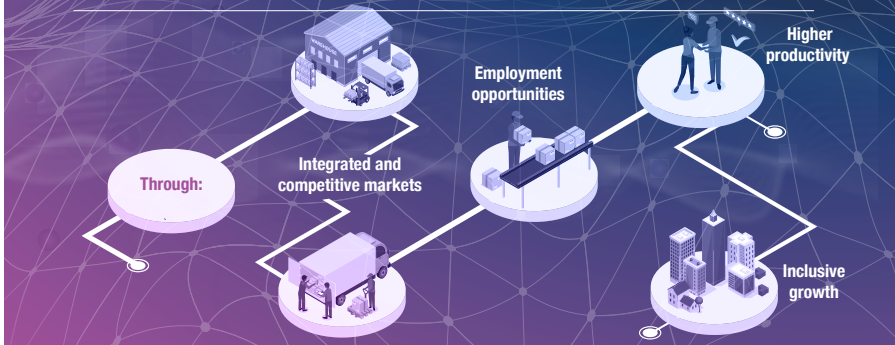
The global supply chain disruptions caused by recent crises, such as the 2008–2009 global financial and economic crisis, the COVID-19 pandemic, the war in Ukraine and the resulting global market slowdown, have intensified the need to promote resilience by diversifying supply chain operations across various countries and regions. The risks of concentrating manufacturing and supply chains in a few markets and of sourcing and supplying sector-specific intermediate goods from a few locations can increase exposure to shocks and disruptions in production networks and supply chains. By diversifying or relocating to Africa, supply chain participating companies can source some of the inputs (raw materials and intermediate goods) from the continent, while reducing the costs of transportation and logistics and minimizing risks of supplier delivery delays and other challenges. These disruptions and opportunities for supply chain diversification or relocation come at a time when African economies are growing more sustainably.

African consumer markets are increasingly transitioning towards middle- and low- middle-income status with an appetite for more sophisticated goods and services. Moreover, the need for supply chain diversification emerges at a time when Governments in Africa and regional institutions have reinforced their commitments to push forward their regional integration, diversification and industrialization agendas, which are viable strategies for developing industrial capabilities and creating prosperity on the continent.

The aforementioned global trends and pressures have given many economies and businesses pause for thought; they are now rethinking strategies for recovery, renewal, and resilience. Many multinational companies are looking into how they can reduce their dependence on a single supplier and diversify their supply chains to build resilience to current and future global turbulence. Others have explored a more regionalized approach with greater security, allowing firms to source and produce within their home countries and regions. While some of these evolving scenarios may have far-reaching implications for investment and fixed cost – and some companies may not be able to pay the cost – their potential benefits and impacts far outweigh the cost. This is particularly so for supply chains and industries that are highly exposed to geo-physical events, trade disputes and other global stresses. *The Economic Development in Africa Report 2023: The Potential of Africa to Capture Technology-intensive Global Supply Chains*, focuses on the high-knowledge and technology-intensive industries – automotives, electronics, green energy technology and medical devices – that are vulnerable to global supply chain disruptions, partly due to their extensive geographic footprint. Opportunities for diversification of high-value and technology-intensive supply chains can strengthen resilience, foster the participation of technology-enabled enterprises in supply chains and optimize the participation of Africa in global supply chains.

For a private business, the scenario for a geographic diversification of supply chains or alternative, multi-source suppliers for goods, materials and services will heighten capabilities to absorb shocks related to the shortage of inputs, such as reduced access to raw materials from a conflict-affected country. Other such shocks include the soaring prices of goods (commodity price volatility due to a global crisis, for instance) and transportation restrictions, such as longer lead times for shipping and delivering products, with impacts on inventory and revenue. Moreover, the geographic diversification of supply chains and alternative, multi-source suppliers for goods, materials and services will also help lessen overdependence on a single source or supply chain market. For example, for a given economy in Africa, particularly one with little or no prior participation in global supply chains, supply chain diversification can offer new development paths. The associated development impact of global supply chain diversification includes a unique opportunity for

DIVERSIFIED GLOBAL SUPPLY CHAINS CAN UNLOCK OPPORTUNITIES AND REAP BENEFITS FROM THE AFRICA CONTINENTAL FREE TRADE AREA



African companies to integrate global supply chains and reap the benefits of economies of scale, integrated industries, private sector growth, productive and technological capabilities and environment sustainability. In the specific context of Africa, the diversification of supply chains can also unlock regional supply chain opportunities and draw many of the potential benefits of the African Continental Free Trade Area – higher productivity, integrated and competitive markets, employment opportunities and inclusive growth, among others.

5.2 A continent on the move

Africa offers many advantages that can drive or contribute to the diversification of global supply chains for technology-intensive industries. The roles of African countries and firms in supporting supply chain diversification can be identified through various supply chain channels and processes (procurement, production and distribution). African countries have an opportunity to integrate as suppliers of raw materials with utility in the low-carbon transition. For instance, Africa has large reserves of key metals, such as cobalt, that can be used in the production of batteries. Moreover, by taking advantage of its growing and youthful population, Africa can strike the right balance between factors of production, labour and technology, as the younger, more technology-aware and adaptable labour force will contribute to higher productivity in technology-intensive industries and supply chains. Increased employment opportunities in technology-intensive sectors, which

in many countries provide higher wages than non-technology-intensive sectors, will clearly contribute to higher income levels and better welfare for consumer-based markets in Africa. A revolving cycle of job creation, improved income, higher consumer expenditure and increased demand for goods and services will communicate the value and attractiveness of African economies and societies to the world and supply chain actors. Learning from the experience of South Africa and other emerging markets, within and outside Africa, in setting cost-efficient distribution and logistics processes, and henceforth securing more investment in adequate hard and soft infrastructure, will be key steps towards leveraging the supply chain potential of Africa.

With the fastest-growing population in the world and the highest concentration of young people, as well as a great potential for e-commerce, African countries will continue to be magnets for consumer markets and products. This has deep implications for supply chains. The trade policies linkage factor in the supply chain is of particular importance, given the momentum provided by the African Continental Free Trade Area and other trade preference regimes. The continent has benefited from preferential trade agreements, such as the African Growth and Opportunity Act, established by the United States, and fostered stronger ties with other emerging and developing economies under South-South cooperation initiatives such as the grouping of States known as BRICS (Brazil, the Russian Federation, India, China and South Africa). Similarly, it is expected that the African Continental Free Trade Area will provide immense benefits for countries in Africa, including employment opportunities and increased intra-Africa trade.

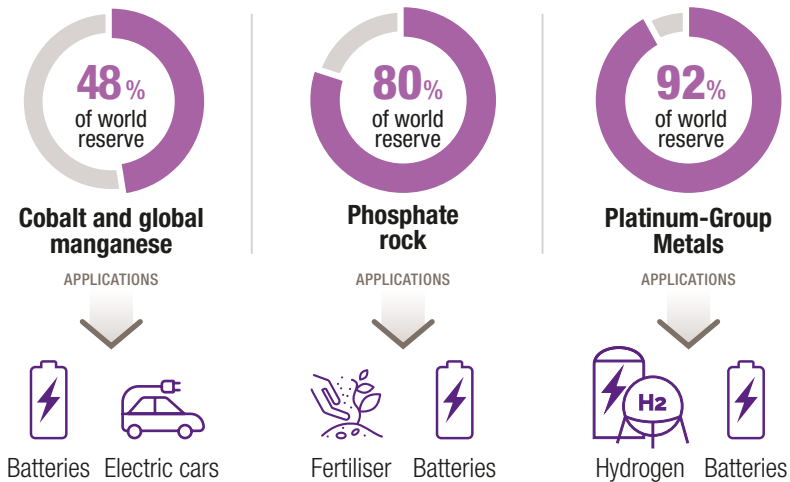
Finally, the low emissions level of countries in Africa and their commitment to emissions reduction are an advantage for diversified and sustainable supply chains. The vast and economically viable green hydrogen potential of the region is an added advantage, as it can lead to lower production and distribution costs. For example, green hydrogen potential could be particularly attractive to energy-intensive industries – steel, chemical, automotive and pharmaceutical industries.

5.3 Market opportunities in dynamic, high-knowledge and technology-intensive supply chains

The role of Africa in technology-intensive global supply chains will be significant in the near future, owing to the rising demand for critical materials. The changing dynamics in technology-intensive supply chains brought about by green technologies provide impetus for African countries to achieve deeper supply chain integration. For instance, an

electric car requires about six times the mineral inputs of a conventional car. Africa holds approximately 19 per cent of all the global metal reserves required to make an electric vehicle. Out of those metals, the continent accounts for 48 per cent of world reserves of cobalt and manganese, 80 per cent of phosphate and 92 per cent of platinum. It also accounts for 97 per cent of the world's exports of cobalt and 84 per cent of manganese and at least a fifth of the world's reserves in a dozen minerals that are necessary for the energy transition.

Africa's main natural resource reserves compared to the world's



The heart of the automotive supply chain lies in the parts and component industry, but countries in Africa provide few inputs to a rising assembling industry. The landscape of various small assembly plants and a few large-scale plants in Morocco and South Africa hinders sufficiently large-scale production to attract automotive parts and component suppliers.

Investment incentives should be aimed at larger-scale or higher-return investment in value added supply chain processes, coupled with access to foreign markets and export promotion. The manufacture of non-specific automotive parts and components (so-called tier 2) is a sound target, as it is often the next processing stage based on the abundant metals in the region sought by a range of manufacturing sectors. Further, it could provide additional incentives to relocate the manufacture of tier 1 products to the

continent, as vehicle production is steadily growing. The necessity of firm and harmonized used-vehicle regulations must be emphasized to allow affordability of vehicles without harming the environment or undermining regional production incentives.

There is substantial opportunity to strengthen regional supply chains in the manufacture of mobile telephones, made possible by the abundance of cobalt, manganese and nickel to make cathode precursors in electric vehicle assembly plants. For example, the Democratic Republic of the Congo, which represented about 70 per cent of global cobalt supply in 2020, recently announced plans to produce a battery precursor. Such plans can be viable only if the regional supply of other materials is supported by infrastructure investment.

In Africa, solar panel module assembly is a lucrative area for investment, given the high growth in renewable energy investment stemming from the region's vast potential for solar energy. Between 2000 and 2020, renewables investment in Africa reached an average yearly growth rate of 96 per cent. Yet, the continent still suffers from significant investment gaps, receiving about 2 per cent of global investments in renewable energy. The production of solar photovoltaics is limited, with some initial opportunities materializing in Egypt, Morocco and South Africa. Despite the rapid growth in demand for solar home systems, systems in Africa are tiny compared with their counterparts in the developed countries and require batteries and charge controllers to ensure stable output. Assembly of the solar field, which must be performed at the site, offers significant local manufacturing potential. Moreover, the need for parts, such as ball joints, bearings and cables, whose manufacture and supply do not necessarily require high-knowledge-intensive specialization, but which are used by many industries, opens up opportunities for already established companies to engage in lateral diversification and extend their customer base. For newcomers in the industry, opportunities further down the supply chain, such as project development, advisory services and installation and repair services, provide more feasible opportunities for employment creation.

Medical products and devices require a range of materials and components and could be the next transformative industry in Africa. Despite some progress, African countries recorded a trade deficit in medical devices of \$2.6 billion between 2018 and 2020. For instance, South Africa maintains a strong export position as the world's largest exporter of two critical materials utilized in the medical devices sector, titanium and platinum. However, it only accounts for 5 per cent of those materials imported to Africa. Despite the large trade deficit of the sector, there is foreseeable optimism and great potential under the African Continental Free Trade Area, which can play an important part in facilitating exports to the continent by reducing tariffs and infrastructure investments.

These expected benefits will make it easier to import the necessary inputs from countries in Africa and localize production downstream the supply chain. Encouragingly, there have been strong advances in Africa in providing health care and diagnostics to people in rural areas through the implementation of technologies and innovative solutions. Apart from collaboration with multinational companies to access knowledge and technology to manufacture and supply medical products and devices, including generic medicines, attention should be given to increasing the local sourcing and manufacturing of raw materials. For example, in Egypt there are already major local research initiatives under way to produce the most needed active pharmaceutical ingredients.

5.4 Unlocking capabilities to achieve value creation in supply chains

While many factors can drive the participation of African countries in global supply chains, they could embark on a more impactful path by building upon and strengthening domestic and regional supply chains. However, the comparative advantage of African economies and supply chains can be constrained by several factors, including export concentration, inadequate infrastructure capacity and lack of technology and skills, which may negate the potential benefits of relocating parts of global supply chains to the continent. The non-diversification and non-regionalization of supply chains in Africa have the consequence of slowing down the region's economic emergence, causing supply chain disruption and heightening the vulnerability of its economy to external shocks.

In Africa, viable technology-enabled services could overcome constraints faced by supply chains by contributing to their diversification and enabling their resilience and sustainability. Such technology-enabled services include supply chain connectivity and logistics, supply chain digitization, electronic data interchange, supply chain traceability software and smart services. In particular, software supply chains, such as application and infrastructure software, can help develop and deepen supply chain networks (for example, supplier–customer relationships) by facilitating reliable and accurate information flow, effective supply chain governance and streamlined operational processes, including the production and distribution of goods and services.

In Africa, most private sector and small and medium-sized enterprises are not yet close to integrating regional and global supply chain networks. This can be partly explained by their lack of access to finance, technology and market opportunities. Low investment in

technology and innovation limits the ability of African firms to tap into these opportunities for global supply chain diversification. Supply chain finance can be a solution for small and medium-sized enterprises. Supply chain finance focuses on working capital financing, bridging the payment time gap between buyers and sellers to manage the cash levels and needs of suppliers in daily operations in an efficient manner and reduce stress to the balance sheet. It facilitates their access to finance by using their accounts receivable – money due to a buyer or another supplier in the short term – as collateral or selling their accounts receivable at a discount to a finance provider. This is particularly beneficial to non-investment grade-rated small and medium-sized enterprises, as it facilitates their access to loans or advanced payments against underlying assets, such as accounts receivable and inventory.

Scaling innovative supply chain finance solutions could significantly improve the access of small and medium-sized enterprises to financing and improve their competitiveness in a well-integrated supply chain that could further increase employment, income, quality of life and economic growth. However, the level of involvement in supply chain finance remains low. In 2022, Africa contributed \$2.2 trillion, or 1.9 per cent of the volume of global supply chain finance.⁴² Although it remains the most underdeveloped supply chain finance market across major regions, its growth has been accelerating. The supply of supply chain finance continues to be far below continental demands. Addressing the challenges to supply chain finance growth – lack of technological infrastructure, inadequate legal and regulatory frameworks, high credit risk perception and sustainability issues – will unlock the financing capabilities of African firms and optimize their integration in regional and global supply chains.

5.5 Practical policy options for building resilient supply chains

This section provides a policy framework that will help African countries become the next frontier destination for global companies that are reassessing their geographic footprint in supply chains and devising strategies to diversify their supply chain networks to build resilience to global shocks and related economic, market and supply chain pressures and disruptions. The public and private sectors, as well as financial and regional institutions, will need to intensify their efforts in acquiring the necessary skills

⁴² Defined solely as payables finance.

and capabilities to integrate regional and global supply chains for high-knowledge and technology-intensive industries, such as automotives, electronics, renewable energy technologies and health care. The section also provides strategic and actionable policy recommendations to leverage the potential of other drivers and enablers of supply chain diversification. These include the localization of supply chains, regional market opportunities under the African Continental Free Trade Area, technology transfer and corporate innovation, technology-enabled service provision by small and medium-sized enterprises and supply chain financing for such enterprises.

5.5.1 Automotive industry: Regional vehicle supply chain

To leverage the increasing demand for production, new vehicle-financing mechanisms that favour lower interest rates should be developed. Further, there is a need for harmonized and transparent standards to facilitate vehicle sales and promote the domestic supply of parts and components, as well as aftersales goods and services. The African Continental Free Trade Area can provide a platform to create the essential linkages between car companies and local suppliers that would enable them to access the necessary knowledge and technology to meet car-specific requirements.

Apart from niche markets, new vehicle assembly locations, such as Ghana, Kenya and Nigeria, should consider setting up multi-brand mega-factories, run by contract manufacturers, to achieve higher production volumes, which is necessary to attract parts and components production.

Despite varying motorization rates, all countries in Africa will see an increase in cars and will participate in the supply chain, especially through aftersales repair and maintenance, if not vehicle assembly. There is a need for a more coordinated automotive strategy and regional automotive development plan to avoid the duplication of efforts. For instance, in 2022, the Economic Community of West African States adopted a framework policy on the development of automotive value chains in the region. Such a regional framework could provide the base for a continental framework. The African Continental Free Trade Area has promoted several initiatives, such as the establishment of a fund to develop automotive manufacturing in Africa.

Low-income countries in Africa have lesser productive capacity and face more structural challenges than more affluent ones. They should be given priority in a regionally coordinated automotive strategy to provide fewer complex products. For example, preferential treatment under the African Continental Free Trade Area rules of origin

requirements should be considered to allow them more flexibility in production and the sourcing of necessary inputs. Policy incentives designed to encourage localization or local content competitive advantage, which can take the form of a specific percentage of mining products that must be used or transformed locally, would facilitate local market linkages and strengthen the industrial capabilities of domestic firms.

Employment in the automotive industry, especially in retail and repairs, is dominated by the informal sector. However, if people are sufficiently trained, they will be able to work in a formal manner. Governments in Africa should implement strategies that identify the necessary human capital, and technical institutes should work with firms in the automotive sector to provide apprenticeships for students.

Increased automation requires gradually moving from simple engineering to more complex product development based on advanced research and development. African countries, in collaboration with the private sector, could provide funding for technical Institutes that specialize in the automotive sector and adapt curriculums to reflect new developments in technology, such as electric vehicles. For instance, the Centre of Excellence in Electric and Industrial Welding Technologies of Sunyani Technical University in Ghana is supported by the Ghana National Gas Company, which aims to build capacity in the niche area of electrical engineering for the manufacture of electric vehicles.

5.5.2 Electronics: Mobile telephone supply chain

Resource-rich countries, such as the Democratic Republic of the Congo, can leverage their cobalt reserves to promote the local assembly and manufacture of mobile telephones by setting up special economic zones and nurturing more conducive environments for foreign and domestic investment.

Addressing legacy environmental, social and governance issues, such as raw materials transparency, is important to ensure the sector's sustainable development. Strategies and mechanisms that foster the adoption of circular supply chains, which consist in recycling and remanufacturing products and components instead of discarding them, will increase supply chain sustainability and attract sustainable investments to the sector.

The enforcement of decent labour laws is necessary in an assembly industry that has a higher share of women, as they are often more vulnerable to exploitation and health risks than men. The private sector should be encouraged to be more responsible by

introducing Sustainable Development Goal indicators in investment agreements and ensure readiness for jurisdictions to adopt sustainability disclosure standards set by the recently established International Sustainability Standards Board.

A one-stop joint venture partner to coordinate local investment and implementation could help reduce regulatory red tape, de-risk projects and facilitate a well-structured knowledge transfer between multinational corporations and local companies.

Investing in skills development and technical training would help create a skilled workforce for the mobile telephone industry. Countries that already engage in some mobile telephone assembly should develop research facilities to invest in next-generation battery technology.

5.5.3 Renewable energy technologies: Solar panel supply chain

Given that investment in Africa is currently low, in particular with regard to renewable energy, demand for solar panels should be stimulated, for example, through structured renewable energy procurement programmes.

A key challenge for companies in the solar panel industry concerns both financial and organizational capability. Local advisory services can help target customers' individual needs and provide guidance for the implementation of large-scale projects.

Not all African countries may be in a position to produce solar panels for their markets, but the additional employment generated by advisory, installation and repair services can be substantial and should receive greater attention. Local entrepreneurs possess a keen awareness of local needs, such as language and culture. This is also true in regard to other renewable energy technologies.

There is a need for intensified collaboration to enhance knowledge and technology transfer. This could take the form of mentoring programmes, in which more established and successful companies can share information and benefit from formal and informal intra-industry exchanges that are necessary for continuous learning.

Most funding from development finance institutions is directed towards large-scale projects, which often restricts or excludes the participation of local companies. These institutions should ensure the inclusivity of local companies and consider local content requirements in tender procedures.

With regard to training and skills development, training in solar photovoltaic projects should be provided for commercial banks, as it is important to enhance understanding of complex projects and facilitate financing.

5.5.4 Health care industry: Pharmaceutical product and medical devices supply chain

Harmonized regulation and product registration is essential to facilitate market access and economies of scale in production. The African Medicines Regulatory Harmonization programme, for example, has achieved a reduction in marketing-approval time but more effort is needed to achieve a regional certification process.

To increase demand and access to medicine, pooled procurement and financing should be further promoted through programmes, such as the Africa Medical Equipment Facility, created by the International Finance Corporation, as well as platforms, such as the Africa Medical Supplies Platform, an online portal that enables the delivery of medical supplies to Governments in Africa. The centralized pooled procurement mechanism of the African Continental Free Trade Area Pharmaceutical Initiative, launched by the United Nations, Economic Commission for Africa, is another important example.

Cluster formation can be beneficial to ensuring access to electricity, water and other key infrastructure for manufacturing activities, including pharmaceutical operations across the continent. An industrial cluster, such as Medicine City, Egypt, has been a common model of pharmaceutical sector development in many emerging economies to provide an attractive environment for investment. One of the focuses when building an industrial cluster should be on increasing the local sourcing and manufacturing of raw materials.

The limited involvement of African countries in upstream research and development, production of intermediate goods and active pharmaceutical ingredients requires the development of an innovation ecosystem. This should be promoted at the regional level through a continental-wide effort, which can create economies of scale, especially for low-income countries.

In light of the challenges of multilateral negotiations on technology transfer, countries should collaborate with companies to access knowledge and technology, as well as industrial design information. For instance, the Government of Egypt has encouraged local companies to establish partnerships and joint ventures with multinational

companies to enter the domestic market, in exchange for technology transfer and intellectual property. South–South cooperation (for instance, as shown by the examples of India–Egypt and India–Nigeria technology transfer) is also important.

5.5.5 Mining industry

Local content requirements and supplier programmes will not sufficiently promote domestic firms if the initial challenges of these firms – lack of electricity and access to finance, for example – are not tackled. Supply chain finance and targeted support to these companies can be negotiated ex-ante with mining companies before granting licences.

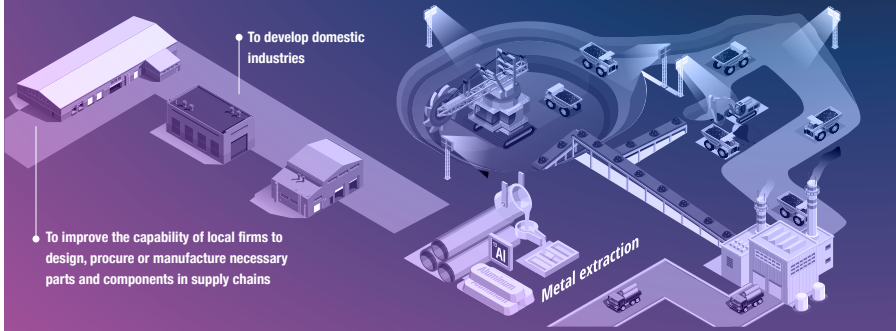
African countries should receive support in negotiating and renegotiating contracts to ensure fair value from the extractive industries.

The Sustainable Development Licence to Operate, a holistic multilevel and multi-stakeholder governance framework aimed at enhancing the contribution of the mining sector to sustainable development, could provide a framework for negotiations and re-negotiations.

A regionally coordinated mining policy could ensure that disadvantaged countries can also supply other inputs, for example, one that provides a common fund covering the additional cost of transporting inputs from countries with weak transport infrastructure to where the activity is taking place. This example can be found in the Regional Mining Vision of the Southern African Development Community. In addition, it is recommended that the implementation of the Africa Mining Vision be stepped up and enhanced.

Governments, private companies and development partners in Africa should encourage recycling and circular economy practices to minimize environmental impact and reduce the demand for virgin materials. More research and development is necessary to tailor the investment needs relating to materials and industries.

BETTER MINING CONTRACTS AND EXPLORATION LICENSES FOR METALS USED IN HIGH-TECHNOLOGY PRODUCTS AND SUPPLY CHAINS ARE NEEDED



5.5.6 Localization of supply chains

The future of supply chain transformation in Africa, especially in technology-intensive industries such as automotives, electronics, renewable energy and pharmaceuticals, will require viable options for creating domestic supply chains that are reliant and resilient. This can be achieved through localized supply chains, supplier development programmes and local procurement requirements. The following policy and operational practices are recommended:

- As inconsistency within local content requirements or the lack of sound implementation can introduce unnecessary rigidities when sourcing inputs, other requirements, such as those relating to export performance, transfer of knowledge and technology to local firms, and employment and skills creation, should be favoured.
- Industrial policies relating to science and technology, human capital development, infrastructure, capacity-building and marketing tools should prioritize local sourcing.
- Domestic companies should be given structured support, with a view to increasing their supply to the mining industry, access to technology and structured finance, and technical mentorship.

- Governments in Africa should work with foreign investors and other partners on innovative supplier development programmes. Such programmes can be beneficial, as they can help firms obtain relevant international certifications, link small and medium-sized firms to lead firms, provide consultancy, establish a forum for lead firms to disclose sourcing needs and develop links for technology transfer to small and medium-sized enterprises.
- Targeted public procurement programmes should be reserved for local suppliers, based on a thorough assessment of goods and services.
- To create incentives for large companies to partner with local enterprises, investment promotion agencies could set up vendor development programmes and create linkages between foreign firms and local suppliers, for which the Singapore Economic Development Board is a good model.
- Active localization strategies should be coupled with corporate social responsibility practices. For example, the Global Reporting Initiative states that multinational enterprises should report on how much they buy locally. Similarly, corporate social responsibility guidelines issued by the Organisation for Economic Co-operation and Development recommend human capital formation and encourage local capacity-building through close collaboration with local communities.

5.5.7 Regional market opportunities offered by the African Continental Free Trade Area

The implementation of the African Continental Free Trade Area provides momentum to draw greater attention towards more high-technology sectors that create local value addition and employment opportunities. As it also aims to strengthen national and regional competitiveness by facilitating regional economic performance and industrial innovation, the African Continental Free Trade Area will help enhance regional supply chain capabilities and contribute to the economic development of supply chain hubs on the continent. To leverage such opportunities, the following policy and operational practices are recommended:

- National and regional development plans should factor in and focus on sectors they would like to target. For instance, national implementation plans under the African Continental Free Trade Area focus on key strategic sectors that can provide maximum benefits through participation in the continental trade agreement.

- While there are private sector strategies in place throughout Africa for the automotive and pharmaceutical industries, the African Continental Free Trade Area Secretariat may consider developing similar strategies for mobile telephone assembly, renewable energy technologies and medical devices, owing to the local linkages of these sectors and their importance for environmental and social development.
- African countries should receive support from international organizations to identify their individual potential and niche areas in these technology-intensive supply chains.

5.5.8 A push for technology and innovation in supply chain transformation

The use of new technologies and digital solutions can provide comprehensive supply chain visibility and transparency and facilitate the ability of companies participating in supply chains to respond more effectively to shifting global market dynamics. Identifying the potential of individual countries in technology-intensive supply chains; assessing the technology and digital readiness of African firms; facilitating technology transfer, reverse engineering and domestic innovation; and developing and increasing the use of digital technology in supply chain processes and interactions, will be important for transforming supply chains in Africa. The following policy and operational practices are recommended:

- Better data and information sharing would attract international investors to more countries in Africa, as multinational companies also require supply chain information to be agile and to comply with environmental, social and governance regulations.
- The use of digital solutions, such as the Africa Medical Supplies Platform and the Green Token blockchain solution offered by the company System Analysis Programme Development, also known as SAP, and electronic data interchange technology in general, can facilitate linkages and help obtain supply chain information.
- Automated product identification, for instance, through electromagnetic fields, also helps identify and track objects, and can, for instance, reduce trade in counterfeit and imitated drugs.

- Corporate social responsibility practices should be fostered to facilitate technology transfer, research and development and access to production knowledge.
- Along with sound legal frameworks, good political stability and low corruption levels, the implementation of strong intellectual property rights can attract foreign investment in high-technology- and research-and-development-intensive supply chains and promote innovation to provide products tailored to meet the needs of Africa.
- The Protocol on Intellectual Property Rights for the African Continental Free Trade Area promises to overcome divergent and overlapping regional regulations relating to such rights. Two intellectual property organizations in Africa, namely the African Intellectual Property Organization and the African Regional Intellectual Property Organization, can be leveraged to implement a robust continental regime.
- There is a need to strengthen investment facilitation services through the streamlining and digitization of administrative processes, making them transparent and accessible to all investors.
- Few investment promotion agencies have concrete road maps for the promotion of investment in the Sustainable Development Goals (SDGs or Goals). Development partners should support investment promotion agencies on how to mainstream the SDGs into their investment promotion work. Costa Rica offers the example of a country whose investment promotion agency has identified priority Goals and reports routinely on these.

5.5.9 Technology-enabled service provision by small and medium-sized enterprises and supply chain financing for such enterprises

Small and medium-sized enterprises can be strategic sources and key drivers of global supply chain diversification and supply chain transformation in Africa. Adopting digital solutions and models to their business performance, operating in a conducive technology-based supply chain environment and tapping into novel finance tools to increase the participation of small and medium-sized enterprises in supply chains will be necessary for those sector enterprises seeking to expand their markets and integrate supply chains. These enterprises could also reinforce their collaboration with larger firms or supply chain participating companies by creating complementary

businesses (vertical integration) or creating similar businesses in other locations (horizontal integration). Large companies should seek to integrate, whether vertically or horizontally, start-ups and small and medium-sized enterprises to diversify and regionalize their supply chains. This is particularly important to enhance regional integration by means of the African Continental Free Trade Area. The following policy and operational practices are recommended:

- The adoption of digital technologies could facilitate the participation of small and medium-sized enterprises in supply chains and linkages with firms that already belong to global supply chains. The integration of technological services through supply chain digitization enhances the visibility of small and medium-sized enterprises throughout the world, thus attracting large companies to work with them.
- New technologies, such as digital invoicing, are particularly important to improve supply chain transparency, enable real-time data capture to facilitate know-your customer due diligence on buyers and suppliers, lower financing risks and prevent fraud.
- There is a need for technology-led solutions, especially for payments systems. Digitization will serve as a new enabler to reconceiving and developing trade finance ecosystems, such as electronic invoicing, application programming interfaces, blockchain, cloud-based solutions and software as a service, to improve supply chain efficiency and transparency. Vertical and horizontal integration, supported by viable technology-enabled services, can lead to supply chain diversification and regionalization. Collaboration and vertical or horizontal integration cannot perform effectively without good coordination, requiring smart currencies and factories, real-time data and the Internet of things.
- Countries in Africa should consider building an enabling environment for a well-functioning, technology-enabled supply chain finance market by improving and enforcing legal and regulatory frameworks. This requires greater homogeneity of legal frameworks to facilitate financial investment across borders. Standards of the regulatory framework should be aligned with supply chain finance prerequisites, such as ensuring the application of laws related to contract enforcement and dematerialization for digital invoicing, signatures and accounting.

- The public and private sectors should play a leading role in educating potential market players across the public, financial, corporate and entrepreneurial sectors, presenting supply chain finance solutions to manage cash flow and deal effectively with late payments, long payment terms and working capital liquidity squeeze.
- Innovative and custom-made credit assessment and financing tools for African firms could help manage and change the risk perception of potential market players. Owing to the disproportionately high-risk perception of African firms, Governments could take part in the guaranteed schemes for pre-shipment loans and sales order advances for small and medium-sized enterprises. Other possibilities include sustainable supply chain finance, which includes working capital loans with environmental, social and governance demands on products sold, and asset financing loans bridging order deposits with environmental, social and governance requirements on equipment procurement.

5.5.10 How UNCTAD can support the implementation of these policy recommendations

To leverage and benefit from supply chain opportunities provided by recent global disruptions and emerging challenges, Governments in Africa can count on the research and policy analysis, technical cooperation and consensus-building support of UNCTAD. As the focal point of the United Nations for the integrated treatment of trade and development and interrelated issues in the areas of finance, investment, technology and sustainable development, UNCTAD provides ahead-of-the-curve and innovative analysis on tailored policy and frameworks that could help Governments in Africa and their stakeholders develop improved capabilities for accelerated industrialization and enhanced participation in global markets and supply chains.

Building upon its expertise and of experience providing on-the-ground technical assistance and innovative capacity-building tools, UNCTAD could develop, jointly with Governments in Africa and other relevant stakeholders, bespoke training programmes and tools that can assist industry leaders and small and medium-sized enterprises in understanding the opportunities to integrate global supply chains through increased access to new technologies, financing and re-skilling programmes. Such technical assistance and training programmes will also strengthen the ability of small and medium-sized enterprises to better mitigate some of the risks that come with access to new markets and potential exposure to external shocks. By providing a forum for

open and constructive dialogue for policymakers, financiers and development partners, UNCTAD could work with Governments in Africa, domestic and global industry leaders, and domestic and foreign investors to facilitate, streamline and increase visibility, transparency and impact in overall supply chain processes, from adopting policies and standards that would encourage more local content requirements, to strengthening local capabilities for innovating, producing and delivering goods and services across regional and global supply chains.