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Re-igniting Africa's Industrialization Through Innovation

Inaugural Prof. Calestous Juma Seminar Series

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Background and Context

Introduction

The African Union's (AU) Agenda 2063 Commodities Strategy set to formulate and implement policies that would stimulate African countries to extract more value from natural resources by promoting vertical and horizontal diversification and local content development. The strategy envisioned a commodity-led industrialization focusing on developing Africa's commodities as a driver for achieving the structural, social and economic transformation of the continent. (African Development Bank, 2017). And despite the gap in industrial performances between Africa and other emerging countries, industrial development seems to be given less weight than deserved in African countries.

Another more important reason for this widening gap is the continent's growth in low productivity sectors, both in terms of the size of the labour force employed, particularly in subsistence agriculture and low-end services, and the contribution that these sectors make to gross domestic product (GDP). In advanced economies the contribution of manufacturing has shifted to promoting innovation, productivity and remains critically important as a pathway from subsistence agriculture to rising incomes and living standards (*Africa in the World Report, 2018*)

Prof. Calestous Juma Seminar Series on Industrialization

The African Centre for Technology Studies (ACTS) and the Calestous Juma Legacy Foundation (CJLF) have initiated a series of seminars in honor of Prof. Calestous Juma, one of Africa's luminaries in the application of science, technology and innovation (STI). Until his untimely death in December 2017, Prof. Juma was an internationally recognized authority in the application of science, technology and innovation for sustainable development, especially in developing countries; and focused on analyzing how knowledge and innovation could be harnessed for development in the context of institutional change in socio-economic systems and policies. He founded ACTS in 1988, where his initial development ideas were nurtured to become a leading inter-governmental STI policy think-tank with the mandate to strengthen the capacity of African countries and institutions to harness science, technology and innovation for sustainable development.

Key Messages

- Despite the gap in industrial performances between Africa and other emerging countries, industrial development seems to be given less weight than deserved in African countries.
- Africa's Industrialization is being driven by global imperatives, which has led to an increased concentration of industrial activity specialized in high value added activities and serving international markets.
- Industrial manufacturing largely drives economic development; the key requirement is continuous technological learning, which underpins economic diversification and structural transformation.
- Although COVID-19 precipitated an unprecedented socio-economic crisis, there was a silver lining with regard to fanning the embers of industrialization in Africa.
- It is imperative to address the basic needs of the informal actors and ensure social protection to enhance their potential for industrialization.

Key Recommendations

- Africa must pursue an active industrial strategy and take agribusiness as the base; this is where it finds its competitive advantage while continuing to promote other industries and the services sector.
- African countries need to find ways to identify and share benefits in health and industry through mutual learning.
- African governments should enact policies that strengthens innovation and technological capabilities in informal enterprises as a bottom-up root to industrialization.

The inaugural seminar, held on 12th-13th August focused on *Reigniting Africa's Industrialization through innovation* which featured the continent's renowned experts on innovation and policy. This briefing note distills key policy recommendations arising from the inaugural seminar. It focused on key questions relating to Africa's industrialization: what challenges have conspired to stifle Africa's Industrialization? What policy directions are required to reverse this trend? What opportunities exist to re-ignite industrialization in the continent? These questions also formed the basis of reflection during the inaugural seminar which attracted more than 130 participants on the first day.

Key speakers included Prof Tom Ogada, executive director, ACTS; Prof. Alfred Oteng-Yeboah; Prof. Banji Oyelaran-Oyeyinka, African Development Bank; Prof. Maureen Mackintosh, Open University; Prof. Erika-Kraemer Mbula, University of Johannesburg; Prof. Rasmus Lema, Aalborg University, Denmark.

The Challenge of Africa's Industrialization

African countries have been left behind in most economic metrics because they have not paid much attention to industrialization. This combined with the legacy of colonialism and slavery trade in the early 50s meant that there were few labour to actually build the industries. The main reason for this is that African countries are not industrializing, not innovating and not adding value. Although Asian countries were once at the same point economically, these countries have left Africa behind.

Dependence on Natural Resources

African countries have relied on the low-growth pathway of commodity extraction and export. Whereas there are many Asian countries like Malaysia and Vietnam that were also dependent on commodities like rubber in Malaysia. But the game changed through horizontal diversification and developed sophisticated and complex products through horizontal diversification.

When a country depends too much on natural resources, those countries tend not to focus on industrialization nor to be innovative. But those countries that made good use of the natural wealth - converting such assets to a good use by innovative processes - usually have a framework of sustainable equitable governance systems usually intolerant of corruption. Secondly, natural resource dependence undermines industrialization and innovation.

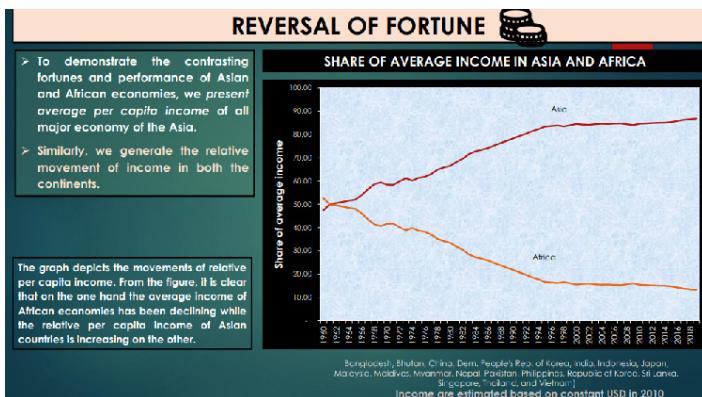


Fig. 1. A graphical presentation of how the average income of Asian and African countries have changed since 1960. While the average income in Asia has increased, that of Africa has declined.

Limited Local manufacturing

Immediately during the COVID-19 crisis, Africa was at the back of the queue for supplies for medicines and vaccines. This was a result of existing high import dependence, low-to-relatively low-tech and limited local manufacturing capabilities and low purchasing power in the international markets. This has demonstrated the critical nature of local manufacturing for tackling medical emergencies and for generating health security.

Global Imperatives

Africa's Industrialization is being driven by global imperatives, which has led to an increased concentration of industrial activity specialized in high value added activities and serving international markets. This has increased the inequalities between those sophisticated producers and those less sophisticated. African countries have experienced insufficient industrial growth and some even premature de-industrialization and linkages between manufacturing and low skilled services - particularly these large base of low skilled services - remain very weak. Majority of micro and small enterprises are operating informally, and to a large extent are disconnected from high value manufacturing activities that tend to be the focus of attention in industrialization.

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Importers of Technology

With technology available from industrialized countries, developing countries often do play only the role of a purchaser. Africa, being an importer of technology produced elsewhere, reflecting uneven manufacturing and innovation capabilities. However, for many developing countries, becomes dependent on developers from the west thus curtailing its capacity to gradually develop and improve on its nascent technologies. Africa countries should develop further technological capabilities, undertake manufacturing systems, systems integration and energy research and development.

Africa's Industrialization Potential and Opportunities

Covid-19: Crisis or Opportunity?

Although COVID-19 precipitated an unprecedented socio-economic crisis, there was a silver lining with regard to fanning the embers of industrialization in Africa. There's been enormous amounts of innovation and that has especially been true where manufacturing is stronger - for example in Kenya and South Africa - where we've seen sanitizers in Kenya developed using local resources, adaptation of delivery systems for medication, local swabs and testing kits and engineering innovation right across the continent. African governments are now much more focused on strengthening local health security; how to make it happen through local industrialization is the issue facing many, many policymakers and industrialists.

Effectively, the last few years before the COVID-19 hit, many African governments had included pharmaceuticals and other medical supplies but - particularly medicines - in revived industrialization policies. There was enormous amount of African Union (AU) support for that before COVID-19. The argument that vaccine production capabilities potentially forms part of a broader development of industrial competencies in biotechnology: a platform on which African firms, supported by governments, working with health needs, can build broader technological capabilities including monoclonal antibodies for a range of diseases including cancer.

Developing capabilities in this new and challenging platform technologies needs medium term planning, patient capital, subsidies and consistent support for the scientific work in African sub-continent over time. It means shifting away from current conventional wisdom towards identifying the challenge and solution, something Prof. Juma was good at.

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Industrialization and the Health Sector

Innovative industrial policy is the institutional key to unlocking health industrial synergies. It means moving away from reactive and 'level playing field' approaches to industrial policy; building sectoral policies instead to promote continuous improvement in the health industry – medicines and medical supplies - and in particular, it means involving health system stakeholders and industrial policy in identifying upstream improvements. For example, opportunities to produce active pharmaceutical ingredients, locally produced excipients and better packaging - things that unlock the capability of the health industries, many of which locked by the COVID-19 crisis. This means government roles in industrial policy: solving an investors' 'problems', breaking deadlocks between suppliers and customers and bridging gaps.

Africa's informal Sector: A source of Hope for Industrialization

The innovation displayed by informal actors amid COVID-19, is a testament to their resilience and ability to respond to new realities. Many of the track and trace services in informal settlements were organised locally and informally. The informal sector responded very quickly to the production of face masks in parts of

Africa, development and installation of hand washing stations relying on limited technology and were often mobile. Thus, there's a lot of innovation that has emerged informally that is hardly captured. One of the strengths of the informal economy is the connection to the social networks. It will be important to draw on these advantages to ensure that the informal economy becomes an asset in the larger process of structural transformation.

Policy Directions for Industrialization in Africa

Different Path to Industrialization

Africa does not need to industrialize the way it happened in Asia, Britain and Japan. The key principle is that countries must industrialize, in their own way given their comparative advantage using what nature has endowed them with. The implication is that is that it also jeopardizes technological learning and economic growth.

Industrial manufacturing largely drives economic development; the key requirement is continuous technological learning, which underpins economic diversification and structural transformation. When a country is locked into resource attraction, it tends to decline in the traded sector.

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If you are not processing you are not learning; if you are not processing you are not innovating. Thus, all your labour shifts to non-traded sectors: engineering, banking or tourism. A story is told of a guy who studied, mechanical engineering but became a comedian, and there are many like that. Neoliberal policies based on the principles of privatization, liberalization and stabilization – without a technological base have brought about a decline in industrial dynamism.

This is not to say that all policies fail. Also, there is no one size fits all that will work in all situations and all seasons. Policies can be misapplied or misused or used in ways that are not competent. What distinguish the less successful performers is less of policy use than the neglect of the objectives for which it is meant.

Agro-Based Industrial Strategy

Africa must pursue an active industrial strategy based on agribusiness; this is where we find our competitive advantage while continuing to promote other industries and the services sector, which has helped a lot of African countries. The African Development Bank is leading by a particular model called a Special Agro-Industrial Processing Zones. This is different from the usual special zone by deliberately locating them within rural communities. Thus, AfDB is using zonal and locational approach to lift zones of poverty into prosperity and in the process building new secondary cities.

Strengthening Family Business

Family business networks or conglomerates in Africa are business survivors where infrastructure is poor, investment and working capital is expensive, upstream suppliers are weak and regulatory frameworks struggle. There could be much more active local policy thinking to actively shape ways in which joint ventures, private equity models could sustain some of the family business strengths while supporting active tech-transfer and upgrading. Supporting an African 'Mittelstand' in the German sense: highly protected, productive family firms.

Informal Sector Policies

The informal sector has a great potential for industrialization. For this to happen, it is imperative to address the basic needs of the informal actors and ensure social protection is offered to actors operating in the urban areas. It is also important to ensure that innovations emerging from the informal sector are recognised and captured.

Improving measurements, making sure that one focuses on enhancing and creating local innovation systems; not being afraid of building non-traditional partnerships and involving formal and informal sector associations with other formal actors in the national innovation system. Finally, ensuring that the new technologies are adopted by and are accessible by informal entrepreneurs and micro enterprises - particularly digital technologies in disadvantaged areas - and ensuring that digital skills are taken up and widespread in disadvantaged communities.

Potential for Green Energy

One of the key drivers of the global economy at the moment, with this new technological paradigm is the energy sector. Thus, the energy sector is going to be much more dynamic in the future and can have more opportunities for manufacturing and services. One key policy mission is that we have to change the circumstances around green infrastructure delivery. It is really important that we look at the process of in-

frastructure delivery in the green space. A lot of the policies at the moment are mainly focused on subsequent green energy delivery part. And that is important because it helps electrify communities and creates other elements of industrialization.

Conclusion

Africa has a vast potential for industrialization as exemplified by the innovation capabilities particularly by the informal sector during COVID-19. However, a number of socio-economic challenges and policy handicaps continue to stifle innovation required to spur industrialization. However, Africa needs to create its own path to industrialization rather than using templates applied by Asian and European countries. This is because what was relevant in the 17th and 18th century and in other countries may not necessarily be relevant for other times and for all countries, particularly for the economic advancement in Africa. While Africa needs to learn broad principles from others the continent must find the right practices for the 21st centuries and for the prevailing national conditions and circumstances.

Recommendations

- Africa must pursue an active industrial strategy and take agribusiness as the base while continuing to promote other industries and the services sector.
- African countries need to find ways to identify and share benefits in health and industry through mutual learning.
- There is need to enhance the contributions of the informal economy, ensuring that innovations emerging from the informal sector are recognized and captured
- African government should enact policies that strengthens innovation and technological capabilities in informal enterprises as a bottom-up root to industrialization.

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