Sachin Chaturvedi
Anita Prakash
Priyadarshi Dash *Editors*

Asia-Africa Growth Corridor

Development and Cooperation in Indo-Pacific

Springer

Asia-Africa Growth Corridor

"Chaturvedi, Prakash and Dash bring together insightful essays that flesh out the idea of Asia-Africa Growth Corridor articulated in 2016 by the Prime Ministers of India and Japan, Narendra Modi and Abe Shinzo. The important volume suggests pathways for pooling India's historic connections in Africa and Japan's long experience in promoting development in third countries to transform the ties between Asia and Africa. In helping bridge the two 'two continents', the Asia-Africa Growth Corridor will transform the 'two oceans' into a sustainable new geography–the Indo-Pacific."

—C. Raja Mohan, *Director, Institute of South Asian Studies (ISAS), NUS, Singapore*

"For centuries the Indian Ocean has been the maritime highway linking Africa with Asia. Now the Africa-Asia Growth Corridor initiative of India and Japan aims to spearhead a more systematic engagement and connectivity between the two continents in the interests of development. This timely volume unpacks the multidimensional Africa-Asia Growth Corridor, from trade and investment to health, agriculture and capacity building. It highlights the critical developmental benefits that can ensue from this partnership and is a must-read for African and Asian policymakers and scholars interested in leveraging the potential of cooperation."

—Elizabeth Sidiropoulos, *SAIIA, Johannesburg, South Africa*

"*Asia-Africa Growth Corridor* is a painstaking diagnosis of pathways to mutually beneficial relations between the peoples of Asia and Africa. The authors skillfully take us from the joint vision of political leaders of two Asian countries that have made giant leaps in development, to the practicalities of sharing such advances with the peoples of the African continent, with mutual benefit. The book delves through the avenues of South-South and Triangular Cooperation, with India and Japan on supporting vertices that can assist Africa's quest for progress in the post-pandemic phase. The *Asia-Africa Growth Corridor* crystalizes a sober endeavor in search of models of development and regional cooperation. It is a must read for scholars, business people, and public officers interested in Asia-Africa development."

—Roberto J. Tibana, *Maputo, Mozambique*

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Editors
Sachin Chaturvedi
Research and Information System
for Developing Countries (RIS)
New Delhi, India

Priyadarshi Dash
Research and Information System
for Developing Countries (RIS)
New Delhi, India

Anita Prakash
Economic Research Institute
for ASEAN and East Asia (ERIA)
Jakarta, Indonesia

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Foreword

Connectivity has been the bedrock of Asia's economic dynamism in past 30 years. The early emphasis on infrastructure was followed with institutional connectivity and beyond the border reforms. Infrastructure development and industrialization have become pathways for narrowing development gaps among the regions in Asia. These are also the basis for the participation of a country or region in international production networks and for infusing innovation into different sectors of economy.

The concept of connectivity is also at the center of infrastructure development and industrial agglomeration in Africa. Not only it is one of the drivers of sustainable and inclusive development, it also underpins the economic integration of Africa. The Asia-Africa connectivity is both historical and enduring. However, new challenges and opportunities call for a trans-regional partnership that would realize their respective potential.

In November 2016, when Indian Prime Minister Narendra Modi and Japanese Prime Minister Shinzo Abe met for the Annual Prime Ministerial Summit, the two leaders agreed to collaborate—working jointly with international community—for realizing a free, open, prosperous and inclusive Indo-Pacific through promoting economic and social development, capacity building, connectivity and infrastructure development for the comprehensive development of the region.

The Asia Africa Growth Corridor (AAGC) is the first substantive outcome of this collaboration. The AAGC derives its theoretical substance from the earlier works of Economic Research Institute for ASEAN and East Asia (ERIA) and Research and Information System for Developing Countries (RIS) on connectivity-led growth in Asia and development cooperation in Africa, respectively. The two organizations, along with IDE-JETRO, had earlier jointly written the 'AAGC Vision Document'—the precursor to this book—which was launched by Prime Minister Narendra Modi in the African Development Bank Annual Meeting in Gandhinagar in May 2017.

Building upon India's historical trade and human linkages with Africa and merging it with the development experience in South, Southeast and East Asia, the 'Asia Africa Growth Corridor: Development and Cooperation in Indo-Pacific' is a well-researched and expanded outcome of this joint vision of Prime Minister Abe

and Modi, of a prosperous and stable Indo-Pacific. The economic construct of AAGC is aligned with the tenets of development cooperation in Indo-Pacific. Further, the book provides development experience on alternative models of development partnership including South-South Cooperation (SSC) and Triangular Cooperation (TrC).

The chapters of this book cover multidimensional aspects of cooperation and growth and suggests commitment from both continents to promote strong, balanced, sustainable and inclusive growth, both at the national and international levels. The economic corridors will stimulate two-way trade between economic agglomerations in Asia and Africa.

The ongoing COVID-19 pandemic has revealed the vulnerability of connectivity and the global value chains. AAGC will strengthen the resiliency of inter-regional connectivity and the global value chains, especially when it is connected with other growth corridors. In the post-COVID-19 phase, it will also support restructuring and diversification of supply chains and markets. Asia and Africa will have high stakes in this restructuring. This book will be a helpful tool in this exercise.

It gives me great pleasure to invite all stakeholders—governments, businesses and community—in Asia and Africa and in other parts of the world to use this book to understand and prepare for a connected Asia and Africa as a harbinger of stable and inclusive Indo-Pacific region.

I believe that this book will contribute to enduring connectivity, prosperity and stability in the Indo-Pacific.

Jakarta
July 2020

Hidetoshi Nishimura
President
Economic Research Institute for
ASEAN and East Asia
Jakarta, Indonesia

Preface

From time to time, global sharing of international development experiences has enriched development paradigms and has opened vistas for new strategies and new opportunities. From Nurske's 'balanced development' to Raul Prebisch's 'core-periphery' theory, to Perroux's 'growth pole' and to the most recent UN's Sustainable Development Goals (SDGs), the world has witnessed regime shifts in development paradigms, yielding mixed outcomes for the economies and the people at large. New variants of development cooperation models being adopted by countries in recent years increasingly subscribe to the principles of ownership, inclusivity, mutual benefit and most importantly the virtues of South-South Cooperation (SSC) and Triangular Cooperation (TrC). The SSC and TrC models apparently demystify the dependence of the developing and less developed countries on aid and promote partnerships among countries by pooling resources; exchanging technology, capacity and expertise; developing connectivity and infrastructure; enhancing trade and investment and people-to-people partnership.

In the past decade, Africa's economic growth and young demography has attracted global investors who are reaching out to the local governments and businesses in different countries. The rich minerals, energy and other natural resources have been the most targeted sectors for trade and investment in Africa. At the same time, African countries have moved ahead vigorously in defining their own destiny in the twenty-first century with a number of milestones such as the regional development vision—'Agenda 2063' and Africa Continental Free Trade Area (AfCFTA). While the African economies emphasize on institutional reforms and region-wide consolidation of development efforts, there is willingness on the part of the Asian partners like India, Japan and other countries for deeper, comprehensive and mutually beneficial economic engagement with their African counterparts. In the race for attracting investments, the African economies have received several development cooperation packages by the leading countries of the world including the USA, EU and China.

India under the leadership of Prime Minister Narendra Modi underscored the need and importance of deepening cooperation with Africa which was reiterated very often during his extensive travel across the region during 2016–2018.

Renewed thrust on the existing formats of engagement such as the 'India–Africa Forum Summit' and opening up of 18 new missions in different parts of Africa along with announcement of several development projects in health, social sector and digital infrastructure are testimony to India's offer of partnership to African nations. Likewise, Japan which has extensive development cooperation activities in Africa has indicated the need for consolidating its partnership through a forward-looking vision envisaged in the Tokyo International Conference on Africa's Development (TICAD-7) held in 2019. There are other countries in Asia which are willing to be part of new regional partnerships with Africa toward achieving the common goals of inclusive and sustainable development, eradicating poverty and destitution, creating jobs, promoting entrepreneurship and enabling upward social mobility. This commonality among the Asian countries for broad-based development cooperation with Africa has given birth to the innovative transcontinental initiative called the 'Asia Africa Growth Corridor (AAGC)'.

During 2017–2020, the coverage on AAGC in sections of media has been speculative and sketchy, depicting AAGC as a competing initiative led by India and Japan to China's Belt and Road Initiative (BRI). Perhaps the apparent similarity in some components of AAGC and BRI might have prompted the media and various academic commentators to build a position in that direction. Regardless of the buzz, it is worth mention to highlight that AAGC has evolved as a unique transcontinental development initiative which is not just confined to the traditional notion of development cooperation measured in aid flows and technical assistance rather envisages a development partnership model that aims to find solutions to vexing economic and social problems faced by Asian and African countries. Importantly, AAGC has brought the Free and Open Indo-Pacific (FOIP) at the center of development strategy in Asia and Africa, resounding the importance of Indo-Pacific region to partners in Europe and North America. It is also important to realise that the gap in infrastructure across the South is so huge that even BRI and the AAGC together also cannot meet it.

Among the salient features, it may be mentioned that the AAGC provides equal space to all different stakeholders in the development process—governments, businesses, civil society and people. The theoretical inspiration for AAGC is drawn from the Perroux theory of 'growth pole' and subsequent variants experimented in different regions of Asia and Africa in the form of 'growth triangle', 'growth quadrangle', 'economic corridor' and so on. The idea of AAGC is to connect the growth centers spread in the Afro-Asian region to hinterland and less developed regions and generate positive externalities measured in improved physical and digital connectivity, efficient local resource utilization, entrepreneurship and industrialization, skill development and capacity building and greater people-to-people and business-to-business interactions. Accordingly, AAGC sets four pillars as core fields of cooperation among the participating countries such as (1) enhancing capacity and skills, (2) quality infrastructure and institutional connectivity, (3) development and cooperation projects and (4) people-to-people partnership.

The idea of AAGC emerged in the Joint Declaration issued by India and Japan during the visit of Prime Minister Modi to Japan on November 11, 2016. Prime Minister Modi stressed that 'Deeper economic engagement, growth of trade, manufacturing and investment ties focus on clean energy, partnership to secure our citizens and cooperation on infrastructure and skill development are among our key priorities.' A similar view was expressed before by Prime Minister of Japan Shinzo Abe at the Asian-African Summit 2015. Prime Minster Abe reiterated that 'Now it is Asia, and it is also Africa, more than anywhere else, where you find the spirit of growth in the breeze, together with the rich soil of dynamic growth potential. Asian and African nations are Japan's partners for growth.' Drawing from the earlier research such as the Comprehensive Asia Development Plan (2010) and the development cooperation experiences of India and Japan, the intent and spirit behind AAGC was concretized by Economic Research Institute for ASEAN and East Asia (ERIA), Jakarta (Indonesia) and Research and Information System for Developing Countries (RIS), New Delhi (India). Later, with recommendation of the Ministry of External Affairs (India) and Ministry of Economy, Trade and Industry (Japan), Institute of Developing Economies-Japan External Trade Organisation (IDE-JETRO) joined RIS and ERIA in formulating different components of AAGC.

The joint effort of RIS-ERIA and IDE-JETRO culminated in the form of *AAGC Vision Document* titled as 'Asia Africa Growth Corridor: Partnership for Sustainable and Innovative Development' which was released by the Prime Minister Modi during the African Development Bank Meeting held in Ahmedabad, India, on May 22–26, 2017. Subsequently, papers written on different pillars of AAGC were presented and discussed in AAGC Track 1.5 Meeting held in Tokyo, Japan, on July 31, 2017. This meeting concluded with the understanding that RIS, ERIA and IDE-JETEO would work further and identify the specific fields of cooperation between India, Japan and Africa. It was agreed that the three institutions would gradually evolve the AAGC Vision Framework Report. In the India-Japan Annual Summit held in Ahmedabad on October 28–29, 2018, the Prime Ministers of India and Japan shared their vision for the Indo-Pacific. The India-Japan Vision Statement issued after the meeting reiterated the joint leadership and collaboration for the success of AAGC. Excerpts from the statement highlights that Prime Minister Modi recognized that the India–Japan relationship has been transformed into a partnership with great substance and purpose and is a corner stone of India's Act East Policy. Prime Minster Abe underscored the basic importance of India–Japan relationship for the regional order and is determined to advancing the 'new era in India–Japan relations' so as to further cooperate for peace, stability and prosperity of Indo-Pacific. Based on their shared vision, the two Prime Ministers reiterated their unwavering commitment to working together toward a Free and Open Indo-Pacific. The two leaders also affirmed that ASEAN unity and centrality are at the heart of the Indo-Pacific concept, which is inclusive and open to all. They shared willingness to expand concrete cooperation with the USA and other partners.

The two leaders' vision for the Indo-Pacific is based on a rule-based order that respects sovereignty and territorial integrity of nations, ensures freedom of navigation and overflight as well as unimpeded lawful commerce and seeks peaceful resolution of disputes with full respect for legal and diplomatic processes in accordance with the universally recognized principles of international law, including those reflected in the UNCLOS, without resorting to threat or use of force. Further, the statement underlines that 'This synergy is embodied in collaborative projects between India and Japan in the Indo-Pacific region, including in Sri Lanka, Myanmar and Bangladesh as well as in Africa. In this regard, the two Prime Ministers welcomed the discussions for establishing the Platform for Japan-India Business Cooperation in Asia-Africa Region to further enhance the exchanges between Japanese and Indian businesses toward developing industrial corridors and industrial network in the region.'

It is heartening to note that the centuries-old people-to-people connect between Asia and Africa is now being increasingly explored though vibrant industrial and economic forces. The efforts from educational and other academic actors would provide further heft to these connects. Facilitating role by governments would catalyze the process but people would provide the substance, direction and the gravitas to the Asia–Africa Partnership.

With continuous progress in conceptualization, identification of projects and regional consultations, this book is a scholarly work on an evolving novel initiative, AAGC, which connects Asia and Africa as partners in the race for inclusive and sustainable development. In that perspective, the broad vision of the book is to provide a structured narrative on various sectors and operational aspects of AAGC. As the projects under AAGC are demand-driven, different sections of the book provide the basis, rationale and modalities for identification and execution of cooperation projects. By assigning equal importance to all four pillars of AAGC, the book covers 16 chapters clubbed under five themes such as (1) Concept, Theoretical Perspectives and Practice, (2) Trade, Investment and Economy, (3) Capacity Building and Skill Development and (5) Sectoral Cooperation: Innovations and Challenges. These five themes present distinct importance of different sectors as well as their overall integration with the goals of AAGC. The rich, in-depth and passionate articulation of ideas and vision in different chapters by the seasoned scholars makes the book a masterpiece in the field of development cooperation and practice.

Sincere thanks to all our esteemed authors including Prof. Sachin Chaturvedi, Ms. Anita Prakash, Prof. Manmohan Agarwal, Prof. S.K. Mohanty, Prof. Amitabh Kundu, Prof. Santosh Mehrotra, Ms. Renana Jahbvala, Dr. Harpreet Sandhu, Dr. Ruchita Beri, Dr.T.P. Rajendran, Mr. Rajeev Issar, Dr. Krishna Ravi Srinivas, Prof. Milindo Chakravarti, Dr. V. Selvakumar, Dr. Priyadarshi Dash, Dr. Ahmad Garba Khaleel, Mr. Vaibhav Kaushik and Mr. Bhaskar Kashyap for their painstaking contributions and cooperation in the timely publication of this book. The editors would also like to acknowledge the research of Prof. Fukunari Kimura, Chief Economist, ERIA, in developing the theoretical concept of the AAGC.

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New Delhi, India — Sachin Chaturvedi
Jakarta, Indonesia — Anita Prakash
New Delhi, India — Priyadarshi Dash

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About the Editors

Sachin Chaturvedi author and development economist, has been working on some of the key development challenges developing and least developed countries are facing, including the implementation of SDGs, and access to development finance and technology. He has served as a Global Justice Fellow at the MacMillan Centre for International Affairs at Yale University, Visiting Professor at the Jawaharlal Nehru University (JNU) and consultant to several international agencies and institutions. He has authored and edited several books and published a large number of research papers in various journals. He is a member of the Board of Governors, Reserve Bank of India and is Director General of RIS.

Anita Prakash is the Director (Policy Relations) of the Office of the President, at the Economic Research Institute for ASEAN and East Asia, Jakarta. She plays a key role in policy support to leaders and senior officials in the governments of Southeast Asia, East Asia, Oceania, Europe, and Africa. Her research covers trade and economic cooperation in East Asia, South Asia and India, multilateralism, global governance and global value chains. Her current research focuses on connectivity and value chains in Indo-Pacific. She edited the Asia–Europe Connectivity Vision 2025 for the ASEM Summit in 2016 and the 'Brussels Report on Asia–Europe Connectivity' for the 12th ASEM Summit in 2018, and developed the vision document for the 'Asia–Africa Growth Corridor'. She was a Visiting Research Associate at the Graduate Institute of International and Development Studies, Geneva from 2016–2019.

Priyadarshi Dash is Assistant Professor at Research and Information System for Developing Countries (RIS), New Delhi. His research interests broadly cover macroeconomics, international trade and finance. He holds a Ph.D. in Economics from the Indian Institute of Technology (IIT), Bombay, where he received the 'Award for Excellence in Thesis Work' in 2011. Dr. Dash has published a book and several papers in peer-reviewed journals. He was a Visiting Fellow at the Korea Institute for Industrial Economics and Trade (KIET), Seoul. He serves on the Editorial Board of Advances in Economics and Business, Cambridge Scholars Publishing, London, and is Managing Editor of G20 Digest.

Chapter 1
Introduction

Sachin Chaturvedi, Anita Prakash, and Priyadarshi Dash

Background

With greater integration of markets worldwide, many countries have experienced substantive rise in their trade and investment flows with other countries. This has been manifested in higher GDP growth and associated increase in per capita income, infrastructure development, urbanization and social welfare. Unlike trade with advanced economies, developing countries are trading more with each other than in the past. Likewise, foreign direct investment (FDI) flows among countries have multiplied in volume and destination; more prominently investments originating from developing countries. This growing South-South economic engagement in the past two decades has not only delivered the goods to the people but has also signalled emergence of newer forms of development partnership among countries. The ongoing COVID-19 pandemic has brought home immense threats to global connectivity and supply chains as we have known. The AAGC is designed to provide the resilience and the sustainability of connectivity for movement of goods, services and people to countries in Asia, Africa and Europe.

If Post-COVID-19 economic shocks are absorbed well, then many least developed countries (LDCs) are on the verge of graduating to developing country status whereas some large developing economies like BRICS are already being viewed as

S. Chaturvedi · P. Dash (✉)
Director General & Assistant Professor, Research and Information System for Developing Countries (RIS), New Delhi, India
e-mail: pdash@ris.org.in

S. Chaturvedi
e-mail: sachin@ris.org.in

A. Prakash
Director for Policy Relations, Economic Research Institute for ASEAN and East Asia (ERIA), Jakarta, Indonesia
e-mail: anita.prakash@eria.org

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emerging markets and attractive investment destinations. Two regions of the world that have witnessed relatively more attention in the shift of global production and aggregate demand are Asia and Africa. While Asia continues to remain the 'engine of global growth', Africa promises vibrant investment opportunities as the region is passing through a new phase of political transitions in Zimbabwe, South Africa, Kenya, etc.; integration of regional economies through African Continental Free Trade Agreement (AfCFTA); region-wide development vision envisaged in Agenda 2063, among others. Africa is also likely to emerge as a successful warrior from the ongoing corona fight. The AAGC will likely to provide the pathway to narrowing of development gaps within Asia and Africa, and between the two regions.

Along with the need for achieving high and sustained growth in developing countries and LDCs in Asia and Africa, there is a greater recognition of ensuring equitable, spatially even and inclusive economic growth in relatively less developed regions and countries. Many find it unconvincing to accept the linear rise in per capita income and/or higher numerical GDP growth as the indicators of economic progress. On the other hand, it is believed that development strategies inspired by Washington Consensus and market-led approaches often fail to provide justice to everybody in the society.

Many countries of the world particularly developing, less developed and small economies, have witnessed radical changes in their development trajectories in the post-war period with mixed development outcomes. Economic outcomes in terms of higher GDP growth, rise in per capita income, greater trade and investment flows, financial sector development and other indicators have been remarkable for many countries, whereas some others are still grappling with the problems of poverty, unemployment, backwardness, distress migration and civil wars for a very long period. Globalization has become the dominant economic paradigm in the world since the mid-1980s even though countries like China with a socialistic market economy and India with a shift from mixed economy model to a sequential transition path of opening up and market economy present distinct variants of the same paradigm. Faster trade and financial integration is the new global order that operates on the principle of the 'survival of the fittest'. The intensity of competition injected in the global economy in the 1990s and 2000s has created the winners and the losers in global trade and finance landscape which often reinforces the 'race to bottom' phenomenon. The recent US-China tariff war is an example of the nationalistic and protectionist policies adopted by the major economies of the world in aftermath of the global economic recession at the cost of pending reforms of the WTO and multilateral trading system. Global trading environment is so dynamic now that countries are not sure of the durability of their export competitiveness and investment attractiveness.

Market economy has delivered well by providing the people the choice of globally produced goods and services and countries the opportunity to expand exports and enhance access to global capital market. Unlike the past, private sector participation in economic sectors is much wider and effective. At the same time, the recurrence of financial crises, prevalence of unemployment, income inequality, social exclusion, etc. expose the flip sides of globalization. This menu of mixed development outcomes across different regions of the world in the post-war period has prompted

the governments and the scholars to find new models and strategies of development and development partnerships among countries that holistically include social, economic and environmental dimensions.

A gracious shift has taken place in the paradigms and perspectives of development cooperation. One clear manifestation of this change is reflected in falling dependence of developing countries on foreign aid even though a good number of least developed countries (LDCs) are still dependent on foreign aid and development assistance. With greater access to international capital market, the reliance on Official Development Assistance (ODA) from the OECD-DAC countries to the developing world has gone down over the years. Interestingly, certain emerging markets mostly the BRICS countries have emerged as Southern providers of aid and development assistance. This has strengthened South-South Cooperation (SSC) and Triangular Cooperation (TrC) among the countries in the South. The COVID-19 pandemic that has devastated the economies and lives of the people across the world in the past six months actually requires much closer collaboration among countries on basic issues affecting people's lives like food, healthcare services, education, subsistence earning, and protection from natural disasters and climate change.

Motivations for the Book

As mentioned above, the world is silently witnessing a transformation in all different spheres of life ranging from economic policy, public services provisions, foreign policy strategies, country engagement modalities, technological choices enabled by digital technology, and above all the nature and scope of people-to-people interactions. Economic policy thinking has gone much beyond the conventional distinction of developed versus developing, rich versus poor, haves versus have-nots and sacred versus profane. Regardless of the level of economic development and social progress, countries aim to engage in more inclusive, people-centric and need-based models of development partnership. A significant amount of intellectual capital has already been invested in formulating response to such evolving trends. SSC and TrC have been hailed as the best alternatives in this evolving discourse on development cooperation. There is a growing perception that new global powers may end up replicating the approaches adopted by the so-called existing global powers, probably in newer forms.

This book is a modest attempt to contribute to the evolving literature on alternative models of development partnership including transnational initiatives. Asia-Africa Growth Corridor is an ambitious and futuristic initiative. Supported by India, Japan and many African and Asian countries, the AAGC aims for Africa's integration with Asia through physical, institutional, and social connectivity in which quality infrastructure, trade, institutional connectivity, and enhanced capacities and skills are important pillars. The theoretical basis for AAGC is strongly rooted in actual country experiences from transport and connectivity corridors, economic corridors, growth triangles and other similar prototype models on income, employment, skilling

and local industrialization. AAGC encompasses a holistic and synergistic approach towards development which would be executed in a demand-driven four-pillar integrated approach. Countries in Asia and Africa having rich development experiences that are efficient and replicable can expand the frontier of development through mutually beneficial development partnership. This book encapsulates the essence, features and sectors of AAGC for deepening cooperation between Asia and Africa.

Organization of Themes and Chapters

The book is organized into five sections such as Asia-Africa Growth Corridor: Concept, Theoretical Perspectives and Practice; Trade, Investment and Economy; Capacity Building and Skill Development; Sectoral Cooperation: Innovations and Challenges; and People-to-People Partnership with a total of 16 chapters.

Chapters 2 and 3 describe the concept, features and practices with respect to AAGC. Besides covering the essence of AAGC as a development partnership model, both the chapters present the importance of Indo-Pacific as a development cooperation paradigm. Chapter 2 underlines the theoretical basis of growth corridor underpinned by the concept of growth triangle and economic corridor. The chapter further narrates how Indo-Pacific has evolved as a paradigm for growth and economic prosperity in the region. The perspectives and modalities of Indo-Pacific vision of different countries are briefly discussed. In addition, the chapter establishes AAGC as a unique experiment of South-South Cooperation (SSC) and Triangular Cooperation (TrC) and how development compact could become the operational framework for implementation of AAGC in the Asian and African regions.

Chapter 3 extends the operational features of free and open Indo-Pacific by highlighting the role of foreign direct investment (FDI) and development assistance in Africa's growth process. The chapter further explores the possibility of increasing trade between Asia, Africa and rest of the world and effective integration of countries into global value chains (GVCs). At the heart of AAGC lies the synergy of India-Japan cooperation in third countries. Within the broad four pillars of AAGC, the development priorities of Africa and the possible modalities of engagement with them are discussed.

Chapters 4 to 7 cover the linkages between trade, investment and economic activity in Asia and Africa. Urbanization is an ensuing process in most parts of developing Asia and Africa which not only has spatial implications in terms of urban space, utilities management and municipal governance but also on triggering a new phase of economic growth. In particular, urban agglomeration could facilitate local industrialization as urban centres help mobilize local resources—labour as well as natural. Chapter 4 delineates the salient features and trends in urbanization in African countries. As far as trade is concerned, trade facilitation is the next important facet of trade policy after a substantial extent of tariff and non-tariff liberalization happens. Chapter 5 delves into the status and prospects of trade facilitation in Asian and

African countries. New sectors of economy unleash potential for economic diversification and creation of jobs and upliftment of the poor and the disadvantaged. For example, blue economy promises vast opportunities for coastal nations all over the world. Chapter 6 illustrates the potential of blue economy in the AAGC countries. Likewise, the contribution of women in economy, although growing over time, needs to be emphasized in the context of AAGC. Chapter 7 identifies the pertinent issues relating to women participation in mainstream economy and their unique contribution to society.

Chapter 4 examines the pace of urbanization and associated opportunities and challenges in Africa in greater detail. It is observed that African countries are witnessing a rapid pace of urbanization which can be suitably harnessed for Africa's growth and development. Urbanization and regional development are intertwined processes. This chapter discusses how urbanization leading to industrial agglomeration could trigger a virtuous path of socio-economic transformation in the participating countries under AAGC.

Chapter 5 assesses the current status of trade facilitation in Asian and African countries in terms of OECD indicators and compares it with global benchmark. Apparently, it suggests that there are significant levels of divergence with respect to customs reforms, risk assessment, valuation and technological innovations. Countries like India and Japan are better positioned vis-à-vis their African counterparts. AAGC proposes to address these gaps by introducing cooperation in development of technological platforms like Automated Customs Data Management System (ASYCUDA) and single window clearance systems.

Chapter 6 underscores the importance of blue economy for investment and job creation in Asia as well as in Africa. Several countries from Eastern Africa region such as Mozambique, Madagascar, Kenya, Tanzania, Seychelles, Mauritius, etc. who are part of Indian Ocean Rim Association have long coastlines and dedicated policies for promotion of blue economy. This chapter analyzes the trends in fisheries production and trade in the region revealing the untapped potential for value addition in processed fish products and necessary policy measures to be undertaken by countries in Asia and Africa regions to restore fisheries stock and prevent illegal, unregistered and unregulated (IUU) fishing in high seas. In addition, the chapter highlights the opportunities for economic expansion and investment in certain resource sectors such as marine minerals, marine biological resources and coastal tourism, as illustrations of sectoral potential of blue economy.

Chapter 7 addresses one important area of policy focus to enhance the role of women in economy. Women not only possess unique skills and capabilities but are found relatively more productive in several sectors of economy. Ensuring women's participation in the economy requires access to skills, technology and finance. India and Japan have supported such initiatives in Asia and Africa in the past, but a joint effort in the form of Asia Africa Growth Corridor will be a catalyst for ensuring gender equality and women empowerment. Women entrepreneurs need to be integrated to global markets and enjoy marketing support to expand their businesses.

Skill development, financial inclusion and public investment in child care and educational services are important policy interventions to scale up women's contribution to economy in the Asia-Africa region.

Capacity building and skill development constitutes a vital pillar of development in the AAGC framework. Given skill shortages in different industrial sectors of African economies, there is a need for developing well-conceived ecosystem of formal educational programmes, on the job training in various technical and vocational fields, and capacity building programmes. In that perspective, human resource development is an integral component of local industrial development in the Asia Africa Growth Corridor. Chapters 8 and 9 decipher the different areas of skill gaps and provide a mapping of public and private sector interventions that would immediately plug the loopholes and enable long-term process of skill upgradation.

Chapter 8 provides a succinct account of how skill gaps could lead to increased reliance on labour-displacing technologies and subsequently could create unemployment in semi-skilled and unskilled segments of labour market in Africa. By sharing of experiences between Asian and African countries, the demographic dividend can be reaped through improved labour productivity and resultant rise in social welfare. Under AAGC, India and Japan could share their expertise in human resources in different industrial sectors with their African counterparts to develop a local skilled workforce for industrial development in Africa. Skill development programmes may include apprenticeship programmes, skill upgradation of women and disadvantaged sections by NGOs and reviving formal education system through universities in Africa.

Chapter 9 builds on the issues discussed in Chap. 8 by highlighting how costly it is for the African countries to compromise with low level of industrial development due to skill and capacity shortages. With proper vocational education and training (VET), the young workforce can play a catalytic role in structural transformation in African economies. The serious mismatch between the current education system and skill requirements needs to be addressed in the Asia-Africa Growth Corridor. India's support in training and education through ITEC and tele-education services and Japan's human resource development programmes run by JICA would be the building blocks for promoting skill development in industrial sectors. Although several institutional innovations would be required to meet the skill gaps, the Centres of Excellence and pre-employment training institutions in African countries could be effectively utilized for this purpose as well.

After providing the overarching framework and focus sectors for expanding cooperation among Asian and African countries, section on sectoral innovations and challenges delves into micromanagement issues in select important sectors of economy. Chapters 10 to 14 cover important facets of cooperation and impediments in health, agriculture, renewable energy and disaster management. The chapters attempt to identify the thrust areas at the sectoral level and provide roadmap to address the challenges in those sectors with an aim to consolidate the gains from cooperation and collaboration under AAGC.

Nothing is more important than health as far as development cooperation is concerned. The COVID-19 pandemic has made us realize the extent of preparedness

required in terms of public health infrastructure, healthcare facilities and provisions and scope for collaboration with other countries, particularly in populous developing countries. Chapter 10 identifies the areas of cooperation with regard to healthcare services, disease prevention and management within AAGC. India, Japan and other countries in Asia and Africa have some mechanisms of cooperation existing in the health sector which needs to be scaled up. In particular, potential areas of cooperation are biomedical and health research such as advanced capacity in genomics, proteomics and modern biology, establishment of public and private clinical services, and so on. India's strength in generic drugs, vaccine supply, open source drug discovery and development and Japan's targeted intervention in disease prevention and mitigation would contribute significantly to the provision of healthcare services in Africa.

Chapters 11 and 12 address the issues of productivity, efficiency and innovations in agriculture and agro-processing sectors. Agriculture is lifeline for many countries in Asia and Africa and attracts significant policy attention globally. At present, the level of investment in agriculture and agro-processing sectors is quite low compared to other sectors of economy. Agriculture infrastructure including for rural value chains, innovations in food processing, quality seeds, farm machinery and implements, and ICT applications are crucial to enhance productivity and competitiveness of agriculture in Africa. Africa being the net importer of agricultural products faces the challenge of ensuring food security and self-sufficiency. Replication of successful experiments in agriculture and adoption of best practices within the umbrella of AAGC cooperation could contribute to higher productivity and efficiency of agriculture in Africa. Further, considering the perceived benefits of mechanization efforts would be required both at policy and industry level for manufacturing of useful machines, implements and tools. Farmers and suppliers in many countries in Africa would also need proper financing to support their ventures.

Climate change and frequent occurrence of natural disasters cause enormous damage to the affected economies in all parts of the world, perhaps with greater severity in low- and middle-income countries in Asia and Africa due to lack of resources and capacity in terms of disaster risk reduction and post-disaster mitigation. Chapter 13 touches upon this critical area of cooperation under AAGC. The chapter highlights the risks associated with natural disasters and the possible areas of collaboration between India, Japan and other countries in Asia and Africa. Given the experiences of India and Japan in disaster management, the scope of cooperation in AAGC could broadly cover disaster risk information and climate services, strengthening data and statistical analysis, risk-informed urban development, capacity building, climate change mitigation and adaptation, and knowledge management.

Many countries of the world now aim to embrace a smooth energy transition with growing share of renewable energy in their energy mix. Notably, renewable energy generation and consumption has increased significantly over the years in most parts of Asia and Africa. Initiatives at government, private and community levels have been supporting this energy transition to happen. Chapter 14 explores the cooperation in renewable energy sector under AAGC through community level initiatives. The chapter argues that a community-based energy system partly or wholly owned

by the community enterprise works well in West Africa for reasons like the availability of supporting policy initiatives and financing. Enabled by a leap-frogging strategy which essentially means skipping of generations of old technologies into new technologies can encourage private sector and communities to participate in many national, regional and international initiatives towards renewable energy production and use.

Last but not the least, the fifth section of the book addresses the most important soft sector of cooperation, i.e. people-to-people partnership. Greater mobility and interactions among people of the Asian and African regions not only promote trust, understanding and faith but also delivers robust economic results. The two chapters in this section illustrate the strength of this important component of development partnership between Asia and Africa. People-to-people and business-to-business partnership has been identified as one of the four pillars of AAGC. While Chap. 15 envisages the future scope of India-Japan development cooperation in Africa of which people-to-people partnership is a vital ingredient, Chapter 16 maps the historical and civilizational linkages that have shaped relations between the civilizations in Asia and Africa.

India has maintained strong historical and civilizational linkages and worked in close partnership with her African counterparts through its bilateral, regional and multilateral initiatives. On the other hand, Japan provides Official Development Assistance and supports development process in Africa through the Tokyo International Conference on African Development (TICAD) process. Both India and Japan juxtapose their development cooperation initiatives in Africa in line with the Agenda 2063 which aims to accelerate Africa's economic growth and structural transformation. Currently, the key areas of cooperation for both the countries under AAGC are education, human resource development and skill enhancement, agriculture, infrastructure, information technology and health.

Chapter 16 captures the most important historical roots of linkages between Asia and Africa. By tracing the nature and process of commercial and cultural interactions among the countries of these two regions in pre-historic, early historic and medieval periods, the chapter presents synoptic view of the rich connect between countries in the past. Further, the chapter enumerates the development of trade and commerce especially spices, precious stones and other products which formed the backbone of the rise of cosmopolitan cities in those times. While recalling the past provides motivation and encouragement to deepen social, economic and cultural interactions among the countries in the Asia-Africa region, there are various modalities that AAGC may undertake to revive the past glory and pave the way for stronger people-to-people relationship in the future. Some of those include academic exchange between scholars, establishment of universities on culture, museums and artefacts, promoting tourism, among others.

Last but not the least, this book has explored the 'Growth Corridor' approach, factoring-in the triggers for local and global components judiciously. The idea of Asia Africa Growth Corridor is an effort to connect the two vibrant regions of the world-Asia and Africa. The scholars involved in writing and editing different chapters of the book have given their best to the thinking and contestations in the subject.

We hope our modest contribution would inspire further work on the subject and provide practical solutions to policy-makers in designing people-led, humanist development cooperation models with greater respect for localisation. This is a treatise on achieving inclusive and sustainable development in Asia and Africa, and in shaping the cooperation paradigm in Indo-Pacific region. It is a roadmap for sequencing of different components of a development strategy, particularly in developing and less developed countries aiming to catch up with global benchmarks of higher economic growth and quality of life.

Part I
Asia-Africa Growth Corridor: Concept, Theoretical Perspectives and Practice

Chapter 2
AAGC and Economic Prosperity in Indo-Pacific

Sachin Chaturvedi and Priyadarshi Dash

Introduction

The Indo-Pacific region has assumed importance as a source of global prosperity and peace in recent years. The geographical spread covered by the Indian Ocean and the Pacific Ocean and the littoral countries in South Asia, Southeast Asia, Eastern Africa and the Pacific regions including the Pacific island countries present vast opportunities for economic growth, diversification, and cooperation. All major countries in the Indo-Pacific region such as the United States, Japan, ASEAN countries, Australia, EU, and India have formulated their foreign policy strategies for scaling up their engagement in the region (Government of Japan 2019; Government of Japan 2018; European Commission 2018; Australian Government 2019; Australian Government 2017). Japan has propagated the idea of Free and Open Indo-Pacific (FOIP) whereas India broadened the concept further by adding "inclusiveness" into FOIP. At the Shangri-La Dialogue in 2018, Prime Minister Modi emphasized that India's own engagement in the Indo- Pacific region would be based on five S' in Hindi: *Sammaan* (respect); *Samvad* (dialogue); *Sahyog* (cooperation), *Shanti* (peace), and *Samridhi* (prosperity).

Both ASEAN and the US vision for Indo-Pacific clearly state the focus on energy, infrastructure and connectivity, digital economy, reciprocal trade, promoting business partnerships, and other areas of sectoral cooperation (ASEAN Secretariat 2019; Government of USA 2019). India's Act East Policy and Indo-Pacific Oceans Initiative integrate the vision of free, open, transparent, and inclusivity as core principles of Indo-Pacific (Government of India 2019). There is greater convergence among

S. Chaturvedi · P. Dash (✉)
Director General & Assistant Professor, Research and Information System for Developing Countries (RIS), New Delhi, India
e-mail: pdash@ris.org.in

S. Chaturvedi
e-mail: sachin@ris.org.in

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the different models of Indo-Pacific cooperation from the perspective of the scope of bilateral and transnational engagements.

The prevailing contestations in the waters of this region have given rise to security and strategic formulations. However, in the last few years, the Japan-India partnership has given the region an important perspective on international development. Further, India and Japan have been vocal in promoting a Free and Open Indo-Pacific for peace and prosperity in the region. FOIP is a joint initiative by India and Japan for cooperation in Africa in various development projects (Cannon 2018). Other countries that are likely candidates for FOIP are Bangladesh, Sri Lanka, Myanmar, and Indonesia. Many countries are weighing the merits of joining FOIP (Hiep 2018). FOIP sets a vision for the common future of the people in the Indo-Pacific region. Further, the region covering two oceans—the Indian Ocean and the Pacific Ocean—is not only home to a diverse set of countries but is endowed with precious natural, mineral, and human resources. From India, Bangladesh, the Maldives, and Sri Lanka in South Asia to Myanmar, Indonesia, and Thailand in Southeast Asia, to Japan and Australia in the Pacific and to Kenya, Tanzania, and Madagascar in Eastern Africa, the Indo-Pacific region has witnessed several variants of development experiences. For instance, while Southeast Asian economies experienced faster industrialization and high GDP growth through export-led growth strategies and development state models, India and other South Asian countries experimented with mixed economy in their post-independence periods and subsequently cautious liberalization and privatization. At the other extreme, Japan is a developed country in Asia characterized by a prolonged period of growth, stagnation and an aging population.

These different development models in Indo-Pacific sub-regions have produced divergent outcomes manifested in the coexistence of high economic growth and abject poverty and income disparity. Although a host of factors may explain this mixed development outcome despite similarities in resource endowments, there exist some serious gaps in resource allocation and enabling policy environments in these countries. In terms of crude development indicators, countries in South Asia and Sub-Saharan Africa are dramatically different from the level of development in East Asia and Southeast Asia. It, therefore, presents a case for a virtuous model of international development cooperation among the countries in the Indo-Pacific region (Singh et al. 2018). India and Japan may initiate this process of engagement in the form of investment in physical and social infrastructure, technology transfer, skill development, local industrialization, capacity building, and people-to-people interactions (MOFA 2019). By following the principles of development partnership, countries in Asia and Africa can jointly envision a common roadmap for attaining inclusive growth and development in the Indo-Pacific region. This may be explored in the framework of growth theories that facilitated development in successful developing countries.

New Paradigm of Inclusive and Sustainable Development

The development journey of the countries since 1990 to date which is conveniently assumed as the Post-Washington Consensus period reveals interesting trends. Per capita GDP in PPP terms (in terms of constant 2011 prices) has multiplied by 1.8 times for the world economy and most remarkably 3.2 and 1.3 times for South Asia and Sub-Saharan Africa, the two underdeveloped regions of the world, respectively. In other words, the level of per capita income for the world as a whole has increased from US$ 8,975 in 1990 to US$ 15,941 in 2018. Similarly, GDP growth and poverty reduction in aggregate terms are also notable for many countries in this period. Many have tempted to attribute this achievement to the success of globalization, the efficiency of the market economy, higher trade openness, higher capital flows, regional trade integration through FTAs and RTAs, global financial integration, and institutional and regulatory reforms. However, there are pockets of underdevelopment in different regions relative to the rapid pace of economic prosperity in some other regions. Interestingly, the world currently witnesses the coexistence of high economic growth and income inequality. It is observed that the top one percent richest individuals have gained disproportionately higher growth than the bottom 50 percent individuals since 1980. While unequal ownership of capital has been identified as the main reason for the concentration of income, there is a need for increased public investment in education, health, and environmental protection for creating opportunities for earning higher income (Alvaredo et al. 2018).

Many developing countries in the world are facing financial and balance of payments crises that impair their growth process. Structural rigidities, financing constraints and heavy social sector allocations, macroeconomic management in most of the developing countries are constrained and inefficient. Official Development Assistance (ODA) is not sufficient to support the desired growth momentum in the recipient countries. Constrained fiscal space and limits to public sector allocations to infrastructure development, connectivity projects, entrepreneurship and skill development, and host of other factors force many countries to compromise at a lower level of economic growth. There is an increasing realization that Sustainable Development Goals (SDGs) provide a new framework for understanding the development process and address legacy issues of low productivity, dependence on foreign capital and technology, labor market distortions, etc. Along with national economic policies countries' development models need to underpin the South–South cooperation (SSC) and Trilateral cooperation (TrC). Achieving SDGs through domestic resource mobilization alone would not be possible in developing countries, thereby necessitating the importance of SSC and TrC under the AAGC.

Growth Corridor-Catalyst for Balanced Regional Development

Regional development and planning have been central to national economic development strategies. Governments, economists, planners, policymakers, and geographers have been in full swing to come up with an inclusive growth model factoring spatial and economic parameters. The rationale behind this exceptional attention given to regional development is the fact that socially and economically backward regions are usually left behind in the race of economic development thereby widening the gap between rural and urban areas together with increased social disparities. It was anticipated that well-programmed, structured, and nationwide development programs will not only contribute to the national economy but will also transmit growth impulses in the backward regions. However, nothing of that sort happened and growth remained unidirectional in many parts of the world in which the resources of underprivileged areas were ruthlessly exploited. Several regional policies surfaced to deal with this predicament and one among them was based on growth poles.

Several paradigms dominated development thinking in developing countries in the post-war period. While Roy F. Harrod and Evsey D. Domar, Albert O. Hirschman, Ragnar Nurkse, Joseph Schumpeter, and others had provided alternative approaches towards development in the 1950s through the 1970s, several institutional innovations were conceptualized to realize the outcome of these development models. "Growth poles" is one such mechanism, originally coined by Francois Perroux in 1949 that propagates a growth trajectory with the prior knowledge of unequal industrialization and development in different regions even within the geographic boundaries of a country. By "growth pole" Perroux meant a center in abstract economic space from which centrifugal forces emanate and to which centripetal forces are attracted. This connects some urban centers (or dominant firms) where economic activity is concentrated. Thus, "growth poles" can act as growth engines for the hinterland (remote or backward areas) which would ultimately lead to higher job creation, raise per capita income, and mitigate income inequality. Perroux tried to build on the theory that Schumpeter had proposed on innovation and the role of large firms, which itself was dependent on discontinuous spurts in a dynamic world. Perroux tried to break away from the limiting geographical dimensions adopted in central place theories. Figure 2.1 illustrates a typical growth pole that connects core industries and linked industries. As nicely captured in Rodrigue (2020) certain large firms or multinational generate agglomeration effects and industrial clusters develop around the growth pole. Core industries attract linked industries around it and growth percolates down. In subsequent phases, one growth pole may lead to the rise of another growth pole, if not strictly in a sequential fashion. In the secondary growth pole, some linked industries may emerge as core industries, and this process of interaction continues over a medium- and long-term horizon.

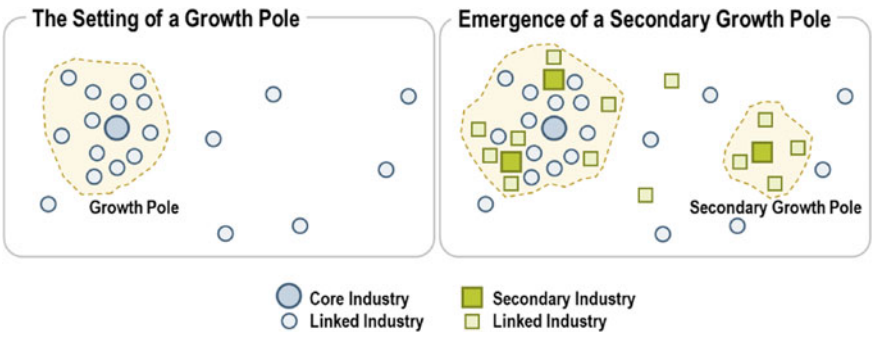

Fig. 2.1 Depiction of Growth Poles. *Source* Rodrigue (2020)

Speakman and Koivisto (2013) refer to the dynamic industries that trigger additional investment, employment generation, factor payments, and strengthen inter-industry linkages. They emphasize that growth poles are simultaneous and coordinated investments, mostly by the private sectors, in many sectors that support a self-sustaining process of industrialization which could be a source of growth and competitiveness for the African countries. Likewise, Avram and Braga (2017) have highlighted how growth poles have contributed to the European economic integration, and how emerging markets are increasingly being viewed as promising growth poles in the future.

The conception of growth poles has received enormous attention and has been subject to numerous definitions and interpretations. Despite the fact that the term growth pole has several annotations, in simplest terms it can be defined as a point of economic activity from where economic growth commences and gradually advance or diffuse to the peripheral area. The term point is an expression for a firm, group of firms, an industry, or an urban location capable of exerting a propulsive and dominant impact on the economy. Polarization effect conceptualized by Perroux is the foundation of the Growth Pole Theory. Perroux (1949) stated that-"the bitter truth is this-growth does not appear everywhere at the same time: it becomes manifest at points or poles of growth, with variable intensity; it spreads through different channels with variable terminal effects on the whole of the economy".

A similar concept—"economic corridor"—captures the mechanics of achieving the predictions of the growth pole theory. An economic corridor, which borrows the spatial perspectives, envisages a gradual path of evolution of a growth corridor—starting from a transport corridor to a logistics corridor, to an economic corridor, and then to a growth corridor (Tang and Thant 1994; Hope and Cox 2015). As per this approach, improved connectivity would facilitate the efficient utilization of natural and human resources in the hinterland and enhance urbanization and industrialization in the growth centers. This approach appears to be the most feasible option to meet the development aspirations of the countries in the Indo-Pacific region (RIS-ERIA-IDE JETRO 2017). Following this model, high-saving economies can deploy their surplus financial resources in building infrastructure and logistics in low-saving economies

in the region which, in turn, would result in growth pole effects by incentivizing local firms in the invested economies to expand and diversify industrial production and move up in the value chains.

Parallel to investment in connectivity projects, skill gaps in local industrial sectors can be bridged through training, capacity building, and customized on-the-job training. The net result would be higher economic activity in the local economy in the form of local industrialization, greater participation in regional value chains, remunerative employment of local labor, and, possibly, higher standards of living. To begin with, India and Japan can extend support to African countries to augment their capability to achieve higher economic growth and meet the Sustainable Development Goals (SDGs).

Besides the Perroux theorization and the spatial or urban geography conception, growth poles are also used for leading countries that have the potential to yield spillover effects in other countries. World Bank (2011) has built on economic concentration as the basis for the growth pole. As per this paradigm, emerging and developing economies would emerge as the growth poles and the activities in those poles would propel activities in ancillary sectors of the economy. Figure 2.2 explains the channels of transmission of growth pole impacts on trade, investment, labor mobility, and direct impacts on income, employment, and social welfare. It emphasizes focusing on the development of small regions with huge potential for growth instead of the entire economy and conclude that economic development in the poles will also diffuse to the peripheries. The application of this concept failed to produce

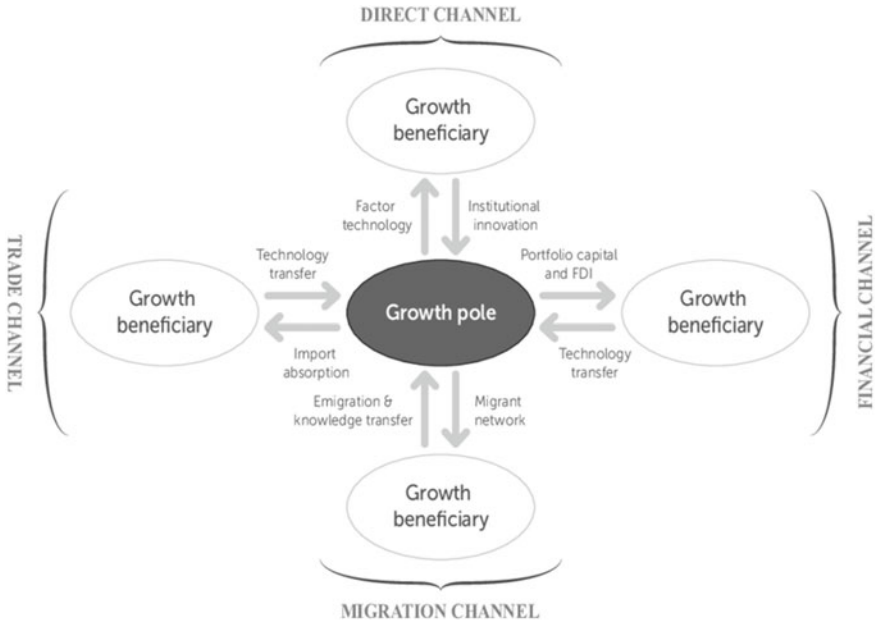

Fig. 2.2 Channel of transmission in growth poles. *Source* World Bank (2011)

desired results during the 1960s and 1970s but it is again gaining prominence and catching the eye of many policymakers. Modifications are being made to make it fit in the contemporary world and this has led to the emergence of several sister concepts like economic corridors, transport corridors, special economic zones, transit corridors, etc which facilitate the functioning for growth poles. Numerous research studies are conducted to estimate the impact of contemporary growth poles on the economy and to comment about their effectiveness in bridging the gap between rural and urban areas (Kakazu 1999; Chheang 2018).

Economic development is not uniform and certain specific regions have greater potential for growth. Consequently, economic advancement materializes around them. In the Perrouxian theory, a firm or an industry was required to act as a propulsive pole and the system proceeded through inter-industry linkage via backward and forward linkages. However, his work largely referred to growth poles in terms of abstract economic space. Hirschman in 1958 moved a step forward by emphasizing the shift from economic to geographic space. He noted that "an economy to lift itself to higher income levels should first develop within itself one or several regional centers of economic strength". He referred to growth poles as centers. Reformulation of the theory of growth poles witnessed the emergence of the term industrial complex. Boudeville defined a growth pole as a city with a complex of propulsive industries. Hermansen described an industrial complex as "an assemblage of technologically and economically interconnected industrial units usually located in a territory". An industrial complex reaped the benefits of reduced cost due to productivity gains, innovation, and other knowledge and scale economies which opened opportunities to transmit growth impulses to surrounding hinterlands.

Growth pole is an instrument used by policymakers for regional planning and development. Regional policies based on growth poles gained momentum in the developing countries in the 1960s. But by 1970s policymakers lost interest because its application failed to record the anticipated outcome. However, stagnation in the innovation process in industries considered as growth poles might be a possible reason for many unsuccessful experiments in that era. Ever since extensive work has been done on the subject matter and various attempts are being made to successfully use regional policies based on growth poles and achieve economic growth which is inclusive and sustainable. Continual innovation and diffusion of knowledge are key determinants for the success of growth poles and this fact was recognized even in the original growth pole theory where Perroux integrated Schumpeter's theories on the role of innovation with theories of industrial interdependence based on inter-industry linkages (Chaturvedi 2016a).

Perroux's work laid more emphasis on "industrializing industries" acting as growth poles and almost neglected the need for channels required for transmitting the growth originating in poles to the hinterland. As per the contemporary understanding, a "growth pole can be any urban center/firm/industry/sector which is dominating, technologically advanced and is capable of inducing further development of economic activity throughout its zone of influence". The system proceeds further through inter-industry linkages. Expansion of economic activity of the propulsive industry determines the expansion of industries that supply inputs and regulates the

growth of demand industries by the quantity and type of intermediate goods supplied to them. "Economic polarization is followed by geographic polarization with the flow of resources and concentration of different economic activities in the growth pole region". The concentration of economic activity reduces the cost of production and increases the profitability which will provide an opportunity for the pole to generate spillover growth effects in the neighboring terrain.

However, for a self-sustaining pole to emerge at a particular location require several other conditions such as easy access to raw materials, efficient human capital, knowledge infrastructure, proper connectivity, fast and proficient transportation, good governance, and ready market for finished goods. So here comes the role of economic and transport corridors and special economic zones which facilitate the development of growth poles (Lord and Tangtrongjita 2016). Development corridors and SEZs bear resemblance to growth poles but actually in practice they act as components of growth poles. Transport corridors connect major centers of economic activity and their primary objective is to improve connectivity and reduce the time and cost associated with transportation thereby promoting trade expansion. Therefore, a dominant industry with a strong inter-industry linkage combined with the availability of other development factors fabricates a perfect environment for the development of a strong pole. A triumphant regional policy painted on growth poles will not only contribute to the national economy, which is reflected through the increased GDP growth and per capita GDP numbers but will also upgrade the economy of its surrounding territory by optimal and fuller utilization of the natural resources and human capital of the hinterland and facilitate the development and enhancement of local industries.

A considerable amount of literature is available on growth poles which cover a multiplicity of aspects such as their effectiveness in regional development, impact of large-scale transport corridors, the outward spread of activities from growth poles, etc. Furthermore, diverse methodologies and techniques like Meta-Regression Analysis, Trend Surface Analysis, Simple Descriptive Analysis, Cost-Benefit Analysis, General Equilibrium models, Difference in Difference methods are used to reach conclusions of great significance. Several research papers observe the impact of the use of growth poles as key elements of regional policy of development and the results are conflicting. There are instances where the regional policies did extremely well while in other cases they proved to be a complete failure.

For instance, the role of urban growth poles in the regional policy of Romania reveals that the urban growth pole program was a complete failure and led to an intensification of regional disparities and imbalances despite a significant rise in GDP and GDP per capita. On the other hand, the after-effects of the Madagascar Integrated Growth Pole Project are quite positive with a perceptible increase in private investment, a number of formal jobs, and newly registered businesses. Transport infrastructure has a significant beneficial impact on intermediate outcomes like trade, productivity, and output per capita but has a detrimental impact on the environment quality and social inclusion. Physical infrastructure is a necessary but not sufficient condition for an economy to obtain benefits from trade expansion and that trade facilitation is of greater value than transport infrastructure improvements.

Along with benefits growth poles have certain shortcomings that need to be addressed in order to come up with a successful regional policy. One of the biggest problems faced by growth poles is their inability to diffuse economic development to the hinterland due to lack of channels through which impulses can be extended. Another disputed point is the consideration of only manufacturing industries to be capable of acting as growth pole and finally the theory's complete disregard for environmental quality. First of all, it must be understood that the growth pole is not merely concerned with industrial development instead "it has to develop conditions under which economic and industrial development occurs". "For this to happen it must perform three basic functions-service centers, innovating and growth-promoting points and social interaction points". Also, it is not necessary that only the manufacturing industry can act as a propulsive industry.

The pole can be service sector centric or even agriculture-based, provided it performs all the above-mentioned functions. Additionally, it must be supported by a fully developed infrastructure, proper connectivity, healthy and skilled labor force, and market-friendly policies. For the growth to transcend to peripheries "the growth pole must incorporate a hierarchical ordering of growth foci to form the nodes through which development impulses can be diffused to the tiniest villages and the backwash effect (unfavorable effect of core economic growth on periphery economic development) is completely counterbalanced. The growth foci vary in size function to suit the needs of a specific region. The lowest level growth foci will cater to all the basic needs of the local community such as education, medical, communication, banking, etc. at a central place. The intermediate growth foci will have all the amenities of the lowest growth foci in a greater scale and better quality and must possess secondary manufacturing. The highest growth foci will serve the macro region of the country. It will possess tertiary activities and best quality amenities." A Growth Pole model described above will not only be self-sustaining but will also result in overall development of the economy. Thus, the objective of regional development policy is to achieve sustainable and inclusive development and growth poles can serve as an instrument to achieve the desired target. Along with infrastructure and dynamic industries, market-friendly policies, proper law and order, and check on corruption will speed up the process of economic growth through a growth corridor approach (UNECA 2014).

Free, Open, and Inclusive Indo-Pacific

Indo-Pacific strategy seems to have dominated the foreign policy perspectives of leading economies in the world. All major economies and global powers eye Indo-Pacific as a source of future economic growth, investments, and influence (Chong and Wu 2018). In particular, India and Japan have expressed strong interest in this initiative for a peaceful and prosperous Indo-Pacific. Indian Prime Minister Narendra Modi and Japanese Prime Minister Shinzo Abe had emphasized the rising importance of the Indo-Pacific region as a key driver for global prosperity during their meeting in November 2016 in Tokyo.

Prime Minister Modi during his visit to Japan, November 11, 2016, stressed upon *"Deeper economic engagement, growth of trade, manufacturing and investment ties, focus on clean energy, partnership to secure our citizens, and cooperation on infrastructure and skill development are among our key priorities."* They both recognized that India's active engagement in the region under the "Act East" policy and Japan's "Free and Open Indo-Pacific Strategy" have the potential for deeper bilateral cooperation and synergy. It was stressed that improved connectivity between Asia and Africa is vital for the prosperity of the whole Indo-Pacific region. In this regard, Japan and India decided to explore the synergy between India's "Act East" policy and Japan's "Expanded Partnership for Quality Infrastructure" for close coordination both bilaterally and with other partners, to strengthen regional integration through improved connectivity as well as industrial networks based on the principles of mutual consultation and trust (Government of India 2020).

During his again visit to Japan in October 2018 for the annual India-Japan Summit, Modi reiterated the unparalleled potential for the development of relations between the two countries. He also recognized that the India-Japan relationship has been transformed into a partnership with great substance and purpose and is a cornerstone of India's "Act East" policy. In a similar tone, Prime Minister Abe underscored the importance of India-Japan partnership for rule-based regional order and is determined to advance the "new era in India-Japan relations" so as to further cooperate for the peace, stability, and prosperity in the Indo-Pacific. Based on their shared vision, the two leaders reiterated their commitment to working together for FOIP. They also affirmed that ASEAN unity and centrality are at the heart of the Indo-Pacific paradigm, which is inclusive and open to all. ASEAN has further clarified it in its June 2019 Indo-Pacific Outlook (ASEAN Secretariat 2019).

Moreover, both India and Japan shared their willingness to expand concrete cooperation with the United States and other partners. Both the leaders cherish the vision for a rule-based order that respects the sovereignty and territorial integrity of nations, ensures freedom of navigation and as well as unimpeded lawful commerce, and seeks peaceful resolutions of disputes with full respect for legal and diplomatic processes in accordance with the universally recognized principles of international law, including those reflected in the UN Convention on the Law of the Sea, without resorting to the threat or use of force. The specific modality of cooperation would include the development of connectivity via quality infrastructure, and other projects including capacity building for shared prosperity, carried out bilaterally and with other partners, in an open, transparent and non-exclusive manner and based on international standards, responsible debt financing practices, and in alignment with local economic development strategies and priorities. This synergy is embodied in collaborative projects between India and Japan in the Indo-Pacific region, including in Sri Lanka, Myanmar, and Bangladesh as well as in Africa. In this regard, the idea of establishing the "Platform for Japan-India Business Cooperation in the Asia–Africa Region" to further enhance exchanges between Japanese and Indian businesses toward developing industrial corridors in the region was highlighted. Chaturvedi and Dash (2019) examine the prospects of India-Japan cooperation from Indian perspectives within FOIP.

The FOIP vision can be fulfilled through the following pillars:
Quality Infrastructure and Connectivity: FOIP would encourage the building of robust institutional, industrial, and transport infrastructure in growth poles among countries through quality infrastructure. Physical connectivity will improve trade facilitation and promote inter-industry linkages, and offer opportunities to countries to choose new product lines and shifts in production lines. Quality infrastructure may include power projects such as smart grids, renewable energy projects like the International Solar Alliance (ISA), telecom infrastructure, and so on.

Focus Sector Development Cooperation: Agriculture, health and pharmaceuticals, and disaster management could be the focus sectors of development cooperation among the countries. Agriculture and agro-processing is an important field of cooperation among countries in the Indo-Pacific region. The specific development cooperation projects may include the establishment of a supply chain for crop seeds and agricultural machinery, the joint establishment of regional manufacturing for machinery and farm implements to boost mechanization, marketing networks for agricultural machinery, arranging finance and credit systems, and measures to reduce post-harvest losses of farm commodities such as pulses, cereals, oilseeds, eggs, meat, milk, and dairy products. The two important pillars of cooperation in health are advancing health research collaboration and medical education as well as industrial cooperation in the pharmaceuticals and healthcare sector. Some prospective areas include health systems research, strengthening the creation of a surveillance network including for precise real-time epidemic tracking, pandemic preparedness for emerging and re-emerging infections, drug resistance surveillance for diseases like TB, HIV, development of point of care diagnostics, anti-microbial resistance, etc. In the field of disaster management, India's experience with management of natural calamities such as floods, tropical storms, drought conditions, etc., can be shared with other countries in the region.

Skill Development and Capacity Building: Education and skill development are important areas of capacity building. Countries in the Indo-Pacific region can share their experiences with other countries to meet skill gaps. For instance, India has an advantage in the healthcare sector, medical training, and other capacities. Similarly, India and Japan can collaborate with Africa in mining and mineral exploration. It would also be essential to synchronize capacity building and skill development to industrial demand at the ground level. Entrepreneurship Development Institutes can be established for creating cadres of future entrepreneurs in the region.

People-to-People Partnership: People-to-people exchange is important for sharing of experiences at the grassroots level as well as for improving human potential through capacity building and training. Public understanding enhances the durability of any project or institution, but most people engage only when their personal interests are addressed. The gains from economic interdependence are more secure when they are widely understood. Tourism and education are the major mechanisms of people-to-people interactions. Universities can play a key role in strengthening greater interaction among the people of the region for fulfilling the dream of FOIP. Southeast

Asia has an extremely rich experience in this regard. The saga of economic growth in the ASEAN region has several fascinating stories of economic corridors and growth poles eventually leading to regional integration. The economies of ASEAN countries could evolve a balance in hard and soft elements that optimize a corridor's competitiveness (Dent 2017).

In this effort, inter-sectoral multilevel approaches could provide growth impetus for small and medium enterprises. India has recently implemented several development schemes that can be replicated in other countries for the desired impact on the socio-economic conditions of the people. India and Japan have their own development cooperation projects in African countries, but their joint initiative under the Indo-Pacific strategy would expand the scope of cooperation and be more effective. Since the Indo-Pacific region is a huge maritime area, the countries can leverage their marine resources for sustaining growth and alleviating poverty and unemployment. The blue economy includes several vibrant sectors which can be suitably brought under the purview of FOIP for effective coordination of the use and governance of marine resources in the Indo-Pacific region (Mohanty et al. 2015; Chaturvedi 2017).

The littoral countries under the Indian Ocean Rim Association (IORA) framework offer tremendous potential for investment in several sectors (Roy-Chaudhury and de Estrada 2018). Economic indicators show remarkable progress in the scale of trade and investment flows originating from the region. Intra-regional average trade in goods grew substantially by 23.5 percent during 2003–07, which was higher than the growth in the region's global trade. In absolute terms, intra-regional trade rose by five times from US$258 billion in 2000 to US$1230 billion in 2012 raising the intra-regional trade (IRT) ratio to 29.1 percent in 2012. Likewise, intra-regional inward and outward FDI stock increased tremendously by registering a growth of almost 40 percent and 62 percent, respectively, during 2009–12, even though the magnitude of FDI flows could be asymmetric across members.

In addition to the on-going silent integration of regional markets through surging intra-regional trade and investment, the success of IORA as a regional economic community is contingent upon three crucial segments: services, investment, and role of private sector. Services sectors in particular require specific policy attention preferably through greater investment and private sector-led initiatives. The combined outcome of these three would determine the pace of a deeper and comprehensive economic integration in the Indian Ocean region (Dash 2014). Further, FDI flows to the region have improved considerably in the 2000s with a good number of mergers, acquisitions, and Greenfield investments. Higher inward and outward FDI stock for the Indian Ocean region shows the dynamism of the region and brighter growth prospects (Dash 2015).

In recent years, India has stressed paradigm shifts in policy approaches to initiate and expedite economic transformation promoting inclusion, well-being, and sustainability. The comprehensive approach to policymaking is meant to link nodes, spread policies, and fill the voids in policy interventions to make transformations effective and credible. This largely overlaps with the integrated approach of the SDGs. The most noticeable change in this approach has been to make economic and social inclusion a robust, time-bound, and self-sustaining process. The emphasis has been

to move beyond entitlement to empowerment and to entrepreneurship. This is being achieved through measures beyond temporary income transfers. The "Pradhan Mantri Jan Dhan Yojana", the flagship scheme for financial inclusion aimed at opening bank accounts for all with an assurance of social security benefits linked with such accounts, has been hailed as transformative. Likewise, schemes of financing for small entrepreneurs, such as MUDRA, and "Stand Up India" for the marginalized and women offer unprecedented opportunities for transformation. The social sector agenda has been set straight through an exemplary focus on savings and educating the girl child, protecting and caring for maternity and comprehensive efforts to eradicate malnutrition.

In addition, the "Clean India" campaign is meant for time-bound results. At the same time, India's focus on clean fuel and renewable energy is massive and magnificent in setting global standards. International Solar Alliance (ISA) initiated under the leadership of India and France is a forward-looking step in that direction. India has undertaken huge programs on supply of subsidized clean cooking gas reaching maximum households and benefitting women. The country is on a steady path of energy conservation and efficiency with the availability of cheapest LED bulbs globally and substantially lowered per unit cost of solar energy generation as compared to thermal. Interestingly, all villages would be connected with high-speed broadband connectivity under the Digital India programme with encouraging progress so far.

India's policy efforts on localizing development and thereafter contextualizing SDGs are a valid model for emulation in the Indo-Pacific region. India is ready to share knowledge, expertise, and institutional designs with other countries for a robust partnership on the SDGs. Moreover, India's maritime projects such as *Sagarmala* and *Chabahar* port are a reflection of its emphasis on developing economic corridors in the Indo-Pacific region (Banerjee 2017). Complementarity between different countries in the Indo-Pacific region has to be studied and explored further for deeper understanding (Koga 2018). Projects in different sectors can be identified based on local needs and development priorities. Since FOIP envisages partnership, the joint mechanisms of identification, financing, and implementation of projects possibly through co-financing by regional development banks like Asian Infrastructure Investment Bank (AIIB) involving two or more countries may be encouraged (Dash 2016; Cammack 2018) . Physical connectivity is the precondition for strengthening economic and growth corridors.

The advantage of India's partnership with Japan lies in Japan's specialization in quality infrastructure in the form of roads, railways, airports, and seaports which would reduce the cost of transport of goods and ensure greater mobility in the urban space with much lower carbon footprints. The challenge would be to motivate leading actors from Japan to bring Africa into their roadmap, although the Tokyo International Conference on African Development (TICAD) VI has suggested several ways for leveraging business partnerships in Africa (MOFA 2017). There are impressive results one come across in this regard. For instance, Japanese business presence in Africa has steadily increased in the past 10 years. Official figures estimate that in 2017, 795 Japanese corporations were operating in the continent, up by 7.7 percent from 738 in 2016 (Kondoh 2018).

Prime Minister Modi's 10 guiding principles for India's sustained and regular engagement with African countries form the backbone of India-Africa relations (Government of India 2018). The India-Africa Forum Summit (IAFS) has already formally structured India's age-old relationship with Africa through new partnerships with several countries in the region. The last IAFS in Delhi had a record 41 of the 54 leaders of the African Union (AU) coming together, compared with the previous participation of just 15 leaders or less in 2008 and 2011. This shows the impact that India has evolved over the years with its partners. In the sectors identified above, including agriculture and agro-processing, health, and disaster management, the specific modalities of implementation of cooperation projects may be formulated. FOIP should devise proper governance structures for optimum and legal use of marine resources for economic growth and well-being. Native coastal communities dependent on fisheries, shipping, coastal tourism, and other sectors may be given inducements to invest, take ownership, and advance knowledge in the blue economy. Under the FOIP strategy, countries can think of creating special funds for expediting certain cooperation projects on a priority basis.

Development Compact—A Coherent Development Partnership Model

Over the years, it has been observed that ODA in the form of aid and grants should not be viewed as the only means of addressing development deficits in developing and less developed countries. In fact, ODA flows to recipient countries have fallen over time and is much below the 0.7 percent of GNI benchmark. Although ODA and Lines of Credit (LoC) would continue to be a major source of support to many countries, there is a need for identifying supplementary sources of funding projects including the private sector. It could also be necessary to repackage certain modalities involved in official aid and development assistance. Unlike the past, low-saving countries are better positioned now to mobilize capital from international capital markets for development projects. In that sense, the curse of the low scale of domestic resource mobilization-both tax and non-tax revenues- need not be corrected by official aid and lines of credit. This realization manifests in alternative ideas and frameworks for development partnership.

The traditional donor-recipient distinction is now increasingly blurred in triangular partnerships. Countries at different stages of development are exploring opportunities to form coalitions and build mutually-beneficial development partnerships than being just a recipient of aid and assistance from OECD-DAC donors. In the last five years, the "Delhi Process", an international conference on development cooperation practitioners', initiated by the RIS Network of Southern Think-Tanks (NeST) with cooperation from the Government of India and the United Nations Office for South–South Cooperation (UNOSSC) has deliberated the possible alternatives that are emerging from this evolving discourse.

With emergence of southern providers of development assistance, SSC and TrC models of development cooperation are considered as efficient means addressing disparities in development in the partner countries. The principles that govern SSC and TrC are mutual gain, non-interference, collective growth opportunities, and absence of conditionalities. SSC and TrC models of partnership offer opportunities for growth and economic expansion through human capacity building and strengthening of institutions. The net outcome of such interventions is often manifested in rising per capita income and quality of growth.

Besides adoption of best practices of SSC and TrC re-packaging of traditional instruments of development cooperation is needed. Chaturvedi (2016b) integrates those instruments into a new concept called "development compact". The new development compact context stresses upon supporting all-round development of the partner country, neither through meeting any specific undertaking nor any commitment to conditionalities. Yanagihara (1998) presents a comparison between the traditional flows with SSC. Likewise, Lim (2008) has examined the Anglo-American model, and Gore (2000) and Mohanty (2016) refer to the Washington Consensus that stresses for macroeconomic stability by controlling inflation and reducing fiscal deficit. In essence, North-South development assistance is mainly explained in terms of a two-gap model in the traditions of the post-Keynesian Harrod-Domar model. In early vintages of SSC scaling up trade integration and investment, cooperation was given thrust which later on expanded to add the other instruments to evolve as a holistic concept of development compact.

Development compact provides development assistance which works at five different levels—(i) trade & investment, (ii) technology (iii) skills development, (iv) lines of credit, and (v) grants. Development Compact entails that the development policies followed by developing countries are cohesive and comprehensive, and do not adversely affect any sector such as health, nutrition, education or income and employment. Capacity building is an important component of development compact approach. All southern countries participating in SSC are either providers or recipients of various training and capacity building programmes. Civil Society Organisations (CSO) play an important role at the grassroots level for successful execution and impact assessment of development cooperation projects.

The four pillars of AAGC shown in Diagram 1 is a reflection of the development compact approach. Asian and African countries can engage in a range of areas such as trade & investment, connectivity & infrastructure projects, development cooperation, and people-to-people and business-to-business partnerships. India, Japan, and partner countries in Africa and Asia can jointly undertake projects that would contribute to these pillars in terms of sharing of funding, mobilizing private sector participation, sharing of technical and human resources, capacity building and skill development, among others (MOFA 2020). Instead of a singular approach, all four verticals of AAGC would operate simultaneously so as to yield optimum results of cooperation.

Diagram 1 Asia Africa Growth Corridor. *Source* RIS-ERIA-IDE JETRO (2017)

Conclusion

AAGC is an ambitious transnational development partnership model that promotes equity, ownership, mutual benefits, and local development aspirations. AAGC underpins the virtues of South–South Cooperation and Triangular Cooperation among partners and envisages demand-driven projects and interventions. Unlike other transnational initiatives, AAGC does not have any unilateral transfer of funding as part of the cooperation framework. In fact, AAGC proposes to pool financial, technical, natural, and human resources for the mutual benefit of the participating countries. Local economic development including spatial equality would be guiding principles for identification and implementation of projects under the auspices of AAGC. AAGC sets a roadmap for greater engagement among India, Japan, ASEAN countries, and African countries which fits well with the Free, Open, and Inclusive Indo-Pacific

strategy. While Indo-Pacific is being viewed in the strategic and geopolitical domain, AAGC situates it as an economic paradigm to promote growth and prosperity in the participating countries of Asia and Africa.

Development Compact approach would be followed for the implementation of various projects under the four pillars highlighted in the AAGC Vision Document. This approach integrates five different instruments of development cooperation such as trade and investment, technology, skill development, lines of credit, and grants. By addressing both financing and operational aspects of projects, development compact would be the most efficient means to realize the benefits of cooperation among Asia and Africa. India and Japan would steer the initiative in the beginning which would be extended to all interested partners from both the regions. AAGC would herald a new era in development friendship among like-minded countries for the achievement of inclusive and sustainable development captured in SDGs.

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Chapter 3
Free, Open and Inclusive Indo-Pacific: An Evolving Development and Cooperation Platform for Asia Africa Growth Corridor

Anita Prakash

Introduction

Asia and Africa relations are historical in time and contemporary in aspirations. They share their past struggles, present efforts, and prospects for a bright future, where the expanse of cooperation for growth in the future is enormous. This bonding is also apparent from their coming together on many occasions—bilaterally, sub-regionally, as a global force and as the "one voice" of developing world on issues that touch human concerns of every kind. The Indian Ocean is the natural link between the two regions and has provided opportunities for partnership between Asia and Africa since time immemorial. Asia-Africa economic and cultural linkages are evidence of partnerships between two regions.

The Asian economy, especially East Asia,[1] has shown strong resilience and provided a robust drive for the global economy in the past and continues to provide the tailwinds to global economy. Africa, on the other hand, is on the growth path and poised for a leap. Endowed with young demography, its economy and social growth indicators are capable of ascending every year, by integrating and expending into the global value chains of production that exist in Asia. Combined together, Asia and Africa stand head and shoulder above other parts of the world. The two regions represent 77 percent of the global population and 39 percent of global GDP (Fig. 3.1).

[1] In the AAGC, the geographical concept of East Asia comprises of Southeast Asia, Northeast Asia and Oceania or ASEAN+6, which includes ASEAN 10, China, Japan, Korea, India, Australia, and New Zealand, corresponding to original 16 East Asia Summit (EAS) countries.

A. Prakash (✉)
Director, Policy Relations, Office of President of ERIA, Economic Research Institute for ASEAN and East Asia, Sentral Senayan II, 6th Floor Jalan Asia Afrika No. 8. Senayan, Jakarta 10270, Indonesia
e-mail: anita.prakash@eria.org

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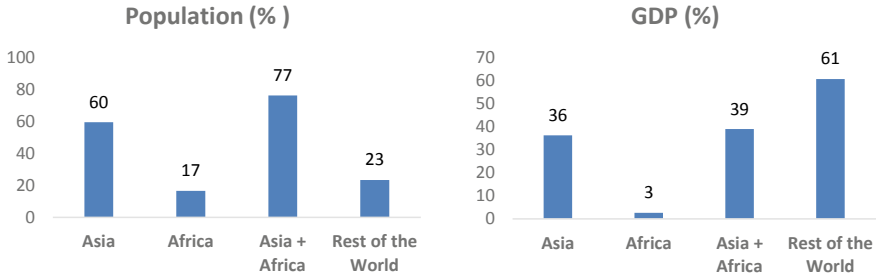

Fig. 3.1 Combined strength of East Asia and Africa. *Source* World Bank Data Bank (2017)

The next decade will be an opportunity for both regions to realize their economic and social potentials, as also to deepen their capacities and institutional strengths. As developing regions, both continents are expected to be committed to promoting strong, balanced, sustainable and inclusive growth, both at the national and the international levels and to actively cooperate to narrow the development gaps and address common economic and social challenges.

India and Japan: Shaping the Asia Africa Growth Corridor in the Indo-Pacific

In the Joint Statement of the India–Japan Annual Summit of November 2016, the Prime Ministers of India and Japan envisaged that India and Japan would seek active cooperation from, and joint work among the international community to participate in the Asia Africa Growth Corridor where increased and improved ties between Asia and Africa will bring about economic prosperity and encourage sustainable development through setting up of institutional as well as industrial corridors and network for capacity enhancement, free and seamless movement of people, trade, investment, energy and partnership for infrastructure.

Formally termed as "Asia Africa Growth Corridor: Partnership for Sustainable and Innovative Development", the foundations of this mega-regional growth programme lie in the India–Japan bilateral cooperation framework, where the governments of India and Japan have committed themselves in giving shape to the Asia Africa Growth Corridor (AAGC) programme.

A free, open, and inclusive Indo-Pacific is also a call from Japan which has been readily supported by India, and other member countries in Southeast Asia. Speaking in the United Nations General Assembly (UNGA) in 2018, Prime Minister Shinzo Abe reiterated the value of peace, cooperation, and prosperity in Indo-Pacific.

> When the confrontational structure is cleared out of Northeast Asia, the maritime corridor running from the Arctic Ocean to the Sea of Japan, through the Pacific Ocean to the Indian Ocean will become increasingly important. Japan, located directly above it and also

> possessing a vast exclusive economic zone, hopes for stability and peace in these waters as well as in the airspaces above them.
>
> The countries of ASEAN lie at the "confluence of the two seas" – the Pacific and Indian Oceans. And it was the forerunners living in what we now call the Pacific island countries who in eras long past crossed these two oceans to introduce products to far-away eastern Africa.
>
> What I call the "Free and Open Indo-Pacific Strategy" derives from our desire to preserve the blessings of open seas, together with these very countries, as well as the United States, Australia, India, and others, and indeed, all countries and peoples who share the same intent.
>
> What must control our sea and air spaces that are broad and wide is the rule of law, and the rules-based order, which are in turn backed by solid institutions.

To fulfill the mandate from the India–Japan Prime Ministers' meeting of 2016, a vision document for AAGC was jointly developed by the Economic Research Institute for ASEAN and East Asia (ERIA), Jakarta, Research and Information System for Developing Countries (RIS), India and Institute for Developing Economies (IDE-JETRO), Japan. The vision document of the Asia Africa Growth Corridor was presented in the Africa Development Bank (AfDB) Annual Meeting on 25 May 2017, in Ahmedabad, India.

The AAGC foresees Africa's integration with India, South Asia, Southeast Asia, East Asia, and Oceania and to give shape to the concept of Free and Open Indo-Pacific. The Indo-Pacific also embodies other connectivity plans that are based on the principles of development cooperation and economic integration. The AAGC concept plan is based on ERIA's earlier works on connectivity and production networks, such as the Asia–Europe Connectivity Vision 2025, and the Comprehensive Asia Development Plan (CADP II), and CADP 2.0. The AAGC proposes four major pillars to bring peoples, goods, services, capital, and institutions closer together, and in realizing the objective of Asia Africa partnership for sustainable and innovative development. The four aspects of AAGC are as follows:

- Development and Cooperation Projects
- Quality Infrastructure and Institutional Connectivity
- Enhancing Capacities and Skills
- People-to-people Partnership

These will facilitate and enhance economic growth by linking economies in Asia and Africa through the development of institutional and human capacities, connecting institutions and people, capacities for planning and execution of projects, trade facilitation, human resource development, and technology improvement, and infrastructure (port, airport, industrial park, telecommunication, IT) of the two continents. The emphasis of the AAGC is on capacity building and expanding the manufacturing base and trade between Africa and Asia. The objective is to transform the Indo-Pacific region into a Growth Corridor which would embed the production networks and value chains in Africa and Asia. It will enable these regions to further integrate and collectively emerge as a globally competitive economic bloc. The AAGC remains specially aligned with Agenda 2030, where green projects would get priority funding and implementation.

What Can Asia Offer to Africa Through the AAGC?

The Asia Africa Growth Corridor has a twofold purpose to it. It brings the development experience of East Asia, Southeast Asia, and South Asia closer to Africa and makes a case for greater economic connectivity and cooperation for development between the two mega regions. Second, it presents a development paradigm for Africa in which Asia, more specifically India and Japan lead the initiatives for enhancing prosperity. The AAGC offers the freedom to pursue development plans that are suitable for, and in sync with the development priorities of countries in Africa and Asia. The AAGC, therefore, is not merely a plan for development and cooperation between Asia and Africa. It is also the underwriter of the freedom of movement of people, goods, services, and capital in the geographical spread between the Western edges of Africa to the Eastern edges of Asia and Oceania. The AAGC is the first such attempt to prepare a growth plan that connects two continents, where development strengths of Asia are shared and dovetailed with the development priorities of the countries and/or regions of Africa. The AAGC keeps the prosperity of the people of Africa and Asia, and their development priorities at the center of all development plans and projects under its aegis.

Asia and Africa: Sharing Their Future Development Plans

East and Southeast Asia have experienced trade and investment-led growth and economic development since the 1970s. The industrialization of this region and accompanying prosperity has also helped this region to improve its socio-economic and human development indicators. The production networks in East Asia are the most sophisticated among all production networks in the world. The initial development in this region was through the Official Development Assistance (ODA) received from the developed countries such as Japan and the United States of America. The critical mass of development and subsequent growth was, however, achieved through regular foreign direct investments (FDI), increased trade, and now increasingly through domestic consumption of goods and services.

East Asia is now facing a big challenge. On the one hand, economic forces in the globalizing era require an even higher level of *de jure* and *de facto* economic integration than now. On the other hand, East Asia, indeed all of Asia, consists of countries and regions widely different in their development stages with diversified historical, cultural, and political backgrounds. The challenge to reconcile these two objectives, i.e., deepening of economic integration and narrowing development gaps, is an urgent issue for developing Asia.

At the same time, the existing production channels in Asia are overloaded and leaning towards few countries, while other developing economies have to strive harder to narrow their development gaps, both domestically and among other countries. The global trade environment has changed immensely since the global financial

crisis (GFC) and rebalancing of existing value chains of production are underway, or under consideration in many markets. It cannot be a "business as usual" response when planning for future growth in Asia.

Learning from the results of investments and participation in production networks, Asia is working towards creation of new production channels, expanding the international division of labor and reinvigorating the existing value chains and connectivity across regions. On all these three accounts, Asia finds a natural partner in Africa, since there already exists a historical and practical economic connect that is waiting to be both deepened and expanded through new channels of investment and plans for development. The leaders in India and Japan have underlined these old partnerships and new initiatives and brought it under their policy initiatives, through the AAGC.

As new international linkages are sought in the Indo-Pacific region, the world of work is also changing due to advancements in technology, innovation, automation, robotics, digital platforms, and greater connectivity. The effect of the digital economy is most advanced in corporate applications and industrial systems; therefore, on investments, hiring, skill training, and trade facilitation policies.

Africa and developing Asia have a young population and a growing labor force—a highly valuable asset in an aging world. The two regions are urbanizing faster than any other region. By 2034, Africa's working-age population is expected to be 1.1 billion, larger than that of either China or India (MGI 2016). Developing Asia on the other hand has the largest regional labor force in the world, with nearly 2 billion workers. The Asian labor force is projected to grow by 0.5 percent annually from 1.9 billion in 2015 to 2.1 billion in 2030 and 2.2 billion in 2050 (ADB 2018). India is projected to account for 30 percent of the regional total labor force by 2030, and countries with relatively young current populations, such as Nepal and Pakistan, will experience larger increases in their labor force and need policies to ensure adequate number of productive jobs.

Africa is urbanizing faster than any other region; its cities are expected to gain 24 million people each year until 2045. Africa has a young population and a growing labor force—a highly valuable asset in an aging world. By 2034, the working-age population is expected to be 1.1 billion, larger than that of either China or India (MGI 2016). To meet these growing needs, the African Development Bank has estimated that Africa needs at least $130 billion for infrastructure development each year (AfDB 2017). The policy challenge will be to ensure inclusive growth and minimize development gaps in the region.

Africa and developing Asia face development gaps at two main levels: geographical and industrial. Geographical development gaps are the differences in income levels and development stages among countries or regions within a country. Industrial development gaps refer to differences in productivity and development stages between multinational and local firms, large firms, and small and medium enterprises (SMEs), and manufacturing and non-manufacturing sectors (Kimura 2015). Planned infrastructure development and connectivity improvements can positively exploit the diversity among countries and sub-regions to narrow these development gaps in

Africa and Asia. Geographical development gaps can be reduced through participation in production networks. Infrastructure enhancements enable countries or subregions to attract manufacturing industries. They also allow people to move from rural to urban areas. The smooth movement of people from agricultural, informal occupations in rural areas to formal, non-agricultural occupations in urban areas is an effective way to raise incomes and supply competitively priced labor to the industrial and modern services sectors.

The concept of connectivity is also at the center of industrialization in Africa and developing Asia (Prakash 2018). Infrastructure for connectivity can make regions competitive in global value chains. In fact, 15 African countries and more than 400 million people are landlocked. Industrialization and connectivity can unlock the economic potential of these countries and connect their people to the rest of the world.

Development Assistance and Direct Investment-Led Growth in Africa

AAGC connects the growth experience from Asia, in particular the Southeast and East Asia, to the growth strategy of Africa. Development assistance, whether bilateral or multilateral, is an integral part of growth for any developing economy. When institutions, capacities, and infrastructure need to be built and nurtured in a developing economy, the economic and technical assistance from development partners play a significant role. A responsible development assistance partner, however, would ensure creation of conditions and capacities in the recipient country/region that will support direct investments in manufacturing of goods and services, development of capacities for sustaining the growth results and creating physical and institutional connectivity infrastructure for deeper economic integration in these developing economies. The growth that was experienced by Asian Tigers initially, and later by ASEAN member countries[2] was attained by moving away from the ODA-led growth to FDI led growth (Prakash 2019a). Figures 3.2 and 3.3 show the levels of development assistance and FDI in Africa and bring out the contrast with enhanced direct investments and GDP growth in Asia.

Developing Asia and Africa have regions that are in different stages of industrial development. The patterns and geographical location of industries, employment, trade, and economic growth will affect structural transformation and employment generation for its young demography. Industrialization and participation in global value chains are important for growth and employment generation. The approach to gradual industrialization and employment for the young population has been affected

[2]ASEAN member countries are Brunei Darussalam, Cambodia, Indonesia, Laos People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

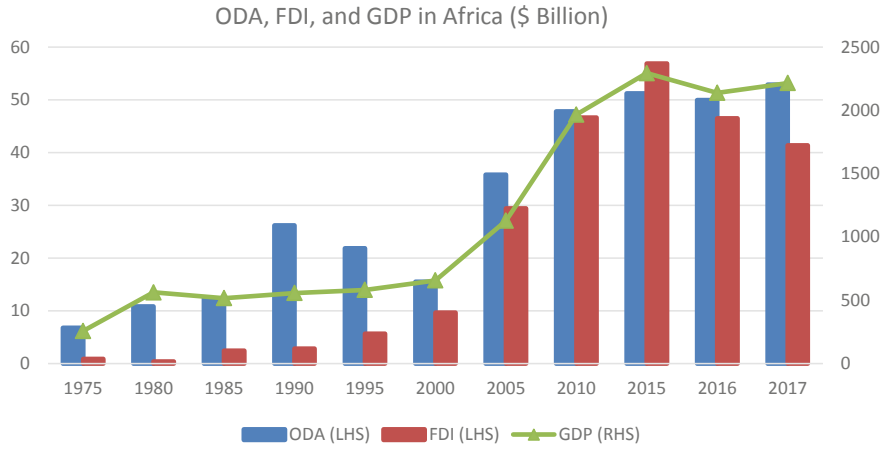

Fig. 3.2 FDI, ODA and GDP levels in Africa. *Source* OECD International Development Statistics (2018) and UNCTAD Stat (2018b)

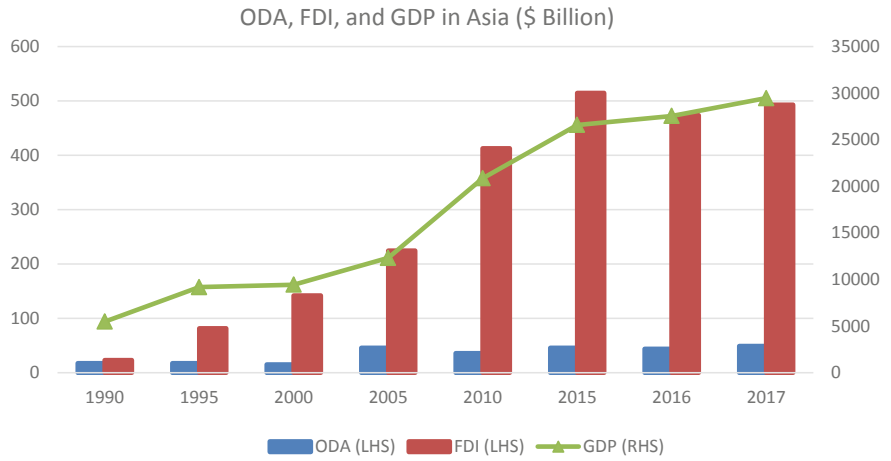

Fig. 3.3 FDI, ODA and GDP Growth in Asia. *Source* OECD International Development Statistics (2018) and UNCTAD Stat (2018b)

by the new digital economy which has abruptly arrived in developing Asia and Africa. These regions are especially vulnerable to decreased investments in manufacturing and jobs being replaced by automation, robotics, and artificial intelligence (AI) as they are not deeply integrated into the regional or global value chains (GVCs). They face the dilemma of matching their existing development stage with global demands for industries driven by new technologies, new skills, and an entirely new set of business ecology. Countries in developing Asia and Africa aspire for growth but require development strategies to attract investments in industries and greater integration into

domestic, regional, and global value chains (Prakash 2019b). AAGC supports the principle that manufacturing activities and deeper integration in GVCs still matter. AAGC provides the rationale and suitable policy focus through which developing countries in Asia and Africa can work together towards economic growth.

AAGC: Platform for Increased Investments and Employment-Led Growth in Asia and Africa

The traditional approach to gradual industrialization and employment for the young population will be affected by Industry 4.0 and the new digital economy, which has abruptly arrived in developing Asia and Africa (Kimura 2018). These regions are suitable for investments in labor-intensive industries which can employ large number of young populations. But these are equally vulnerable to reduced investments in manufacturing and jobs being replaced by automation, robotics, and AI. The development strategy for employment-led growth in these regions must, therefore, consider a multidimensional approach to industrialization, trade, and integration in the regional and global value chains in which industrial development is matched with higher spending on education and development of skills and training for adapting to digital age technologies and improved productivity. The AAGC will embody a blueprint of this shared multidimensional and multisectoral development plans between Asia and Africa. The development strategies will also focus on appropriate policies for investments, education and training, social security, and trade facilitation.

Increased investment in Africa and many parts of developing Asia is required for industrialization, for moving up in the value chain of production and for greater integration in the GVCs. In order to leave ODA-led growth behind, Africa requires conditions that can attract FDI. FDI for industrialization in Africa is increasing and manufacturing is the second highest destination after the oil and gas sector. Rising wages in East Asia are creating a perfect opportunity for the investments to explore and move towards Africa and other parts of Asia. After Europe, Asian companies are the highest investors in manufacturing opportunities in Africa, increasingly shifting the manufacturing activities to the low wage regions in Africa. Intra-African investment is also becoming increasingly significant, just as intra-Asian investments sustain the growth in Asia.

It is important to recall here that Asia's GDP growth is higher in proportion to the quantum of FDI in the region (Figs. 3.3 and 3.4) when compared to Africa. This signifies the advanced levels of domestic investments and mature production networks, capacities, and institutions that enhance productivity. Also, many of the Asian countries, especially those in East and South East, are placed higher in the value chain of production developed over the past 40 years. As Africa grows, the development and investment plans must focus on the creation of infrastructure, capacities, and institutions, as well as trade facilitation measures for robust engagement with Asia. These

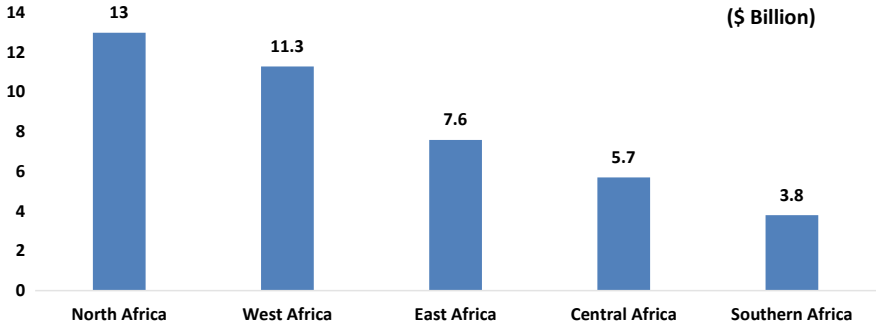

Fig. 3.4 FDI flows into Africa, by Region, 2017. *Source* UNCTAD World Investment Report (2018a)

will help to enhance both the quality and quantum of growth in Africa. The subsequent chapters in this book will recommend programmes and policies that encourage enhanced investment in African economies and greater engagement with the production networks in Asia. The AAGC focus is on opportunities for expanding growth in Africa, to be shared by a larger number of population across Africa and Asia, and to create accompanying capacities and infrastructure to sustain and improve the growth results. The sectoral programmes under the four pillars of AAGC, described at length in the following chapters, will create the conditions and capacities for growth in Africa in the respective sectors.

Asia benefited hugely from participation in the production networks that were put in place through foreign direct investments in the 1970s and 1980s, and well into the 1990s. The second unbundling or the international division of labor helped East Asia, and now increasingly South Asia too, to receive FDI in manufacturing in the early phase of industrialization (Baldwin 2008). Development of logistics and economic infrastructure was crucial to such industrial development. Designers and coordinators of international production networks were primarily multinational enterprises (MNEs). These include MNEs with various firm nationalities; not just Japanese, Korean, Taiwanese, and Hong Kong, but also American and European. All are actively utilizing the mechanism of international production networks in East Asia and South Asia.

The African economy is still at the lower ends of global value chains, whether in agriculture, manufacturing, or services. The economic activities of Africa and the pattern of trade conceal within them the depth of opportunity that lies ahead for the continent. AAGC will attempt to address these opportunities of growth, through its development cooperation and connectivity plans. The AAGC can focus on both scale and quality of economic growth and development in Africa. The AAGC sectoral development programmes are therefore guided by the development needs as well as the quality of development in the respective countries and regions of Africa.

Deepening the Global Value Chains in Indo-Pacific

Industrialization contributes significantly to the accumulation of physical and human capital. It integrates the informal and formal economy and generates substantial backward and forward linkages with other sectors, providing a wealth of opportunities for suppliers, distributors, retailers, and business services (Signe and Johnson 2018). For example, the inputs needed for different kinds of industrial production generates demand for agriculture, mining, and other raw materials, as well as for energy and information technologies, while it increases the supply of products for consumer markets, construction, and other sectors.

Manufacturing is at the heart of industrialization, although industrial activities around processing and refining of raw commodities would remain a significant aspect of industrialization in Africa. Africa's participation in regional value chains has lagged behind, except in very few countries. Manufacturing's share of sub-Saharan Africa's total GDP is under 10 percent.

Global value chains function around a regional hub. This is particularly true in China and Europe, giving rise to the terms "Factory Asia" and "Factory Europe". Global value chains (GVC) are mostly regional, giving rise to the notion of regional value chains, where regional hubs mainly trade in parts and components (ITC 2017). While GVCs tend to be regional in Europe, Asia, and North America, the situation is different in Africa. Most of the domestic value-added is exported outside Africa.

Africa has the potential to emerge as the linking trade hub between Asia and Europe. Investments for industrialization in Africa, however, must match with the development priorities of African countries. In this way, the development strengths of Africa can be shared and dovetailed with the development priorities of the countries and/or sub-regions of Africa and with the growth centers in Asia and Europe.

As Africa attracts more investments in manufacturing away from Asia, its industrial markets are slowly diversifying from extraction related industries. Weaning the industrial production in Africa away from resource-based manufacturing will be important for all stakeholders—policymakers, investors and consumers alike.

It is important to note that manufacturing continues to grow above 3 percent annually between 2005 and 2014—putting Africa ahead of all other regions in the world. In 2017, transport vehicles, electronics, and machinery (HS Code 84-89) constituted 10 percent of Africa's total exports to the world, by value. While construction and resources continue to attract the largest investments, manufacturing is now among the top sectors for investment flows into Africa, accounting for about a quarter of total FDI in 2017 (FDI Intelligence 2018). There is significant potential for Africa's industrial growth in the next decade (Fig. 3.5).

Presently, much of the capital investments in Africa are in the infrastructure, mineral, or energy sector. There is a wide opportunity to create conditions and capacities in Africa to attract investments for industries and infrastructure that can ensure participation in and movement upwards in the value chain, whether in agriculture, or commodities, or manufacturing of goods and services.

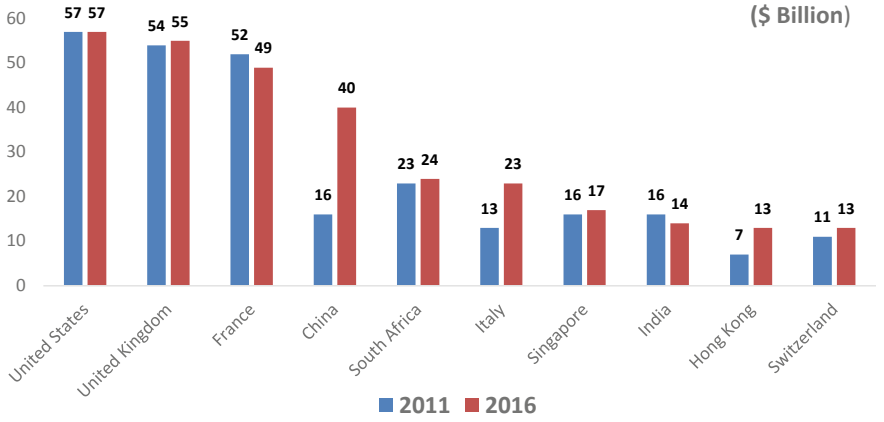

Fig. 3.5 Top Investing Countries in Africa, by FDI Stock. *Source* UNCTAD World Investment Report (2018a)

AAGC will work on the details of projects that will enable the linking of economies and markets of Asia and Africa. It is expected that the positive outcome of these linkages and partnerships will propel further investments in production and development projects. It will also be important to ensure that as investment levels increase in Africa, investing economies and companies feel encouraged to target the higher end of value chains of the respective industry. This will be especially important for investments in mineral resources and agriculture, which are the traditional strength of the African economy. Manufacturing and services could be targeted at more grass-root level, and start moving upwards once capacities and markets for produced goods and services mature, both outside and inside Africa.

AAGC Can Deepen Africa's Trade with Asia and Rest of World

Africa's trade with the rest of the world has a huge scope to grow in quantity and quality. For example, Africa's trade with the rest of the world is dominated by the export of resources and commodities. The current state of Africa's trade is pathways for the development of growth poles in African economy (Table 3.1).

Despite being a resource-rich continent, with ample diversity in its geography and demography, Africa has a negative balance of trade. Machinery and transportation equipment form a third of its imports. Agriculture suffers from lack of investment, innovative agriculture production, and high-value agro-trade. Since 2000, Africa has maintained an annual economic growth of more than 5 percent. However, its high dependency on exports of mineral fuels and oil products take up almost one-third of

Table 3.1 Africa's trade with rest of the World, 2018

HS code	Product label	Export		Import		
		(in $ billion)				
		Value	% of Total	Value	% of Total	
01–05	Animal & animal products	8	2	15	3	
06–15	Vegetable products	28	6	40	7	
16–24	Foodstuffs	23	5	23	4	
25–27	Mineral products	239	50	98	18	
28–38	Chemicals & allied industries	21	5	50	9	
39–40	Plastics/rubbers	6	1	27	5	
41–43	Raw hides, skins, leather, & furs	1	0	2	0	
44–49	Wood & wood products	7	1	15	3	
50–63	Textiles	17	3	28	5	
64–67	Footwear/headgear	2	0	5	1	
68–71	Stone/glass	43	9	11	2	
72–83	Metals	36	7	43	8	
84–85	Machinery/electrical	22	5	102	19	
86–89	Transportation	20	4	56	10	
Others	Miscellaneous	5	1	34	6	
Total	All products	477	100	549	100	
	Balance of Trade					−72

Source International Trade Center (2019)

its exports to the world. The falling prices of primary commodities, especially oil, from 2014 onward has lowered the growth rate for Africa to 3.5 percent.

The prospects of a declining growth trend raise the need to transform the economic structure which has high dependency on the export of natural resources and primary commodities. The value of participation in the value chains of manufacturing and agriculture is evident.

To achieve these objectives, quality infrastructure and sectoral capacity building will be a unique part of AAGC programme. The implicit opportunity for growth through suitable investments in development plans and projects, and necessary human resource training is at the heart of AAGC, where East Asian and South Asian growth poles and nodes will get connected with potential and existing growth points in Africa. As Africa's needs for development, investments, capacities, and sustainable planning are addressed over the years, AAGC will create an inclusive development pathway in Africa and Asia.

A Steering Role for India and Japan in AAGC

India and Japan have a long history of development cooperation and development assistance in Africa. India has a leading role among development partners of Africa in capacity building, connectivity, and energy sector, with competitive strength in providing affordable, appropriate and adaptable technology, and in project execution, albeit with a resource constraint. At an institutional level, the India–Africa Forum Summit (held every 3 years) is the apex level of India's engagement in growth and development programmes in Africa. India's relations with Africa are not just centered on business. India's partnership with Africa is based on a model of cooperation that is responsive to the needs of African countries. It is demand-driven and free of conditions.

As one plank of this cooperation, India extends lines of credit through India's EXIM Bank. Till 2016, 152 credits have been extended to 44 countries for a total amount of nearly 8 billion US Dollars. During the Third India–Africa Forum Summit in 2015, India offered 10 billion US Dollars for development projects in Africa over the next five years, with additional grant assistance of 600 million US Dollars. Much of these assistance and credits are committed to development cooperation programmes for capacity development, infrastructure and energy, and disaster management. The defining role of India's private sector's engagement in different regions in Africa is noteworthy, as they stay ahead of policymakers in terms of initiatives and investments for economic and infrastructure development in Africa. India's private sector is at the forefront of driving this impetus. From 1996 to 2016, Africa accounted for nearly one-fifth of Indian overseas direct investments. India is the fifth largest country investing in the continent, with investments over the past twenty years amounting to 54 billion USD, thereby creating jobs for Africa.

Japan's complementary role in Africa is in its strong Official Development Assistance (ODA) programme in Africa. Japan's low cost of capital and high savings to fund development activities in Africa is further complemented by its expertise in designing, planning, and hardware infrastructure. It also has the capacity to transfer capabilities to manage supply chains in the manufacturing sector and infrastructure projects. Japan holds the Tokyo International Conference on African Development (TICAD) every five years, which provides an open forum to generate innovative discussion among stakeholders participating in the African development programmes. Since its inception in 1993, TICAD has contributed to improving social and economic conditions in Africa mainly through aid grants and technical assistance. Under TICAD V (2013–2017) commitments, Japan identified three thrust areas for its development support in Africa. These are robust and sustainable economy, inclusive and resilient society, and peace and stability. Under these three heads, Japan has committed an ODA of 30 billion US Dollars for the financing of African development.

Japan encourages Africa's ownership of Japan's development assistance programmes. Assistance measures that leverage Japan's strengths and experiences have been identified at the Sixth Tokyo Conference on African Development (TICAD VI) in August 2016, under the following three pillars:

I. Promoting structural economic transformation through diversification and industrialization
II. Promoting resilient health systems, and
III. Promoting social stability

The Japan International Cooperation Agency (JICA) is implementing various cooperation programmes with domestic and international partners to support sustainable growth in Africa. These efforts are in line with the commitments of the Government of Japan at TICAD VI. Japan is supporting African growth through public and private means of 3.2 trillion yen, including ODA of around 1.4 trillion yen and other public and private resources of around 16 billion dollars.

The key areas of Japan's support to Africa are investment promotion, logistics, trade facilitation, and capacity development for business and industry. Development of Strategic Master Plans and transportation infrastructure is the hallmark of Japan's development support for Africa. Market-oriented agriculture, reduction of disaster and promotion of sustainable development, quality education, gender mainstreaming, water, and sanitation are the key areas of development that are foreseen to be financed by Japan under the TICAD VI commitments. Assistance in universal health coverage (UHC) has been also initiated to strengthen health systems in the region.

Japan's plan for a comprehensive approach to Africa's economic growth is based on its experience of ODA, and subsequent investment-led growth in Southeast Asia. The Southeast Asia region is a rich example of economic development through investments and participation in global value chain of production of goods and services. This experience is now being aligned with India's own development experience, and its long development cooperation experience and commitments in Africa, through the AAGC.

In the larger Asian context, Asian businesses are participating extensively in the global production network and supply chains, and are spread between East Asia, Southeast Asia, and South Asia. Africa has tremendous scope for growth and requires development partners to achieve this. While Africa's participation in regional and global value chains is important for its growth, the development priorities among countries, regions, and sub-regions vary. The development cooperation and infrastructure and connectivity development programme under AAGC will align and integrate with these needs at national, regional, and sub-regional levels.

Matching the AAGC with Africa's Development Priorities

India and Japan bring a shared repertoire of development cooperation strengths for Africa. In this sense, the AAGC fulfills India and Japan's vision of development in the Indo-Pacific. The sectoral programme chapters of the AAGC study will bring out the strengths of India and Japan's development programmes and present pathways to align them with the development needs of Africa. The Special Strategic and Global Partnership between India and Japan will add further value to the AAGC.

The four main components of AAGC—development and cooperation projects, quality infrastructure and connectivity, capacity and skill enhancement, and people-to-people partnerships are complementary. These components have four common dimensions:

(i) They connect Africa with the strengths of India, Japan and the larger region of South Asia, Southeast Asia, East Asia, and Oceania.
(ii) They are designed around the development priorities of countries and/or regions in Africa, in particular the Agenda 2030, African Union's Agenda 2063 and its Programme for Infrastructure Development in Africa (PIDA)
(iii) They put people at the core of connectivity and development and cater to their aspirations and needs, and;
(iv) They create development programmes and projects based on equal partnership, mutual trust, and cooperation.

In realistic terms, the AAGC will be instrumental in creating new production channels, expanding and deepening the existing value chains, ensuring economic and technical cooperation for enhancing capacities, facilitating a greater flow of peoples between the two continents, and achieve sustainable growth over the longer term. The AAGC will be developed through quality infrastructure and complemented by digital and regulatory connectivity. The most important part of AAGC is that it will put people at the core of its planning, and the programmes and projects will be in sync with national and/or regional development priorities and plans.

Other multilateral and trilateral initiatives for connectivity in Indo-Pacific will be able to seek linkages and partnerships with the AAGC through their own complementary plans for Africa. The AAGC will be the roadmap for deepening and widening the Asia-Africa partnership in the next decade. The growth and connectivity plans along the AAGC will engage and support the stakeholders through consultation, cooperation, and development.

The AAGC aims to ensure diversity in growth plans and nurture the natural diversity that exists in the region. Green Projects will always be a priority in AAGC. The time for connecting Asia and Africa is never more opportune than now.

Focus on People, Agriculture, Quality Infrastructure and Sustainable Development

The decade following the Global Financial Crisis (GFC) has starkly brought out the need for policy focus, and actionable plans that create responsible growth and inclusive development for all people. India and Japan have agreed to take concrete actions that will support the aims of building resilience in, improving the sustainability of and assuming responsibility for development in Asia and Africa. The AAGC underlines this responsibility for connecting emerging and developed economies, through development plans which are inclusive and sustainable, and importantly, are responsive to the development needs and aspirations of the African and Asian countries.

In this context, the two Prime Ministers have especially highlighted the need for joint measures to enhance sustainable infrastructure, improve investment frameworks as well as support education and capacity building in Africa. The AAGC will achieve this by putting the needs of the people/regions, and their say in development plans at the core of all projects. The development lessons from Asia and Europe indicate that connectivity and growth are sustainable when they are understood by the people. A greater emphasis on livelihoods, capacities to sustain development projects, and deeper integration into value chains of production would touch people's life directly and positively. This would ensure growth programmes in the AAGC to become scalable and sustainable.

In the African context, the role of agriculture will continue to be important in the foreseeable future. Agriculture sector must be able to gain sustainable growth and continue to serve as the foundation of development in all aspects. Given the large dependence of populations in both Africa and Asia on agriculture, it must be nurtured to act as an engine of growth. Reciprocal relations between agriculture and industry in backward and forward linkages could strengthen the growth of each sector. Improving capacities for innovation and productivity in agriculture is the way forward in AAGC.

There is scope for Asia to share its experiences of growth and development with Africa. Many regions in Asia have augmented their economic and social potentials through enhanced partnerships within and between regions. As Africa works on its growth trajectory, the AAGC will provide quality infrastructure—physical as well as institutional effectively. Quality infrastructure connects people, towns, regions, and countries, and helps unleash their potential for growth. It consists of five remarkable aspects. These aspects are: (a) effective mobilization of financial resources; (b) their alignment with socio-economic development and development strategies of partner countries and regions; (c) application of high-quality standards in terms of compliance with international standards established to mitigate environmental and social impact; (d) provision of quality of infrastructure taking into account aspects of economic efficiency and durability, inclusiveness, safety and disaster-resilience, sustainability as well as convenience and amenities; and (e) contribution to the local society and economy.

Therefore, quality infrastructure would remain in harmony with the local environment, community, and people's livelihoods. This will enable better growth and development within, and between the two continents, with added spillovers into global peripheries of growth. Eventually, the AAGC aims to be an efficient and sustainable mechanism for linking economies, industries and institutions, ideas and people among, and between Africa and Asia. Owing to their unique development experiences, and their contribution to development among countries and sub-regions of Africa and Asia, India, and Japan can play significant roles in developing the AAGC for sustainable growth among, and in between Africa and Asia.

Linking of development projects and growth corridors with sustainable development goals is important. The AAGC would embed planning and implementation mechanisms in which projects and plans adhere to respective SDGs.

AAGC Will Redefine Bilateralism and Development Cooperation in the Indo-Pacific

When H.E. Mr. Narendra Modi, Prime Minister of India and H.E. Mr. Shinzo Abe, Prime Minister of Japan met for the annual Prime Ministerial Summit meeting in Tokyo, on 11 November 2016, both leaders agreed to draw from their mutual strength, trust, and vision. The two Prime Ministers agreed to draw on the strength of shared values, convergent interests, and complementary skills and resources, to promote economic and social development, capacity building, connectivity and infrastructure development in the Asia Pacific region. It was also agreed that this initiative would combine human, financial, and technological resources of the two countries to advance these objectives, including through India's development cooperation programmes and Japanese ODA projects. Importantly, this cooperation would strengthen a rule-based international order in the Indo-Pacific region and create a prosperous Indo-Pacific region in the 21st century.

The Asia Africa Growth Corridor is the outcome of this bilateral commitment to improve connectivity between and within Asia and Africa, through realizing a Free and Open Indo-Pacific region, factoring in India's "Act East" Policy and Japan's "Expanded Partnership for Quality Infrastructure". As directed by the two leaders, the foundation of AAGC is being developed jointly and cooperatively with the international community to promote the development of industrial corridors and industrial networks in Asia and Africa.

As AAGC develops an action plan to support Asia and Africa's next decade of growth, it will also set a model for inter-regional growth that is propelled by mutual trust and cooperation, partnership between India and Japan and the cooperation of their friends and partner countries in Asia, Oceania, and Africa. In AAGC, India and Japan have begun a new model of trilateralism, where friends pool in their combined strengths for advancing regional and global growth. Through AAGC, India, and Japan reinforce the values of mutual trust and cooperation among friends and neighbours. The AAGC will be a growth multiplier and a trust multiplier in the Indo-Pacific region.

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Part II
Trade, Investment and Economy

Chapter 4
Urbanisation and Industrialisation in Africa and Asia in the Context of SDG Linked Issues of Sustainability, Inclusivity and Partnership

Amitabh Kundu

Introduction

An overview of secondary data and contemporary literature on urbanisation in Asia and Africa suggests that despite the widely different trends and patterns, alternate policy frameworks and varying ideological dispositions across the countries and governments, the two continents are currently experiencing rapid urbanisation which, in the coming decades, is likely to be much higher than the global average and those of the most other continents. It is argued that there has been a progressive shift of the epicentre of urbanisation from "the predominantly northern latitudes of developed countries to the southern ones of developing countries" at least since the early years of the present century. Understandably, the "the mean latitude of global urban population would steadily shift to south" (Mohan and Dasgupta (2005)).

The scholars who believe development through 'market and governance' argue that the strategy of globalisation and structural reform is responsible for the acceleration of rural–urban (RU) migration, giving a boost to the pace of urbanisation. The latter is attributed to pull factors operating through the cities and towns and much of the investment and consequent increase in employment would take place in or around the existing urban centres. This rapid pace of urbanisation both in Africa and Asia would be promoted by the scale of production, particularly in manufacturing, agglomeration economies, technological developments and substitution of capital for land. Even when the industrial units get located in rural regions or virgin coastal areas, in a few years, these would acquire urban status.

This perspective and the proposed package of solutions have not gone unchallenged. It is argued that migration and urban development in the two continents would be associated with accentuation of regional and interpersonal inequality, leading to an

A. Kundu (✉)
Distinguished Fellow, Research and Information System of Developing Countries (RIS), Core 4B, Fourth Floor, India Habiat Centre, Lodhi Road, New Delhi 110003, India
e-mail: akundu.jnu@gmail.com

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increase in poverty. A low rate of infrastructural investment in public sector—needed for compliance with globally ordained fiscal discipline—would result in deceleration of agricultural growth. Employment generation in the formal urban economy would not be high due to capital intensive nature of industrialisation. These, coupled with open trade policy, would "contract the purchasing power and increase unemployment rate" resulting in destabilization of the agrarian economy and exodus from rural areas. All these would lead to rapid growth in urban population. The protagonists as also the critics of globalisation model, thus, converge on the proposition that urban growth in the post-liberalisation phase in both the continents would be high, backed up by rapid rural-urban migration.

The present paper overviews the urbanisation process in Africa and Asia, disaggregating at the regional level since the 1950s, including the projected pattern until 2050, in the second section, which follows the present introductory section. An attempt is made here to examine the thesis of rapid urbanisation and urban explosion in these regions. The size-class distribution of cities and towns along with the changes therein during 2018 and 2030 have been analysed in the third section. In the following section, an attempt is made to understand the challenges and opportunities faced by African countries posed by the process of urban industrial development. Issues of ecological degradation, pressure on environmental resources due to deforestation, land acquisition for industrial and service activities, fall in water tables in the cities and their peripheries have been discussed in the context of the rapid pace of urbanisation in the past decades as also in coming years. It analyses how the population growth in cities, towns and their peripheries has resulted in alarming growth in demand for land which poses a threat to the ecosystem and biodiversity in different regions. It, at the same time, shows that a strategy to strengthen the capacity of the government for adaptation and making cities resilient can lead to rapid socio-economic transformation and contribute to meeting of the SDGs. The final section proposes a strategy of sustainable and inclusive urbanisation within the framework of Afro-Asian Growth Corridor, through mutual cooperation among the countries in partnership. Experience in organisation of data, designing regional and city level plans, their implementation, resource mobilisation, etc. of the Asian countries would be extremely relevant in building the participatory development model. While sharing the success stories in the field of urban planning and governance as also warning its cooperating partners to avoid the mistakes, India can make an important contribution in designing the future strategy of urbanisation. In turn, India along with several Asian countries would learn what to adopt and what to avoid in linking their cities with the global capital market, from the African experience.

A Macro Overview of Urbanisation

Africa, a largely rural continent with exceptionally rich biodiversity, is the fastest urbanising region in the world and would remain so in the coming decades (Laurance et al. 2015). Its urban population is expected to become more than five times in five

Table 4.1 Share of different regions in Global Urban Population, 1950–2050 (%)

Region/Sub-Region	1950	2000	2020	2030	2050
Africa	4.3	10.0	13.4	15.9	22.3
Eastern Africa	0.5	1.9	3.0	3.9	6.3
Middle Africa	0.5	1.3	2.1	2.6	3.9
Northern Africa	1.7	2.9	2.9	3.1	3.5
Southern Africa	0.8	1.0	1.0	1.0	1.0
Western Africa	0.9	2.8	4.4	5.4	7.7
Asia	32.8	48.8	53.9	54.2	52.1
Eastern Asia	16.1	22.2	24.6	23.7	19.3
South-Central Asia	11.3	15.6	17.0	18.0	20.0
Central Asia	0.8	0.9	0.8	0.8	0.9
Southern Asia	10.5	14.7	16.2	17.2	19.2
India	8.5	10.2	11.0	11.8	13.1
South-Eastern Asia	3.4	6.9	7.6	7.8	7.9
Western Asia	2.0	4.1	4.6	4.7	4.8
World (Millions)	751	2868	4379	5167	6680

Source Computed by the author using the data provided in UN (2018)

decades, shooting up from 286 million in 2000 to 1488 million in 2050; its share in the global urban population rising from just 4 percent in 1950 to 10 percent in 2000 and 22 percent in 2050, claiming over 22 percent of the global urban population (Table 4.1). Asia, with larger geographical territory and having ancient urban roots, would increase its population two and a half times during the same period, the corresponding percentage figures being 33, 49 and 52 at the three points of time (UN 2018). Africa would, thus, experience much faster urban growth, which is understandable since it had only 14 percent of the population living in urban areas compared to 18 percent in Asia in 2000.

A quick overview of the detailed data in the World Urbanisation Prospects (2018 Revision) reveals that several African and Asian countries are experiencing an acceleration in the growth in urban population ever since the late seventies. Projections have been made that the percentage of the urban population in Africa would go up from just over 35 to about 59 while Asia would see even higher rise of 19 percentage points from 37 percent figure in the base year, during 2000–50 (Table 4.2). It may be noted that urban population in Africa was about a tenth of that in Asia in 1950 but by 2050, it would become almost half that of the later. While the share of Africa in the world urban population would continue to grow even after 2030, that for Asia will go down from 54 percent to 52 percent (Table 4.1). Importantly, the share of Asia in the incremental world urban population during 1950–70 was as high as 43 percent compared to 8 percent for Africa. The corresponding figures for both will be 45 percent each for the period 2030–50, with only 10 percent of the incremental urban population coming from the rest of the world.

Table 4.2 Percentage of Urban population, 1950–2050

Region, Sub-Region, Country or area	1950	2000	2020	2030	2050
Africa	14.3	35.0	43.5	48.4	58.9
Eastern Africa	5.7	21.0	29.0	34.5	47.1
Middle Africa	13.9	39.7	50.6	56.2	67.0
Northern Africa	25.9	48.3	52.5	55.3	64.1
Southern Africa	37.7	53.8	64.6	69.4	77.2
Western Africa	9.3	34.5	47.7	53.6	63.8
Asia	17.5	37.5	51.1	56.7	66.2
Eastern Asia	17.9	42.0	64.8	72.8	81.4
South-Central Asia	16.6	29.6	37.1	42.0	54.1
Central Asia	32.7	45.7	48.3	50.5	60.5
Southern Asia	16.0	29.0	36.6	41.7	53.8
India	17.0	27.7	34.9	40.1	52.8
South-Eastern Asia	15.6	37.9	50.0	55.6	66.0
Western Asia	28.9	63.8	72.3	75.4	81.4
World	29.6	46.7	56.2	60.4	68.4

Source Computed by the author using the data provided in UN (2018)

The demographic weight of Asia and Africa—currently accounting for over 60 percent and 17 percent of the world population and projected to increase over time — is so overwhelming that researchers, planners and administrators have often viewed the information in an alarmist perspective, as discussed in the preceding paragraphs. International organisations, too, have often used phrases such as an 'urban avalanche or earthquake' hitting the two continents, based on the absolute magnitudes or the changes therein, compared to the corresponding global figures, as noted above. Large and growing shares of the continents in the world urban poopulation are significant milestones but cannot be considered as parameters in formulating a development strategy. There is a need to look at the rates of growth in urban population and more importantly Urban-Rural Growth Differentials (URGD)—the difference of the annual growth in urban population from the corresponding rural figure—as analytical parameters, reflecting the dynamics of urbanisation in the regions.

The growth rates of urban population in Africa in all its five regions during the fifties and sixties were spectacular—much higher than the global averages and even those of Asia. The rate slowed down towards the end of the century. The case of Asia was the opposite. After registering modest urban growth in the fifties and sixties, the continent picked up the momentum of urbanisation which became phenomenally high towards the end of the century. These, however, remained below those of Africa but much above the global average until the early years of the present century.

Importantly, there has been a deceleration in urban growth in recent years all over the world, primarily because of the decline in natural growth of population. As per the UN projections, this trend will continue in the coming decades. Africa

Table 4.3 Average annual rate of change in Urban Population, 1950–2050

Region, Sub-Region, Country or area	1950–1955	2000–2005	2020–2025	2030–2035	2045–2050
Africa	4.75	3.52	3.44	3.19	2.71
Eastern Africa	5.21	4.17	4.32	3.98	3.28
Middle Africa	4.28	4.43	3.98	3.61	2.93
Northern Africa	4.50	2.12	2.05	1.96	1.76
Southern Africa	3.45	2.26	1.84	1.43	1.02
Western Africa	6.29	4.42	3.82	3.38	2.82
Asia	3.86	3.06	1.84	1.35	0.84
Eastern Asia	4.36	3.34	1.47	0.67	- 0.04
South-Central Asia	2.79	2.78	2.29	2.06	1.55
Central Asia	4.95	1.61	1.49	1.58	1.50
Southern Asia	2.63	2.85	2.33	2.08	1.55
India	2.30	2.76	2.33	2.13	1.54
South-Eastern Asia	4.28	2.99	2.01	1.60	1.06
Western Asia	4.90	2.74	1.90	1.60	1.21
World	3.10	2.29	1.73	1.45	1.13

Source Computed by the author using the data provided in UN (2018)

nonetheless has maintained an edge over the rest all along the period and would continue to do so till 2050, as seen in Table 4.3. Asian urban growth will, however, be below that of the world after 2030. However, if Africa is taken out of the global figure, Asian pace of urbanisation will be faster than that of the rest of the world.

It has been argued quite rightly that urban growth rate in a region could be high compared to the others due to a higher growth in population. In order to articulate dynamics of urbanisation, scholars and policy planners have often taken the difference between urban and rural growth rates. In the absence of comparable data on rural–urban migration, URGD has been popular in UN system for assessing the force of urbanisation and making cross-national and cross-regional comparisons. A global comparison of URGD figures (Table 4.4) reveals that Africa had a stronger urban dynamism in the fifties and sixties than Asia, attracting massive rural–urban migrants. Asia, however, overtook Africa in the nineties and subsequent decades and maintained a higher level till 2030. After that, the two continents have similar levels of urban dynamism, as one would infer from the convergence of URGD figures.

As per the globally observed pattern, as recognized and used in the UN system, URGD value is expected to go up till a country attains fifty percent level of urbanisation and declines thereafter. This may be seen as generally valid globally as the URGD increased till the first decade of the twenty-first century wherein half of the world population became urban, and decreased thereafter. Asia, too, seems to be in conformity with the pattern since its URGD has been going up since the fifties with certain decadal fluctuations. The figure, however, started going down after the

Table 4.4 Urban–Rural Growth Differential

Region, Sub-Region, Country or Area	1950–1955	2000–2005	2020–2025	2030–2035	2045–2050
Africa	3.13	1.65	1.95	2.06	2.19
Eastern Africa	3.19	1.73	2.51	2.64	2.62
Middle Africa	2.73	2.33	2.24	2.28	2.30
Northern Africa	2.73	0.83	1.05	1.52	2.02
Southern Africa	1.77	2.17	2.19	2.08	1.96
Western Africa	5.13	2.81	2.45	2.18	2.09
Asia	2.37	3.05	2.31	2.10	1.99
Eastern Asia	3.08	5.09	3.96	3.06	2.03
South-Central Asia	1.23	1.56	1.99	2.31	2.49
Central Asia	2.85	0.92	0.64	1.57	2.29
Southern Asia	1.08	1.61	2.04	2.34	2.49
India	0.75	1.54	2.13	2.49	2.59
South-Eastern Asia	2.17	2.68	2.24	2.24	2.20
Western Asia	3.47	1.75	1.51	1.73	1.86
World	1.91	1.99	1.76	1.73	1.76

Source Computed by the author using the data provided in UN (2018)

early years of the present century, even though the urbanisation level was below fifty percent, suggesting premature slacking of urban dynamism. This is even more correct in the case of Africa as its URGD fell drastically in 2000–05 compared to 1950–55.

One would infer, contrary to the assertions made by several researchers, administrators and research and policy linked institutions that there are significant deficits in terms of the levels and pace of urbanisation in most of the African and Asian countries in terms of the global norms. Their recording a decline in URGD is a matter of concern reflecting the dampening of the factors behind urban industrial development. It is possible to explain this in terms of the thesis of premature deindustrialisation and shrinkage of cities in the developing world. One would expect the national and global leaders to meet the challenge of promoting spatially balanced development by addressing the issue. As Africa and Asia have somewhat similar concerns in this regard, mutual cooperation in research and preparing and implementing development strategies would help in addressing these and promoting inclusive and sustainable urbanisation (McGranahan et al. 2009).

Changing Structure of Urbanisation with Differential Growth Across Size Class of Urban Centres

The cities and towns in different size categories have been growing at different rates, altering the size composition of urban population across the continents of the world. The percentage share of urban population in cities above 10 million people is projected to go up from the present level of 14.4 and 8.5 in 2018 to 17.7 and 11.0 in 2030 in Asia and Africa, respectively.

Correspondingly, the percentage figures for cities having a population between 5 million and 10 million would be as high as 9 percent in Asia and remain at that level during this period while the figure would go up from 5.5 to 9.8 in Africa. In sharp contrast to this, the figures for Europe in these size categories of cities are much lower. Furthermore, Asia and Africa already have 20 and 3 cities, respectively with population over 10 million against only two such cities in Europe. The number of cities in the size class between 5 and 10 million are 23 and 5 in Asia and Africa, respectively, against only four such cities in Europe. More importantly, while the number would remain the same in Europe in the coming decades, these would go up significantly in the other two continents (Table 4.5).

Urbanisation in most countries in African continent manifests in the growth of its megacities; its urban structure is characterised by a high degree of urban primacy, that is, one city—usually the capital—having high concentration of population, and economic activity. The eight megacities in Africa, are Lagos, Kinshasa and Cairo, with over 10 million people and, Khartoum, Johannesburg–Pretoria, Dar es Salaam, Alexandra and Abidjan recording population between 5 million to10 million. As governance, and public institutions, along with political power, get concentrated in these cities, not much attention is given to infrastructural provision and economic

Table 4.5 Size class distribution of Urban Population/Centres in Asia and Africa in comparison with Europe

Country/Population	Percent share in Urban population		Number of cities	
	1918	2030	1918	2030
Africa				
10 m+	8.5	11.0	3	5
5–10 m	5.5	9.8	5	13
Asia				
10 m+	14.8	17.5	20	27
5–10 m	8.9	8.8	28	34
Europe				
10 m+	4.2	6.1	2	3
5–10 m	4.8	3.2	4	3

Source Computed by the author using the data provided in UN (2018)

development of middle and lower order towns. This has remained so, despite high rates of urban population growth and emergence of a large number of small and medium towns over the past few decades. The concern for this serious inadequacy and resultant distortions in the overall urban structure has led the African region to successfully push, for a shift of focus onto the national territorial system and settlement hierarchy, away from select megacities, in the Habitat III process.

Unlike many countries in South and East Asia, small and medium towns and cities hold the key to rapid urbanisation in Africa and Asia. Happily, much of the increase in urban population is taking place in small- and medium-sized cities in mid latitudinal Africa as well as South Asia. The growth of existing villages and towns linked with the local demand of an emerging middle-class is transforming the rural landscapes. This holds forth a great promise for escaping premature deindustrialisation for several countries in Africa and Asia. The nature of spatial expansion and growth of smaller urban settlements will significantly influence the ability of the two continents to achieve targets associated with the 2030 Agenda set out by the United Nations linked with sustainability and inclusiveness.

Urbanisation in Africa: Challenges and Implications

UN projections indicate a slowing down of the pace of urbanisation in Africa from a high rate of about 5 percent per year in 1950s to 3.5 during 2000–25. The rate is predicted to go down marginally in the subsequent decades but that can largely be attributed to decline in natural growth in population (Table 4.3). In case of Asia, the rate has declined significantly from the early fifties to early years of the present century but the decline is very sharp in case of the subsequent periods. This is a significant departure from the trends projected for Africa, with significant variation across the countries. Natural increase, however, will play a more important role in determining the growth in urban population compared to migration in both the continents.

The present high rate of urbanisation as well as the projected high growth rates, in relation to other continents, for the coming three decades put Africa and Asia on the same platform. The processes and the factors underlying urbanisation are, however, vastly different. Much of urban expansion in Africa is characterised by unplanned and unregulated growth whereas urbanisation in Asia is somewhat planned, resulting in a rapid increase in population density although the later is as yet not very high (Turok et al. 2014). The legacy of colonialism, structural adjustment, and neoliberal policies have weakened democratic institutions of urban planning in Asia and produced urbanisation scenario described as “messy” by the World Bank. And yet, the lack of planning framework, ad-hochism and role of vested interest in urban interventions are much more visible in African countries.

Complicated settlement structure has emerged over time with weak local governments and poor land-use management practices in African cities (Turok 2012). In many of them, there has been proliferation of extremely high density ‘slums’ and

informal settlements, mostly in the city core as also the unregulated peri-urban areas. Inadequacy in their provisioning of basic services and infrastructure can partly be explained in terms of colonial institutional arrangements, aggravated by the persistence of political instability (Dodman 2016). It has been difficult for the local governments to adhere compliance with the norms of health and hygiene in providing basic services and biodiversity conservation for environmental protection (Lawasa 2014). And yet, the overall urban form is of low-density, primarily due to poor land-use management practices and cities not having any system of urban planning.

This is also because urban middle and upper class and expatriates choosing mostly to reside outside the city core, leading to sprawling development of residential areas and sub-urbanization. The unregulated peri-urban colonies built by them created exclusive low rise habitats in the countryside, interspersed with low-income colonies and agricultural land (Flintan 2011). Consequently, a multi-layered governance arrangements emerged in different countries, with weak local authorities. On the contrary, cities in Asian countries have indirectly forced people to get into informal settlements with much worse physical conditions by having strict land-use plans in formal settlements, making the latter unaffordable to the poor.

Increase in urban population in Africa has, thus, been accompanied by an expansion in urban land. This can partly be attributed to the legacy of colonialism, wherein the focus was on a few cities through which administrative and trading machinery was operationalised. These cities not only maintained their primacy but could also strengthen their economic base through subsequent adoption of neoliberal policies and programmes of structural adjustment. This is not the case in many of the Asian countries wherein urban expansion has taken place mostly in continuum, with intermingling of rich and poor within settlements. Understandably, the increase in urban land has been far less than in urban population.

Interestingly, the colonial rule in Asia has left the tradition of Anglo Saxon urban planning which the urban middle-class could use this to their advantage to build well designed low-density neighbourhoods for themselves. Also, in sharp contrast with Africa, there were land-use and density restrictions under city level Master Plans, reflecting upper-class bias. All these were responsible for the overall land to man ratio in urban areas in Asia being relatively low as per the global standards. Since the planned low-income colonies were also designed not with very high densities, the demand for urban land was not very high. Also, many of the Asian countries went in for agricultural development, maintaining their landholding patterns that did not allow much land to be released for non-agricultural use. As a consequence, despite the incremental urban population predicted for the period from 2000 and 2030 for Asia being higher than in Africa, the increase in urban land would be lower. Importantly, a six-fold increase in the demand for urban land has been predicted for Africa for this period which is much higher than that of Asia.

The negative impact of a rapidly growing demand for urban land in Africa is evident from its high rate of deforestation around large cities, small towns, and transportation routes (Rudel 2013). Peri-urban agriculture, important for food security in Sub-Saharan Africa, is responsible for the loss and degradation of habitats

around cities. Importantly, Africa comprises several regions with exceptional biodiversity and is dotted with protected areas (PAs) with varying levels of protection status (IUCN 2017). In 2000, it was sparsely urbanised and merely 500 km^2 of urban land fell within the boundaries of its PAs. Presently, these cover an area of about 4.5 million square kilometers across the continent. In mid latitudinal Africa, nearly 20 fold increase in urban area in the vicinity of PAs, pose serious challenges for governance and management.

Urbanisation and economic development have led to the expansion of the transportation network which is of concern in the context of biodiversity conservation (Frank et al. 2015). There are 33 major development corridors of which many are in their preparatory stages. These rail and road linkages when operationalised would cut through over 400 PAs and degrade about 2000 more. Moreover, these would significantly expand future urban expansion patterns and fragment the existing habitats (Dobson et al. 2010).

Long-distance water transfer will be yet another critical issue in African urbanisation since large cities would continue to dominate the continent's urban spatial expansion. Growth of smaller cities and towns can reduce the necessity of long-distance water transfers since a part of the demand can be met locally through tapping new sources. Besides the pressure on agrarian ecosystem due to increasing demand for land and water from agriculture and forestry, the urban demand for natural resources such as fuelwood, building materials, and wild foods can lead to significant local environmental degradation (Zheng et al. 2016).

Ethnic conflicts and civil wars, some of which have been going on for decades, have been important drivers of urbanisation. These pose challenges to habitats in peri-urban areas around major cities where the refugees and internally displaced people (IDP) have settled down. What started as temporary relief camps got merged into urban areas over time. A large number of refugees and IDP are living in cities in East Africa and the Horn of Africa.

It is often assumed that rapid urbanisation and migration from rural to urban areas would ease the pressure on natural habitats. In many parts of Sub-Saharan Africa, this indeed is the case as it has reduced rural populations which, in turn, brought down the rates of deforestation. However, in Western Africa, forests have been put to agricultural use to meet the increased demand for food in the cities, showing a positive relationship between urbanisation and deforestation. Besides, land speculation by wealthy urban residents, abetted by lack of land-use restrictions, has led to land conversion and its inefficient use. One would argue that any reduction in land pressure due to rural–urban migration is likely to be overtaken by the increased demand for food and other natural resources from rapidly growing African cities.

In addition, there has been a significant foreign direct investment on agricultural land and land purchases to meet the export demand for food and forest products, often with serious ecological consequences (Abemethy et al. 2016). These are financed from countries like Malaysia, and Brazil, in addition to Europe and the USA. In recent years, investment from another rapidly urbanising country, China, has been an important source of funding for such projects. Besides, there are infrastructural and industrial projects that have played a major role in shaping expansion around

existing urban agglomerations as also creating new urban regions (Wouterse et al. 2011). Both, however, unless planned properly, can have a serious negative impact on biodiversity and ecosystems at local and global levels (Lin et al. 2015). It would, therefore, be important to ensure that such investments facilitate industrial diversification and usher in inclusive and sustainable urban development (Pieterse et al. 2014). In contrast, FDI in agriculture and forestry has been very low in Asian countries, particularly India. In the case of the latter, the infrastructural and industrial investments have come as partnership projects and mostly been integrated with regional or city development plans.

There has to be a paradigm shift when Asian investments are sought in a big way into African development scenario since both face similar ecological concerns in the context of urban industrial development that are at variance with the interests of the current investors. Given the shared concern of migrants not being integrated into a formal urban system and the threats of environmental degradation, the thrust of the strategy of Afro-Asian cooperation should be to promote balanced urbanisation through development of small and medium towns (Pieterse et al. 2015). Indian investments could be important in ensuring that these facilitate industrial diversification and inclusive urban development if the successful experiences of industrial dispersal through development corridors, connecting the major megacities are replicated in Africa, after due modifications, required to suit the local context.

A Perspective for Inclusive Urban Development and Governance

It is important to recognize that urban areas are integral to ecological landscapes. Also, ecosystem processes and services should change along rural–urban continuum, as emphasized in SDG 11. Unfortunately, dependency of humans on ecosystem services has not been built into national or regional policy positions on urbanisation, Africa and Asia being no exceptions.

The cities in both the continents can benefit from strengthening the ecosystem services such as provision of clean air and water, besides provisioning of transport, digital infrastructure and public institutions that would attract foreign direct investment for promoting rapid urban industrial development (UN 2016). African Urban Agenda (AUA), a UN-Habitat initiative to facilitate sustainable urbanisation in the continent, provides an opportunity to incorporate ecological governance and conservation into the system of urban planning (AUC 2015). Urban agriculture emerges as an instrument of increasing the green cover in this context and of enriching biodiversity in urban areas. This, however, has a greater possibility in Africa than Asia due to low pressure of population on land in the former.

Coordination among governments across local, regional and national levels would be essential for an efficient management of ecosystem services and coordinated development of infrastructure through regulatory mechanisms (UN 2016). The African

Union (AU) and its affiliated body, the African Ministers' Council on Water, can provide political leadership for provisioning of water resources for sustainable development. Africa's ecosystem can, thus, serve as a foundation for developing green infrastructure that can meet the needs of its cities and towns while safeguarding its fragile biodiversity.

India, along with supra-national and regional bodies has the potential to contribute to ecological governance in Africa. Urbanisation can become a catalyst for effective conservation of biodiversity, facilitating development of green infrastructure while meeting the needs of basic amenities of urban population. Notwithstanding the encroachment of natural habitats and increasing demands of growing urban populations on natural resources, concentration of people in small and medium towns can ease off the pressure on land and resources.

A key area of concern in African and Asian continents is that despite a fairly high rate of urban growth in recent decades, most of the countries have failed in sustaining a reasonable rate of industrial and economic growth. This can be attributed to a low rate of capital investment and of saving, partly due to low per capita GDP. Besides, African cities, except a few at the top of the hierarchy, are poorly connected to the global capital market. The former produces select goods and services for regional and international markets but does not specialize in the manufacturing of any globally tradable goods with economies of scale.

The investments in urban development must support large concentrations of people and employment in different parts of the city, connecting industrial and infrastructural projects with housing complexes and commercial areas. Unfortunately, the *morphology* of African cities or what Lall (2020) calls their urban 'form' has not been structured to improve economic prospects in their regions. He identifies dense concentrations only in select areas and disconnected neighbourhoods as the key factor constraining their economic development. These have been attributed to inefficient land markets, absence of effective zoning regulations and overlapping property rights regimes. There is no strong formal planning institution at the city level which can envisage and connect residents with jobs, services and commercial/recreational complexes. The resulting scattered neighbourhoods turn out to be expensive for businesses and social interactions, resulting in the need to pay higher wages. This, in turn, makes the location of firms in these cities less competitive and less profitable in the global market, discouraging potential regional and global investors and trading partners.

The most important component of the strategy of urban development will, therefore, be to make infrastructural investment in a coordinated manner so that neighbourhoods can get well connected with jobs and basic services. A case has been made for Africa's cities to open doors to the world by formalizing land markets, bringing transparency in property rights, and having effective urban planning. An important consideration in operationalising this would be the quality of data. There are inherent uncertainties in future projections of the growth in urban populations and required urban land and these have implications for the governance system. India has a strong tradition in building urban information system that can be of assistance for

establishing a comprehensive database and linking it with decision-making process at different levels of governance.

For many of the African countries, rapid urbanisation can be vital for taking advantage of the demographic dividend, owing to the high shares of their young population, that will go up in the coming decades. Migration of able-bodied young persons to cities, however, poses enormous problems in terms of managing congestion, unemployment, morbidity, diseconomies of agglomeration and pollution in several African cities. This has emerged as a big challenge in making that growth inclusive and equitable. Here, the Indian experience - its successes and failures - in dealing with the problems of the rapid growth of youth population, uneven population/employment density and pollution level, unequal access to basic amenities and differential absorption of migrants across the wards within the cities would be of great value.

As a latecomer to the development scene, many of the emerging African cities will benefit from Indo-African collaboration by availing technological innovations, including digital know-how, eco-friendly construction materials, and new modes of transport. India would have a lot of experience to share regarding smart infrastructural investments and an effective governance system for making cities more competitive and attracting modern industries (Ghani et al. 2016). In making the cities more competitive, it will be important that the cities go for specialization with concentration of a particular industry, as happened in several cities in India during eighties and nineties. Initially, the cities will go for specialization in traditional industries, catering to the national and regional market. In the second stage, a number of second tier cities are likely to go for specialization in modern industries, such as office accounting, computing machinery, communication equipment, etc. However, many of the large cities, that are highly specialized, would learn from the recent experience of Indian megacities like Mumbai, Delhi and Bangalore, experiencing the largest and fastest shifts away from specialization. With the advancement of technology, diversification will shape future urbanisation patterns in Africa. Importantly, industrially diversified cities and districts in India have high employment growth since 2000. This opens up possibilities to explore in African context. Furthermore, such job gains of diversification can trickle down from cities to their rural hinterland, ushering in a process of inclusive and spatially balanced growth, based on an integrated settlement structure, as has happened in many of the Indian states in the south such as Kerala, Tamil Nadu and Karnataka.

For taking full advantage of these positive trends, African cities will have to boost infrastructure investment coming from internal and external sources. Despite a slowdown in the manufacturing sector's growth—a trend mirrored in many countries in the world including India, linked to global recessionary factors—urbanisation can be accelerated, based on local demand, accessed through better infrastructural connectivity. A large majority of people in the continent lack access to basic amenities such as safe drinking water, sanitation, electricity and roads that can absorb massive global and national investment through creation of appropriate institutional arrangements and incentive systems. This would go a long way in promoting inclusive and sustainable development in the region.

Access to better infrastructure and basic amenities and increased efficiency in public spending will attract more private investment for infrastructure and industrial development. This, when backed up by a skill development strategy, as is being attempted currently in India, would lead to emergence of an entrepreneurial class. This, as per ADB report Asia 2030 and Asia 2050, would be a critical factor in pushing Asian economic growth to above 7 percent per annum against the global growth of below 3 percent. The growth trajectory would be similar in the case of many African countries although the magnitudes would differ. There is, thus, a strong incentive for the global investors to channel their funds for developing infrastructure and industries in African cities as the returns on investment would be significantly above those in high-income countries, trapped in low growth syndrome, with a large share of aging population.

The governments at sub-state level, public and semi-public agencies and local bodies should leverage their assets, including land to mobilise user revenue. For attracting investment from capital market and mobilising the savings of the common public, it would be important to float innovative instruments such as bonds, debentures, etc. This would necessitate strengthening and enhancement of technical and financial capacity of the local bodies, public and semi-private organisations to attract the needed private funds and build partnerships with private companies and financial intermediaries. The municipal governments may consider tapping the massive unutilized funds with pension agencies, life insurance companies, etc., for their innovative infrastructure projects through visionary leadership at the local level. This can promote entrepreneurship, increase competitiveness of towns, and usher in balanced regional development by strengthening urban-rural connectivity. All these would necessitate modification in financial regulations and reform in capital market for Africa's urban transformation.

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Chapter 5
Potential for India–Japan Cooperation in Trade Facilitation in Africa

S. K. Mohanty, Priyadarshi Dash, Vaibhav Kaushik, and Bhaskar Kashyap

Introduction

Trade facilitation refers to simplification, modernization and harmonization of export and import processes.[1] Gains from trade liberalization and integration depend on efficient trade facilitation in the form of robust infrastructure and simplification of customs, border and administrative procedures related to export and import of goods. Trade facilitation reduces transaction costs and eliminates time-consuming and cumbersome customs and documentation formalities required in cross-border trade of goods. Along with at-the-border infrastructure, trade facilitation in terms of computerization and automation, efficiency in customs clearance and risk management system helps address faster clearance of goods at the border thereby lowering trade costs and greater participation of developing and least developed countries in the global trade. With growing production fragmentation and increased trade in value-added products, goods cross border multiple times involving several countries. Thus, there is the likelihood of escalation in trade costs due to multiple crossing of goods. This can be addressed effectively if customs and border procedures are made business-friendly and adaptive.

S. K. Mohanty · P. Dash (✉)
Professor & Assistant Professor, Research and Information System for Developing Countries (RIS), New Delhi, India
e-mail: pdash@ris.org.in

S. K. Mohanty
e-mail: skmohanty7@gmail.com

V. Kaushik · B. Kashyap
Formerly Research Assistant, Research and Information System for Developing Countries (RIS), New Delhi, India
e-mail: vaibhav.kaushik1990@gmail.com

B. Kashyap
e-mail: bhaskarjkashyap@gmail.com

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The impact of trade facilitation is estimated to be significant for developing countries whether they export or import goods to or from rest of the world. In the context of the value-added trade, an increase of 0.1 in trade performance indicators for a country may result in value-added imports between 1.5 and 3.5 percent, and exports increase may range from 1 to 3 percent (Moïsé and Sorescu 2015). Considering the importance of trade facilitation in enhancing global trade, WTO members concluded negotiations on the Trade Facilitation Agreement (TFA) at the Bali Ministerial Conference in 2013. The Agreement came into force in February 2017 based on the Articles V, VIII and X of the GATT (WTO 2014). A complete implementation of the TFA is estimated to reduce trade cost by 16.5 percent for low-income countries, 17.4 percent for lower middle-income countries, and 14.6 percent for upper middle-income countries, thus accelerating global growth while leading to significant welfare gains.[2] By offering special and differential treatment to developing and less developed countries, the TFA is expected to bring a drastic rise in the level and intensity of trade in the world. The Asia Africa Growth Corridor (AAGC) involves countries of Asia and Africa at varying levels of development and trade openness. This is reflected in their physical infrastructure, customs procedures, documentation and compliance formalities, publication, notification and inspections, and so on. Designed as a people-centric development strategy, the AAGC may stimulate economic activity in terms of higher private investment, greater participation of firms in value chains across different industries, skill upgradation and capacity building, and virtuous integration of growth poles and peripheries.

Trade Performance in IORA

The Asia Africa Growth Corridor can be a great opportunity for the Indo-Pacific region as major global activities are centered in the region. Within the Indo-Pacific space, Indian Ocean Rim Association (IORA) is emerging as a dynamic region which needs to be properly nurtured. This region witnessed a sharp turnaround by registering an emphatic growth rate of 6.7 percent in 2010. Since 2016, growth rate of the region has been rising persistently and is expected to reach 5.3 percent in 2018. As the region has maintained a consistent growth performance, it enabled the region to maintain a higher share in the global real output. The share of the IORA region in the Gross World Product (GWP) has increased systematically even during the period of economic recession resulting from Subprime Mortgage Crisis in 2008–2009. The region shared almost one-tenth of world's real GDP in 2015. There has been a considerable divergence in growth and size of GDP in different sub-regions of the Indian Ocean Rim region. In terms of combined growth performance, South Asia has been performing better than East Africa, but there is evidence of convergence of growth performance in recent years among these sub-regions. Almost close to $7 trillion economy, the IORA is larger than the combined GDP of several Regional Trade Agreements (RTAs), including MERCOSUR, Pacific Alliance, Andean, SICA and CARICOM in terms of real GDP in 2015 (Fig. 5.1)

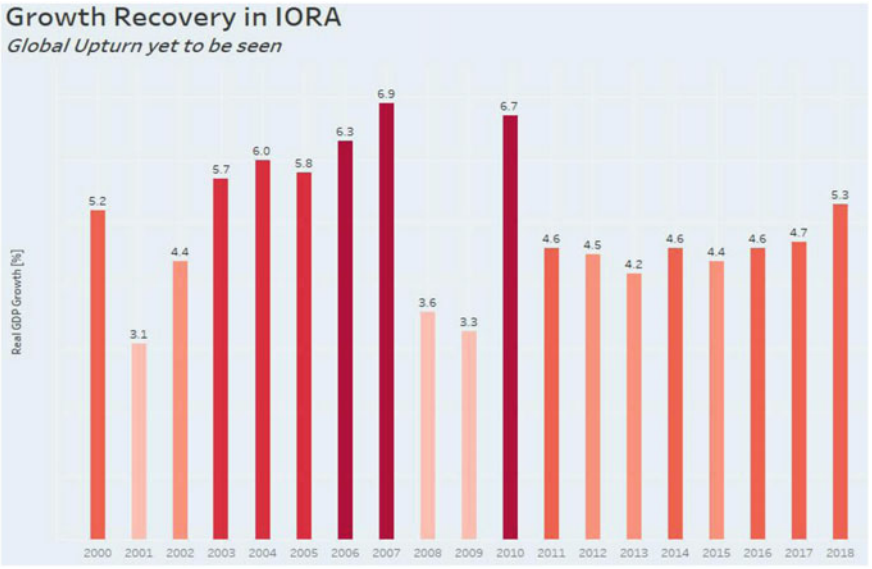

Fig. 5.1 Robust recovery in IORA. *Source* Authors estimation based on the IMF World Economic Outlook Database (2017)

Countries in the Indian Ocean Rim region are on the path of faster liberalization since the 1990s. Most of them are primarily trading nations with a strong dependence on the external sector manifested in high trade openness of more than 60 percent of GDP. The region was adversely affected by the second episode of the global recession. Several African states have embarked on trade liberalization, and countries like Mauritius and Seychelles have made significant headway in liberalizing their trade policies (Table 5.1). Though country experiences differ significantly, there are instances of significant reduction in tariff rates in sectors like mining and manufacturing in most countries in IORA. Such liberalization of trade policy has been noticed in a number of countries, even during the period of recession.

The IORA region has registered high intra-regional trade (IRT) in the recent years. In terms of volume and ratio high IRT in IORA has marked a strong presence in the world economy. The region recorded an IRT flow of $1.23 billion and IRT ratio of 27.4 percent in 2014 (Table 5.2). The region was greatly affected by the persistent global recession and the volume of the IRT declined steadily since 2012. There is a considerable difference in terms of IRT ratio between different sub-regions of the IORA; thus indicate larger trade possibilities among the member countries. Southeast Asia is emerging as the most dynamic sub-region in IORA, as the IRT ratio is the largest among other sub-regions. Interestingly, the IRT ratio of the East African sub-region has almost doubled than that of the South Asian region, indicating vibrancy of the African counterpart in terms of regional economic integration in IORA.

Table 5.1 Tariff profile of the Indian Ocean Rim Region

Country	2007	2009	2012	2014
Australia	3.4	3.4	2.6	2.6
Bangladesh	14.6	14.4	14.6	13.9[d]
Comoros	11.3	11.3[b]	8.8	15.4
India	16.1	12.4	13.2	13.1[d]
Indonesia	6.9	6.8	6.6	6.6[d]
Iran, Islamic Rep.	26.2	26[b]	26.6[c]	26.6
Kenya	12.6	12.6	12.8	12.8
Madagascar	12.4	11.6	11.8	11.7
Malaysia	7.2	7	5.4	5.1
Mauritius	3.2	1.1	0.9	0.8
Mozambique	10.3	10.1	10.1	10.1
Oman	5.3	5.2	4.5	4.5
Seychelles	7.1	7.1	2.7[e]	2.7[e]
Singapore	0	0	0	0
South Africa	7.7	7.7	7.4	7.3
Sri Lanka	10.7	10.7	9.9	8.3
Tanzania	12.6	12.6	12.8	12.7
Thailand	9.7	9.7	9.6[c]	10.7
United Arab Emirates	4.7	4.8	4.6	4.5
Yemen	7[a]	7.1	7.5	7.5[d]

Source Authors estimation based on Trains WITS, 2017
Notes [a]denotes 2006, [b]for 2008, [c]for 2011, [d]for 2013 and [e]for 2015. Figures represent average simple tariff of individual countries

Table 5.2 Intra-regional trade in IORA and Its Sub-Regions

Region/Sub-Region	2001		2014	
	IRT Value ($Mn)	IRT Ratio (%)	IRT Value ($Mn)	IRT Ratio (%)
IORA	239,667	22.4	1,234,421	27.4
IORA-East Africa	3432	4.7	15,708	5.6
IORA-Middle East	8829	6.7	100,623	12.2
IORA-South Asia	3676	3.1	25,576	2.9
IORA-Southeast Asia	146,645	19.7	534,556	21.2

Source Authors estimation based on IMF Direction of Trade Statistics, 2017

Current State of Trade Facilitation in Asia and Africa

Countries in Asia and Africa along the AAGC are at varying levels of trade facilitation. Although no country is found extremely advanced in all dimensions of trade facilitation, countries in South Asia and Eastern Africa have made considerable progress on customs modernization and automation in recent years. In terms of efficiency of customs agencies, most of the sample South Asian and Eastern African countries are yet to achieve the desired level of efficiency.[3] While some are close to the global best practice score of 0.03 (measured in terms of expedited release procedures, the efficiency of customs and delivery of imports and exports) but many others, including Comoros, Tanzania and Myanmar, fall short of the global benchmark (Table 5.3). Similarly, in automation and computerization processes, countries in Asia and Africa have done modestly well with the further scope of improvement. However, electronic processing and payment of duties and automated processing systems in Asia and Eastern Africa are relatively less advanced in comparison to the global best practices. It suggests the case for promoting mutual cooperation in some of the above mentioned areas of trade facilitation including risk management.

As per the OECD trade facilitation indicators, Asia and Sub-Saharan Africa are below the best practice mark in terms of most of the trade facilitation measures (Fig. 5.2). Achieving the desired level of trade facilitation is a challenging task for Africa and Asia because of a lack of technical know-how and skills. This can be verified from the notifications *i*ssued by some of the Asian and African countries under Trade Facilitation Agreement (TFA) of the WTO. The TFA gives flexibility to developing countries and LDCs to be identified under three categories A, B and C for implementation of the Agreement provisions. As per the TFA, measures notified under category C shall only be implemented by a country when it acquires requisite capacity through technical assistance and capacity building (WTO 2015).

It has been observed that most of the African countries have been notified under category C, followed by Asia. More specifically, countries in Southern Africa and Eastern Africa need provisions of technical assistance and capacity building to implement TFA (Fig. 5.3). For instance, Zambia notified 65 percent of measures under Category C, followed by Swaziland (49 percent), Nigeria (43 percent), Chad (36 percent) and Seychelles (32 percent). As per the WTO database, five measures most notified under category C by Sub-Saharan African countries are related to single window (Article 10.4), risk management (Article 7.4), average release times (Article 7.6), and enquiry points (Article 1.3) (Fig. 5.4). Along with the improved soft infrastructure of trade facilitation, there is a need to develop transport infrastructure, particularly inland transport, as it is viewed as a prerequisite to enhance other capacities in terms of technology, risk management, and so on.

It is generally assumed that developed countries would be the providers of technical assistance and capacity building under the construct of North-South Cooperation. But it does not seem to be the case. Under Article 22 of the TFA, donor countries have to provide information to the WTO on the technical assistance and capacity building measures undertaken by them. However, as per the TFA database,

Table 5.3 Status of trade facilitation in Asian and African Countries

Trade Facilitation Indicators	Global Best Practices	IND	JPN	COM	KEN	TZA	MOZ	MUS	MDG	ZAF	BGD	MYN	VNM	LKA	THA
Expedited release procedures	0.03	0.03	0.06	–	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	–	–	0.03
Efficiency of customs and delivery of imports	0.06	0.03	0.06	–	0.03	–	–	0.06	0.00	0.03	–	–	–	0.03	0.06
Efficiency of customs and delivery of exports	0.06	0.03	0.06	–	–	–	–	0.06	0.06	0.03	0.03	–	0.03	0.06	0.06
National customs website	0.09	0.09	0.09	–	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Percent of import declarations cleared electronically	0.15	0.08	0.08	–	0.15	0.15	–	0.15	–	0.08	–	–	0.08	0.15	0.08
Percent of export declarations cleared electronically	0.15	–	–	–	0.15	0.15	–	0.15	–	0.08	–	–	0.15	0.15	–
Electronic processing	0.15	0.15	-	–	0.15	–	–	0.15	–	0.15	–	–	0.15	0.15	–
Electronic payment of duties, taxes, fees and charges	0.08	0.15	0.15	–	0.15	0.08	0.08	0.15	0.08	0.15	0.08	–	0.08	0.08	0.08
Electronic payment system integrated with automated declaration/cargo-processing systems	0.08	0.08	0.15	–	0.08	0.08	0.08	0.15	–	0.15	–	–	0.08	0.08	0.08
IT systems capable of accepting and exchanging data electronically	0.15	0.15	0.15	0.15	0.08	0.15	0.15	0.15	0.15	0.15	0.08	0.08	0.15	0.15	0.15

(continued)

Table 5.3 (continued)

Trade Facilitation Indicators	Global Best Practices	IND	JPN	COM	KEN	TZA	MOZ	MUS	MDG	ZAF	BGD	MYN	VNM	LKA	THA
Automated processing system include functions allowing for the release of goods subject to conditions (i.e. guarantee)	0.15	–	0.15	–	–	–	–	0.15	–	0.15	–	–	–	–	0.15
Single window	0.03	0.03	0.06	–	0.03	–	0.03	0.06	0.06	0.03	0.03	0.03	0.06	0.03	0.06
Customs controls supported by a risk management system allowing risks to be assessed through appropriate selectivity criteria	0.06	0.06	0.06	–	0.06	0.06	0.03	0.06	0.03	0.06	0.03	0.03	0.06	0.03	0.06
Other border controls supported by a risk-management system	0.03	0.03	0.03	–	0.03	0.03	–	0.06	0.03	–	–	0.03	0.03	0.03	0.03
Coordinated/shared risk management mechanisms	0.09	0.09	0.09	–	0.09	0.09	–	0.09	–	0.09	–	0.09	0.09	–	–

Source OECD Trade Facilitation Indicators

Notes First three rows depict ease in custom procedures, followed by nine indicators on performance in automation, IT and single window, respectively. Last three rows represent indicators on risk management systems. IND = India, JPN = Japan, COM = Comoros, KEN = Kenya, TZA = Tanzania, MOZ = Mozambique, MUS = Mauritius, MDG = Madagascar, ZAF = South Africa, BGD = Bangladesh, MYN = Myanmar, VNM = Vietnam, LKA = Sri Lanka, THA = Thailand

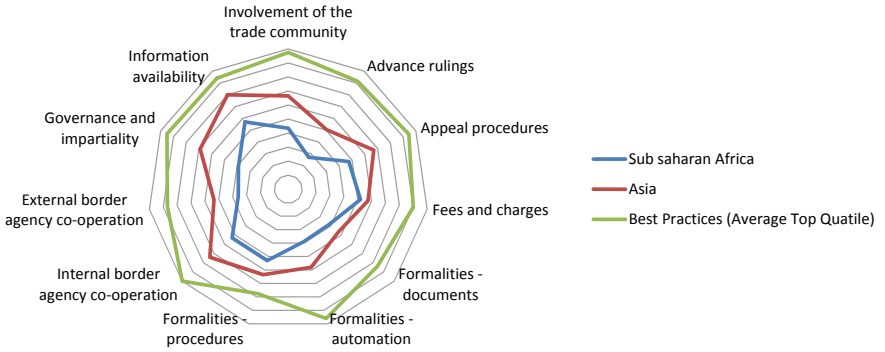

Fig. 5.2 Trade facilitation indicator scores of Asia and Sub-Saharan Africa. *Source* Drawn by Authors based on OECD Trade Facilitation Indicators

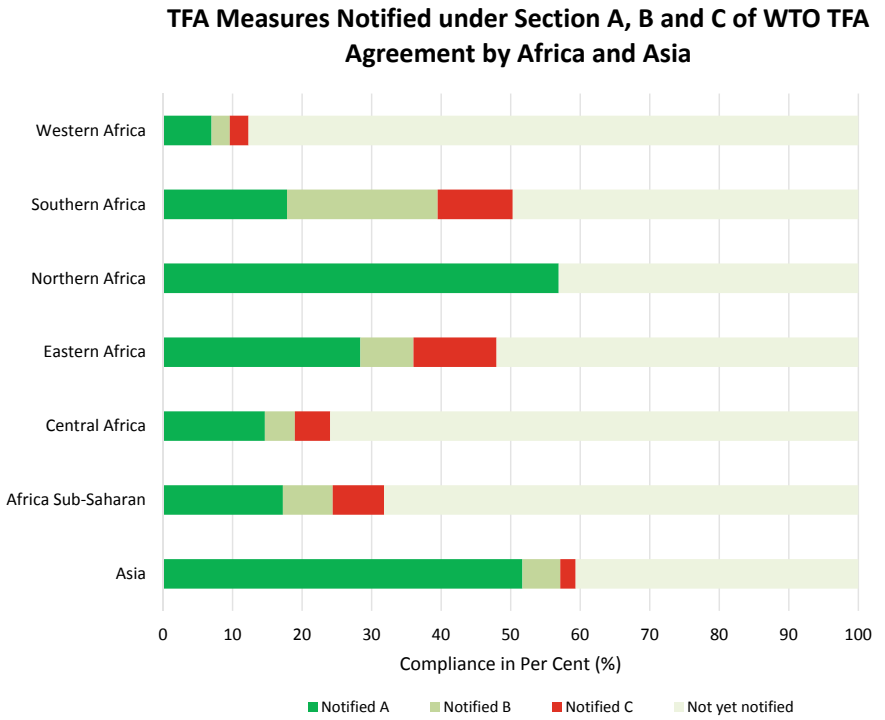

Fig. 5.3 TFA measures notified under Section A, B and C of WTO TFA Agreement by Africa and Asia. *Source* Drawn by Authors based on WTO Trade Facilitation Agreement (TFA) Database

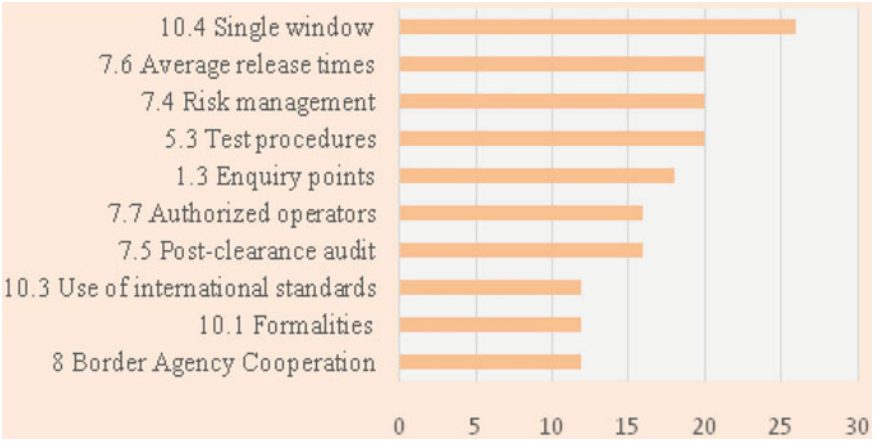

Fig. 5.4 Most notified measures for category C for the African Region (Excluding North). *Source* Drawn by Authors based on WTO Trade Facilitation Agreement (TFA) Database

only seven developed countries have given the information, including the European Union. Further, the TFA database shows that among the western countries only USA, Canada and EU have done allocations to the tune of $52 million towards trade facilitation in Africa.[4] Such commitments are inadequate given the length and breadth of Africa and the range of measures needed to be implemented within the ambit of TFA. Further, scarce resources for the implementation of the TFA may lead to the diversion of funds from developmental goals. In such a situation, there is scope for cooperation among the Asian and African countries, especially India and Japan, to support the improvement of trade facilitation in Africa.

It has been found in a study by the UNECA (2013) that time taken for export and import activities is among the highest in Africa (excluding Northern region). Moreover, the documents required to export and import are also on the higher side in Africa (Table 5.4). The Declaration of African Union Ministers of Trade has underscored the importance of trade facilitation and reiterated their priorities on enhancing infrastructure, boosting productive and trade capacities, reducing transaction costs, supporting reforms, and improvements in customs regulatory systems.

Countries in Asia and Africa have received aid from the OECD Development Assistance Committee (DAC) for trade facilitation reforms. It would be interesting to assess trends of disbursements from the donors for trade facilitation in Africa; as the current trade policy reforms are focused on the trade facilitation and harmonization of regulations and standards. Total Overseas Development Assistance (ODA) from the DAC to Africa for trade facilitation has increased significantly since 2011. Among the major DAC donor nations, in 2015–16, the United States had the highest share (around 54 percent) to Africa, followed by the United Kingdom (26 percent). In absolute terms, the support by the United States to trade facilitation in Africa has increased since 2012 and has remained at around $56 million on an average over the period 2012–2015. In comparison, average disbursement from the United Kingdom

Table 5.4 Transaction costs and time in international trade

Region	Documents to Export (No)	Time to Export (days)	Cost to Export ($ per container)	Documents to Import (No)	Time to Import (Days)	Cost to Import ($ per container)
East Asia & Pacific	6	21	923	7	22	958
Eastern Europe & Central Asia	7	26	2134	8	29	2349
Latin America & Caribbean	6	17	1268	7	19	1612
Middle East & North Africa	6	19	1083	8	22	1275
OECD high income	4	10	1028	5	10	1080
South Asia	8	32	1603	9	33	1736
Sub-Saharan Africa	8	31	1990	9	37	2567

Source World Bank (2012)

over the same period was around $28 million. Among all developed countries, there has been a secular decline in the total share of DAC from 2012 onwards, after a steep rise in 2011 (Table 5.5). The average share of total disbursements from all donors during 2012–2015 was $187 million.

Among selected recipient countries of Africa, the total share of disbursements by the DAC countries was on an increasing trend over the period 2010–2013, followed by a decline in 2014, before registering a modest increase in 2015 (Table 5.6). The total DAC disbursements to the selected nations of Africa for 2012–2015 were around $20 million on average with Tanzania receiving the highest, followed by South Africa and Kenya, respectively.

Possible Areas of Cooperation

Besides tariff liberalization, trade facilitation reforms are viewed most important globally for trade policy reforms as well as for countries facing high trade costs. Rippel (2011) highlights the specific areas of reforms in trade facilitation and how it could be integrated with the development vision of African countries. The specific aspects of trade facilitation necessitating forward-looking policy reforms include the following:

Table 5.5 Donor-wise ODA disbursements by DAC Countries to Africa for trade facilitation

($ Million)						
Donor/Year	2006	2011	2012	2013	2014	2015
United States	4.60	18.64	52.50	57.46	56.81	58.23
United Kingdom	–	30.03	15.79	37.63	29.94	28.23
Sweden	0.25	3.14	8.40	8.47	2.84	5.92
Canada	–	5.84	5.80	0.67	5.21	4.42
Germany	2.28	1.85	0.05	0.02	1.92	4.24
Finland	–	0.11	0.11	–	–	3.33
Belgium	–	0.02	0.16	1.13	3.05	1.11
Korea	0.04	1.40	2.85	0.35	1.58	0.72
Japan	–	–	0.22	1.98	0.67	0.59
Netherlands	–	0.47	0.31	0.02	0.05	0.56
Denmark	–	0.78	8.47	13.50	2.39	0.35
France	–	0.35	–	–	0.36	0.30
Ireland	–	–	0.09	0.13	0.14	0.06
Switzerland	1.45	0.21	0.10	0.14	0.06	0.05
Norway	–	0.58	0.12	–	–	0.02
Australia	–	–	–	–	–	–
Greece	–	–	–	–	–	–
Italy	–	–	–	–	–	–
Spain	0.03	0.07	–	–	0.04	–
DAC Total	8.66	63.51	94.97	121.50	105.05	108.12
All Donors	9.24	128.89	120.87	212.34	191.71	227.26
Share of DAC in All Donors (%)	93.71	49.27	78.57	57.22	54.80	47.58

Source OECD Stat
Note Data are in constant prices

Technology

International trade, pertaining to customs administration, is becoming complex involving many agents within and across national borders. The complexities merit the development of IT systems. As the studies indicate that adoption of information technology can significantly reduce transaction time and costs which, in turn, would enhance the flow of international trade.[5] While mere adoption of IT for customs administration is not a sufficient condition, leveraging on it can yield far-reaching implications in terms of improved transparency, efficient information dissemination and advanced security (Chaturvedi 2009).

A good number of countries in Asia and Africa have deployed IT systems to fast-track the process of customs clearance. They have either adopted a relatively simple

Table 5.6 Recipient-wise ODA disbursements by DAC Countries to Africa for trade facilitation

	($ Million)					
Recipient Country/Year	2006	2011	2012	2013	2014	2015
Tanzania	0.90	8.34	12.83	19.29	24.87	23.95
South Africa	0.02	0.15	9.65	10.76	7.51	12.44
Kenya	0.08	6.57	7.43	14.01	10.33	5.55
Somalia	–	–	–	–	–	0.63
Madagascar	0.09	0.01	–	0.04	0.31	0.18
Mauritius	0.01	0.13	–	0.06	0.03	0.11
Mozambique	0.29	0.02	–	0.03	–	–
Seychelles	–	–	–	0.03	–	–
Total of selected countries	1.40	15.22	29.92	44.22	43.06	42.85
DAC total to Africa for Trade Facilitation	8.66	63.51	94.97	121.50	105.05	108.12
Share of Selected countries in DAC Total to Africa for Trade Facilitation (%)	16.12	23.96	31.50	36.40	40.99	39.64

Source OECD.Stat
Note Data are in constant prices

off-the-shelf automated customs data management system such as different versions of Automated Customs Data Management System (ASYCUDA) or have developed a more sophisticated sovereign platform e.g. Single Window, to suit respective national requirements. The key advantage of *off-the-shelf* solutions lies on the fact that various modules have already been tested, and are ready to be deployed which would reduce the opportunity cost of building it from scratch. However, a major limitation of these systems pertains to their limited possibility to customize to meet evolving national requirements. Nationalized solutions, such as single window, on the other hand, can be tailor-made to meet country-specific needs and would serve as a major advantage as the cost of compliance to multiple formalities is pretty high.[6]

Evidences emerging from post-adoption of both of these platforms are mixed.[7] While ASYCUDA and Single Windows have largely yielded positive results, their performance has been modest in several situations for different reasons.[8] Many developing and least developing countries, which constitute a significant proportion in Asia and Africa, have not yet adopted IT for streamlining customs administration process.

Challenges with ASYCUDA and Single Window

ASYCUDA was the software launched by the United Nations for Trade and Development (UNCTAD) in the early 1980s on the request of the Economic Community of

West African States (ECOWAS). It gives automated assistance, covering most international trade procedures, ranging from trade facilitation, customs control, operational capacity along with allowing cost-effective replication and adaptation to higher upgraded versions. Ever since its initiation, many LDCs and developing countries have benefited from increased customs revenue due to reduced time in import and export and minimization of administration costs. However, in many cases, countries could not take full advantage of ASYCUDA due to varied reasons, such as electricity cuts and shortages impeding 24 × 7 operations, limited network connectivity, and deficient IT infrastructure in addition to inadequate training of customs staff to operate the systems (Godunov 2015).

Single window, on the other hand, is broadly defined as a "platform that enables trade stakeholders to submit documents and other relevant information through a single point of entry in a standardized way to complete export, import and transit procedures" (CEFACT, 2005 in World Bank, 2007). Thus, the information requirements of several regulatory authorities under different jurisdictions are submitted and processed at a single point. This, in turn, harmonizes regulatory compliance system resulting in faster trade flow. However, important challenges among others in the implementation of single window are in terms of high capital expenditure and recurring costs, lack of expertise among personnel to develop such systems in addition to the challenges witnessed in the case of ASYCUDA.

Countries of Asia and Africa have competitive advantage in IT sector which can be leveraged to fill gaps in trade facilitation of other countries. In particular, India has low cost and highly skilled English-speaking software professionals ensuring high quality of service delivery, meeting international standards.[9] In addition, frugal innovations and quick-fix solutions have been harnessed with limited resources resulting in good quality and affordable products adding to the comparative advantage of countries in the region. Both Africa and parts of Asia are privileged to have the young population. The entrepreneurial spirit among the young can be bolstered by furthering people-to-people connect to create an ecosystem of innovation and smart solutions.

To enhance efficiency and to ensure widespread use of single window customs facilities in Asia and Africa, a number of problems are to be addressed. Funding is observed as a major problem for the successful implementation of the ASYCUDA. Government support for procuring bigger electricity generators in all ports and border points may help resolve issues of irregular power supply and erratic electricity cuts. Many a time, inadequate computer equipment and infrastructure affect use of ASYCUDA. Funds may be mobilized to purchase modern computer equipment and for installing proper network infrastructure at the ports. For instance, in Monrovia, a World Bank project is providing a comprehensive fibre optic network, including a data centre for greater Monrovia covering (at least 90 percent of the customs revenue collection). Customs clearance time is another area of crucial trade policy reform. The measures that would decrease clearance time may include the follow-up time with officers and the business community to ensure that the abandoned declarations are handled; additional training to reduce queries; additional system controls to enhance

faster clearance, among others. Along with the above-mentioned measures, the efficiency of customs clearance rests on creating awareness of customs procedures and proper training of staff.

Customs Valuation

Effective customs valuation standards and practices improve trade facilitation and ensure authentic trade statistics. Harmonization of customs valuation procedures and practices at the international level ensures a level playing field for those engaged in international trade as well as transparency and predictability in international transactions. Absence of effective customs valuation practices and procedures acts as a trade barrier; reduces revenue realization by authorities as well as incentivizes money laundering due to under-invoicing and over-invoicing; increases corruption and dilutes outcome of a country's customs and trade policies.

Given the importance of customs valuation systems in overall trade outcome an Agreement on Customs Valuation (ACV) was concluded during the Tokyo Round of GATT negotiations in 1979. However, implementation of ACV at the national level requires the establishment of a legislative and regulatory framework; a mechanism for judicial review; administrative procedures; organizational structure; and training (De Wulf and Sokol 2005). Implementation of the ACV across developing countries, particularly in Africa and Asia, has been sub-optimal. In general, there is a serious lack of adequate understanding of customs valuation procedures across the developing countries, which reduces the effectiveness of customs administration. Many of those lacunae include inaccurate or incomplete incorporation of the ACV provisions into domestic legislation; high average tariff rates leading to under-invoicing and most importantly administrative limitation. Lack of administrative capacity is particularly due to inadequate value data and poor means of information gathering; lack of qualified personnel; poor or non-existent training facilities; limited and often ill-managed computerization; unavailability of operating manuals; poor hierarchical supervision; and weak or non-existent internal audits.

Improvement in valuation is directly related to the quality of customs administration; betterment needs customs modernization plan with a focus on better organization and management with administrative, financial and technical autonomy and accountability. Apart from overall customs administration, there is a need to strengthen institutions and infrastructure for valuation through a legislative framework, training of valuation officers, establishment of valuation offices, and value information systems and databases. Implementation of policies and procedures to ensure better customs valuation practices require firm action by the national governments as well as technical assistance from other countries, especially from developing country peers, who have evolved best practices in the customs valuation. For instance, India has established the directorate of valuation, special valuation branch and National Import Database to improve customs valuation practices.

Similar institutions can be established in other developing countries through technical assistance.

Risk Management

Since the latter half of twentieth century, there has been a significant increase in trade volume which has increased demand for customs organizations to ensure regulatory compliance. At the same time, it is recognized that time-consuming customs procedures increase trade costs and act as non-tariff barriers. Hence, the objective of customs is to ensure regulatory controls as well as trade facilitation. In an effort to achieve a balance between trade facilitation and regulatory control, customs administrations are generally abandoning their traditional, routine "gateway" checks and are now applying principles of Risk Management (RM) with varying degrees of sophistication and success (De Wulf and Sokol 2005). This approach has added advantages of increased efficiency of operations, streamlining of processes and procedures, and reduction in regulatory burden. The measure also allows for a better allocation of human resources, an increase in customs revenues, and improved compliance with laws and regulations (UNCTAD 2011).

In the current economic environment defined by globalization, significant growth in trade (to and from Africa, and also within Africa) and an exhilarating pace of change, implementation and designing of a customs risk management system is no longer a 'nice' to have but a stringent necessity (WCO Revised Kyoto Convention (RKC) Chap. 6). Objective of risk management within African states is for a balanced combination of not only trade facilitation and regulatory control but also revenue mobilization given social obligations. Across Africa, implementation of risk management processes in practice is met with varying success. The major constraints include lack of adequate human and technical capacity, inappropriate customs infrastructure including IT and telecom infrastructure, defective RM programme implementation, inadequate staff skills, lack of coordination among different arms of customs and lack of reliable and centralized data to facilitate risk management (Buyonge and Goodger 2014).

Possible solutions to the above mentioned problems should encompass implementing capacity building programmes for field staff, establishing specific risk management units with the specific responsibility for maintenance and operation of the RM System, and use of automated systems for dynamic risk assessments. Further, there is a need to engage with technical assistance service providers with expertise and experience in implementing risk management solutions in developing countries. Additionally, there is a need to enforce a Unique Tax Identification Number (TIN) to check tactics used by importers of submitting different TIN to escape tax liability. In this context, there is a scope of drawing lessons from the unique identification system of India, called *Aadhaar*, which has benefits much beyond establishing unique TIN.

Another area of mutual learning is the Risk Management System (RMS) which has been implemented in all major customs ports/airports covering more than 90 percent of India's international trade. It has revolutionized the customs import clearance process by cutting down clearance times drastically. Instead of routine assessment and examination of all cargoes, only selected consignments should be taken up for scrutiny and examination. Implementation of the RMS has been a success story for Indian customs, and this initiative has been conferred with the Prime Minister's Award for Excellence in Public Administration.

India–Japan Cooperation in Africa

India and Japan have made considerable progress on many fronts of trade facilitation in recent years (Figs. 5.5 and 5.6). Both countries have undertaken many initiatives to improve customs procedures and for simplification of trading formalities and procedures. Lately, India has made significant strides in ease of doing business and business environment. This has been reflected in steady improvement in the rank of India in the World Bank Global Ranking of 'Ease of Doing Business'. As per the 2020 Report, India's rank is elevated to 63rd in 2019 among the 190 nations participated in the ranking; marking 14 places gain compared to the previous year. Indian customs have launched SWIFT facility to provide a single window interface for clearance of goods in the least possible time. The system has done away with the requirement of seeking approvals from multiple government agencies by integrating procedures in a single platform (CII 2017).

Similarly, Indian customs have re-introduced Electronic Data Interchnage (EDI) Gateway called Indian Customs and Central Excise Electronic Commerce/EDI Gateway (ICEGATE), which was operational earlier, with enhanced integrated

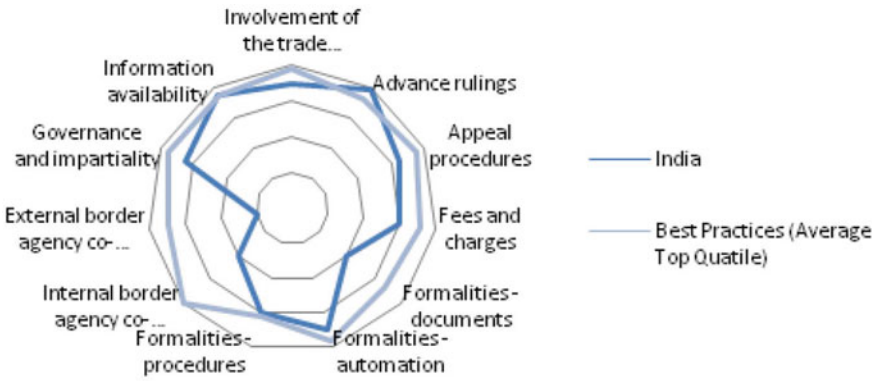

Fig. 5.5 India's performance in trade facilitation. *Source* OECD Trade Facilitation Indicators

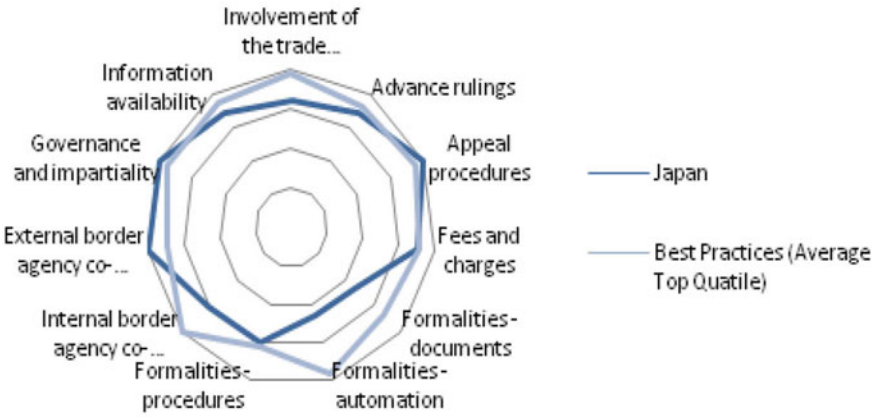

Fig. 5.6 Japan's performance in trade facilitation. *Source* OECD Trade Facilitation Indicators

processes. In addition, an integrated RMS facility that has automated risk management systems has been launched. Under the new system, ICEGATE portal (and not the officers) would decide on the level of examination and testing based on the principle of risk management which would bring in efficiency and transparency. In another development, Project *Saksham* has been launched to integrate customs IT systems with Good and Services Tax Network (GSTN), thus extending a single window system and increasing '*ease of doing business*' for those involved in the international trade.

As per the OECD trade facilitation indicators, Japan's Risk Management System (RMS) matches the global best practices score. Improvement noticed in risk assessment capabilities since 1999 has reduced operation costs as staffing levels remained unchanged, even though export and import transactions increased significantly. For effective risk management, Japanese Customs maintains import records and also relevant information on importers in an integrated and organized manner. Similarly, in the case of automation of customs procedures, Japan is at par with global best practices. It has one of the oldest automated customs clearance systems in the world that started working in 1978 with automation of customs procedures, electronic exchange of information and automation of other services including cargo storage and management. The system is called Nippon Automated Cargo Clearance System (NACCS), and it was developed under Public–Private Partnership (PPP) model. Such a rich experience under the PPP mode can be useful for African counterparts to achieve automation by leveraging local private sector.

Further, Japan has been offering technical assistance in RMS to developing countries through its own initiative, as well as through cooperation with the World Customs Organisation (WCO). There is a need to channelize such assistance under the aegis of the AAGC. India, moreover, has a relatively advanced system of customs clearance and border procedures than most of the African countries. Since improved trade facilitation is crucial for promoting cross-border trade, India and Japan can

offer technical assistance and cooperation to other countries in Asia and Africa to strengthen linkages among different growth poles in the AAGC.

Endnotes

1. See WTO Website on trade facilitation.
2. See Moïsé and Sorescu (2015).
3. For illustration purposes, the sample AAGC countries considered are India, Japan, Bangladesh, Comoros, Kenya, Tanzania, Mozambique, Mauritius, Madagascar, South Africa, Bangladesh, Myanmar, Vietnam, Sri Lanka and Thailand.
4. Author estimation based on notifications under Article 22 (TFA database).
5. See UNESCAP Website.
6. De Wulf and Sokol (2005).
7. See World Bank (2017).
8. The Comoros, for example, introduced the ASYCUDA software in 2010 but it was not used widely by local traders. Electricity cuts and shortages made the system unreliable during regular business hours; the private sector did not experience the expected positive impact from the implementation of the program.
9. See Centre for the Advanced Study of India (CASI), University of Pennsylvania for causes and consequences of IT boom.

Conclusion

Following years of intense negotiations, the Trade Facilitation Agreement (TFA) was adopted in the Bali WTO Ministerial, paving the way for bringing efficiency in customs clearance of goods at the border to bring down trade costs for developed and developing countries, participating in international trade. Developing countries are likely to be the key beneficiaries of this Agreement. For the rapid implementation of Trade Facilitation (TF) measures in Asia and Africa, the AAGC could be instrumental in initiating varieties of activities in areas such as private investment, inducing firms to participate in value chain activities, facilitating capacity building for skill development and integration of growth poles along the Afro-Asian stretch.

In the context of the Afro-Asian region, the recent global focus is on the Indo-Pacific region which has large opportunities for trade and investment. In the notional region of Indo-Pacific, Indian Ocean Rim Association (IORA) is an active regional economic forum with high growth dynamism during the period of global buoyancy and recession, and trade is increasingly becoming the driver of growth for the region. The growing importance of the regional trade has been the outcome of the fact that regional economies are active on their path of economic liberalisation, though countries differ significantly on average tariff rates within the region. Rapid trade liberalisation has triggered robust intra-regional trade (IRT) in IORA, as the ratio was reported at 27.4 percent in 2014, having huge trade potential to expand further following upturn in the global economy during the post-COVID-19 period. As the region is expanding in trade and has shown wide variations in TF infrastructure among

regional economies, the AAGC can lend support to the region in its endeavour to modernise its customs and bringing in automation. Modernisation in the sector such as electronic processing and payments of duties as well as automated processing in the IORA and the Afro-Asian region would spur trans-continental trade to a large extent.

As such Asia and Sub-Saharan Africa (SSA) are below the global average in terms of undertaking TF measures, but the introduction of further initiatives under AAGC could benefit both the continents. For efficient implementation of TF measures, support like technical assistance and capacity building can be mustered through cooperation among Afro-Asian economies. In this regard, both India and Japan can extend support to their endeavour to implement TF measures. Reforms in TF are considered most pressing globally and Afro-Asian region is no exception to this trend. In this regard, reforms required in the region include the adoption of information technology to reduce transaction time to foster the flow of trade, particularly deployment of ASYCUDA; implementation of effective customs standards for ensuring level playing field for domestic players in international trade; adoption of better risk management measures for deploying human resources effectively, enhancing collection of customs revenue and compliance with domestic laws and regulations. India has an efficient track record of handling with the Risk Management System (RMS) by using several innovative instruments such as Tax Identification Number (TIN), Aadhaar, SWIFT, ICEGATE, GSTN, etc. to promote trade. On the other hand, Japan is a successful country in implementing TF measures and its RMS matches with the global best practices in TF. In this regard, India and Japan can support countries of the Afro-Asian region, particularly the Indo-Pacific including IORA in their endeavour to implement TF measures in the region.

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Chapter 6
Economic Opportunities in Blue Economy in Africa

S. K. Mohanty and Priyadarshi Dash

Introduction

As part of the drive for environmental sustainability and sustainable development, several concepts and paradigms have been coined by the multilateral institutions and scholars in the past decades. In that discourse, 'Blue Economy' has emerged as a popular concept in the recent decade. Unlike the sister concept 'Green Economy', the domain of Blue Economy is well-defined and operationally feasible. In simple terms, Blue Economy refers to all ocean resources and ocean-related activities happening in a defined coastal area without compromising the parameters of environmental and ecological sustainability. Many in the policy circles find it quite convincing that both economic and environmental yardsticks are efficiently intertwined in the Blue Economy paradigm. As countries are gearing up their resources and administrative machinery to meet the Sustainable Development Goals (SDGs) by 2030, the adoption of Blue Economy and associated practices appears to be very much tenable. *Prima facie*, the potential of ocean resources have not been comprehensively harnessed yet globally. At the same time, it would not be an exaggeration to mention that the industrial use and societal benefits of ocean/marine resources are either not properly understood or under-utilised. Although oceans and ocean resources have contributed immensely to economic growth in countries for the past several centuries, the approach towards ocean resources has been exploitative in nature within the framework of mainstream economic theories. It is the economic

S. K. Mohanty · P. Dash (✉)
Professor & Assistant Professor, Research and Information System for Developing Countries (RIS), New Delhi, India
e-mail: pdash@ris.org.in

S. K. Mohanty
e-mail: skmohanty7@gmail.com

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use of oceans and ocean resources that have commanded more respect in the neo-classical high growth obsessed models of development than other uses and benefits including ecological, social and aesthetic.

Since the United Nations Rio+20 Conference in 2012, Blue Economy has become a crucial sector of economic policy, especially for the coastal nations. Small Island Developing States (SIDS), in particular, advocate for greater recognition of Blue Economy at the global level so that their vulnerability is addressed through international cooperation. More than access to global markets and other economic opportunities, SIDS consider Blue Economy approach a promising alternative that provides solutions to the problems of climate change, loss of coastal areas, marine plastics, degradation of marine habitat, depletion of fish species, frequent occurrence of natural disasters, and so on (UNECA 2016; UNECA 2014). UN (2017) presents how SIDS across the world and Least Developed Countries (LDCs) are positioned as far as opportunities and challenges in Blue Economy are concerned. On the other hand, large coastal nations like the US, China, India, Indonesia, Australia, Japan, the EU and others which have some policies in operation for oceans, are putting specific policies and efforts to promote Blue Economy in their countries.

Blue Economy has attracted enormous attention in the projects, funding and partnerships opportunities of international institutions like the UN and UN institutions such as UNCTAD, UNDP, etc., World Bank, Food and Agriculture Organisation (FAO), IMF, multilateral development banks like Asian Development Bank (ADB), African Development Bank (AfDB), etc. and inter-country organisations like IORA, G20, OECD, EU, ASEAN, BIMSTEC, SADC, etc. The World Bank has initiated a multi-donor trust fund called PROBLUE which works for integrated, sustainable and healthy marine and coastal resources. With active projects worth US$5.6 billion as of March 2020, PROBLUE aims to develop Blue Economy and addresses issues relating to poverty, income generation and social welfare. Likewise, FAO and other international organisations have initiated many such programmes to popularize and promote Blue Economy across the world.

Contours of Blue Economy

Despite ample clarity over the concept of Blue Economy, a proper definition would enable empirical estimation of Blue Economy practically feasible for different countries and facilitate cross-country comparison. It would require convergence in competing thoughts and perspectives on the essential features of Blue Economy. Mohanty et al. (2015) define Blue Economy more systematically by drawing the sharp distinction between the apparently similar concepts such as ocean economy, coastal economy and marine economy. As per that strand, ‘Blue Economy’ covers all ocean-related activities including direct and indirect supporting activities required

for the functioning of those economic sectors while adjusting to the costs of environmental damage and ecological imbalance caused due to exploitation of ocean resources for consumption. Blue Economy is different from the green economy as it goes beyond preservation and addresses sustainability issues with emphasis on regeneration. In other words, it means that the world cannot afford to cherish 'brown economy' any more like the current practice of production and consumption in the form of massive scale of resource extraction and high carbon energy consumption is not sustainable and equitable.

With regard to sustainability, Blue Economy links production and consumption systems to the long-term capacity of ocean ecosystems and envisages efficiency and optimization of marine resources to ecological limits (EIU 2015a, b; UNCTAD 2014). In terms of the broad principles, the core elements that represent the distinct features of Blue Economy are local sourcing of raw materials, employment of local workforce, use of low-carbon energy sources, waste recycling, diversification of food and livelihood options, conservation of living and non-living marine resources, promotion of small-scale industries, and so on. Another crucial issue concerning Blue Economy is the measurement of its size and contribution to GDP. Since there is no commonly accepted statistical framework to define the coverage of sectors and the activities in those sectors, the empirical measurement of Blue Economy remains a contentious area. This is probably the reason for not having any consolidated global database on Blue Economy sectors. As a result, policy formulation for promoting Blue Economy and exploring cooperation at the regional levels becomes difficult in the absence of a sound understanding of Blue Economy sectors in these economies. The available estimates based on national statistical systems for the United States, Australia, Ireland, United Kingdom, China, Indonesia and others are merely indicative and lack consistency and scientific basis for cross-country comparison.

Besides certain identifiable major sectors, the existing international and national statistical systems do not provide any systematic basis for valuation and measurement of non-market goods and services and ecosystem benefits, more specifically at higher levels of product disaggregation. Two statistical frameworks such as the National Accounting System (NAS) and Input-Output (IO) table are widely referred to in the literature for the estimation of Blue Economy. China uses input-output analysis whereas the United States and the EU use NAICS and NACE classifications, respectively. Ireland reports statistics on Blue Economy as per the NACE classification. Regardless of the sectoral coverage, those classifications broadly correspond to the ISIC activity classifications. There is very little work so far to go for further disaggregation of activities at the product level to estimate 'Blue Trade'. As it appears, the accounting system and data reporting will gradually converge to the ISIC categories and further to HS product classification.

Table 6.1 presents the distribution of traditional and emerging sectors of Blue Economy including goods and services.

Table 6.1 Blue Economy Sectoral Coverage AAGC

Sector	Sub-sector	Industry	
		Traditional	**Emerging**
Agriculture	Living Resources (Fisheries)	Capture fishery, Seafood processing, Packaging, Marketing and Distribution	Multi-specie aquaculture, fish processing, marine aquatic products, Open sea cage culture, Krill fishery, Deep Ocean Fisheries, Non-edible seafood, pharmaceutical products
Mining	Non-living extractions	Coastal placer, oil and gas exploration	Exploitation of Deep Sea minerals (seabed minerals), ultra-deep water oil and gas
Manufacturing	Boat & ship making	Warship building, port and ocean shipping manufacturing, ship repairing ports and repairing equipments, ocean ship and transportation manufacturing,	Container carriers, LNG/LPG carriers, nuclear sub-marines,
	Marine biotechnology	Marine derived bio-products, bio-prospecting	Marine biological pharmacy, marine food additives, marine cosmetics
	Marine construction	Marine bridges, shore-based 'hard' and 'soft' infrastructure	Undersea cables and pipelines
	Marine energy	Solar, wind, Ocean Thermal Gradient, Offshore oil and gas exploration	Geothermal, Ocean Thermal Energy Conservation (OTEC), gas hydrides
	Other marine industries	marine sea salt, marine chemicals, Ship repairing, coastal manufacturing	Marine engineering architecture, marine electric power generation industry, desalination for fresh water
Services	Port & Shipping	Coastal shipping, and international shipping, harbour-maintenance services	Pilotless shipping, containerisation of port services
	Tourism	Coastal tourism, Ecotourism and yachting	Cruise tourism
	Transport & Logistics	Inland shipping, coastal & international passengers and freight, ship repair	Transport ICT, bloc chain, IoT, artificial intelligence, cloud computing, advance analytics, atomisation, robotics, cyber security
	Other marine services	Dredging operations, mapping, science and technology and education	Marine legal services, maritime consultancy/certificate services, service industry of marine

Source: Mohanty et al. (2017) based on various sources

Country Experiences on Blue Economy

During the last four decades, the global economy has been experiencing the vast potential of the Blue Economy in invigorating growth dynamics in littoral economies which are endowed with vast marine resources. Though these countries are endowed with marine resources, they are diverse in nature, thereby meaning that countries differ greatly in terms of natural resources in different sectors. For example, India has a long coastline of 7516.6 km including 2094 km of Island Territories. As we start moving along the coastline of Odisha on the Eastern side of India towards the south, the composition of coastal placer minerals changes significantly. When the composition of marine resources changes so substantially within a country, variations in marine factor endowments become diverse across countries. Apart from variability in the levels of marine resources, littoral countries are mostly endowed with strategic resources that can take the countries on high growth path.

According to the provisions of the United Nations Convention on the Law of the Sea (UNCLOS), littoral countries can access more land beyond its Exclusive Economic Zone (EEZ) upon its special claims and many countries have acquired more marine territories in the Extended-EEZ, even more than their landmass. Acquiring more area under sea means access to more resources and hence, better prospects for long-term growth of the country. Large part of marine resources is renewable in nature and therefore, growth sustainability is possible with the model of Blue Economy. Since the composition of marine resources differs across littoral countries, growth contributions remain high to these economies, but the source of growth contribution would differ. As sectoral growth driver differs from one country to another, there are no stylised facts about Blue Economy in the standard literature. A country has to explore its Blue Economy potential in the absence of stylised facts among marine economies. It may be noted that the benefits of Blue Economy are not only accrued to littoral economies but also to landlocked economies dealing with marine sectors.

Though the benefits of the Blue Economy are known for decades, there is no global unanimity on several unresolved issues, thus, making policymakers in a state of ambiguity in having a clear vision about specific sectors. There is no commonly agreed definition existing about Blue Economy and multiple variants of the concept available in the literature such as marine economy, coastal economy, etc. (Dash 2018). There are no conscious efforts made to develop an appropriate methodology, particularly the classification of sectoral activities to estimate the quantum of Blue Economy in an economy. The Blue Economy activities are so deeply entrenched in the economy that all economic activities are not yet identified. When economic activities are not fully identified internationally, the recognition of products is a distant dream. For this reason, there is little progress in estimating blue trade. Since countries are not uniform in adopting similar methodologies to estimate Blue Economy, estimation of its contribution is not comparable across counties. This limits the possibility of comparing estimates of the size of Blue Economy at the aggregate or sectoral level across countries.

A cross-country comparison of estimates of Blue Economy is an indicative of direction of growth which countries are achieving over a period. There may not be any guesstimate available for a country based on any parameter (NOEP 2016; Mohanty 2018). Country experiences indicate that sizable opportunities in a Blue Economy do not accrue to a single sector but rather multiple sectors. Therefore, a littoral country must be having ample opportunities in several sectors and those sectors need to be identified with appropriate surveys. The driver of blue growth could be any sector for a country/region, depending upon the availability of its marine resources. According to the present situation, Blue Economy of Brunei and Indonesia are steered by the fishery sector, the EU by the marine minerals (i.e., offshore hydrocarbon), China by the marine manufacturing, and the US by the services sector.

Status of Blue Economy in Africa and Asia

Preceding discussion on country experiences shows that countries with strategic planning for blue development have benefitted in numerous ways. The forward and backward linkages of Blue Economy strategies are enormous in diverse sectors including growth, employment, food security, etc., to name a few. As the sector involves complex methodological constraints, many countries have not succeeded in estimating the contribution of the sector to GDP and other sectors (Mohanty et al. 2015). There are a few countries/regions for which the contribution of Blue Economy to domestic economic activities is available over a period of time. However, in general, there has been not much mention of stylised facts relating to Blue Economy. Some studies have attempted to generate certain estimates of the size of Blue Economy (Colgan and Kildow 2013; Mohanty 2018; Mohanty et al. 2017). For this analysis, we have considered some structural and macroeconomic parameters for measuring the contribution of Blue Economy. Structural variables include size of the littoral economy, length of coastline and coastline per square kilometer of geographical area. It is construed that various parameters can throw light in developing certain guestimates for a littoral economy for which there is no formal estimation of the level of economic activities in the Blue Economy.

Size of the economic activities reflected in GDP of a littoral economy may have large and varieties of blue resources which can help the economy in reaping the benefits of the Blue Economy. It may be hypothesized that long coastline of a country can offer access to large blue resources. Long coastline per unit of landmass can provide an advantage to a country to deal with its large blue resources. High per capita income of a littoral country can help in generating more resources for the development of its existing blue endowments. Various alternative propositions are considered to guestimate about the existing potential of blue economy in a literal economy. Experiences of selected countries in regard to their contribution to GDP in different years are presented in Fig. 6.1. For example, the contribution of Blue Economy to GDP in Denmark was 6.3 percent in 2002, in Malaysia 22 percent in 2008, and in Mauritius 10.8 percent in 2012, etc. as shown in Fig. 6.1.

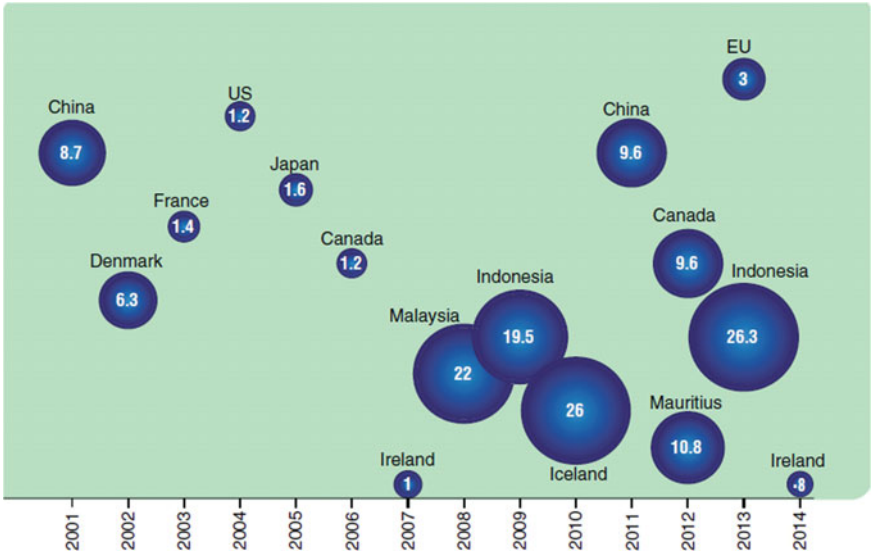

Fig. 6.1 Contribution of Blue Economy: Country Experiences. *Source* Mohanty et al. (2017) *Note* The size of the bubble represents the percentage contribution of blue economy to country's GDP

From the existing literature, we have mustered information about the contribution of Blue Economy to the overall GDP for 16 countries at different points of time. From these estimates, an attempt has been made to derive 'Stylised facts' about Blue Economy based on aforesaid parameters. The level of GDP of South Africa, Thailand, Singapore and Malaysia are almost at a similar level but the contribution of Blue Economy to their overall economy is differing widely among them. We have taken a set of economies with dissimilar sizes of GDP such as China, Mauritius and Singapore where the size of contribution of Blue Economy to GDP was almost at a similar level. The size effect of GDP has very little to say about contribution of Blue Economy to GDP. Certain countries like the Philippines, Vietnam and Indonesia are having a similar level of per capita income but are differing significantly in their contribution of Blue Economy to GDP. There are possibilities that similar regions may elicit a similar level of response in regard to the contribution of Blue Economy to their GDP. Considering this hypothesis, two important regions such as ASEAN and the European Union are chosen. Countries in these regions do not have similar levels of contribution of Blue Economy to their GDP. Cluster of littoral economies may not have any clue to explain the nature of Blue Economy in a region.

Certain economies like Vietnam, Thailand, France and Sweden are having similar length of coastline but are different in their ratios of Blue Economy to GDP. In terms of length of coastline per square kilometer of landmass is taken for certain countries like United Arab Emirates, Thailand, France, Sweden and China where the said ratio is somewhat similar among these countries but the contribution of the Blue Economy differs significantly among them. It is observed from small and

littoral countries like Mauritius, Iceland and Denmark that the contribution of blue economy to GDP is relatively high for these countries but differs significantly in terms of their average per capita income. Taking into consideration various options to arrive at certain 'Stylised facts' about the contribution of the Blue Economy does not provide any specific clue to resolve the issue. It is, in fact, important to examine the key characteristics of Blue Economy of a country through proper accounting methods and avoid any guesstimate regarding the nature of Blue Economy. AAGC should develop an accounting framework for the littoral countries in the Afro-Asian region to understand and estimate the magnitude of Blue Economy in the region and also lend support to estimate other benefits associated with the sector.

Resource Endowments in African Oceans

Blue resource endowments in Africa are huge and diversified. Out of 54 countries in the region, 38 are coastal states and the region spread across Indian Ocean, Mediterranean Ocean, Atlantic Ocean and the Red Sea. Maritime zones under Africa's jurisdiction include 13 million square kilometers of territorial seas and EEZs and more than 6.5 million square kilometers of the extended continental shelf. Africa's maritime diversity is rich in fisheries, marine minerals, marine biological resources, attractive tourism sites, important port and sea lanes and a variety of ecosystem services. Apparently, the marine resources are believed to be underutilized in Africa so far, given the potential. For the current purpose, we have chosen three sectors such as marine minerals, marine biological resources and coastal tourism as indicative sectors for Africa's strong ocean resource base.

Marine Minerals

Africa is a blessed region as far as minerals are concerned. The region not only exports raw and value-added mineral products to many countries of the world but also attracts a large chunk of global mineral investments. Both land-based and marine minerals have been part of Africa's development process. In recent years, the growing awareness of the potential of the region's minerals and the policy actions by the countries to tap this potential has intensified. In 2009, African leaders adopted the Africa Mining Vision (AMV) which provided a comprehensive and integrated approach towards harnessing African mineral resources for economic development. Mineral-based linkages were given emphasis and for the first time the mining sector was strategically placed in the national and regional development agenda. Amidst public concerns and civil society protests over inadequate returns to the region from supply of raw minerals to the rest of the world, mineral extraction has been continuing and structural bottlenecks have remained in the mining industry.

The policy options that were envisaged for realization of AMV included eliminating trade and market access constraints, enhancing access to capital, addressing poor infrastructure, measures to improve technical skills and training and exploring value-added processing within the region. Barring integration with other sectors of economy, AMV proposed the spatial development approach for coordinated development and exploitation of mining industry in Africa. Several mineral resource-based development corridors were identified to unleash the stranded potential in other sectors such as agriculture and agro-processing, forestry and wood processing, and tourism. UNECA (2011) believes that in view of increasing demand for minerals by China and India and rising investment in mining industry in Africa, Africa can convert this opportunity to promote cooperation with other countries than fuelling competition among investors. Figure 6.2 illustrates the resource-based development corridors in Africa which is very much in line with the spirit of development cooperation that AAGC postulates.

The Africa Mining Vision is for the entire mining sector including the deep sea mining. In the Blue Economy framework, African countries have embarked on several initiatives to optimally utilise ocean resources. Minerals on the seabed in the continental shelf and EEZs of Africa such as polymetallic nodules, polymetallic sulphides and cobalt-rich crusts are being viewed as potential resources for Africa's growth and development. With respect to mapping of mineral reserves in Africa there is no properly maintained consolidated database as such; however, certain indicative estimates reveal the extent of stock of minerals on the seabed. Table 6.2 indicates

Fig. 6.2 Mineral Resource-Based Development Corridors in Africa. *Source* UNECA (2011)

Table 6.2 Offshore Resources Held within Continental Shelf

Country	Manganese (Tonne)	Copper (Tonne)	Nickel (Tonne)	Cobalt (Tonne)	Oil & Gas (BBOE)	Gas Hydrates (BBOE)
Somalia	12,133,799	485,352	242,676	485	15	3
Kenya	1,039,100	41,564	10,391	10	0.3	1
Tanzania	284,052	11,362	55,681	56	25	5
Mozambique	24,651,000	616,290	16,290	616	0.5	1
South Africa	27,731,850	924,315	1,109,130	616	0.2	0
Namibia	55,586,750	7,782,145	924,315	370	0.005	0
Angola	12,565,228	753, 914	1256	1257	0.1	0.1

Source Kimani (2015)
Note BBOE = Billion Barrels of Oil Equivalent

that there are huge reserves of manganese, copper and nickel in the African oceans which could trigger rapid growth in regional Blue Economy. In addition, diamond reserves in South Africa and Namibia offer substantial revenue gains for these two countries.

In addition, the diamond placer deposits in South Africa and Namibia could be to the tune of 1.1 million carrats worth of US$3.5 billion. Despite enormous stock of marine minerals, Africa has not participated in deep sea mining except South Africa. While International Seabed authority (ISA) has sanctioned licenses to several mining companies across the world, it is disproportionately low for Africa. Only three contracts from South Africa by Diamond Fields, Green Flash Trading 251 and Green Flash Trading 257 have got licenses from ISA for prospecting of phosphorites (Miller et al. 2018). With advancement of exploration technology and flows of foreign investment to the region, deep sea mining could be a sunrise sector for Africa's Blue Economy (Benkenstein 2014). As part of AMV, African countries have been quite sensitized for exploiting mineral deposits in their continental shelf. In addition, most of the regional coastal economies have explored their entitlement to outer continental shelf by submitting proposals and making necessary national legislative changes. Further, African Centres of Excellence have been proposed to increase marine science research and enhance access to geo-spatial and geo-scientific information (ISA 2017).

Marine Biological Resources

Africa is known to the world for its natural resources, be it on land or in oceans. Marine biodiversity in Africa is rich, diversified and possesses enormous economic value. In general, the region's marine ecosystem includes fisheries, coral reefs, mangroves, wetlands, lakes, etc. Particularly, the Indian Ocean Rim countries in the Western

Table 6.3 Species of Marine Fish, Seaweeds and Seabirds (No.)

Country	Seaweeds	Fish	Marine Birds
Somalia	211	846	71
Kenya	403	662	70
Tanzania	428	784	44
Mozambique	243	1734	63
South Africa	850	2000	94

Source Griffiths (2005)

Indian Ocean including Kenya, Tanzania, Somalia, Mozambique and South Africa have substantive coverage of mangrove forests, coral reefs and seagrass beds along with fishery resources. While regional aggregates present a significant stock, there are variations in the country endowment of fish species. For instance, fisheries resources in Somalia are under-exploited due to infrastructure and capacity gaps and fishing is mostly subsistence-oriented. As far as trade is concerned, Somalia mainly exports Lobsters to the United Arab Emirates. Likewise, Kenya has a stock of few fish species mostly demersal fishes in its waters. There is a vibrant commercial prawn industry in Kenya and a good number of maritime protected areas. There are more than 500 fish species in Tanzania; of which reef fishes are the most important category. The mangroves in Tanzania have been exposed to various misuses and inappropriate fishing practices leading to faster depletion of fishery stock. A large portion of fishing in Mozambique is artisanal and people depend on fishing for livelihood. South Africa, one of the largest economies in the African region, is gifted with several economically valuable fish species including the small pelagic fishes. Table 6.3 presents the marine flora and fauna with the distribution of species of fish, seaweeds and seabirds in the Western Indian Ocean countries.

There are other studies that provide supplementary information on the endowment of fish species in the African region. Regardless of the number of species what is important is the knowledge about various taxonomic groups in the region. Griffiths (2005) observes that the marine biodiversity in Africa covers much larger and economically valuable taxonomic groups than the known groups such as flowering plants, seaweeds, all vertebrate groups, mollusca and crustacean. The Western Indian Ocean region is characterized by coral reefs and associated ecosystems and provides livelihood to the coastal communities. Coastal population in Kenya, Mozambique and Tanzania exert pressure on coastal and marine habitats and resources. Although scientific knowledge about marine biodiversity is considerably advanced now than the past, the African marine biodiversity could unleash much greater potential than what is known as of now (Abdellahi et al 2014). The mangrove forest coverage in Africa is extensive and contributes to the resilience of the region. The mangrove forest areas in different countries in the region are mentioned in Table 6.4.

Besides fish, wetlands, coral reefs and seaweeds, the African countries have a good number of medicinal plants. From time to time, UNEP has mapped the availability of medicinal plants in different countries. The diversity and richness of such precious

Table 6.4 Distribution of Mangrove Forests in Africa

Country	Area (Greater than 10,000 ha)
Nigeria	3,238,000
Mozambique	500,000
Madagascar	325,560
Cameroon	306,000
Gabon	250,000
Sierra Leone	250,000
Guinea-Bissau	100,000–236,000
Guinea	223,000–285,000
Senegal	169,000
Tanzania	115,500–133,540
Angola	110,000

Source Shumway (1999)

resources can be assessed by looking at the varieties of medicinal plants available in Tanzania. Tanzania and other countries in that tropical environment might have a similar kind of marine biodiversity for medicinal uses.

Table 6.5 shows the various plant species that have medicinal properties and the human ailments that these plants address. A cursory look indicates the manifold purposes and cures that these plants potentially offer to mankind. Undoubtedly, the knowledge about the medicinal plants in the whole African region would provide a rich treasure of knowledge.

Coastal Tourism

The African coastal economies spread over four different oceans present a unique attraction for international tourists. Africa's natural forests, zoos, parks, flora and fauna have been major drivers of the tourism industry in the region. While Africa continues to remain a major destination country for global tourists, new and emerging tastes of the global tourists are observed in recent years. As per the World Tourism Organisation (2013), while Sun, Sea and Sand (SSS) continues to be a prime motivation for tourists, new trends are observed such as the interest for nature and wildlife watching, preference for clean locations and quality of the environment, interest in cultural attributes, cruise tourism, marine and coastal recreational facilities. It provides opportunities to intertwine tourism with the conservation of marine habitats (Tonazzini et al 2019; Honey and Krantz 2007). Nelson (2007) observes a judicious mix of conservation and business promotion tourism products under the coastal tourism programme. In that sense, the prospects for ecotourism in eastern

Table 6.5 Medicinal Plants of Tanzanian Coastal Forests

Affliction	Species	Local Name	Part	Preparation
Snake bite	Vismia orientalis	Mtunokitumbi	Bark	Rub bark on affected areas
Prolonged menstruation	Diospyros natalensis	Kibombo	Root	Boil root with chicken meat and drink broth
Sunburn and fever	Monanthotaxis buchananii	Mpeki	Leaf	Grind leaves, mix with water and drink
Ulcers	Eriosema nutans	Mwiru	Roots	Make tea from roots and drink
Washing new-born child	Oxyanthus sp.	Mgwaza	Roots	Boil roots and use warm infusion
Womb, postnatal pain	Chlorophytum sparsiflorum	Naliwe	Leaf	Crush leaves in water and drink
Fever in infants	Microcoelia exilis	Nyandege	Leaf	Put leaf in cold water and bath baby in it
Gonorrhoea	Ancylobotrys modestus	Mkula	Root	Soak root in water and drink
Malaria	Dichrostachys cinerea	Kikulagembe	Twigs	Burn twigs and inhale smoke
Childbirth, sex determination	Schlechterina mitostemmatoi	Namwana	Stem	Make tea from stem bottom for male, stem top for female
Hernia	Alchornea laxiflora	Kitwatwa	Leaf	Chew leaves to stop pain

Source UNEP (2001)

Africa can be tapped as locally beneficial ecotourism products are relatively undeveloped. Moreover, the economic benefits emanating from rising tourism activity do not translate into local incentives as local people have less share in the overall pie of tourism income (Rogerson et al. 2018). If it happens, then local people can become harbinger of conservation of marine ecosystems within the framework of marine tourism promotion.

Africa has witnessed a steady rise in the number of international tourist arrivals. Since no separate statistics are available for coastal tourism and destinations, the aggregate performance of tourism sector as a whole reflects the trend in coastal tourism as well. In 2019, Africa received 73 million tourists registering 6 percent annual growth from various destinations (Fig. 6.3). It results in US$38 billion tourism receipts and US$520 per tourist arrival. While there is a modest rise in the number of tourists visiting the region, per arrival earnings have actually fallen over time; from US$640 in 2014 to US$520 in 2019. However, future projections indicate optimistic trends for Africa. As per Signe (2018) consumer spending on tourism, hospitality, and recreation in Africa is projected to reach about US$261.77 billion by 2030 marking US$137.87 billion rise over 2015. Although it does not appear unrealistic, certainly

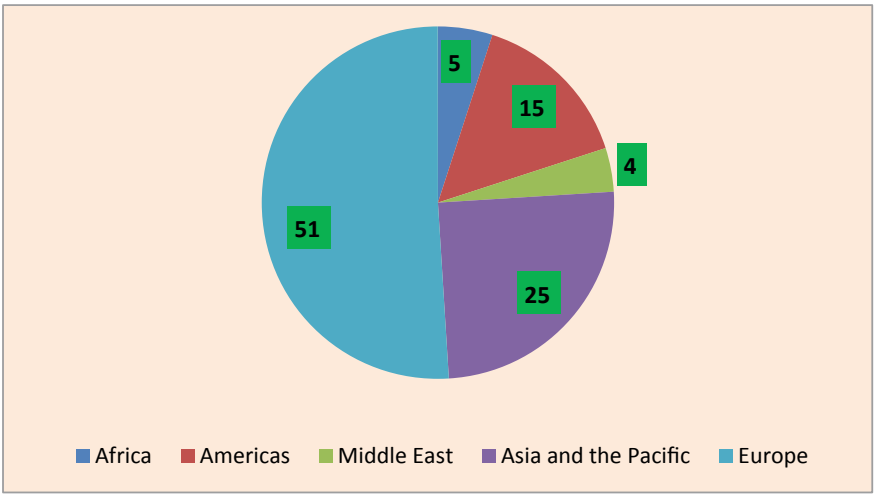

Fig. 6.3 Regional Distribution of International Tourist Arrivals *Source* Authors based on data from World Tourism Organisation

policy predictability and investments in enabling infrastructure, foreign investments in hospitality sectors and adherence to Blue Economy principles can promote coastal tourism in the continent.

A look at the regional share of Africa shows that the potential of Africa in tourism is yet to be harnessed efficiently. In terms of geographical area and the coverage of forests, oceans and inland biodiversity, the share of Africa in tourist arrivals appears to be underestimated. Continued thrust on Blue Economy as a paradigm of development could possibly help realize that goal some years down the line.

The projections for the region's tourism potential are feasible as the stock of hospitality infrastructure is growing steadily. Foreign investments in Africa's tourism sector are increasing which signal significant improvement in the overall business environment in the region especially tourism and hospitality sector competitiveness indicators. The major global hotel chains have ambitious plans in Africa. Table 6.6 indicates the trends of their investments in Africa.

Trends in Fish Production and Trade

Ocean is the largest habitat for fish and aquatic living organisms including aquatic animals, aquatic products such as coral, sponge, mother pearl, etc. and aquatic plants. It provides food, income, employment and livelihood to millions in both Africa and Asia. It is an important source of livelihood for indigenous fishing communities in both the continents. There is a growing demand for fish and fish products in different parts of the world. It is equally demanded in developed and developing countries

Table 6.6 Top Hotel Chains Investing in Africa, 2018

Hotel Chain	Hotels under Construction (No.)	Rooms under Construction (No.)
Hilton	24	6687
Radisson Blu	25	5473
Marriott	16	3438
Fairmont	8	2977
Hilton Garden Inn	17	2818
Sheraton	9	2013
Four Points	13	2006
Swissotel	4	1961
Melia Hotels & Resorts	6	1935
Golden Tulip	9	1662

Source Signe (2018)

for a variety of reasons including food security, nutritional security and livelihood security. There is significant progress in fishing techniques for which the productivity of fish production has been improving over the years. On account of advancement in fishing technologies, quality of fish production and fish processing of raw fish are improving over time. One of the important reasons for the improvement in the production of fish production, particularly in the aquaculture sector, is on account of better pricing in the domestic and international markets. Fishermen are getting better remuneration for fish cultivation and catching. Fish prices has been volatile in major traditional markets such as the US, the EU and Japan.

In recent years a new market is emerging fast spanning over the continents of Asia and Africa, mostly in the specific regions of East Africa, West Asia, South Asia, and Southeast Asia. Emergence of the new markets has culminated in maintaining the price stability of the fishery sector in the global market. With the expansion of new markets in the Afro-Asian region, there is increased demand for high-valued processed fish in the region. There are studies indicating that the rise of trade is closely associated with the depletion of species in different parts of the world. As a precautionary measure, there is enforcement of trade restrictions by national authorities to arrest overfishing. Despite these production restricting laws enforced by different national authorities, industrial fishing is expanding at the cost of subsistence fishing.

During the last five decades, the volume of capture fishing has been declining and the production gap has been more than compensated by aquaculture. There has been prolonged discussion in the WTO to prohibit fishery subsidy in order to contain industrial fishing and hence, depletion of endangered fish species. Through AAGC, there could be a trans-continental consensus on some of the pressing issues such as fishery subsidy, moratorium on catching of fishes, curb on industrial fishing, support for subsistence fishing, etc. Fishing sector is becoming important due to unsustainable practices of fishing leading to depletion of species, rise of aquaculture, promotion of value chain, etc. In the Afro-Asian region, Indian Ocean Rim Association (IORA)

Table 6.7 Fish Production Trends in the Afro-Asian Region

ISSCAAP Division	Actual	Share (%)		CAGR (%)	
	(2014) (Thousand Tonnes)	(2003–07)	(2008–14)	(2002/04–2006/08)	(2006/08–2012/14)
Div 1 (Freshwater)	3360	15	17.4	4.8	2.7
Div 2 (Diadromous)	588	2.5	2.9	2.7	2.7
Div 3 (Marine)	13,426	71.5	68.5	−0.6	1.4
Div 4 (Crustaceans)	1340	6.8	6.9	0.3	1
Div 5 (Molluscs)	861	3.6	3.6	−2.7	3.6
Div 7 (Misc. Aquatic Animals)	127	0.5	0.8	10	1.1
Div 8 (Misc. Aquatic Animal Products)	18	0.1	0.1	0.7	1.8
Div 9 (Aquatic Plants)	120	0.4	0.3	−16.1	8.4

Source Authors Estimation based on Fishstat, FAO
Note International Standard Statistical Classification for Aquatic Animals and Plants (ISSCAAP) is developed by FAO to classify fishery species for production analysis

is emerging as a major regional grouping of 22 member states (Chaturvedi 2017; Mohanty and Dash 2012). Structure of fish production in the rim states of IORA is presented in Table 6.7.

Production of aquatic animals and plants in the region increased manifold over the last decade. Total production including both capture and aquaculture grew from 20 thousand tonnes in 2000 to 37 thousand tonnes in 2012 at growth rate of 4 percent during 2003–07 and 5.4 percent during 2008–12. Much of this rise was attributed to healthy trends in aquaculture production registering consistently high growth throughout the 2000s. Although the effects of global recession on trends in production of fish, other aquatic animals and plants were apparently unclear, the fall in aquaculture output in the post-crisis years (2008–12) was relatively sharper than the boom period (2003–07) (Table 6.7). Relative to the boom period, growth rate for aquaculture slipped by 2 percent during 2008–12 for finfish, shellfish and miscellaneous aquatic animal species whereas it was seemingly abrupt for aquatic plants. Production is also supported by fishery trade. There is rising intra-regional trade within the region. It is highly robust in the seafood sector as compared to other

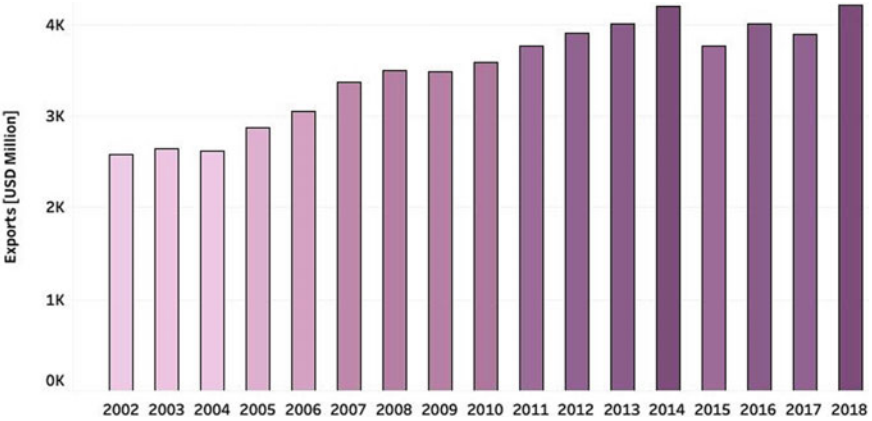

Fig. 6.4 Africa's Fishery Exports to the world. *Source* Authors estimation of fishery exports using UN Comtrade, online extracted on 3 July, 2020 *Note* Fishery sector includes all HS products in Chap. 3. Africa is represented in the figure by 46 countries

minor traded sectors such as aquatic products and aquatic plants. Trade in aquatic plants has incentivised small farmers to cultivate varieties of seaweeds for the edible purpose.

As far as trade is concerned, African coastal economies are actively engaged in fish exports and imports with the rest of the world. While imports are necessary for enhancing access to food security and improving a variety of choices for the consumers, exports matter for promotion of Blue Economy in Africa in the form of employment generation, remunerative prices to fish farmers, and ensuring a steady flow of income to the dependent native coastal communities. As depicted in Fig. 6.4, Africa has witnessed a steady rise in fish exports in the 2000s till 2014. Although there was a fall in fish exports during 2015–17, there are symptoms of catching up in 2018. With advanced fish processing technology and facilities, African countries can participate in regional fish value chains and contribute to growth of the fishing industry in the region.

Scope for Asia-Africa Cooperation

As an emerging development paradigm, there is wide scope for cooperation in blue economy among counties in order to maximize welfare of people across the Afro-Asian region. As a credible development strategy, there is a need for sensitizing the relevance of the Blue Economy by canvassing for 'Blue voice' to create public awareness across the region to popularize the relevance of the strategy among people. These efforts would support regional economies in their endeavour to undertake national level integrated survey to assess the potential of their respective Blue

Economy sectors. It may be noted that Blue Economy is not only important for littoral economies but also for landlocked countries. For the last several decades, Maritime Spatial Planning (MSP) has been an important strategy in many littoral economies to minimize the friction of the human interventions through various activities in a damaging environment of the oceans and thus its ecosystem services. Apart from human activities and ocean environment, Blue Economy brings in the third dimension of coastal industrialisation based on ocean resources. The scope of the marine spatial planning has to be expanded to integrate the additional aspect of marine industrialization within the framework of Blue Economy. It requires the sharing of experiences and cooperation between countries to develop these models into specific tangible projects.

Since 2015, developing countries were grappling with several pressing development issues concerning them under the SDGs and several achievable goals were set under SDG-14 to deal with the issues of sustainable ocean management. It is important to note that achieving the target of SDG-14 can lay the foundation of Blue Economy in a littoral country but it has to go too far to implement and achieve key objectives of Blue Economy to make it as the driver of economic growth in the long run (RIS 2016). There is a need for working towards evolving a national marine and ocean policy. There should be some mechanism to integrate national policies with the global governance framework. Development of bottom-up marine planning for each economy and participation with the regional economies for integration with the global platform is needed. AAGC could be a key driver of promoting Blue Economy strategy in the region.

It is commonly understood that the twenty-first century belongs to 'Asian Century' and progress recorded in the African continent has been rapid since the beginning of the decade. Despite quick changes in the global regimes during the last two decades, several economies in Asia and Africa continue to remain on a high growth trajectory and their Blue Economy policies are likely to inject more growth dynamism to alleviate poverty and facilitate in providing a decent standard of living to people in the region.

Pan-continental Blue Economy policy can be conceptualized for food and nutritional security, employment generation, energy security and several other non-traditional security with sustainable growth through cooperation among the countries. In the Afro-Asian region, high growth of economies has been the hallmark of the century with Blue Economy as driver of growth for many regional countries. As Blue Economy grows faster than other sectors of the economy, cooperation between Asia and Africa in the framework of Blue Economy would take on a high growth path in reducing the development gap and moving towards growth convergence in the region. Afro-Asian region is the hub of global maritime economic and strategic activities. Development Compact approach would fit the Asia-Africa region's collective endeavour towards promoting Blue Economy (Chaturvedi 2016). With spur in economic activities and a large presence of military powers, the Indian Ocean has become a hotbed of potential military conflict. Cooperation among countries in the region may help in reducing military tension in the region and can support endeavours of the countries to maintain sustainable growth in the region. The Blue Economy

framework should be embedded in the framework of regional cooperation of major regional groupings in the Afro-Asian region such as IORA, Indo-Pacific, etc.

There are several sectors in Blue Economy that requires attention of group coordination between regional economies which can only elicit some tangible results in areas like management of the migratory fishery, deep sea fishing, moratorium on fish catch, sea transport, coastal management, preservation of coral reefs, control of pollution by ships, oil spills, etc. On a positive note, potential sectors contributing to Blue Economy are not known to us fully and new emerging sectors are persistently added to the existing stock of knowledge on Blue Economy. Supporting each other in discovering potential of Blue Economy is urgently required in both the continents of Asia and Africa. Moreover, there is no commonly agreed definition of Blue Economy and its associated sectors which are directly and indirectly linked to various economic activities. The US and the EU have already developed their own classification to account for the contribution of various sectors to their economies. AAGC initiative can fill up this gap by formulating an accounting framework for Blue Economy for the region.

For fostering the uninterrupted flow of goods and services, various projects relating to multimodal marine infrastructure for seamless connectivity in Afro-Asian region may be taken up under AAGC. This would support in filling up infrastructural gaps at different segments including sea-ways, river-ways, etc. Trans-continental cooperation is required in various sectors of blue economy. It is necessitated to develop 'Blue technology' in critical areas. Creation of 'Blue Technology' would take economies in the two regions on the path of 'self-reliance' to harness potential of the blue resources. In this regard, experiences of the countries in the region to promote 'Blue SMEs' are paramount in optimally using marine resources. India and Japan have developed intermediate marine technologies for promoting SMEs. In order to reap the benefits of Blue Economy, an overarching trans-continental governance structure may be developed to handle various sectors in a more coherent manner. AAGC initiative with India and Japan can help in developing such a comprehensive governance structure for the region through mutual consultation and creating a quality marine infrastructure for fostering a seamless flow of economic activities in the region.

Conclusion

The Blue Economy presents a credible development paradigm to achieve high growth in a sustainable manner. Africa is emerging as one of the fast-growing continents of the world and adoption of Blue Economy strategy may support the region's economies further in accelerating their growth process. In several regional economies, maritime diversity is rich in fisheries, marine minerals, marine biological resources, tourism sites, port & sea lanes and a variety of ecosystem services. Since most of these countries are richly endowed with minerals, many of them have given priority for the first time to the sectors which are strategically placed in the national

and regional development agenda. Several of these regional coastal economies have explored their entitlement to the outer continental shelf by submitting proposals and making necessary national legislative changes. Scientific knowledge about the marine sector is considerably advanced and the African marine biodiversity could unleash much greater potential than what is known as of now using such knowledge. The acquaintance about the marine medicinal plants in the African region would provide a rich treasure of knowledge.

Country experiences indicate that the Blue Economy grows faster than the rest of the sectors in an economy. When a country manages its marine resources properly, sustainable growth can be achieved in a predictable manner. Both Asia and Africa have witnessed high growth in the present century. These high growth continents would get an opportunity to expedite their growth process further with active support from Blue Economy. The extent of growth contribution varies significantly across countries but it depends upon a country's blue endowments which vary significantly from one country to another. A country has to find its own way to identify its blue resources to estimate the possible contribution of its Blue Economy. As such, there are no 'Stylised facts' about Blue Economy in the existing literature. Empirical examination in the paper could not arrive at any 'Stylised facts' about Blue Economy.

As part of the living sector of the Blue Economy, fishery sector is important for both the continents. Production of the sector is growing, primarily due to high growth in aquaculture. In the seafood sector, the finfish segment is dominated by freshwater and marine fish. Rise of the seafood production is due to both finfish and shellfish. Production of aquatic animals and aquatic products is small in quantity compared to seafood with a moderate level of growth. While the production of aquatic plants is small, its growth performance is robust and expanding during the period of recession. A new market in the fishery sector is emerging in the region. With the emergence of the market, price stability is gradually emerging in the global market. A key feature of the regional market is that intra-regional trade (IRT) in the seafood segment is becoming sturdy. The IRT ratio is small but picking up fast for the aquatic plant since the demand for the sector is skyrocketing during the past decades.

With improved economic conditions of people with the globalisation, preference of people towards ecosystem-based tourism has increased by many folds. New trends are observed such as the interest for nature and wildlife watching, preference for clean locations and quality of the environment, interest in cultural attributes, cruise tourism, marine and coastal recreational facilities. It provides opportunities to intertwine tourism with the conservation of marine habitats.

Align with national initiatives, regional cooperation initiatives inspire the African coastal nations to promote Blue Economy much more vigorously than before, and Blue Economy has been given thrust by African Union and forms a crucial component of Agenda 2063. Africa Integrate Maritime (AIM) strategy also envisages a roadmap for development of the Blue Economy in the region.

Existing literature describes that the twenty-first century is meant for Asia and Africa to demonstrate their growth miracles, and Blue Economy strategy is expected to take them to a greater height in that endeavour. Through regional cooperation in Blue Economy sectors, there could be bigger gains for the region as a whole

than trying it individually in silos. Since the region is already flourishing, there are apprehensions of military conflict in the region for any reason. Regional cooperation would not only minimize the potential threat of regional conflict but also could prepare grounds for rapid growth of the Blue Economy sectors in the region. There could be more sectoral cooperation in diverse areas. India and Japan may evolve a comprehensive governance structure under AAGC through mutual consultation which can help in taking a view on creating quality marine infrastructure in the region.

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Chapter 7
Women in the Economy: An Untapped Resource for Growth in the Asia-Africa Region

Renana Jhabvala

Introduction

Women constitute a major growth potential for the emerging economies in Asia and Africa regions; a valuable resource which, if properly nurtured, can give a strong push, not only to economies but also to societies; creating growth with nurturance and humanity. Women in Asian and African countries have considerable similarity and can easily communicate with one another the distance and language barriers. The communication is often over their shared work, their shared place in the society and their shared experience as mothers. The focus of this paper is to understand and build on the shared similarities for better integration of women into the mainstream economy in these two regions. The communication, linkages and exchange of experiences and resources between women across the Asian-African region would strengthen the position of women in the society leading to greater empowerment and building more robust and resilient societies.

Women Economic Participation and Inclusive Development

Empowering women and reducing gender gaps at work are central to the Sustainable Development Goals. Yet in both Asia and Africa, women face considerable gaps in terms of their participation in the economy. Men's work participation in the countries in the region is generally higher than that of women, although there exist considerable differences among the countries. The women's average work participation rate in South-East Asia and sub-Saharan Africa is high at over 60 percent, and in South Asia and North Africa, it is low around 25 percent (UNHLP). In both Asia and

R. Jhabvala (✉)
President, SEWA Bharat, Delhi, India

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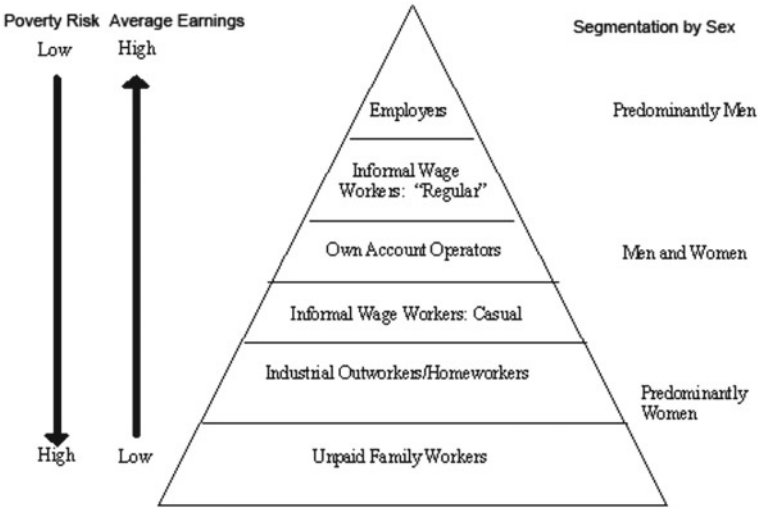

Fig. 7.1 Hierarchy of earnings and poverty risk by employment status and sex Chen, M et al; Progress of the World's Women 2005: Women, Work and Poverty. Published by UNWomen, 2005

Africa, a majority of women work in the informal economy. And in South Asia, non-agriculture informal employment for women is over 75 percent, and in East Asia, it is over 60 percent.[1] Similarly, in the sub-Saharan Africa, informal employment in all the reported countries accounts for a significant share in total non-agricultural employment; ranging from 33 percent in South Africa to 82 percent in Mali. Even in a developed country, like Japan, informal employment for both men and women is just under 40 percent[2]. The women in the informal economy are more vulnerable to exploitation. They are often paid less compared to men and are mostly engaged in low-skill and less-dignified occupations than their male peers (Fig. 7.1).

If the excluded women, the uncounted women, the women who are in the informal economy, those being paid lesser than men, those with a few opportunities, are brought into the economy as equal partners, given access to skills, technology and finance, economies across the world would begin to grow at the unprecedented rate. According to the Mckinsey Global Institute, there would be 27 percent more potential for economic growth if women are fully included in the economy. The potential contribution of women to economy would even be higher for the South Asia and Africa. The potential for growth would increase by 47 percent in North Africa and 60 percent in India if women are fully integrated into the economy. In the East Asian region, the emergence of the fast-growing economies during the 1990s and early 2000s was through all-round inclusion of women in the workforce. As women transformed their roles from rural home makers to factory workers and self-employed entrepreneurs, the economies grew at an extraordinary pace.

Inclusion of women fully in the economy would increase employment, income and growth and will make the economy more humane too. Women spend their income

in nurturing their families and communities. Women spend more on family needs on food, housing, clothing and education, while a larger percentage of men's income is used for their personal needs. Furthermore, when it comes to public spending, women approve public spending related to home needs such as water, sanitation and safety, as compared to men, preferring to larger infrastructure. In other words, including women in the economy would lead to faster growth, more employment and income, and better nurturance of family and society.

Women Empowerment for Sustainable and Innovative Development

The Vision for Asia Africa Growth Corridor envisages partnership for a sustainable and innovative development. It would be through enhancement of capacities and skills and through people-to-people partnerships. This is especially relevant in view of the fact that the governments of India and Japan have similar objectives regarding empowerment of women, increasing their economic opportunities and entrepreneurship, and access to financial and digital inclusion. The Government of Japan has consistently supported these goals in the Asian and African regions directly through South–South as well as triangular projects. It has also supported and harmonized efforts of multilateral agencies. Similarly, the Government of India has supported projects for empowerment of women in different regions including South Asia, East Asia and East Africa. A joint effort of both the Governments would result in increased gender equality and empowerment of women in both Asian and African regions.

How can this be achieved? There is a considerable experience in the Asian region on strengthening women's economic inclusion. According to the UN High Level Panel for Economic Empowerment of Women, there are seven drivers for women's economic empowerment. They are as follows.

1. Resolving adverse social norms and promoting positive role models.
2. Ensuring legal protection and reforming discriminatory laws and regulations.
3. Recognizing, reducing and redistributing unpaid work and care.
4. Building assets–digital, financial and property.
5. Changing business culture and practice.
6. Improving public sector practices in employment and procurement.
7. Strengthening visibility, collective voice and representation.

Many of these drivers have been used in Asian countries and have proved effective in promoting economic empowerment of women, especially the ones at the base of the pyramid. A joint partnership between governments, businesses and organizations of women themselves can have a strong synergetic impact.

Financial Inclusion as Driver of Growth

Financial inclusion has broadly been recognized as a critical factor in reducing poverty and achieving inclusive economic growth. Financial inclusion is not an end in itself, but a means to an end—there is growing evidence that it benefits individuals particularly women substantially. Studies have indicated that when people participate in the financial system, they are able to start better and expand their businesses, invest in education, manage risk and absorb financial shocks. Access to accounts and to savings and payment mechanisms increases savings, empowers women and boosts productive investment and consumption. Access to credit also has positive effects on the consumption, employment status, income, and on some aspects of mental health and outlook. The benefits go beyond individuals. Greater access to financial services for both individuals and firms may help reduce income inequality and accelerate economic growth (World Bank Financial Inclusion Index[3]).

Women empowerment through financial inclusion and entrepreneurship has a history of more than three decades in the Asian region. However, more recently, countries in Africa have been successful in bringing women together into groups and in various forms of both financial inclusion and livelihood through entrepreneurship. Over the years, there have been attempts to improve women's financial inclusion. In India, the first such attempt was in 1976 with SEWA Bank in Ahmadabad, India; a bank of women in the informal economy which flourished and even at present offers a variety of financial services, ranging from savings and loans to insurance and pensions. This was followed by the establishment of Grameen Bank in Bangladesh in 1983. The model of Grameen Bank has provided an excellent way of reaching out to the poor women worldwide.

In India, the self-help group movement was started by a group of NGOs, most notably Myrada, and was soon adopted as a policy by the government. The self-help groups have been quite remarkable as these entities encouraged women to come together, to save and eventually to take loans. Although many loans are for the much-needed consumption, but a sizeable number is used for small businesses. In the rural areas, the microcredit is primarily for livestock, farming, small shops, etc., whereas in urban areas, those were mainly for trade or for small manufacturing. In India, women in almost all rural areas and in many urban areas tend to take part in some self-help groups or Joint Liability Groups (JLGs). Many states have actively promoted these groups to form federations, and many government programmes are channelized through them. The Kudumshree in Kerala is a good example of such a development.

The success of the Indian and Bangladeshi micro-finance and self-help groups was noticeable as it was built upon a traditional form of group savings and lending existing for centuries.[4] These traditional groups or Rotating Saving and Credit Associations (ROSCAS) have been incorporated into the modern financial systems as Joint Liability Groups (JLGs) or Self Help Groups (SHGs) and have become a source of financial inclusion for poor women. In many African countries, similar

savings groups are being operated traditionally by women. Some of these are traditional ROSCAS and some are "funeral groups" where women save money to use for funerals and death duties, which are quite expensive. In many African countries, there have been attempts to build on these traditional forms of self-help and to increase financial inclusion. Financial inclusion in African countries is somewhat lower than the rest of the world. Middle East and North Africa (MENA) has the lowest percentage of adults with a formal account (18 percent) and of poor people with formal access to financial services (9 percent). In sub-Saharan Africa, there is large heterogeneity among countries and sub-regions, and overall, only 24 percent of the adult population has bank accounts at formal financial institutions—half of the global average (CGAP).

However, in recent times, in many of these countries, governments have been playing a crucial role in increasing financial access through social funds or support to micro-finance industry. Through the efforts of governments as well as international agencies, there has been considerable change in women's financial inclusion in the last decade, leading to their empowerment. Women's World Banking (WWB) is one such an example of a global non-profit, devoted to providing more low-income women access to financial tools and resources required to build security and prosperity. The WWB network consists of a large number of financial institutions catering mainly to informal sector and poor people (of which over 60 percent are women).

It seems that the world is ready for an explosion of financial inclusion in countries where traditionally formal finance institutions were limited. As far as women are concerned, experiences in Asia can serve as a guiding tool to speed up women's inclusion in Africa. At the same time, there are many innovative experiences from Africa, such as digital financial inclusion in Kenya, which can serve as learning for enhancing financial inclusion in India and other Asian countries.

Women Enterprises and Trade

Self-employment is a way of life for women in many of the Asian and African countries. In rural areas, small farms and livestock are primarily handled by women, and in urban areas, women tend to be home-based producers and artisans, street vendors and may undertake other activities in the informal economy. Moreover, women enterprises tend to be smaller and unproductive owing to lack of finance, skills, technology and steady markets. There are many excellent examples in both Asia and Africa where inputs of skills and technology have helped women to grow their enterprises and become more productive. Since most of these enterprises start off with a low capital, an effective way to bring them into the market and move them up the value chain is to help them to create women's cooperatives or joint companies in the form of social enterprises. Large businesses in the country as well as international businesses can be helped by procuring from these women enterprises. Procurement of orders is often a challenge for small women entrepreneurs as well

as for the social enterprises created by them. By reaching out to such small women enterprises, larger businesses can definitely help women to grow their businesses.

A growing number of large companies, driven by businesses, community impact and reputation interests, are working to build economic opportunities for women in their supply chains and to provide market-specific trainings and other supports to women, who are often in partnership with the public sector. Some of these companies are members of WeConnect International, a non-profit organization, which identifies, certifies and provides training to women-owned enterprises and connects them with qualified local and multinational companies. Trade within the region to give access to markets that can benefit women-run small enterprises is another growth area. Inter-country and inter-regional markets need to be developed for women to reach out and earn a better living. The "Sabahs" or South Asia Business Association of Home-based Workers are good example of how women artisans, food producers and other types of home-based workers have built social enterprises in their own countries. The Sabahs have learnt from one another and from the SEWA Trade Facilitation Centres in India to become successful enterprises while providing employment to hundreds of women. Furthermore, the Sabahs have traded their products across borders in exhibitions and through mutual trade agreements to enhance their markets. Similar experiments have been undertaken between Indian and African women groups. Weaver women from Ethiopia organized by women group, WISE, benefitted from design inputs by Indian designers and participated in Indian exhibitions where Ethiopian cotton goods were highly appreciated which led to increase in their outputs and earnings.

Support for Care Work

One of the reasons why women tend to be left out of the economy and face less earnings and low productivity is that they shoulder the greater responsibility of taking care of the family; especially children. Most governments do not support childcare programmes for the small children. The Integrated Child Development Services (ICDS), the major childcare programme in India, is more of nutrition and pre-school programme rather than a childcare programme to support the working mothers.

Access to affordable high-quality childcare and pre-primary services and education for children is a challenge confronting women around the world, especially in developing countries and for poor families in high-income countries. Public investment in childcare services would boost women's labour force participation, create paid jobs in the care sector, generate long-term social benefits for the development of children, for educational attainment and skill levels of future workers and citizens, and help spare time of older children in the family (typically girls) in developing countries; confirmed by evaluations in Guatemala and Colombia (UNHLP).

The Way Forward

As mentioned above, there are a large number of notable experiences of women empowerment and participation in India, as well as in other Asian countries, which can be tapped to achieve socio-economic growth across continents through women's economic power. Both the Asian and African countries can share their experiences for higher and productive participation of women in the economy. At the same time, the unique experiences from African countries can be shared in the Asian region. A dedicated Fund may be created with an aim to build a network of women's economic organizations in order to support each other through knowledge sharing as well as through possible avenues of trade.

In particular, such a fund should have the following objectives:

- Reach to women in the informal sector and rural economy.
- Address financial inclusion through self-help groups and other forms of collective organization.
- Intervene to build women's entrepreneurship, preferably through social enterprises.
- Support women in care work while they participate in economic activities.
- Build networks of experience- sharing, knowledge- sharing and mutual trade across continents of Asia and Africa.

The fund should be available to the following:

- Organizations in India which have documented long-standing experience in women's economic empowerment, financial inclusion or enterprise building and have links with African countries for sharing experiences.
- Organizations in African countries wishing to learn from experiences in Asia to build women economic groups or institutions.
- Organizations in Asia or Africa with the capability of building Asia-Africa networks for knowledge sharing or mutual trade.

Endnotes

1. With Thailand as an exception at 42 percent.
2. In OECD countries, informal employment tends to be defined differently and includes part-time workers and temporary workers, not covered by employers' social security as well as own-account self-employed.
3. See World Bank.
4. These groups have different names in different parts of India, called "bisi" in Gujarat, "committee" in many Northern States.

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Part III
Capacity Building and Skill Development

Chapter 8
Skill Development in Africa: Scope for India–Japan Cooperation

Manmohan Agarwal

Introduction

Recent growth dynamism in Africa has been substantial compared to the trends in the 1980s and the 1990s. In particular, the period 2001–07, before the onset of the financial crisis, was a golden period for growth in developing countries and also in sub-Saharan Africa (SSA) in comparison with the 1980s and 1990s. Annual growth in per capita income in SSA averaged 3.7 percent during 2001–07 as compared to the near decline in the earlier two decades. In 2008, the year of the financial crisis, per capita growth was 1.5 percent; still substantially higher than in regions, other than Asia. The SSA countries continued to maintain a high export to GDP ratio even though there was some decline after the crisis as was true for other developing country regions. The region, however, remained predominantly a primary exporter as the share of manufacturing in total merchandise exports was only a fifth. In the previous decades, manufacturing sector grew slowly, partly hampered by lack of skills in the labour force, leading to inadequate job creation. Consequently, the level of unemployment in the region continued to remain high, resulting in considerable migration, particularly of the skilled personnel to other parts of the world, thereby accentuating skill shortage. Sub-Saharan Africa showed the highest emigration rate globally, 1.5 percent, against a global average of around 1 percent, according to the UN Population Statistics.

Governments in Africa, aware of the need to reduce the skill gap, have started introducing various training programmes so that the people passing out of schools and training institutions are productively employed. There are, however, a number of challenges with the implementation of the programmes. In view of resource constraints and capacity gaps, international collaboration can help address the skill shortage and raise employability of the local workforce. India, Japan and other countries can

M. Agarwal (✉)
Adjunct Senior Fellow & Retired Professor, RIS & Jawaharlal Nehru University, New Delhi, India
e-mail: manmohan44@gmail.com

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be potential development partners in this drive. Japan has robust capacity building programmes in the country and has successfully raised skills in other countries also. And India is a recipient and supplier of various training initiatives. The complementarities between Indian and Japanese initiatives on skill development can be suitably utilized to supplement efforts of African countries for improving effectiveness of training programmes in Africa.

Employment Situation and Skills Gaps

As mentioned above, the economic performance of the sub-Saharan economies has been remarkable compared to the past. However, this growth momentum is necessarily rooted in sustained industrialization. Although manufacturing growth has picked up in the recent past, the employment situation has not been commensurate with GDP growth. In fact, the share of manufacturing in GDP has gone down in the recent years accompanied by a fall in rate of gross capital formation. Savings have to be properly mobilized for improving growth performance and job creation. Proper skilling and training would raise labour productivity and contribute to revival of manufacturing in Africa.

While the overall economic performance of SSA economies reflects symptoms of growth rebound, the employment situation has not been impressive. Africa needs to emphasize more on job creation as the incidence of unemployment is very high in the continent (ILO 2016). Furthermore, as per the ILO Global Employment Trends, the SSA has the highest rate of vulnerable employment[1] in the world (77.4 percent in 2014), (ILO 2014).[2] Moreover, youth unemployment in SSA has remained stubbornly high; declining from 13.4 percent in 1991–2000 to only 12.3 percent during 2001–2012 despite noticeable growth (ILO 2013). Overall, the proportion of working-age population in paid employment in the region is low—only 13.7 percent. Further, the informal economy in the region contributes 50–80 percent of GDP; 60–80 of employment; and 90 percent of new jobs. Further, 90 percent of the estimated workers in both rural and urban areas are engaged in informal jobs only. High unemployment rate is perhaps the reason for large-scale migration from the SSA region. SSA has the highest emigration rate globally, i.e. 1.5 percent, against a global average of around 1 percent (ILO 2016).

Surprisingly, the SSA countries have not yet successfully reaped the benefits of the demographic dividend. Half of the region's population is under the age of 25 years. The challenge is to transform this youth bulge into an opportunity. In view of huge skill gap in Africa, there is a real danger of maintaining a large untrained workforce which would become a demographic drag. To benefit from demographic dividend, Africa would need a strong policy for bridging skills gaps. Actions to bridge this gap have to be sector-specific and industry-oriented. The training should enable workers to become fit for jobs in manufacturing and other industrial sectors. At the same time, it is equally necessary to ensure that the trained workforce is absorbed in the region rather than migrating from the region. Skill development is also necessary

as low wages may not be sufficient to attract adequate investments. If productive manufacturing has to grow, an enhanced skill base would be required.

Skill development and training has to take into account the growing pace of robotizaton of manufacturing industries. The focus should be to develop sectors having the least threat of automation at least in the short to medium term. The target sectors could include garment, agro and food processing and leather that provide the greatest scope for employment generation in the African economies. The role of services sectors in job creation needs worth mention particularly for providing employment to low- and semi-skilled people. As per an estimate, with an investment of INR one million, 78 jobs can be created in service sectors, while in manufacturing, there can only be 45. To reap the harvest from the prospective demographic dividend, the youth needs better skills. In addition, improvements in the quality of education, nutrition and basic health care would be necessary.

Skill Formation Systems

Usually, skill formation happens at two stages. One, through formal education at the school level or college level and another, specific job skills acquired through on-the-job training. There could be a third level that may interface between these two—a level that provides more broad skills adaptable to a wide variety of industries without providing skills appropriate to a particular industry or sector. This could be through vocational training in general schools, vocational training in special institutions or an apprentice system, though the last one is more likely to be industry-specific and even perhaps company-specific.

Technical and Vocational Education and Training (TVET) is a challenge in all African countries as enrolment rate is low. Enrolment rate in the formal TVET at the secondary level is 5 percent or less.[3] Traditionally, in Africa, as in most parts of the world, TVETs are associated with the formal schooling system. There has been a rapid expansion of enrolments in primary education. But literacy among the youth of age between 5 and 14 is only 70 percent, indicating one of the major problems with the educational system. Enrolments in the secondary school have increased only to 42 percent, much lower than the level reached in East Asia (World Development Indicators).

Slow increase in secondary school enrolments implies less spread of vocational education. Bottlenecks in the growth of vocational training are due to a perception that it is inferior to general education because of its limited employment opportunities and small increments in pay after training. This is probably due to the fact that the formal technical and vocational education and training system is mostly viewed as a qualification rather than a means of acquiring skills and competencies for successful integration into the world of work. On the other hand, the non-formal and informal skills training sectors (including traditional apprenticeship) are poorly equipped, only marginally linked to the formal sector (if at all), and lack channels for upward mobility and professional development. The large informal sector provides limited

opportunities for people from vocational training institutes. Further, lack of proper government support makes it more difficult to popularize vocational training and its acceptance in the job market.[4]

Many countries have introduced programmes to encourage training and/or employment of local workforce. Over half of African youth do not have access to secondary education, and technical and vocational training opportunities are even scarcer. Governments and international institutions are paying increasing attention to TVET (it is one of the eight priority areas in the African Union's Second Decade of Education, 2006–2015). But despite an increase in the number of African students in TVET, only a few governments in Africa are able to finance TVET at a level needed for supporting quality training. The demand is enormous. Three out of five unemployed in sub-Saharan Africa are young people, mostly surviving in the informal economy.[5]

There were attempts to make formal TVET providers more responsive to preparation for (self) employment in the informal sector. At the most extreme (for instance, in the case of the Malawi Entrepreneurship Development Institute), technical colleges were transformed into entrepreneurship development institutes. However, it was far more common for additions to be made to college programmes. In some projects, this took the form of additional inputs after the conventional college programme. In some other programmes, it was the addition of elements to the existing curricula such as the requirement to write a business plan as an extra examination subject.

The result has been a model of TVET that reflects historical accretion of institutions far better than a clear vision of what TVET is and what its mandate(s) should be. The core function of the TVET in promoting employment chances remains evident across the region and has resulted in a growing focus on the needs for radical curricular overhaul and better relationships with the world of work. The role of the informal economy, however, is not well-addressed in most countries. While the informal economy, including unorganized MSMEs across manufacturing and service sectors, may account for a significant share of GDP in Africa, it is still a low productivity sector. The Indian experience shows that productivity of registered manufacturing is relatively high. But an unorganized sector with a low skill base may adversely affect manufacturing.

For enhancing employability or moving up the value chain skill development is the key. The need is to evolve a National Skills Qualification Framework (NSQF) across all institutions of learning in such a way that it promotes transferability of skills and allows a learner to grow from academics to skills into jobs. Further, skill education can be made compulsory at schools and colleges. Improving employability is possible only if the industry–academia gap is bridged as industry is the biggest stakeholder in the skills ecosystem. In some countries, skill development is completely driven by industry. In addition, creating mechanisms for preferential hiring of skilled workers for large-scale infrastructure projects can be thought of as well. The demand for unskilled workers is declining in the overseas job market, and the future belongs to skilled workers, preferably with multiple skills. It is, therefore, important for Africa to upgrade skills of its young workforce to meet the future demand in the overseas

job market. More specifically, it is imperative to build capability of women workers with industry-specific skills and accredited certification.

Along with the formal sector, skilling of workers in the informal sector is critical for ensuring sustained supply of trained workforce and higher domestic absorption. Labour productivity is considerably higher in the formal sector than in the informal sector. But providing skills needed in the formal sector without the availability of such jobs, which is unfortunately the reality, would only lead to more emigration. Raising skills in the informal sector would raise income and may lead to increased demand, including for the formal sector goods.

Besides national initiatives, it is imperative to utilize the accumulated wisdom on skill generation and development in other countries. This is even highly important for the participating countries in the growth corridor approach as each country can leverage its comparative advantage for maximizing industrial production, trade and investment. The lessons from India and Japan need worth mentioning in this context.

Japan

Japan has considerable experience in skill formation and capacity building both within the country and in other countries. While skill formation in Japan is predominantly enterprise-based and mostly imparted through on-the-job training, the role of large private training providers outside the enterprise is increasing (Curtain 1994). Furthermore, the results of the National Skill Tests are being used extensively. The provision of public vocational training in Japan depends on whether a worker is employed or unemployed. Graduates from school are offered mainly long-term training, lasting for one to two years, whereas unemployed workers mostly receive training of six months or less and employed workers primarily receive short-term training of only a few days. Vocational training is offered free of charge to those who often change occupations (and currently unemployed) and are physically disabled, and the cost of texts and other materials is borne by trainees. Some training courses for this category are entrusted to private sector education and training institutions. Training subjects taught at the public human resource development facilities are mostly vocational and technical subjects for industries, such as manufacturing and construction, but among the trainings commissioned to the private sector, courses are on various subjects like computers and social welfare. Short-term vocational training for the employed is also given based on the needs of employers or employers' associations of the region. The Polytechnic University, a public vocational capacity development university, provides training and education to educate public vocational training instructors and for developing textbooks for that purpose.

Further, career development promotion grants assist employers with a part of the wages and costs incurred when providing education, training and other services to workers so that career enhancement within the companies is encouraged. Skill training systems are transferred successfully as shown in a study on the automobile sector in Thailand. The Korean and Taiwanese experience again underscores

efficacy of Japanese capacity building. The two countries had higher educational enrolments when the Japanese governed these territories than in the case of any other countries. Furthermore, because economic development in East Asia was very often tied to outsourcing by Japanese companies, these companies often provided training facilities for their workers.

India

India also has considerable experience as a recipient and as provider of skill transfers. India received considerable help from a number of governments for setting up the Indian Institutes of Technologies. India participated in the Colombo Plan, both as a recipient and as a provider of technical assistance. The private sector in India has also built up substantial capacity over time. For instance, Tatas with considerable help from the Government of Singapore has trained twice as many people as Tatas required for its precision engineering plant so that a pipeline of skills was built up for a whole industry rather than meeting the needs of a single company (Ansu and Tan 2008).

Like Japan and India, the best practices from other partner countries can be suitably replicated in the Asian and African economies. In particular, Japan, India and other partners can combine their expertise with the efforts of the African economies to step up training efforts in Africa.

Africa

Like Asia, the African countries have gained experience in dealing with skill development of their workforce. For instance, public-funded institutions in South Africa teach vocational skills to young people. The South African Government also provides subsidy to employers, thereby transferring part of the cost of worker's wages from employers to the government. Such individuals usually stay at their jobs long after their subsidies end. The *National Rural Youth Service Corps* in South Africa hire young people for rural community projects after training them. Despite reasonable increase in the skill level of the participants, there are still significant skill gaps in the country and in the whole African region. However, institutions are often geographically inaccessible and do not teach skills demanded by the private sector and students, and also do not provide strong placement services.[6]

Similarly, Kenya implemented *Jua Kali Voucher Program*, which subsidized 90 percent of job-training expenses at specialized training centres for eligible unemployed individuals. The programme allowed for competition for attracting trainees and has been responsive to student demands and was attuned to job opportunities. However, training programmes in Uganda were considered inadequate because they were not sufficiently geared to the skill needs of the trainees, often treating school graduates and college graduates equally. In brief, programmes often ran into problems

because of inadequate selection criterion. Vouchers could offset this problem. Also often, little attention was paid to the quality of jobs. The need for skilled workers in the face of inadequate public facilities resulted in the expansion of non-formal TVET. Non-formal TVET predominates in most countries but is often highly fragmented and operates in a non-coherent way. Different non-governmental organizations have taken up the job of providing training to the youth, to make them fit for employment in the informal job market (de Largentaye 2009).

In Africa, some public–private partnerships are underway to introduce job-related trainings designed to meet short-term needs of employers. The Ghana Industrial Skills Development Centre (GISDC) was launched in 2005 to provide training in mechanical, electrical and process engineering. Mozambique has set up an ICT technicians' training programme, which features a tripartite arrangement involving the government, an existing public training centre and industry representatives on the institution's decision-making body. In Nigeria, the government has started to process certification and accreditation of private providers if they meet certain criteria (including a governance structure that included industry representation) to qualify as Vocational Enterprise Institutions. Public–private partnerships can be helpful in providing relevant skills. As mentioned above, voucher schemes have been successful. Youths are provided by the government with vouchers. They can use them to enrol in any training facility, whether public or private sector.

The experience of Indian NGOs in training and skilling may provide some pointers to action in Africa (See Box 1).

Box 1: Grassroot Interventions Bring Wonders to Local Communities

In addition to government and industry initiatives for skill development, grassroot level interventions by NGOs and development agencies have demonstrated a huge potential in creating capacities and expanding livelihood choices of local people. Instead of module-based training packages, the interventions are aimed at imparting specific technical, managerial, financial and marketing skills to local men and women to lift them out of poverty and explore productive employment opportunities. Notably, three student-led initiatives proved highly effective in meeting the specific skills of women self-help groups (SHGs) in Uttar Pradesh. A group of management students from the Institute of Management Technology, Ghaziabad, India, helped 15 women of a self-help group of village Galand in Uttar Pradesh to bring value addition to their product and nurture their knowledge of local market and credit facilities. By exposing the women to related or new skill sets, the group was able to make new products like paper plates, paper bags and cotton wicks along with the core product, diyas (candles). This small low-cost initiative resulted in getting the poor women a sustainable source of livelihood by empowering them to be self-reliant in a patriarchal set-up.

Likewise, another two groups of students from the Institute of Management Technology, Ghaziabad, brought dramatic changes in the lives of the village

of Nandpur in Uttar Pradesh and in Bhatti Mines slum in South Delhi. The team helped identify a product, petticoat, for the women of Nandpur who did not have any other occupation for livelihood except working as agricultural labourers. The nature of assistance offered by the student team was in the form of understanding the types of products demanded in the local market, the necessary skills to make those products, establishing market linkages and the overall appetite for nurturing the business idea. With this small intervention, the student team not only influenced them to engage in productive self-employment activities but also in promoting entrepreneurship among them. The story of the women of Bhatti Mines in Sanjay Colony in South Delhi is another example of skill building and entrepreneurship. The students facilitated the women of the slum to get training in weaving and tailoring, develop locally demanded products and build marketing acumen. It helped migrant women get a decent source of livelihood and dignity of life.

Pratham, an Indian NGO, the "Teaching-at-the-Right-Level" is an innovative initiative that has proved to be highly effective in raising children's basic reading and arithmetic in a short period of time and at a low cost. The Pratham model has a rigorous evaluation system carried out by the Abdul Jameel Poverty Action Lab of the MIT in the USA. Impressed with the project outcome, the representatives of Japan International Cooperation Agency (JICA) working for basic education projects in Africa reached out to Pratham and spent time in rural Uttar Pradesh for gaining complete understanding of Pratham's instructional work. Based on this preparatory visit, a workshop was organized in July 2017 in New Delhi for members of JICA supporting projects in Niger, Madagascar, Burkina Faso and Ghana. The JICA teams shared details of the work they would do in Africa. As a result of these exchanges, it is hoped that Pratham will experiment with some of the community-based models that JICA projects are implementing in Africa and that the JICA projects may supplement their current work in Africa with elements of Pratham's model for basic learning. Interventions of this nature can be replicated in the participating countries in Asia and Africa.

Sources: Compiled from IMT (2017), I'm the Change: Parables from a Developing World, New Delhi & Pratham's unpublished notes shared with RIS.

Innovative Ways to Raise Skill Levels

Training is expensive. If a person leaves a job, then the training may be wasted. Since companies no longer provide a long period of employment, they are reluctant to bear expenses of training. This problem can be somewhat resolved by having clusters of

similar skill using industries since if a company loses a worker to another firm, it is as likely to gain a worker. Furthermore, a worker who has lost a job is more likely to find another one. Industrial policy can play a role in making skill training more effective and efficient.

In Germany, the apprenticeship system is well established; as almost 60 percent follow the apprenticeship route. FDI in African countries could be encouraged to develop manufacturing facilities in those countries and in providing requisite training facilities. The apprenticeship system could be adapted to the needs of African countries to ensure a relatively smooth transition into employment and stop emigration. Students in high school could work part time in a company. On graduation from school, they would get a job. Students, if they take advantage of the scheme, must accept a job with the company. The modalities of engagement of those students would have to be worked out.

India already has a large number of programmes to support capacity building in Africa. The scope of those programmes could be expanded from capacity building at the level of policy formation or research or tertiary education to apprenticeships in Indian companies either those operating in Africa or those operating in India. The main industries in East Africa are food processing and textiles. India and Japan have the capability to improve efficiency in these industries and to make them more competitive internationally. Starting from building capacity, the countries should seek to build capacity in industries downstream and upstream in these two sectors. Another area where efforts should concentrate is in the universities. There is a need for reviving the universities in East Africa which were good in education and training in the past. Though they may not be immediately needed to improve capabilities in food processing and textiles, they would be needed later as backward linkages are being established. The machine sector in these countries is also very weak. For filling the skill gap in Asia and Africa, it is important to build a proper ecosystem for skill development that would involve institutions from the public as well as the private sector.

The Way Forward

Skill development among the labour force is a key priority in Africa to sustain the growth momentum and to cater to the skill requirements of the new foreign companies. Lessons from innovative training programmes in countries like Kenya, Ghana, Mozambique and Nigeria can be combined with the expertise of India and Japan in capacity building and training in order to make these programmes more responsive to students' demands and more attuned for job opportunities. Both Asian and African countries can participate in these efforts to raise skill levels of local workforce in the Asian and African countries in various sectors and industries including the manufacturing sector. There are lessons to be learned from Africa for improving skill building in the developing countries.

Endnotes

1. Vulnerable employment is defined as unpaid family workers and own-account workers as a percentage of total employment.
2. See Amadou (2014).
3. See MacArthur and Routman (2014).
4. Biavaschi et al. (2012).
5. See Technical and Vocational Education and Training on UNESCO website.
6. Agenda 2063 has laid out an ambitious programme for the development of African countries and implementing it would require skilled people. But each country would draw up its own development strategies and plans so the requirement for skills would vary between countries. The draft 10 year Plan will provide specific details, and the skill training activities of the Indo-Japanese programme will have to mesh with that.

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Chapter 9
Human Resource Development: The Scope for Potential Cooperation Between Asia and Africa

Santosh Mehrotra

Introduction

In the nearly four decades that have elapsed since the start of the structural adjustment process in sub-Saharan Africa (SSA) in 1980, there have been little structural transformations in these economies. These economies were then and still have remained highly commodity dependent both in structure of production and exports (Mehrotra and Panchamukhi 1987; Rodrik 2008). This means that there was very little growth in domestic manufacturing. Per capita income seemingly resumed growth in the early 2000s after two lost decades of growth in 1980s and 1990s; but still the growth of industry was very limited as GDP growth was driven by commodity prices rising in the international market. SSA exporters benefitted from it, which was visible in GDP growth.

The implication of this pattern of development is that the future can only be bright for the growing youthful population of SSA if they were absorbed in labour-intensive manufacturing; as a consequence, the productivity of the whole economy would rise, wages would increase in agriculture as the labour market would tighten over time and surplus labour could be absorbed in non-agricultural activities. The point is that job growth in non-agricultural sectors is critical not only for GDP growth, but also to alleviate poverty. Without sustained job growth, peaceful conditions would be compromised; and without peace, there would be little growth, as little investment would materialize.

SSA presently has the distinction of having the youngest population in the world, with two-thirds of its population being under the age of 25 years; by comparison, in India, which is regarded as also one of the youngest populations in the world, half of its population is under the 25 years. By 2030, SSA would be home to more than one-quarter of the world's under-25-year-old population. As this young population—the best educated and globally connected the continent has ever had—enters the

S. Mehrotra (✉)
Professor, Jawaharlal Nehru University, New Delhi, India

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world of work, the region would have a demographic opportunity (World Economic Forum 2017). In other words, the SSA would be faced with the prospects of a larger labour force in search for work. In the absence of non-agricultural job growth, those who are getting education would migrate to urban locations in search of jobs; but without formal industry and modern services, there is little prospect for structural transformation of the economy (the rise in share of industry and services in output and employment). This is precisely the process that the Asian and African economies can envision in a growth corridor.

However, in the absence of capacity development of young educated personnel at least up to the secondary level as well as Technical, Vocational Education and Training (TVET) being imparted to them, this goal of structural transformation cannot be realized. That is why this chapter on the skill development requirements in the East and West African sub-regions acquires significance. It examines educational and skill levels of SSA's population; the economic needs of SSA economies to meet requirements of the five-fold priorities identified; discusses areas of India's cooperation with the SSA, past and current, and identifies the uniqueness of India and Japan with regard to skills and human resource development (HRD), and finally, identifies the way forward.

Education and Skills in SSA

For all persons, skill requirements over the life-cycle are of three kinds: foundational skills, transferable skills and vocation or technical skills. Foundational skills are literacy and numeracy capabilities needed for obtaining work that pays well enough to meet daily needs. These skills are the foundation for acquiring the second and third types of skills; hence, completing primary and secondary education of good quality is vital. Transferable skills (also called soft skills) include analysis of problems and reaching for solutions, communicating ideas, being creative, being computer literate, and showing leadership and conscientiousness. Technical and vocational skills require specific technical know-how relevant only to the occupation for which training is imparted.

Among non-specialist scholars, there seems to be a mistaken belief that in projects that would be typical of a growth corridor (e.g. manufacturing, infrastructure), only TVET skills are needed. The fact is that there are many functions in manufacturing or infrastructure development that require general academic education of good quality, not necessarily TVET skills. Similarly, a lot of infrastructure project-related skills are not technical at all, but are more in the nature of services (e.g. finance, accounting, customer relations, repair management), which require only good quality foundational skills, excellent soft skills and some technical skills. Therefore, a skill development strategy that meets human resource (HR) requirements must build upon excellent foundational skills.

Millions in the SSA, however, lack foundational skills, and yet they are already in the labour market. The adult literacy rate (15 years and over) in the SSA in 2015 was

66 percent (13 percentage points lower than in India during the same year), while the youth (15–24 years) literacy rate was 75 percent. There is very little emphasis in schools on transferable skills, and enrolment for technical and vocational skills is negligible at the secondary level. Lower secondary (i.e. grade 6–8) adjusted net enrolment rate in the SSA in 2014 was 66 percent, while total gross secondary enrolment (lower and upper) was 65 percent. That means that at least a third of all 15–17 year old are not even reaching the upper secondary education; this is important as it is only at that level vocational education is introduced in any country. It is, therefore, not unexpected that vocational education/training enrolment is extremely limited.

Sub-Saharan Africa has among the lowest number of years of formal education in its older generation. Of course, this data does not account for the alternative modes of learning such as informal apprenticeship, learning on job and traditional knowledge system providing learning and training opportunities to millions of working-age Africans with little formal, curriculum-based education. In younger cohorts, extensive investment in education has improved vastly the composition of education and skills in the region. As documented in the African Union's recently adopted Continental Education Strategy for Africa 2016–2025, the overall pyramid of African education shows a fairly broad base at 79 percent adjusted net enrolment in primary school (up from 59 percent little more than a decade ago)—equivalent to 144 million African school-age children, who at present access primary education. India has reached primary net enrolment rate of 97 percent in 2007. However, enrolment at the secondary level in SSA drops to 50 percent, and only 7 percent of the young people is enrolled in tertiary education (World Economic Forum 2017). By comparison, India has 85 percent gross enrolment rate at secondary level (classes 9–10) in 2015 and over 25 percent at tertiary level (Mehrotra 2016).

If current demographic and education trends continue, the continent's working-age population is set to increase by two-thirds by 2030; from 370 million adults in 2010 to over 600 million in 2030, and the share of this population with at least a secondary education is likely to increase from 36 percent in 2010 to 52 percent in 2030. In higher education, enrolment of students in the Science, Technology, Engineering and Mathematics (STEM) lags behind other fields such as economics, business, law and social sciences (AfDB 2013). Access to TVET is limited in sub-Saharan Africa, which would be a constraint for projects in infrastructure or manufacturing for any development partnership between Asia and Africa. In fact, the African Development Bank (AFDB), in its Human Capital Strategy covering 2014–18 has pointed out that the poor education of workers in Africa is a major impediment to trade, production and competitiveness.

Nevertheless, for those who are a part of the continent's high-skilled white-collar workforce, the data (based on a survey of LinkedIn members) revealed that 35 percent of LinkedIn's tertiary-educated African members were from Business, Administration and Law degree-holders complemented by qualification in law, business management, banking, finance, marketing and human resources. The same data suggests the availability of a fairly large STEM and information and communication technology (ICT) talent pool, comprising nearly 40 percent of the LinkedIn

sample, accounting for specialization in Engineering, Manufacturing and Construction (16 percent), Information and Communication Technologies (11 percent), and Natural Sciences, Mathematics and Statistics (11 percent). Within Engineering, Manufacturing and Construction, more than half of the graduates were from electrical, civil, mechanical or chemical engineering, or architecture and urban design. Among those with ICT qualification, the large majority specialized in computer science or in developing and maintaining information system and databases. A much smaller cohort studied hardware and software engineering, and only a selected few were from the field of artificial intelligence. And of those who specialized in Natural Sciences, Mathematics and Statistics, more than half had studied basic sciences (biology, chemistry or mathematics), while more than one among six were from applied fields such as biochemistry, bioinformatics, neuroscience or environmental science.

The important point is that (as the WEF 2017 study notes) the education system has not been responsive adequately to the skill needs of the labour market. Thus, so many university graduates have remained unemployed, while African countries continue to face shortage of skilled labour. The result is that millions of educated young people over decades have migrated abroad. A growth corridor across Asia and Africa would possibly help stop this distress migration. Hence, the focus of this growth corridor should be on creating jobs for nationals in the corridor projects envisaged, and the technical skill investment needs to be according to demand.

In other words, *when the detailed project reports (DPRs) for massive infrastructure-industrial corridors are prepared, there will have to be a requirement upon companies mandated to prepare the DPRs to prepare HR development plans—which are specific to the project, and hence must be demand-based.* A supply-driven, donor-financed skill development plan must not be prepared; otherwise, it would run a huge risk of wasted resources. Like Sustainable Development Goals (SDGs), partner countries of the growth corridor would aim to dramatically expand higher education including technical education but without concomitant industrial and agricultural development, the millions of new graduates are going to be merely emigration fodder. In other words, what it indicates is that DPRs are required to perform the function of articulating skills (especially transferable skills and vocational skills) requirements of each project.[1]

The African Development Bank finds that Africa needs about 4 million more teachers and 1–2 million more health workers. Addressing shortages at all levels is a key development priority for many African countries. Insufficient secondary enrolment (an area in which JICA is already providing financial assistance to many African countries), particularly in science and technology, constrains efforts to augment access to higher education and TVET and to have teachers needed for quality primary education. Health workers including nurses, midwives, medical technicians, biomedical engineers and experts in e-health and m-health are also in short supply; a result of poor incentives and migration (African Development Bank 2013).

As in global studies on the future of jobs, which are being impacted by the rapid automation and changes in technology, the key findings from the WEF (2017) based on the new data (including from LinkedIn) are as follows:

- On an average, sub-Saharan Africa exhibits a high-skilled employment share of just 6 percent as contrast to a global average of 24 percent. Only in Nigeria, Namibia and South Africa, the share is close to the global average; in no other country in SSA does it get close to 10 percent. Some of the most common types of higher-skilled employment in the continent include business analysts, school teachers and academics, commercial bankers, accountants, marketing and operation specialists, customer-service specialists, advertising professionals, information technology workers and software and app developers, according to LinkedIn's data.
- Employers across the region identify inadequately skilled workforce as the major constraint to their businesses, including 41 percent of firms in Tanzania and 30 percent in Kenya, while others indicate less pressure (9 percent in South Africa and 6 percent in Nigeria). However, this pattern may worsen across the region in future. In South Africa alone, 39 percent of the core skills required across occupations would be wholly different by 2020.
- While it is predicted that 41 percent of all work activities in South Africa are susceptible to automation, that share is 44 percent in Ethiopia, 46 percent in Nigeria and 52 percent in Kenya. This susceptibility is likely to be moderated by comparatively low labour costs and may be offset by job creation. Despite this window of opportunity, the region's capacity to adapt to further job disruption is a concern.
- Often this skill instability stems from the fact that many jobs in the region are preferring use of digital technologies. Average ICT intensity of jobs in South Africa has increased by 26 percent over the last decade, by 6.7 percent in all formal sector employments in Ghana and 18.4 percent in Kenya.
- According to the analysis in partnership with LinkedIn, at present trending professions on the continent include creative industries, food technologists, 3D designers, data centre workers and care, education and health workers. In the longer term, there is strong job-growth potential in hard and soft infrastructures, green jobs, ICT sector and through the new work formats.
- The greatest long-term benefits of ICT-intensive jobs in the region are likely to be not in the lower-skilled delivery of digital products or services but in digital design, creation and engineering. To build a pipeline of future skills, Africa's educators should design future-ready curricula encouraging critical thinking, creativity and emotional intelligence as well as should accelerate acquisition of digital and STEM skills to match the way people would work and collaborate in the Fourth Industrial Revolution.
- The World Economic Forum's Human Capital Index, which measures the extent to which countries and economies optimize their human capital through education and skill development and their deployment throughout their life course, finds that sub-Saharan Africa, on an average, captures only 55 percent of its full human capital potential, compared to a global average of 65 percent, ranging from 67–63 percent in Mauritius, Ghana and South Africa to only 49–44 percent in Mali, Nigeria and Chad.[2]

The data shows that to prepare for the future of work, the region must expand its high-skilled talent pool by developing future-ready curricula with particular emphasis on STEM education; increasing digital fluency and ICT literacy across the population; providing robust and respected technical and vocational education; and by creating a culture of life-long learning, including provision of adult training and upskilling infrastructure.[3] By 2030, the continent's working-age population is set to increase by two-thirds, from 370 million adults in 2010 to over 600 million in 2030. As 15–20 million increasingly well-educated young people are expected to join African workforce every year for the next three decades, a delivery ecosystem for quality jobs—and future skills to match—would be imperative for fully leveraging the continent's demographic dividend. The World Economic Forum's analysis also finds that the region's capacity to adapt to the requirements of future jobs—measured by assessing the quality and extent of its education and staff training systems, post-basic education attainment and breadth of skills—relative to the region's exposure to these future trends (measured by assessing the impact of latest technologies, local economic diversification and complexity, employee productivity and unemployment) leave a little space for complacency. While a number of African economies are relatively less exposed to technologically driven labour market disruptions, this picture is changing rapidly. Urgent efforts for closing the continent's skills gap are a must.

Priorities for Development Partnership in Human Resources Development

Over the last decade, six of the ten fastest-growing economies in the world are from Africa, which is set to double the size of their economy by 2030 if these trends continue. Income levels and complexity of the local economic activity are increasing concurrently from a comparatively low base, including among many of Africa's most populous countries, such as Nigeria, Ethiopia, South Africa, Tanzania, Kenya and Uganda. South Africa, Mauritius, Senegal and Kenya are the economies of the region with the highest degree of diversification and complexity.

Sectoral priorities for the AAGC partners (in the absence of better sources of skill-gap data) should be driven by the priorities indicated by the African Development Bank in consultation with the African governments (AfDB 2014). The AfDB has identified following five High Priorities for African development:

- Power Africa (electricity),
- Feed Africa (agriculture),
- Industrialize Africa (infrastructure, mining and manufacture),
- Integrate Africa (encourage intra-regional trade) and
- Improve the quality of life for the people of Africa (human resource development, including skills).

There are skill gaps in each of these five areas, as has already been indicated. Formal sector unemployment rates are often high—including among recent secondary school and university graduates—in countries as diverse as South Africa, Nigeria, Mozambique and Senegal. While formal sector employment did grow in sub-Saharan Africa over the past two decades, the job growth was not commensurate with population growth, resulting in fewer opportunities in the formal labour market for many of Africa's young school and university graduates. In addition, a sizeable number of Africans continue to work in an informal economy; on family farms and in urban self-employment—usually the sectors where skills of the newly secondary or tertiary educated are least value-adding, and particularly in rural areas, where they often aspire least to work. This limited success in capitalizing on its existing education investment is the main cause of the region's relatively poor performance on the World Economic Forum's Human Capital Index.

At the same time, a large number of African employers cite inadequately skilled workforce as a major constraint to business expansion. This points to a double bind—mismatch between the number of educated young people seeking jobs and availability of formal, high-quality jobs and not having young people adequately trained for such roles. Closer dialogue is required between education providers and industry needs to align and optimize region's demand and supply for skills. The continent's employers and educators need better tools to enable them to have better understanding of new and emerging skills requirement of the labour markets. Some of the priorities for forging development partnership among India, Japan and other Asian and African countries are discussed below.

Focus on Small and Medium Enterprises for Quality Job Growth and Skilling

Employment in Africa in the formal sector is mostly in smaller-sized firms having limited resources to invest in upskilling and re-skilling. In the poorer economies of the SSA, the share of total employment accounted for by small firms (employing less than 20 workers) could be anywhere between 20 and 50 percent of all workers. However, in Namibia or South Africa, the share was under 10 percent; in such economies with slightly bigger firms (with 20–99 workers), the share was much bigger (say in the range of 25 percent of total employment) than in poorer economies (World Bank database). The share of employees in the enterprises employing more than 250 workers was quite small in SSA. Firms which were employing more than 1000 employees, the share was even smaller, except in Lesotho, Malawi, Cameroon, Madagascar, Kenya, Senegal, Gabon, South Africa and Mauritius, where such firms may account for 20 percent of the total employment. Given that India has considerable experience in supporting SMEs (as does Japan); this is an area of possible support for HRD and skill development that the AAGC partners should focus on in the countries where the economic corridor is to be built.

Potential Growth Sectors for Skill Development

Manufacturing production in the sub-Saharan Africa more than doubled during the decade 2004–14 [according to ODI London (2016)], dispelling the myth that the sector is in long-term decline. While the share of manufacturing in the GDP had fallen from 19 percent in 1975 to 11 percent in 2014, it still grew faster than the global average of 3.5 percent annually, from $73 billion in 2005 to $157 billion in 2014. At the same time, manufacturing exports doubled from $50 billion in 2005 to more than $100 billion in 2014, while many countries observed an increase in Foreign Direct Investment (FDI). This process can be strengthened along the growth corridor.

As per ODI London (Balchin et al. 2016), SSA countries are increasingly exporting manufactures to one another, with 34 percent of the total SSA manufacturing exports in 2014 from 20 percent in 2005, although countries in Asia have also become much more important destinations. This trend can be strengthened to create industrial and infrastructure corridors. In addition to manufactures, infrastructure would be another sector needing skilled people. Between 1998 and 2007, spending on African infrastructure rose at a compound annual rate of 17 percent—up from $3 billion in 1998 to $12 billion in 2008, significantly outstripping growth of global infrastructure investment. This growth was driven largely by increased funding from non-OECD governments–particularly China's, which provided 77 percent of it in 2007.

Despite GDP growth, there is unevenness in infrastructure in Africa; behind the unevenness is the huge variation in the size of African economies, economic volatility, political stability, and quality of logistics, healthcare and skills. Almost three-quarters of these countries do not have GDP large enough to sustain projects of more than $100 million (a comparatively small budget for, say, a port, an airport, a major road or a power project). Similarly, quality of roads and density of populations vary considerably. Fifteen African countries are landlocked, and African transport costs are up to four times higher than those of the developed world, upsetting importation of equipment and materials.

Nevertheless, Indian firms have been investing in infrastructure projects. Ongoing projects are IL & FS Transportation Networks alongside Elsamex SA (a Spanish joint venture) in an Ethiopian road project worth $223 million; and Tata Power's commissioning of two 60 MW units at its 12 MW Itezhi Tezhi hydropower project in Zambia in February 2017. Energy sector is another focal point for Indian companies for their expansion strategy in the region. Two Indian firms, Bharat Heavy Electrical Ltd and Angelique International Ltd., are to build a $128 million hydropower plant for Zimbabwe Power Company (ZPC) to generate 30 MW of electricity.

While Indian companies are ready to partner with Africa, the poor quality of infrastructure, especially in the rural areas, makes that a difficult proposition. This also affects trade within the region as well as the trade with other nations. In case of lack of direct physical connectivity, huge costs are incurred by citizens just to get connected to cities within African borders, which affect competitiveness of African

businesses and its attraction as an investment destination. The largest deficit in Africa is in the energy sector, which is acute in low-income countries. Electricity coverage ranges from 68 percent in the urban areas to only 23 percent in the rural areas. Power demand is expected to grow at 93 percent in the next few years (CII, 2017). The next sector in need of attention is roads and railways. Even though roads carry about 80 percent of goods and 90 percent of passengers, almost 50 percent of the roads are still unpaved; and less than 15 percent of people have access to all-weather roads. There is 84,000 km of rail network, but their maintenance and upkeep have suffered and need urgent attention. There are 64 ports in Africa, but the connectivity from them to the hinterland through road and air is inadequate. The ICT sector is growing at about 7 percent with mobile phone market being the second largest in the world. In the water resources segment, only 60 percent of African citizens have access to improved water sources and only 28 percent to improved sanitation; largely owing to the paucity of funds for water and sanitation which clock a dismal 0.1 percent of GDP (CII 2017).

Sub-Saharan Africa is gifted with a young population, mostly under the age of 25 years constituting two-thirds of its population. Such a young workforce along with opportunities in industry and modern services can enable structural transformation of the African economies. However, in the absence of capacity development of youth at least up to the level of secondary education or Vocational Education and Training (VET), this goal of structural transformation cannot be realized. There has been a mismatch between the current education system and the skill requirements of the labour market in Africa. While most of the African countries face shortage of labour, many university graduates have remained unemployed. In that sense, the focus of the Asia Africa Growth Corridor should be to invest in skill enhancement apart from creating jobs through investment in corridor projects. India has been providing training and education through ITEC and tele-education services. Likewise, Japan has been supporting human resource development through JICA. Such initiatives for providing training and vocational education have to be leveraged to create the centres of excellence and pre-employment training institutions in African countries which, in turn, would address the skill gap in the region.

For building industrial corridors, infrastructure development and expansion of skilled people would be required. In this respect, India and Japan collaboration can be invaluable. Africa's mining sector presents a paradox: although the continent is strongly endowed with mineral resources, mining has not been a consistent engine of economic development, hoped by people in many countries (Mckinsey 2017). Furthermore, infrastructure constraints often hinder development: many bulk mineral deposits require multibillion-dollar investments in rail and port facilities to allow ore or semi-processed minerals to reach the markets. Such investment decisions are not taken lightly, especially by less stable countries, where the rule of law and security of tenure are not necessarily guaranteed.

Not surprising that of the five largest global diversified mining companies, only one has a major share of its production in Africa. As a result, junior mining companies and major ones focusing on diamonds and precious metals have played a significant role in developing the continent's resources. In recent years, new players such as

Chinese and Indian companies have entered the scene, but a few projects have been developed to the point of production. Observers expect a demand for major mined commodities to grow strongly in the next 10–20 years to support increased urbanization and infrastructure build-out in China, and emergence of India's middle class. Africa, given its share of global resources, should play a part in meeting that demand.

So mining is another sector in which HRD development would be critical, and the India–Japan collaboration can play a role in Africa. India is a major mining country, with all kinds of major and mining minerals, and hence has plenty of expertise in the field. In recent years, oil production has grown more rapidly in Africa than in any other region. What's more, the oil and gas sector is a foundational element of economic growth for the continent, as 19 African countries are significant producers. This accounts for a significant part of their revenues and represents a prime mover for employment, domestic power development, and, in many cases, infrastructural development (for instance, schools, hospitals and roads). Production of deep-water oil would continue to grow (in the Gulf of Guinea, for example), while onshore gas and a new-resource development in emerging East African hydrocarbon producers (such as Uganda) are expected to become other main engines for growth (Mckinsey 2010).

Nigeria has oil reserves of 37.7 billion barrels, and its daily production is 2.2 million barrels per day, and is touted as the largest oil producer in Africa and 11th largest in the world. However, even at their full capacity, Nigeria's four refineries produce only about 10 million litres of petrol while local consumption is 35 million litres per day. Thus, despite good reserves, Nigeria is also bound to import petroleum products. A similar scenario highlights the gas sector as Nigeria's role in global LNG supply has dropped to 7 percent from 10 percent in the past, owing to lack of investments. Therefore, India can help Nigeria overcome this constraint by technological support as India also imports oil from Nigeria.

Powering Africa

Countries with an electrification rate of less than 80 percent of the population consistently suffer from reduced GDP per capita. The only countries that have an electrification rate of less than 80 percent with GDP per capita greater than $3500 are those with significant natural resources such as Angola, Botswana and Gabon. But even they fall well short of economic prosperity. Whether people can access electricity, and if so, how much they are able to consume (consumption) are the two most important metrics indicating the degree to which the power sector supports national development. Intensifying India's ongoing cooperation in Africa in developing renewable energy generation including solar, wind, hydro, geo-thermal and bio-mass along with building power transmission systems would be a natural progression to achieve the targets set forth. India is looking at Africa for growth in the primary energy sector for its growing economy, and India also needs to diversify its suppliers and energy sources.

Funding in Africa is a key challenge (CII 2017). As per the UN estimates, of the 34 of the least developed countries in the globe, 31 heavily indebted countries are in Africa, and in the last three to four years, dampening of oil and commodity prices indicates that private sector investments have reduced significantly. This means the government would have to fill gaps in infrastructure development and the PPP model has to be strengthened. There is also the need for African countries to make their projects "bankable", and given that project preparation capacity is said to be lacking in many sub-Saharan countries, that is why collaboration in project development, knowledge-sharing and financial partnerships with countries like India become critical and crucial, more so for attracting private investment. The India–Japan initiative can help build these capacities, as India in particular has developed considerable expertise in the area. Japan has already proposed to strengthen cooperation in this sector between Japan and India, which are big importers of LNG.

India's Trade and Investment in Africa

The trends in India–Africa trade relations are strong. Bilateral trade has risen by around fivefold from $11.9 billion in 2005–06 to $56.7 billion in 2015–16. The rapid growth in bilateral trade is because both Indian and African governments have systematically brought down barriers to seamless trade flows by dismantling various tariff and non-tariff barriers. India has steadily opened up its markets to African exports. Africa's trade surplus with India has increased rapidly, albeit driven in large part by a narrow range of suppliers and commodities. At present, India's exports to Africa have increased almost fourfold from $7 billion in 2005–06 to $25 billion in 2015–16, thereby accounting for 9.5 percent share in India's total exports. India's imports from Africa, on the other hand, have increased by nearly sevenfold from $4.9 billion in 2005–06 to $31.7 billion in 2015–16, thereby accounting for 8.3 percent share in India's total imports. As a result, India's trade deficit with Africa stood at $6.6 billion in 2015–16, from a surplus of $2.1 billion in 2005–06 (CII 2017).

There is a clear policy direction in India to expand ties with Africa. To enhance India's trade with Africa, the Government of India had launched an integrated programme 'Focus Africa' from the year 2002–03. The main objective of the programme was to increase interactions between two regions by identifying areas of bilateral trade and investment. The 'Focus Africa' programme has been extended to cover the entire African continent. Many African nations have also benefited from India's Duty Free Tariff Preference scheme for the LDCs, which was implemented in 2008.

African countries are receiving strong investment interest from India due to their high-growth markets and mineral rich reserves. In fact, India is one of the largest investors in Africa. As per the FDI markets database, India was the fifth largest country investing in Africa, after the USA, UK, France and UAE; with manufacturing activities accounting for more than half of the FDI inflows from India to Africa. Indian Multi-National Enterprises (MNEs) have ventured into both greenfield and

brownfield investments, spanning telecommunications, energy, computer services, power and automobile sector among others. A large proportion of Indian FDI has also gone into the infrastructure sector in Africa. Several of these investments are actually tied to the investments made in the extraction sector. In other cases, Indian construction and telecommunication companies have made investments in Africa to build roads, ports and telecommunication networks in several African countries. Apart from these, market-seeking FDI from India is also present in Africa. Several auto-industry majors like Tata Motors and Mahindra and Mahindra have investments in Africa.

Broadly, Indian investments in Africa are predominantly resource-seeking, though market-seeking and efficiency-seeking investments are also present. With a view to facilitate and further enhance bilateral trade and commercial relations with countries in Africa, India has rightly placed important policy measures as also institutional frameworks to create an enabling trade and business environment. Major policy initiatives and institutional frameworks include, among others, Focus Africa Programme, India's Duty Free Tariff Preference (DFTP-LDC) Scheme for Least Developed Countries, Pan-African E-Network; India and Pan-African Countries Initiative, IBSA Initiative, Inter-bank cooperation among BRICS members, and India-Africa Forum Summit.

India–Japan Collaboration for Human Resources Development in Africa

In the foregoing paragraphs, a number of sectors in Africa have been identified where growth prospects are high, where HRD for industrial corridors promoted under the AAGC would be necessary. Apart from infrastructure (ports, airports, roads, energy plants), the other identified sectors are manufacturing, mining and oil production and gas sectors. The objective here would be to create manufacturing centres backed by appropriate human resource development for increasing value addition (for mining, oil, gas) within the relevant African countries, partly for domestic consumption and partly for export. The African Development Bank (AfDB) Human Capital Strategy (2014–18) indicates that to support its rapidly changing political and socio-economic development, Africa needs to build skills in traditional professions (teachers, nurses, doctors) and in STEM. The AfDB's Human Capital Strategy has its main area of focus on skills and technology.

India's Strengths in HRD

India's unique selling property while offering technical assistance to other developing countries derives from multiple sources. India has had a long history of

providing technical assistance in human resources development to a large number of African countries through its International Technical and Economic Cooperation (ITEC) programme under which full financing is provided to staff and students for attending training courses in India. Till date, over 24,000 scholarships across 300 training courses conducted at 60 training institutions have been utilized by the African nationals in IT, renewable energy, agriculture, marine and aeronautical engineering, marine hydrography, SME entrepreneurship, rural development, parliamentary affairs, logistics and management, climate change adaptation, disaster management, cybersecurity, forensic sciences, and defence and security, among others.

So far, tele-education services provided by different Indian Universities, such as Indira Gandhi National Open University (IGNOU), New Delhi; University of Madras, Chennai; University of Delhi, New Delhi; Birla Institute of Technology and Science (BITS), Pilani; and AMITY University, NOIDA, are examples where success has been achieved through persistent policy alignments.

Tele-medicine is another area with huge success in implementation, and where Indian super-specialty hospitals such as All India Institute of Medical Sciences (A.I.I.M.S.), Delhi; ESCORTS Heart Institute and Research Center, New Delhi; Moolchand Hospital, New Delhi; Fortis Hospital, NOIDA; Apollo Hospital, Chennai; Sri Ramchandra Medical College and Hospital, Chennai; Narayana Hrudayalaya, Health Care Global Enterprises, Bangalore; CARE Hospitals, Hyderabad; Amrita Institute of Medical Sciences (AIMS), Kochi; Dr Balabhai Nanavati Hospital, Mumbai; and Sanjay Gandhi PGI, Lucknow, are involved in providing products and services to African countries.

The most visible impact has been felt in the areas of telemedicine and tele-education, as Africans living thousands of miles away have had direct access to top educational institutions and super-specialty hospitals in India. These projects are worth $125 million. Under the tele-education component of the network, more than 2000 students from Africa have been enrolled in five top-ranking universities in India in a host of disciplines. Live sessions with Indian experts were a tremendous success with the youth in Africa.

Tele-medical consultations have also been started between African doctors and Indian specialists. Encouraged by African response, India has even offered training at the regional level by conducting workshops in tele-medicine and tele-education modules for optimizing benefits of the project. Blending technology with social transformation, the Pan-African e-Network Project (PAENP) project showcases creative possibilities of how ICT can become a catalyst in ensuring lasting positive socio-economic changes. A knowledge-driven society in Africa could be a potential game-changer for the global economy. Pan-African training centres across locations in India and Africa are being worked upon in consultation with the African Union demonstrating the broader paradigm of South-South Cooperation.

Together with Japan, this capacity for providing training and vocational education by India has to be leveraged for Africa's benefit by creating centres of excellence and pre-employment training institutions in African countries. In addition, staff for infrastructure and industry corridors can be trained by Indian companies as well as by

Japanese companies operating out of India. One problem that besets developing countries' skill development systems is that government institutions are main providers of such trainings, which inevitably remain supply-driven. However, under the growth corridor approach, human resource development would be aligned to development of industry corridors, and hence would be demand-driven rather than supply-driven. This would ensure that the traditional old model of training in most developing countries would be aligned to a training model adopted in Japan and the East Asian countries, which are industry-led and demand-driven.

Growth corridor between Asia and Africa can emphasize on the development and deepening of value chains. Skill requirements can evolve dynamically with the pace of such value chains in Asia and Africa sub-regions. It entails that the whole process of skill development may undergo a paradigm shift requiring firms, which are building infrastructure or setting up manufacturing facilities for value addition in Africa, shall set aside funds to create in-house, in-firm enterprise-based vocational training facilities. This is a normal practice in Japan, but to a much lesser extent among Indian firms, except for largest Indian corporates. To the extent that large Indian corporates are investing in Africa, they would need to factor in enterprise-based training infrastructure as well as human resource (i.e. instructors), who would conduct in-house training. Such training would necessarily be demand-based.

Japan's Strengths in HRD

Japan has long-standing commitment to human resource development in Africa through the work of JICA. The same applies to Japan's HRD support to India based on the request from Japanese companies. Japan's Ministry of Trade and Industry (METI) supports training for employees working at the Japanese companies in developing countries. The trainees maybe skilled in the following areas: (1) basic Japanese manufacturing spirit included Kaizen and 5S; (2) practical technical skills; (3) design and product development skills; and finally, (4) management and planning skills. Such training programmes would require sending experts to the local area training in Japan itself.

In the case of the India–Japan initiative in Africa, there is potential for using ongoing project in India called Manufacturing Skill Transfer Promotion program (MOU of November 2016). In accordance with this, a Japan–India Institute for Manufacturing is in the process of being set-up, and this may indeed become the base for Japanese training for African industrial and infrastructure corridors. The METI is already supporting training for African employees in productivity promotion in Africa through the Japan Productivity Council. This involves staff training in productivity promotion through the Japan Productivity Centre. It is also involved in sending experts to strengthen ability of staff and provide on job training on 5S and Kaizen in South Africa, Kenya, Nigeria and neighbouring countries. These activities can very well be expanded further under the AAGC initiative.

In addition, it should be noted that the secondary school system in most African countries is in need of improving mathematics and science education. JICA has long been providing assistance in math and science education, designed for children to acquire basic skills. This activity could also be dovetailed with HRD for industrial corridors.

Specific Recommendations on Modalities for Skill Development

Pre-employment training institutions are lacking in the SSA. Three modalities of skill training centres are recommended.

Establishment of Industrial Training Institutes

India had started to develop Industrial Training Institutes (ITIs) in the early 1960s, which offered training to 10th class graduates in trades that would offer employment in manufacturing and non-manufacturing industrial sectors. The training lasts for a minimum of two years, but in certain trades may extend to 3–4 years. In 2015, there were approximately 2000 government-owned and managed ITIs, which have grown in number. In addition, in 2007 there were under 2000 private ITIs, which have grown to 12,000, on account of growing demand. India can offer technical support for establishment of such centres, both in the African public and private sectors. The loans extended by the Indian government to African governments can be utilized to finance such ITIs in Africa.

Vocational Education in Schools

As stated above, a very small share of secondary schools offer vocational education in the SSA. However, India has been growing its capacity for providing vocational education in the service sectors in India's government secondary school system from class 9 onwards. This has grown rapidly since 2014, and thus, India should be able to provide government-to-government support to African governments for promoting vocational education. Since 2011, the National Skill Development Corporation (NSDC) in India has been providing loans and equity to private vocational training providers for setting up training facilities, while attempting to regulate such providers. This model can be offered to African countries, while taking into consideration pitfalls of the Indian model.

The WEF (2017) indicated that the education system in the SSA has not been adequately responsive to skill needs of the labour market. As a result, many university graduates remained unemployed, while African countries have continued to face shortages of skilled labour. The result is that millions of educated young people over the decades have migrated abroad. Hence, the focus in AAGC should be on ensuring the projects provide for technical skill investment, or for demand-based HRD. In other words, when the detailed project reports (DPRs) for massive infrastructure-industrial corridors are developed, there will have to be a requirement upon companies mandated to prepare the DPRs to include HR development plans—which are specific to the project, and hence must be demand-based. A supply-driven, donor-financed skill development plan must not be prepared; otherwise, it would run a huge risk of wasted resources.

Sectors that need skill development emphasis in the SSA are as follows. Investment in specialist skills and local talents in building and construction trades due to rapid urbanization and a continent-wide need for infrastructure development is one obvious example. Additional demand for specialist skills and local talents in consumer industries such as agriculture, food and beverages, home and personal care, apparel and transport and automotive, expanding rapidly due to the region's growing population, is another. As the Fourth Industrial Revolution unfolds, sub-Saharan Africa is also poised to develop new business models on the basis of these technologies. Innovations such as mobile payment systems like M-Pesa in financial services, the use of drones for last mile delivery in transportation and logistics and development of a wide range of digital applications tailored to Africa's continued importance and unique strengths in agriculture point to growth of these new aspects in the region's economy. At the same time, in economically advanced regions, concerns have recently been raised regarding potential impact of automation on jobs on the continent. It has been estimated by WEF from a technological standpoint that 41 percent of all work activities in South Africa are susceptible to automation, as 44 percent in Ethiopia, 46 percent in Nigeria, 48 percent in Mauritius, 52 percent in Kenya, and 53 percent in Angola. However, these effects are likely to be moderated by comparatively lower wages and slower technology adoption.

Future job growth would not be limited to the technology sector alone. Investments in sub-Saharan Africa's enormous infrastructure such as improvements in the continent's transport networks are booming. While the potential benefits of such "hard" infrastructure investments are well-recognized, economists predict equivalent or greater—often untapped—job creation potential of investments in countries' "soft" infrastructure of child-care, elder-care and education, which also often produce more gender-balanced labour market outcomes. For example, the direct and indirect job creation effects of an investment of 2 percent of GDP in South Africa would amount to 511,000 jobs in construction (with 29.6 percent of direct jobs going to women) and 414,000 jobs in care (with 61.4 percent of direct jobs going to women). Investing in the care economy also dovetails with recognized importance of early-childhood education for human capital development. In addition, millions of new teachers would also be needed across the continent.

The transition to a more ecologically sustainable economic model also has the potential to create millions of new jobs globally, including in sub-Saharan Africa. For example, it is estimated that by 2025 South Africa alone can create 462,000 additional jobs by "going green", including in clean energy generation, energy efficiency, pollution control and natural resource management. Similar estimates exist for countries such as Mauritius, Namibia, Kenya, Senegal, Uganda and Zambia.

Finally, regardless of sector or occupation, new work formats are offering individuals and entrepreneurs new opportunities. Online platform work is on the rise globally, including in sub-Saharan Africa. For example, the continent currently has 56 e-ridesharing services, most of them are home-grown apps launched over last five years. In Africa, online talent platforms have the potential to create significant benefits by moving people from informal to formal jobs, by increasing workforce participation and hours worked of those formerly underemployed or inactive, by shortening duration of job searches and by enabling matches that would otherwise not have happened. By 2025, this can result in 536,000 additional full-time equivalent jobs and a $3 billion increase in GDP in Kenya, 861,000 jobs and $20 billion in South Africa, and 1.9 million jobs and $20 billion additional GDP in Nigeria. As elsewhere, African companies would increasingly need to learn to manage a distributed, virtual workforce to integrate virtual freelance workers and to mitigate challenges for engaging in online work.

Despite particular concentrations of Engineering, Manufacturing and Construction specializations in the architecture, engineering and energy sectors and of ICT specializations in software industry, strong demand for STEM and ICT skills exists across a wide range of industries in Africa. A second promising approach for policymakers, businesses, educators and workers to understand the unfolding employment landscape consists of tracking growing and declining share of specific job functions and particular professions on the basis of data from professional networking sites and online job adverts. WEF (2017) provides one such picture for Africa through research partnership with LinkedIn, indicating growing shares of job functions broadly in the fields of business development, education, entrepreneurship, media and communications and marketing, among others. Reviewing detailed matching data for particular professions gives upward trends in professions such as creative industries, food technologists, 3D designers, data centre workers and care, education and health workers. Such data, while limited to those who have digital access and often available for the high- and medium-skilled white-collar workforce only, holds strong potential over time for improving forecasts and planning for specific skills, occupations, sectors and geographies.

While two-way trade and investment ties between India and Africa have deepened, the future potential is much higher. The focus is shifting towards creating value chains and investment-led trade. The Indian private sector has the potential to further deepen its economic footprint in African nations, especially in manufacturing sector. Under the aegis of the New Partnership for Africa's Development (NEPAD) along with providing financial aid and extended lines of credit, innovative financing mechanisms for manufacturing sector in Africa are being explored for specific High 5 sectors

identified by the African Development Bank. At present, Africa's exports of intermediate goods are dominated by mining products and resource-based manufactures such as basic metals or chemicals and fuels; this is consistent with a forward integration into global value chains, but merely as exporter of raw materials and other intermediates embodying limited value addition. Despite its limited size, intra-African trade in intermediates is significantly more diversified than the corresponding trade with the rest of the world. The scope for the incipient emergence of regional value chains, particularly in the manufacturing sector is, however, still largely untapped due to an array of structural and policy constraints.

Reliable and timely data on the structure of employment and skills in the sub-Saharan Africa is difficult to obtain. There is scarce information on the number of existing jobs, of newly created jobs, and of unfilled vacancies in specific sectors, undermining efforts to systematically assess and develop continent's skills base. Nevertheless, initiatives aimed at closing skills gaps can only be effective if they are not hampered by data gaps.

The Way Forward

Gifted with rich natural resources and young population, Africa offers huge potential for investment, job creation and growth. While the African countries receive investments from all the major economies of the world, there exist huge skill gaps among the local workforce in Africa that would raise their prospects of employment. In that perspective, AAGC initiative would provide a framework for cooperation between the Asian and African countries in the areas of formal and informal education, skill development through vocational education, training and capacity building programmes. India's ITEC programme and JICA's support for human resource development have made significant contribution to the skill formation in a number of African countries. Along with these specific initiatives, India, Japan and other countries in AAGC can work together in addressing the skill shortage in the participating countries in Asia and Africa from the perspective of promotion of local industrialization and job creation. Besides government initiatives, the private sector from India and Japan can identify the key industrial sectors for training and skill development of the local workforce. Demand-driven capacity building programmes in priority sectors may be given emphasis under the AAGC initiative.

Endnotes

1. "Across the continent, substantial potential exists for creating high-value-adding, formal-sector jobs in a number of areas. However, to realize this potential, closer dialogue between education providers and industry is needed to align and optimize the region's demand and supply of skills," said Nicolaas Kruger, Chief Executive Officer of MMI Holdings and Chair of the Africa Skills Initiative (WEF 2017).

2. The Africa Skills Initiative is inviting businesses in partnership with government, civil society, and the education and training sectors to make quantifiable commitments to skill, upskill or reskill 1 million people by 2018 and 5 million people by 2020 in Africa, the Middle East and other regions.
3. "One thing we know about the future of work is that we can't predict all the changes that lay ahead," said Allen Blue, Co-Founder and VP of Product at LinkedIn. "So it's critical that Africa takes advantage of new insights that helps provide a more comprehensive view of trends within its work-force, and develops a network of workers, employers, educators, policy-makers and trainers that is responsive and can adapt quickly to change."

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Part IV
Sectoral Cooperation: Innovations and Challenges

Chapter 10
Health Sector Cooperation in Asia-Africa Growth Corridor

Harpreet Sandhu

Introduction

Health constitutes one of the fundamental challenges that mankind is facing in the twenty-first century, especially in the emerging economies and low- and middle-income countries (LMICs). Each year, millions of people lose their life to a number of avoidable and preventable diseases especially the emerging and re-emerging infections in addition to insurmountable devastation and socio-economic losses through these epidemics. Human development, as elucidated in the Sustainable Development Goals (SDGs), would not be possible without making significant efforts and sustained large-scale investments for bridging health inequities and for redressing infectious diseases, especially in the developing world.

Economists acknowledge that in the emerging global knowledge economy, science and technology returns are likely to be the single highest contributor for the long-term rise and economic advancement of countries. This is more so in health sciences, as they assist employment and boost industry, and also reduce dependence on imports, and save on the tremendous costs on health expenditure and associated socio-economic issues including stigma, discrimination, poverty, and so on.

Current State of Health Sector in Asia and Africa

The development of sustainable, affordable, accessible and effective healthcare for all is the foremost challenge faced by the world; more so in the developing countries. Success in achieving the health objectives of Sustainable Development Goals as well as more focused objectives of specific health programs; and from pandemic/epidemic

H. Sandhu (✉)
Scientist F, International Health Division, Indian Council of Medical Research, New Delhi, India
e-mail: sandhuh.hq@icmr.gov.in

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diseases to fighting non-communicable diseases would depend on the sustainable efforts toward expediting innovative health strategies and breakthrough technologies in gearing up and improving health systems along with strengthening swift adoption of best practices from one region to the other.

Emerging and re-emerging infectious diseases threaten and pose a clear and ongoing risk to global health, security and economic prospects. The rise in global travel and trade due to greater interconnectedness among countries has resulted in unpredictable outbreaks of infectious diseases of international concern. The Ebola outbreak during 2014–2016, which originated in West Africa and spread to far-off countries like US, Spain, Germany, France, among others with massive economic impact, is an example indicating that diseases at present have no boundaries. While source and virulence of the next emerging pathogens are difficult to predict, it is anticipated that the next major outbreak may be far more severe than Ebola. The global spread of COVID-19 pandemic and the associated social and economic devastations has proved it. The diseases of a concern can be Neglected Tropical Diseases (Crimean-congo Hermorrhagic fever virus, Flavivirus diseases, Lassa fever virus, Nipah virus, Rift Valley fever virus, Chikungunya virus, Zika virus), Coronaviruses (MERS Co-V & SARS), and HIV/AIDS, Tuberculosis, Malaria among others (WHO 2014). The South-East Asia is a hotspot for emerging infectious diseases, particularly, zoonotic and vector-borne diseases as the result of many factors including population growth, mobility, urbanization and environmental changes such as agriculture and livestock intensification, deforestation and climate change. Among the factors that coalesce in East and South-East Asia in increasing risk of emerging infectious diseases are ecological factors, which allow rapid pathogen mutation and host adaptation for example, Dengue, re-assortments of influenza virus and emergence of drug resistance. The Yemen's cholera outbreak, which spread rapidly at the end of April 2017, affected the largest number of people in the world; as the suspected cholera cases rose to half a million mark and led to approximately 2000 deaths, owing to deteriorating hygiene and sanitation conditions and disruptions in water supply across the country.

In future, most of the diseases are likely to emerge from Africa or Asia, which are home to one-third of human population. These are the very countries where animals, humans and birds all live in close proximity, and are also experiencing epidemiological shift toward non-communicable diseases (cancer, diabetes, cardiovascular diseases).

On the services delivery front, health systems in South-East Asia have witnessed bold developments challenging existing regimes and have stimulated much debate. Reforms have led the Philippines and Indonesia to devolve their healthcare delivery systems. Sri Lanka has a universal healthcare system that offers one of the highest quality healthcare systems in South Asia at a shockingly low cost. Thailand's brave declaration on compulsory licensing to produce and import essential medicines, and Indonesia's refusal to share samples of H_5N_1 influenza viruses with WHO sparked major diplomatic debates about balancing national imperatives with global interests. The National experiments in expansion of health equity and universal coverage PhilHealth in the Philippines; Vietnam's health fund for the poor; and Thailand's universal

health-coverage scheme provides innovative models for equitable financing, which have attracted global interest also. Despite these shared challenges, South-East Asia still lacks effective structures for regional health cooperation (Acuin et al. 2011).

The primary hurdle facing developing countries on the road to excellence in the health sciences is capacity. Whether it is medical and paramedical staff, scientists and researchers, technicians and equipment handlers, manufacturing and quality assurance staff, or regulators—there is a significant gap that needs to be bridged in all these areas. Addressing capacity issues will spark a domino effect in other areas as well that include research and biomedical innovation, collaborative immuno-biological and population-based intervention studies, and industrial and manufacturing collaborations.

In view of the above, it is imperative to establish a functional and robust health surveillance and response mechanism enabling two-way exchange between laboratory and clinical researchers on the one side and public health workers and communities/patients on the other side to enable development of new and targeted interventions for disease management (diagnosis, prevention and treatment, etc.) based on the specific regional needs, disease patterns and evidence-based design of innovative strategies and public health programs.

Such an integrated approach would aid in strengthening systems across the health continuum.

- Understanding disease epidemiology for precise and robust disease tracking, enabled with digital visualization;
- Identifying potential hot-spots or high-risk populations for enabling observational cohort studies and clinical trials of new product development/introduction;
- Preparedness for emerging pandemics/epidemics;
- Identification of pathogen (for infectious diseases) and host (for both infectious and non-communicable diseases) markers to enable designing of new and targeted tools for disease management (including diagnosis, prevention and treatment);
- Design of evidence-based public health actions and programs.

Hence global community needs to follow a collaborative, inclusive and transparent approach to improve ability to respond to new threats by developing and accelerating access to research interventions which can aid in management of such emergencies. This includes targeted R&D to ensure accelerated development of appropriate diagnostics, vaccines, therapeutics and medical and information technology.

Areas of Cooperation

India has tremendous expertise in developing independent health and biomedical research capabilities and disease management programs; which has led to one of the most successful polio eradication programs worldwide; set-up of centers of excellence in biomedical and health research; advanced capacity in genomics, proteomics

and modern biology; and establishment of public and private clinical centers of excellence. It has also proven itself as a global pharmaceutical powerhouse with significant exports of drugs across the globe. The country is also growing as a manufacturing hub for vaccines and a leading supplier for developed countries; supplying over 60 percent of their demand. Facilitated by technology transfer from Indian and global academic research, internal company R&D and using off-patent space, Indian companies have successfully developed and marketed several affordable biopharmaceuticals since the last decade.

Japan is strong in preparedness planning as well as specific measures of targeting prevention, pandemic control and mitigation. The Japanese government provides detailed action procedures for key stakeholders during each phase of pandemic or epidemic, clear-cut responsibilities, besides guidelines for long-term capacity development (Govt. of India 2013). As a result, Japan had no confirmed cases of severe acute respiratory syndrome (SARS). Japan was also unaffected by avian flu, with no confirmed cases by the end of 2009. And an adult HIV/AIDS prevalence rate of less than 0.1 percent was reported.

In this regard, India and Japan can join hands towards development and dissemination of interventions (including vaccines) for infectious pandemic diseases, which may seriously affect society. The current global efforts for Pandemic Preparedness can be leveraged upon through the following: the World Bank Global Pandemic Emergency Facility; the Coalition for Epidemic Preparedness Innovation (CEPI) for developing vaccines against epidemics (led by India through Secretary, Department of Biotechnology); the Global Research Collaboration for Infectious Disease Preparedness (GloPID-R), a network of funders of emergency outbreak research with an objective to rapidly activate research funding in specific areas related to etiology, vaccines, diagnostics and data sharing; the Chatham House project on data sharing in infectious disease surveillance; and Pandemic Product Development Committee by the WHO.

As an economy in transition, India offers lucrative partnership opportunities to the region toward jointly enhancing capabilities in health sciences. The country is one among the few developing countries that have made significant strides in every aspect of health; a plethora of high-quality yet affordable clinical service facilities. Catering to patients from multiple countries, India has established centers of global excellence in clinical and biomedical research with a strong network of collaborations across the North and the South; successfully delivered one of the most effective polio eradication programs worldwide; and has been a key contributor in global response to pandemics. India is in a unique position, of being a developing country and yet steadily and gradually has developed significant capabilities in health and biotechnological research. India's research output includes over 60,000 research publications and filing of hundreds of domestic health care and pharma patents every year. Furthermore, a significant portion of vaccine supplies and formulation of drugs across the world are developed and supplied by India. India is harnessing its capabilities not just to fuel its own health R&D growth, but is working with various Asian and African nations to enhance their capabilities in disease prevention and management.

India has more than 300 USFDA approved pharmaceutical firms; the highest number of FDA approved firms outside the US. Besides, the country has provided nearly half of all the investments by low- and middle-income countries (LMICs) in neglected diseases R&D; of which close to 60 percent of public investment was through the Indian Council of Medical Research (Policy Cures 2015). Although this represents only 2 percent of the combined global investment, a quarter of new neglected disease products have been registered since 2000. In the policy innovation space, India is an early adopter of successful models from around the world, including open source, public-private partnership, early stage research development, entrepreneurship platforms and incubators, and international engagement through product development partnerships (PDPs).

There is also a growing demand to encourage African entrepreneurship in health sciences through technology transfer, training and hands-on experience. India's proven track record in this domain and significant pharmaceutical, nutraceutical, traditional medicine, and diagnostic and medical device exports across the globe, coupled with emerging innovation platforms such as the Biotechnology Industry Research Assistance Council (BIRAC), the Open Source Drug Discovery (OSDD) initiative, and Pharmaceuticals Export Promotion Council of India (Pharmexcil) can play a leading role in strengthening the ecosystem and creating an enabling environment geared toward product development in the region.

Besides gaining access to strategic knowledge and specific technical skills, there are strong reasons for Asia and Africa to consider enhanced industrial partnerships in health and biotechnology. Additionally, discovery, evaluation and commercialization of new health and biomedical products is characterized by high costs, high risks and high returns. Partnerships help minimize costs and distribute risks, while maintaining high returns, owing to the expanded market.

Due to the growing partnership between India and Africa in medical tourism, telemedicine, along with the establishment of domestic branches and clinical centers of Indian medical conglomerates in Africa, there is a rising demand for improving access to Indian drugs and vaccines in the African nations. This calls for policy alignment and streamlining of regulatory practices to enable the free flow of affordable pharmaceutical products in the African market. Considering the current state of global economies, the Governments of India and Japan can play the role of a facilitator than that of a doer. This can be in the form of incentives and some possible areas for such incentives are as follows:

- *Export of pharma products to Africa*: Supply quality medicines at concessional rates for major diseases like HIV/AIDS, TB, Malaria, Cardiac diseases. Governments in Asian and African countries can procure and supply medicines through a special agency.
- *Local manufacturing in Africa by Asian firms*: This can be through joint ventures; may be through a Government Fund for technology transfer. For example, India has gained considerable experience in manufacturing generic pharmaceutical

products and this expertise can be shared with the African continent in developing indigenous pharmaceutical industries. That can contribute to Africa's goal of eradicating many of its chronic diseases.
- Setting up health care facilities including traditional medicine by Indian/Japanese firms
- Export of human resources
- Opening more tele-medicine centers
- Medical tourism in India (e.g. Ayurveda and Allopathy also)
- Scholarships for Africa in Asian medical and nursing colleges
- Setting up of medical colleges
- Training and exchange of experts in policy and law in IPRs and drug regulation
- R&D- for example, India has a very good experience with an alternative route of drug discovery in its Open Source Drug Discovery (OSDD) program. India could consider partnering with Africa in its innovative R&D program of the Open Source Drug Discovery project of the Council of Scientific and Industrial Research with an aim to finding drugs for diseases affecting Africa the most.

On the African governments' side, faster drug marketing approval for generic pharmaceuticals, and speedier measures for various clearances required for setting up of new ventures in the pharmaceutical sector and in the health care sector are required. Indian/Japanese private and public sector as well as non-governmental agencies can also consider taking up initiatives to bring together philanthropists to contribute toward Africa's determination to achieve health for all in the shortest possible time. Quality of healthcare has the potential to transform risks of demographic and disease burdens into a demographic dividend and opportunity to transform pharmaceutical industries. At the same time, political constraints and gaps between accessibility of healthcare services need to be worked upon.

Asia and Africa share commonalities in disease burden, demographics, resource limitations, inadequate distribution of health personnel, and a common desire to attain self-sufficiency in disease management. At a time when emerging economies are increasingly moving away from the Western funding models and looking to develop independent capacities, it is opportune time for the two regions to pool together their resources for health innovation.

The landmark India Africa Forum Summit (IAFS) III in October 2015 under the aegis of the Hon'ble Prime Minister of India has set the tone for reinvigorated and forward-looking partnerships between the two regions. Health is among the key areas identified for furthering collaboration with India committing significant resources towards enhancement of health capacities in Africa through the proposed Africa Health Fund. The Indian National Health Policy 2017 seeks to promote universal access to good quality health care services and Africa has also set its health agenda referred to as Agenda 2063. These new goals have to be taken into consideration in the formulation of development cooperation activities in the forthcoming decades.

To carry forward this vision of IAFS III in the area of public health, the Indian Council of Medical Research in partnership with five Indian ministries and several African regional scientific and research agencies organized the first India Africa

Health Sciences Meet (IAHSM) in September, 2016. In the Meet, 11 cabinet ministers and 400 delegates, including senior government representatives, technocrats, industry leaders and scientists, were the participants. The deliberations highlighted the need for India and Africa to conduct joint biomedical and health research to address diseases of common concern through indigenous development of affordable drugs, diagnostics and vaccines, and also enabling knowledge- sharing and capacity-strengthening. Discussions also focused on boosting pharmaceutical trade and developing cooperation to foster affordability of essential drugs and harmonization of regulatory and intellectual property policies (ICMR 2016).

To formalize this partnership as the India Africa Health Sciences Collaboration, a Memorandum of Understanding (MoU) has been developed by the ICMR (through the Department of Health Research) and the African Union (AU). The collaboration would witness participation from key African agencies such as NEPAD, ASRIC, AOSTI, AAS and NASAC. In Africa, complementary programs are emerging through the Medical Education Partnership Institute (funded by NIH's Fogarty International Center), Welcome Trust's DELTAS program, and World Bank's African Centres of Excellence program.

To enable two-way training and exchange of scientific personnel engaged in research activities, the existing mechanisms of the Government of India should be leveraged upon, for example International Fellowship Programme for scientists belonging to developing countries by the ICMR, CV Raman fellowship and India Africa R&D Fund by Dept of S&T, ITEC program by Ministry of External Affairs and other Govt. of India initiatives such as the Pan-African e-Network and Health Sector, Team-9 Initiative and Focus Africa Programme (to boost bilateral trade and investment/commerce between two regions). Some of the major Indian pharmaceutical joint ventures or subsidiaries manufacturing or trading in Africa are: Cipla Ltd, Ranbaxy Laboratories, Dr Reddy's laboratories, Glenmark Pharmaceuticals, IPCA Laboratories, Parentearl Drugs, Emcure Pharmaceutical Ltd, Aurbindo Pharma Ltd, J B Chemicals, Cadila Healthcare, Lupin Ltd, and Intas Pharmaceutical Ltd (RIS 2015).

Tokyo International Conference on African Development (TICAD), a major global economic policy forum, initiated by Japan in the early 1990s has played a critical role in facilitating African development initiatives under the dual principles of African ownership and international partnership. With regard to "Resilient Health Systems for Quality of Life," one of the priority areas in the Nairobi Declaration of TICAD VI, Japan would steadily translate "G7 Ise-Shima Vision for Global Health" into action in Africa. To this end, it would work jointly to realize effective measures against communicable and non-communicable diseases; attaining universal health coverage through resilient systems; strengthening emergency responses; and promoting R&D innovation and capacity building.

Historically, India and Japan have deep-rooted links through oriental culture and religion, which originated in India. Considering purposeful S&T cooperation between the two countries, a Science and Technology Initiative to support pure science research is being implemented through India-Japan Joint Committee (IJJC)

on Cooperation in S&T. The Department of Science and Technology (DST) has initiated a value-based partnership with the Japan Society for the Promotion of Science (JSPS) and Japan Science and Technology Agency (JSTA) through MEXT (Ministry of Education, Culture, Sports, Science and Technology). Subsequently, there has been substantial cooperation in emerging areas of modern biology, healthcare, agriculture, nanotechnology, robotics, alternative sources of energy, etc. A number of students visited Japan under the annual "Japan-Asia Youth Exchange Program in Science" also known as the "SAKURA Exchange Program" implemented by the DST and the JSTA.

India also has a long standing cooperation with Japan in the health sector. The Japan International Cooperation Agency (JICA) has provided technical and grant-in-aid cooperation to ICMR's institute in Kolkata—National Institute of Cholera and Enteric Diseases (NICED). This cooperation (during 1998–2008) resulted in capacity strengthening and technology transfer aiming to reduce enteric diseases in India. Cooperation between NICED and Okayama University in emerging infectious diseases has further strengthened this collaborative network. Most recently, cooperation between the ICMR and the National Institute of Infectious Diseases, Japan, was formalized through a Letter of Intent in 2016 for development of integrated surveillance covering epidemiology and genomic data of antimicrobial resistance for comparative studies.

Memorandum of Cooperation (MoC) between the Ministry of Health & Family Welfare of India and the Ministry of Heath, Labour and Welfare of Japan covers fields of health care services, HRD, health information systems, disease surveillance and health research. The MoC between Central Drugs Standard Control Organization (CDSCO), India, and Ministry of Health, Labour and Welfare of Japan has established the Medical Products Regulation Dialogue and Cooperation Framework to facilitate constructive dialogue on raw materials for pharmaceutical use, biological products, medical devices, quasi-drugs, cosmetic products, and associated administrative and regulatory policies.

The presence of a huge Indian diaspora in many African nations and Japan, and the fact that a significant majority of our populations is under the age of 35, it is our opportunity and responsibility to utilize this demographic dividend to its full potential. Our common concerns and fight against poverty, nutrition, sanitation, infrastructure, health and healthcare delivery, all demand innovative, sustainable and most importantly, regionally relevant solutions. Cognizant to this demand, the AAGC is shouldering responsibility and has taken a step forward in setting up platforms for development in Africa. Cooperation through the sharing of development solutions—knowledge, skills, experiences, best practices, policies, know-how, and resources—is essential for scaling research capabilities in developing countries toward attaining self-sufficiency in disease management. The complex nature of health problems faced by Africa and Asia demands a unique and multifaceted solution—one addressing critical issues, including attracting best scientific talent for research, securing requisite investment, and leveraging low-cost technologies and products to bridge gaps.

The AAGC has committed substantial support towards the development of Africa with dedicated focus on capacity building, sharing of technical know-how and globally collaborative academic linkages between the Asian and African regions through existing efforts to strengthen and leverage regional synergies to address shared challenges in health sciences.

Considering the remarkable similarities in the Indian and Japanese partnerships with Africa towards the development of innovative health technologies and strengthening health systems, there is a compelling case for converging and synergizing both initiatives to achieve the best possible outcomes in the shortest period of time and leveraging on complementary strengths and investments to propel shared interests. The mobilization of the highly ambitious Asia-Africa Growth Corridor opens the possibility of transforming each of these independent partnerships to an exponentially greater scale.

Specific Projects and Recommendations

The foundational principles for the partnership under the AAGC are Reciprocity; Leveraging complementary strengths and existing platforms; Exploring creative funding models; and Acknowledging diverse regional priorities.

The collaborative health projects under the growth corridor can be disease-specific or agnostic, but would help address cutting-edge scientific queries of the day, and aid in influencing clinical outcomes and policies for improving disease management.

Recommended Cooperation Projects

Health Sciences Research

1. *Health systems strengthening for pandemic preparedness and emergency response*: Focus on disease surveillance systems interlinked with advanced data technologies for effective and precise epidemic tracking and visualization of transmission dynamics; and capabilities for early tracking of new epidemics, including integrative bioinformatics and bioethics.
2. *Conduct joint population- based clinical trials*: For addressing diseases of common concern (communicable, non-communicable, emerging/re-emerging) and work toward development of new and targeted interventions for disease management (diagnosis, prevention and treatment); identification of new biomarkers for early diagnosis and development of Point-of-Care diagnostics.
3. *Research on antimicrobial resistance*: To promote "One Health" approach to tackle cross-cutting issues of AMR in human and animal health, agriculture,

food and environment; and forge multi-sectoral collaborations in line with the 2015 WHO Global Action Plan on AMR.
4. *Implementation research*: For designing and implementing effective interventions to improve quality in health systems; design evidence-based public health action programs.

Integrative Product Development and Delivery

1. *Facilitate joint product/technology development/validation (for diagnostics, treatment or prevention)*: For enabling harmonized regulatory policies, collaborative pharmacopeia and ethical guidelines, joint manufacturing and demand creation/introduction/uptake across regions.
2. *Conduct capacity building efforts*: To enhance awareness and mutual recognition of drug regulatory authorities and review mechanisms of CTDs; drug testing, quality control, release criteria and mechanisms.
3. *Create B2B platforms*: To support creation of networks of manufacturers, researchers and regulators to facilitate business/investments, promote indigenous manufacturing in Africa, technology transfer and policy interventions.

Capacity Building

To align research capabilities and improve understanding of regional landscape, needs, strengths and gaps:

1. Establishing *Joint Centers of Research Excellence* (in Africa/Japan/India) with advanced capacities in genomics, proteomics, bioinformatics and modern biology through linking with Global experts for support in the latest tools and technologies; Standardization and harmonization of protocols and generation of comparable data; Establishment of regional scientific leadership; Knowledge transfer and exchange of best practices.
2. Allocate scholarships/fellowships at premier Indian and Japanese institutions, and industrial internships for promising African candidates in medical and paramedical training, clinical and biomedical research, pharmaceutical manufacturing and allied disciplines to facilitate greater technology transfer and building of sustainable capacities and capabilities.
3. Training opportunities can also be offered to the Asian post-doctoral researchers at African laboratories to diffuse and imbibe new learning, especially in areas such as Open Science, ICT-enabled medicine, GIS and geo-medicine.
4. Capacity building efforts across the product development value chain, including manufacturing, cold-chain and supply-chain management, drug standards and licensing, standards and data from clinical trials, among others.

Capacity building partnerships should include expertise available in Indian, Japanese and African institutions and should be enriched through partnerships with other world-class agencies and institutions with relevant expertise to enhance skills in Asian/African regions.

The Way Forward

The complex nature of health problems faced by Africa and Asia demands a unique and multifaceted solution—one addressing critical issues, including attracting best scientific talent for research, securing requisite investment, and leveraging low-cost technologies and products to bridge gaps. Cooperation through the sharing of development solutions—knowledge, skills, experiences, best practices, policies, know-how, and resources is essential for scaling research capabilities in developing countries toward attaining self-sufficiency in disease management. The collaborative health projects under the AAGC can be disease-specific or agnostic to help address cutting-edge scientific queries of the day, and aid in influencing clinical outcomes and policies for improving disease management. Capacity building partnerships could include expertise available in Indian, Japanese and African institutions and could be enriched through partnerships with other world-class agencies and institutions with relevant expertise to enhance skills in Asian/African regions.

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Chapter 11
Raising Farming Efficiency for Sustained Agriculture in Asia and Africa

T. P. Rajendran

Introduction

Agriculture is Africa's largest economic sector, representing more than 15 percent of the continent's total gross domestic product (GDP) (more than $100 billion annually) and employs more than 70 percent of its workforce on approximately 783 million hectares of arable land (27 percent of the world's total). However, agricultural GDP in Africa is highly concentrated, with Egypt and Nigeria alone accounting for one-third of the total agricultural output. In the last decade, countries that have increased investments in agriculture as per the Comprehensive Africa Agriculture Development Programme (CAADP) targets (or have exceeded) have seen reduction in hunger and poverty and increase in productivity. These include Ghana, Togo, Zambia, Burundi, Burkina Faso, Mali, Niger, Congo, Senegal, Ethiopia and Malawi. However, as it is evident from the trends in agricultural performance, Africa still needs substantial efforts to boost investment and productivity, deepen intra-African trade and establish market-oriented agro-food value chains. African agriculture therefore needs business models that can significantly increase the level of investment from the private and public sectors, as well as donors.

Current State of Agriculture in Africa

Agriculture is the basic sector that has stood with Asia and Africa for sustaining the food and nutritional requirements of people. The evolution of this human activity by utilizing natural resources to grow crops that are primary food sources is historically a

T. P. Rajendran (✉)
Adjunct Fellow, Research Information System for Developing Countries (RIS), Core 4B, Fourth Floor, India Habiat Centre, Lodhi Road, New Delhi 110003, India
e-mail: tp.rajendran@yahoo.co.in

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major achievement of the countries in these two continents. The component of animal husbandry in agriculture could add better nutrition and provides scope for better health management in farm families. Modern agriculture has provided opportunities to practice integrated farming through incorporation of cropping, livestock, fisheries and other such sectors that can make farming profitable (Altieri et al. 2012). The derived benefits in terms of higher income, employment and food and nutrition could enlarge the scope for making agriculture as the core sector for national growth. Its inter-linkages with other sectors of economy such as health, industry, commerce and trade have drawn attention towards renewed emphasis on further improvement and acceleration of agriculture.

Agricultural science offers sufficient opportunity to utilize genetically robust crop varieties and animal breeds that can offer higher yield and better tolerance to both biotic and abiotic stresses. The utilization of available agricultural technologies would provide sustainable food production. The African countries from various geographies possess wide variety of agro-ecologies and weather patterns. Their longitudinal variations of natural resources demand tailored technologies for the improvement of African agriculture. The dryland and rainfed farms that are in majority shall be serviced with specifically tailored services of knowledge and technology. The African growth in agriculture can be leveraged with the technological advancement that Asia pursued to trigger faster growth in this sector. Shared growth and development experience in Asian agriculture would enable the African countries to harness the untapped potential for accelerating prosperity, peace and stability.

The high-growth ambitions of the African countries have laid emphasis on agriculture for mitigating hunger/nutrition and for achieving higher economic growth. Recognizing this, the Agenda 2063 or the African Union has categorically mentioned in its Aspiration-1 that for a prosperous Africa based on inclusive growth and sustainable development, agriculture needs to be modernized and become productive; using science, technology and indigenous knowledge; and the sector has to be made profitable and attractive to the farming community in general. African Agricultural Technology Foundation (AATF), Alliance for a Green Revolution in Africa (AGRA) funded by Bill and Melinda Gates Foundation and Rockefeller Foundation, African Seed Trade Association's (AFSTA) Alliance for the Seed Industry in East and Southern Africa (ASIESA), GROW AFRICA, One Acre Fund, International Fertilizer Development Centre (IFDC), Syngenta Seeds2B Project, USAID's Feed The Future Initiative, etc. are some initiatives that are operating across the continent to increase productivity in order to free millions of people out of poverty and hunger.

Asia grew with its agricultural progress of the last century through mainly 'gene revolution' that produced visible and marked impact on the productivity and profitability in this sector. Intensive agriculture has been in vogue in Asian countries to increase the pace of agricultural growth. This ideology was aided by 'gene revolution' in seeds and breeds. The phenomenal developments in agricultural technologies to accommodate the improved high-yielding seeds and breeds provided the best background for perceptible growth in Asian agriculture. The current century has visualized the impact of climate change to impact on the natural resource systems in various measures in both the continents. In the recent times, success stories of

the Asian Green Revolution have been considered as models for adaptation in the African countries with the aspiration to improve the efficiency of food production.

Value chain development and regional manufacturing and service hubs shall bring about farm gates to consumer chains. The strengthening of inter-country manufacturing network could take many countries into surplus and exportable stock of plants and machinery. In this context, quality products for plants and machinery could be achieved through extensive turn-key project-based development cooperation with the elite Asian business houses. There is scope for enhancing investment in these projects in the Eastern African countries (EXIM Bank 2017). Projects can be undertaken to expand the scope of contract farming towards producing commodities that serve the nutritional security of African countries. The medium- and small-scale processing factory units can be established around such contract farms to ensure that the harvested commodity is taken into these processing units and also to prevent any loss of commodities. The farmers can be given premium price for the freshness and higher nutritional status. The stakeholders of each African nation for the nutrition-mission shall be keenly integrated with the contract-farmed agricultural commodities that can be customized for processing and further use in the supply chain for nutrition programmes in the countryside through effective campaigns amongst the local communities.

Areas of Cooperation

Along with the national initiatives on promoting agriculture, it is important for the African countries to explore the possibility of cooperation with the Asian countries. The scoping and prioritization for the Asia-Africa cooperation in agriculture sector needs to be set upon the population growth and influence of climate change in these continents in the next two decades. The prediction of wider changes in agro-climate and agro-ecology calls for smart agriculture technologies that would help offset the adverse impacts in the prevailing farming systems. The following are some of those specific areas of cooperation:

Seed Industry Sector

For the furtherance of Africa-India cooperation in agriculture, collaboration in seed sector seems to be a win-win proposition for both India and Africa. As Indian companies gain access to new markets, African farmers/distributors have access to better quality seeds and an opportunity to increase their productivity and income. The African Union (AU) initiated a policy framework called the Comprehensive Africa Agriculture Development Programme (CAADP) in 2003. The overall goal of CAADP is to ‘help African countries reach a higher path of economic growth through agriculture-led development, which eliminates hunger, reduces poverty and

food insecurity, and enables expansion of exports'. It has been declared as an integral part of the New Partnership for Africa's Development (NEPAD). NEPAD is AU's strategic framework for pan-Africa socio-economic development. The AATF and other initiatives mentioned above can help gain momentum in African agriculture. International seed testing standards and quality management protocols for ensuring genetic purity and quality of crop seeds can be the plank on which necessary logistics, legal framework, policy settings, implementing system, capacity enhancement and creating enabling environment to be taken up.

Micro-propagation and tissue culture technology ensures the supply of disease free, high-yielding clones of fruit crop planting materials as in the case of banana, papaya, etc. Investment to establish suitable factories in many African countries could be a business plan that can be pursued by the Asian companies. The horticulture crops of local importance can get strong fillip through this route of supply of healthy and genetically pure planting materials to the small farmers. The benefit from such an intervention is to harvest good quality and market-ready fruits by farmers.

Agro-processing and Knowledge Sector

Agro-processing would enhance farmers' profitability and choice of the African countries to utilize the processed food for consumption (Konig et al. 2013). Indian efforts for robust development cooperation to build up capacity have been visible in many African countries. Setting up of industries related to cotton, sugar, leather, farm wastes (cellulosic and non-cellulosic), food products, nutrient supplements, biofuels, etc. could be scoped through the AAGC. Few examples with high economic potential for improving farm gate profits and reducing farm gate commodity losses are given in Table 1.

The products from these industries can be made available for both African and Asian consumption. Private initiatives to establish markets for supply of different levels of agro-processing equipments are available in certain parts of the African continent. E-extension service has unique potential in Africa in service knowledge on various aspects of agriculture including post-harvest processing and marketing. Indian investment in information and communication technology sector in African nations could stand in good stead to sustain this effective mechanism for bringing in the much-needed knowledge of service sector. Energy sufficiency to run these industrial clusters that can be established around villages can be ensured through non-conventional sources as well as from existing electricity transmission grids. Skilled manpower from within the African countries to run these plants may be organized to make the products viable and cost-effective for competitive markets in Africa and other continents.

Table 11.1 Agro-industries for African countries

1	Sugar production plants with cogeneration of electricity/molasses/alcohol (fuel grade), industrial chemicals
2	Coffee processing plants
3	Groundnut processing plants
4	Fruit pulp, juice and jam making plants
5	Tomato paste and ketchup production plants
6	Oil extraction mills for oilseed crops
7	Cassava processing plants, methanol, industrial chemicals
8	Cattle ranch and beef meat production plants
9	Rice mills of various production capacities
10	Livestock feed manufacturing plants
11	Dairy processing plants
12	Modern abattoirs
13	Poultry feed manufacturing plants
14	Honey processing plants
15	Cotton processing: ginnery, spinning mills, hand loom/power looms/cloth mills (textiles), high quality cellulose and industrial chemicals
16	Agricultural farm waste processing into high value byproducts including fortified manure/paper/fuel etc.

Source: Author's Compilation

Manufacturing of Farm Machinery and Implements

Considering the prevailing scenario and the perceived benefits of agricultural mechanization for intensification of agriculture, efforts are required both at policy and industry level. Policies should provide for creating conducive financing mechanisms and tools for both buyers and suppliers to overcome the challenges faced by the sector. Investment by international players can be explored to increase the spread of farm mechanization. Agricultural equipment from India can be adapted in Africa, with minimum customization, as both continents have similar landholdings and farmers have limited disposable incomes for utilizing (purchasing/custom hiring) such assets. Similar opportunities also exist in the irrigation sector, where the internal rates of return on irrigation projects are estimated to reach as high as 28 percent, depending on the type of irrigation and other conditions. Solar pumps could also be an option for African agriculture.

Veterinary Service Enterprises for Efficient Livestock Production

The livestock sector of the African countries is significant to boost small farm income.[1] Veterinary services make vital contributions to livestock supply chains, from farm to fork, and must be strengthened for the benefit of people and the environment (Higham et al. 2016). Mainstreaming livestock into village enterprises has been kept in the CAADP framework.[2] Mude, an economist at the International Livestock Research Institute, Kenya, won the 2016 Norman Borlaug award for developing an index-based insurance scheme providing a safety net for herders in drought-prone East Africa, in which the loss of livestock equates to a loss of livelihood and cultural identity. Safety net through livestock herds with attendant veterinary service are a model that African continent should seriously pursue.

The sector can be supported with modern therapeutics and suitable diagnostic kits and prophylactic vaccines. Establishing strong technical collaboration with suitable Asian countries provides ample scope to produce the much-needed diagnostic kits for disease surveillance and diagnostics. Vaccine production is possible with foreign direct investment to manufacture major animal vaccines for the African countries. Large-scale production of these essential items in livestock production can bring down their cost to affordable level by the small farmers. Asia has made giant leap in the manufacture of these health management tools in livestock production. These experiences along with sufficient investment can turn around the egg, dairy and meat industry substantially.

Food Processing Sector for Plants and Machinery

Value chain development and regional manufacturing and service hubs shall connect farm gates to consumer chains. The strengthening of inter-country manufacturing network could take many countries into surplus and exportable stock of plants and machinery. In the context of quality products for plants and machinery through extensive turn-key project-based development cooperation with elite Asian business houses could be achieved. Scope for enhanced investment in this sector is visualized in East Africa.

The extent of food commodity loss from farm gate to consumption level is vast and huge in monetary terms. It forms the best argument for investment in food processing and products that can save advertent commodity loss. ‘Save grain’ campaign in India of the 1980s and the pilots that were undertaken by the UN-Food and Agriculture Organization in the African and Asian continents signify the importance given by the nations on the concerns related to loss of commodities from farm gate to consumers’ tables. The studies[3] conducted under the ‘Initiative—SAVE FOOD—solutions for a world aware of its resources, the FAO published Working Papers on Rice Value Chain-Food loss analysis: causes and solutions (FAO 2017a) and Chickpea (FAO 2017b)

Value Chain-Food loss analysis: causes and solutions and Milk Value Chain-Food loss analysis: causes and solutions (FAO 2017c). The economic burden of such loss to nations has been enormous. The value chains built up on the food processing sector is a major trigger for economic growth through enhanced industrial infrastructure and consequent employment in and around villages.

According to a report by the World Bank in 2011, FAO and the United Kingdom's Natural Resources Institute, grain losses in Sub-Saharan Africa alone are about $4 billion a year and could meet the minimum annual food requirements of at least 48 million people. This estimate shall be further increasing over the last six years. It is relevant to imbibe the support to African Union[4] in the development of policies and strategies for country-specific plans to reduce post-harvest food losses. Based upon the Malabo Declaration, the African Union has developed the implementation strategy and roadmap, with strategic actions and milestones from 2015 to 2025. To facilitate the process, FAO and the African Union co-organized a high level regional consultation in October 2014[5] to inform the development of a continental food loss reduction strategy. Consequently, Malabo Strategic Action Area 1 (SAA1) targets 'Support to Post-Harvest Management', with the aim of establishing effective post-harvest loss (PHL) reduction systems by 2025 on the African continent. Under the UN initiative on 'mainstreaming food loss reduction initiatives for smallholders in food deficit areas', many pilot projects have been launched in Sub-Saharan Africa (SSA) such as 'reducing food losses through improved post-harvest management in Ethiopia—Phase 1' a Swiss project[6] that targets to reduce the post-harvest losses of commodities along with the development of a post-harvest policy and strategy framework for the Ethiopian Ministry of Agriculture.

Specific Projects in Agriculture

The suggested projects are for manufacturing infrastructure for agriculture, establishing rural value chains and instituting business for knowledge and technology diffusion for improving farm productivity and for creating medium and small enterprises for manufacture of farm machinery and for agro-processing.

Manufacturing Infrastructure

The significant impact of robust manufacturing infrastructure in the African countries can drive growth in agriculture. Some of the following examples can be illustrative.

1. Manufacturing set-up of alternate energy-based cold chains in various regions of Africa can secure all perishable agricultural commodities from farm gate to markets. Development of horticulture has dependence on energy sufficiency for

managing cold chains to preserve the commodities from high post-harvest losses in many SSA countries.
2. Manufacturing of machinery for sugar, textiles, meat, dairy, coffee, tea, cocoa, honey and leather industries is considered significantly crucial, as the raw materials from farms for feeding these industries are expected to flow into the national food baskets. Fruits and vegetable processing for various products is a prospective niche area for the food processing sector. In the light of the intense demand for processed horticultural food items to satiate nutrition to population, the food processing industry is expected to grow in all the regions of Africa. Industries for natural colours and various chemicals from flowers are also promising sector for developing and production of suitable machinery for their extraction and processing.
3. Manufacture and installation of solar water pumps is required for improved water use efficiency in agriculture. Innovative lift irrigation technology using solar pumps and energy efficient water lifting machines could alter water use efficiency in farms.
4. Manufacture and service of various power capacity motor bearing water pumps and related minor equipments and machinery could be of immediate relevance to SSA.

Rural Value Chain Infrastructure

The rural value chains for agricultural commodities such as food and industrial raw materials have to be crafted in accordance with the local economic strength as well as influencing the socio-economic development of people. Utilizing rural food commodities, advertently lost/wasted, can be used for value enhancement through various levels of processing to provide economic benefits to the local producer communities in all countries.

The following core areas are believed to achieve considerable progress in building up rural value chain infrastructure in Africa.

1. ***Transport System Including Land/Water Connectivity***

The transport network system is designed to facilitate cross-border movement of goods and services amongst countries of Africa. This network would absorb transport requirements of agricultural inputs to farms and agricultural commodities/raw materials from farms to processing hubs. Employment and labour market would grow to steer economic growth in Africa.

2. ***Finance and Credit Facilitation System***

The African Development Bank (AfDB) as well as the African national banks can organize primary financing and refinancing of the above mentioned projects through efficient and smart project documents. These documents can be prepared for the African countries through expert consultants from Asia and other parts of the world.

Institutions such as the National Bank for Agriculture and Rural Development (proposed) could be developed by African Development Bank for processing the financial needs for achieving agricultural growth and consequent rural development in the African countries.

3. ***Integrated Marketing System***

The success of farm economy rests on robust and transparent integrated markets. Such markets would integrate value addition as well as processing of farm commodities to create commodity processing environment. The marketing networks of each country shall fan out to neighbouring African countries by utilizing opportunities arising out of growth in farm productivity and availability of farm commodities. E-marketing, future marketing, contract farming, etc. with buy-back assurance can be used in the variegated economic situations of Africa.

Business of Knowledge/Technology Diffusion Service

The success of implementation of development cooperation in agriculture under AAGC would be central to smart business of knowledge and technology diffusion in the African countries on farm commodities of interest to the region. Prioritized interest or enhancing the agricultural commodity production of crops and animal sectors would enable each African country to launch infusion of technology and associated knowledge into the small holding farms. The following components may promote agri-business in the African countries.

1. *On-farm diffusion service*: In situ set-up of capacity and skill enhancement at farm gates utilizing information and communication technology (ICT) would create models that become self-financed business systems. Financing through banks and rural development institutions would create faith in developing smart agri-business service including agriculture insurance or risk cover from aberrant weather patterns and other unexpected loss in farms.
2. *Farm inputs/farm output service*: Many Asian models on cooperative societies for agricultural input financing and servicing stand to become replicable lessons to Africa. Credit-linked input service system and debit-linked farm output processing and marketing could be tested for sustainable growth of farm enterprises.
3. *ICT—The track for leap-frogging farm sector*: The farms of all nations could be networked through ICT in order to diffuse knowledge and information that are updated according to the situations in order to equip farming families for Expert Decision Systems. The artificial intelligence (AI)-based ICT environment and technologies can guide farmers and markets on the volume of seasonal commodity production of each country. However, this information could be used for regulating farm gate commodity prices so that farms do not run into loss. Servicing of Good Agricultural Practices (GAP) in farms, information on the

possible value chains of farmers' commodities in the neighbourhood, transnational markets within the continent are few examples of deploying ICT applications. Modern agriculture technology of Asia has enlarged the utilization-potential of ICT immensely in the African nations. Local capacity improvement in this sector could trigger employment generation in the region.

Recommendations

- The project designs can be finalized after due consultation with stakeholders in the country of interest in this continent. Farmers and their groups as 'Farm Producer companies' shall be important players in the consultation process to establish socio-economic merit of these projects. These initiatives shall have the support of robust agricultural insurance systems and risk coverage plans through joint venture of government and private business houses.
- Modern marketing systems such as e-Commerce, future and forward markets shall support the commodities for profitable gains to farmers.
- Timely implementation would sustain costs that are envisaged as investments and can be ensured through professional project documents.
- Project implementation through globally reputed agencies would infuse professionalism and would empower the African governments to establish transparent and cost-effective projects without time overrun and cost escalations therewith.

Conclusion

Exchange of expertise between the countries of the two continents could bring about mutually integrated commodity production for their markets. National food security for nutritional satiation of the community's needs to be the priority as envisioned in Agenda 2063. Advancements in Science and Technology in all modern branches of innovations could be funnelled to foment the capacity and enabling policies of the regional economies either as sovereign or as collective missions. African nations could deliberate how this ambition can be achieved through regional cooperation within and outside the African continent. Africa seems to have risen in this millennium for taking up this humongous challenge to make its own revolution in agriculture.

The immediate step shall be to organize a series of conclaves of African nations on a regional basis. This shall be steered by India and Japan with clarity on the potential requirements for the target African nations in relevance to their aspirations in making agriculture their major growth driver. Identifying the existing gaps that decelerate agriculture in these African countries would enable the AAGC to develop new ground-plans.

The significant goal of AAGC is to reduce the nutrition and health burden on the African countries and sustain nutritional security of their population. While encouraging regional cooperation within the African Union for bringing in agricultural revolution, it would be a significant step to develop and enlarge existing trade and market systems. The African dream for attaining prosperity of the present young generation and the children in those countries with high economic and socio-political stability can be attained through very elaborate scheme to turnaround agriculture in these countries to be competitively profitable.

Native ingredients of skilled and educated citizens, modernized infrastructure, structurally transformed governance, objective security of energy, nutrition and health can spur economic growth, and developmental needs of the African nations could be integrated with industrialization based on agricultural processing enterprises. The growth of agriculture due to the immense and pristine natural resources including biological ones and well-structured applications of science, technology and innovation in agriculture could be made sustainable to support the nutritional and health security of the people in the continent.

The AAGC may coordinate with the financial institutions of Asia and Africa along with the World Bank to bring in financial inclusion to the sub-regional growth of agriculture in relation to the climate-resilient farming systems. The financial institutions may value the natural endowments of the countries and the sub-regional collectives and provide due support through favoured systems to enhance farm gate value chains and improve financial stability of the African farmers. The essential regional integration on the basis of the agricultural maps could promote collateral guarantee to financial incostitutions. The sustained economic growth might reduce poverty and improve health of people and enable achievement of the Sustainable Development Goals. AAGC could play a realistic role with the African sub-regional groups in envisioning a road map for agriculture that can spur regional trade and prosperity in the region.

Endnotes

1. Higham et al. (2016).
2. Framework for mainstreaming livestock in the CAADP pillars (African Union Inter-African Bureau for Animal Resources, 2010).
3. See FAO SAVE Food initiative.
4. Ibid.
5. Ibid.
6. Ibid.

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Chapter 12
Cooperation in Agriculture: Innovations and Agro-processing

Krishna Ravi Srinivas

Introduction

Agriculture is crucial for the African economies as it employs more than 40 percent of labor force and contributes significantly to GDP. With approximately 783 million hectares of its arable land constituting 27 percent of the world's total, Africa provides enormous scope for economic growth and human development (FICCI-PwC 2016). Although the contribution of agriculture to GDP varies across the continent, according to the World Bank its share is about 32 percent (World Bank 2013) (Fig. 1). Africa is experiencing good growth with an average growth rate of 7 percent between 2011 and 2013. Although the significance of agriculture varies in terms of contribution to GDP, it ranges from 2.4 percent in Equatorial Guinea to 70 percent in Liberia as it provides employment to 50 percent of labor force, of which 47 percent are women. The rural population of Africa is 64 percent of the total population and agriculture is the main source of livelihood and employment for a significant section of this population. The share of agriculture is declining, partially because of low productivity and limited value addition (WEF-World Bank-OECD 2015). Comparison with other regions as shown in Fig. 1 shows that Africa has a lot to do to catch up with other regions in agricultural productivity.

It is acknowledged that Africa has missed the Green Revolution while Asia gained significantly from the same. Over the years, a frequent question that had been asked and answered is whether the success story in Asia could be replicated in Africa by a Green Revolution. The answer is yes, a qualified yes (WEF-World Bank-OECD 2015; Otsuka and Kalirajan 2006). This does not mean that whatever was done in

K. R. Srinivas (✉)
Consultant, Research and Information System for Developing Countries, Core 4B, Fourth Floor, Lodi Road, New Delhi 110003, India
e-mail: ravisrinivas@ris.org.in

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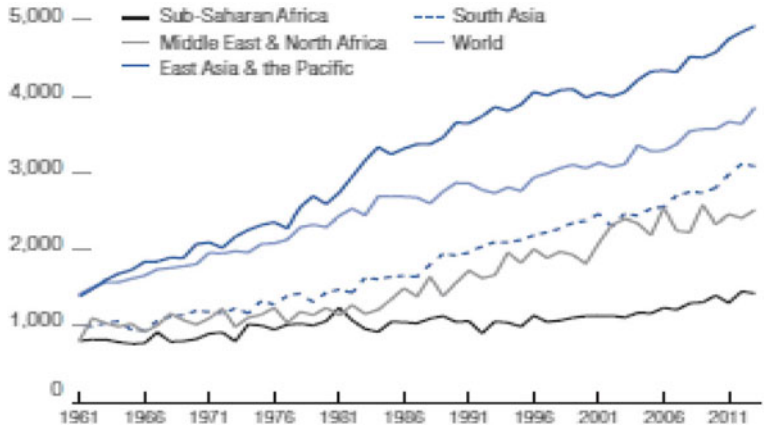

Fig. 1 Cereal yields by region, 1961–2013 Kilograms per hectare. *Source* World Bank (2015)

Asia should be simply repeated in Africa. It means that the Green Revolution is to be combined with the Gene Revolution in Africa to ensure that Africa benefits the most. For example, such a strategy will not mindlessly promote the use of pesticides and fertilizers in Africa, although their usage is lower when compared to usage in Asia. Instead, the strategy would be to adapt from the best examples.

Africa is a net importer of agricultural products, with imports of cereals (including rice, maize, and wheat) and livestock products (dairy and meat) contributing to food security and the mismatch between an increase in consumption and an increase in production contributes to this imbalance (OECD-FAO 2014). This means that even a small contribution to increasing agricultural productivity can reduce the dependence on imports and contribute to food security. However, there are multiple challenges that are being faced by agriculture in Africa, ranging from climate change and urbanization to low productivity and lack of modernization. Given the diversity in the crops and agricultural produce in Africa, focusing on one crop or two will not be sufficient. Instead depending the needs different country strategies for increasing productivity have to be developed. As Table 1 shows that in many countries cereals are important and crops like cocoa and horticulture sector are also important. Translating this into practical terms means that increase in productivity should be a target for many crops and cereals and this should be fine-tuned at the national level. This has significant implications for collaborations because one crop-one solution would not work in Africa as Table 1 shows countries in Africa have diversity in terms of crops.

Agriculture in Africa involves diverse crops and livestock but productivity is particularly important for cereals and starchy roots, which provide two-thirds of the total energy intake for the population (three-quarters for the poor). Though there are increasing cereal yield trends in most sub-Saharan African countries, these yield levels remain low compared to other regions of the world. As evident from the yield numbers presented above, despite diversified agro-climatic advantages, agriculture productivity in Africa for almost all major food product categories lags considerably

Table 1 Major Crops Grown in Africa

Sr. No.	Major crops grown	Country
1	Wheat, rice, maize, sorghum, potatoes, cassava, sugarcane, beans, nuts, oilseeds, cotton, tomatoes, onion, banana, pineapple, cocoa beans, fibre crops (jute, bast fibres, etc.), tobacco	Angola
2	Rice, maize, sorghum, potato and other tuber crops, sugarcane, cashew nuts, kola nuts, oilseeds. cotton, okra, maize, cocoa beans, coffee, tobacco	Côte d'Ivoire
3	Rice, maize, millet, potatoes, cassava, yams, sugarcane, beans, oilseeds, cabbage and other brassicas, onions, okra, banana, citrus crops, cocoa beans, rubber	Congo
4	Wheat, rice, barley, maize, rye, sorghum. potatoes, sugarcane, beans, peas, lentils, oilseeds, cotton, cabbage and other brassicas, tomato, onion, garlic, eggplant, citrus fruits, grapes, melons, mango, fibre crops (jute, flax, etc.), pulses	Egypt
5	Rice, maize, millets, sorghum, potato, cassava, sugarcane, beans, pulses, nuts, oilseeds, cotton, tomatoes, chilies, onion, citrus fruits, mango, pineapples, cocoa beans	Ghana
6	Wheat, rice, maize, sorghum, potato, cassava, sugarcane, beans, cowpeas, nuts, oilseeds, tomatoes, onion beans, mango	Niger
7	Wheat, rice, maize, sorghum, potatoes, cassava, yam. sugarcane, cowpeas. nuts, oilseeds, tomato, onion, carrots, okra, pineapple, papaya, cotton	Nigeria
8	Wheat, rice, barley, maize, sorghum, potatoes, sugarcane, tobacco, nuts, oilseeds, cotton, tomato, pineapple, mango, rubber	South Africa

Source PwC analysis

behind that of other continents, including staples such as maize and important African export commodities such as cocoa (FICCI-PwC 2016).

Many studies have identified the factors that constrain the increase in agricultural productivity including the Africa Competitiveness Report 2015 which discusses how Africa can benefit from a "Green Revolution". Despite all problems and issues, agricultural growth and increased productivity are possible in Africa, although estimates vary on potential rates of growth and increase in productivity.

In recent years, African countries have embarked upon high growth strategies. The Agenda 2063 reiterates the importance of modernization of agriculture in Africa to achieve inclusive and sustainable development. But the challenge lies in identifying the key areas where initiatives in cooperation should focus and among these areas which themes/issues should be prioritized and how they should be linked with the broader work programs on cooperation.

Fields of Cooperation

Broadly, the following sectors may be considered as potential areas for cooperation:

- Seed Sector
- Farm Machinery
- ICT in agriculture.

Seed Sector

Given the importance of quality inputs to enhance/maintain productivity, the need for cooperation in this sector is obvious. However, in relative terms, the seed sector is underdeveloped and the formal seed sector is gaining ground in many countries and the co-existence of formal and informal seed sectors is a factor that has to be taken into account. According to one study "Africa's seed market is estimated at 1.5 billion USD–about 3 percent of the world total–and is expected to double to 3 billion USD within the next 10 years. Currently, Africa is a minor player in the global seed trade, accounting for less than 2 percent of global trade. Approximately, 80 percent of the seeds are distributed through informal seed systems, wherein the farmer saves and replants the seeds every year. Constraints holding back investment, progress, and trade in this crucial sector include a highly fragmented seed system, inconsistent policies, standards, regulations and procedures, high costs for registering new varieties, and inadequate infrastructure to support the development of the seed industry" (FICCI-PwC 2016).

Literature on agriculture indicates that the bottlenecks include lack of adequate R&D, weak capacity, and investment in public sector innovation system to develop new genotypes relevant for different climatic requirements, minimal or little technology transfer, and, lack of seed marketing channels which, in turn, constrain access to seeds. Given the untapped potential, collaboration and cooperation in seed sector has been of interest to countries such as Brazil, China, and India. Obviously, the big MNCs have also established a firm footing in Africa. But the reality is complex and despite claims that seeds from these countries are more suited than those provided by companies from G8 countries, that they are more pro-poor and sustainable, ultimately are yet to be tested and there is scope for collaboration and knowledge sharing (Tugendhat 2014a, b).

Nevertheless, cooperation in the seed sector cannot be assumed to be a win-win proposition always and as more and more companies/countries target the seed sector, the opportunities will increase but would become very competitive. But the situation is getting blurred as there are many initiatives and too many actors and initiatives in the seed sector in Africa (see for details, Good Seed Initiative, CABI 2014). It is important to understand the scope for collaboration in these initiatives. Private sector firms are not averse to working with civil society groups/NGOs and capacity building in the seed sector is also part of development cooperation in some cases.

All this means that the seed sector will be a contested arena with many players trying to promote technologies and seeds with attractive claims and compete for the growing but limited market. So cooperation for the sake of cooperation cannot be a reason for intervening in this sector rather relevance and value addition should be paid attention to. Given the long-term implications and scope for cooperation in this sector, it is essential that cooperation should be perceived as a beneficial one right from the beginning. More important is that it should not be perceived as a move to thrust upon/promote controversial technologies or inappropriate seed varieties.

The African Union and the African countries have unilaterally undertaken several initiatives towards promoting agriculture. Some Indian initiatives need worth mention. For example, Indian seed companies such as Advanta India Ltd. have partnered with various local non-government organizations (NGOs) and initiatives for distribution of high-yielding crop seeds. Indo-American Hybrid Seed Ltd, Nirmal Seeds, Ganga Kaveri, Ankur Seeds, Rasi Seeds, and Nuziveedu Seeds have partnered with Syngenta Seeds2B/African Seed Trade Association (AFSTA). M/s Vibha Seeds has business processes for cotton, rice, and vegetable seeds in Mozambique, Ethiopia, Kenya, Tanzania, and Senegal. Strategic business plans such as the buyout of a local seed company (Zimbabwe-based Africa's largest listed seed company, Quton Seed Company) by Mahyco (Maharashtra Hybrid Seed Company). Many seed companies pursue this path or register as an African seed company in order to sustain their foothold. Japanese seed company such as Nakata also has a similar foothold in Africa. Given the bewildering range of activities and initiatives, it is suggested that cooperation in this sector should be promoted after understanding the objectives, activities, and initiatives. For both Japan and India, seed sector is a key arena for intervention through cooperation. In the current scenario, the private sector has taken the lead, and, still there is scope for the public sector to play a key role.

In view of the fast-changing scenario and the diversity in seed systems and regulations, it is suggested that a review of the current collaborations and cooperation initiatives should be undertaken to understand the scope in the future, lest duplicative efforts and unproductive initiatives should be promoted in the name of cooperation. India and Japan can do this together and explore the potential for the public sector in cooperation. Similarly, capacity building in regulations is another issue that needs attention as many studies are revising the regulations and increasing the capacity in the sector. What Africa can learn from India and Japan in regulations depends upon how relevant the regulations in Japan and India are for Africa.

Having said all these it is worth pointing out that as formal and informal seed sectors co-exist and will continue to do so for at least a decade, cooperation should not ignore informal seed sector including local seed production systems, farmer-centric seed networks and assume that these, in any case, will wither away. Instead, if cooperation can demonstrate that India and Japan can contribute to meeting farmers' needs through cooperation in/with the informal seed sector, it will enhance the credibility which, in turn, will stimulate demand (Christinck et al. 2014).

Farm Machinery

According to FAO (2016), "Moreover agricultural mechanization in its broadest sense can contribute significantly to the development of food systems, as it has the potential to render post-harvest, processing and marketing activities and functions more efficient, effective and environmentally friendly". The role of farm machinery in different stages of value chain in agriculture is varied and important. Hence there is a need to take a comprehensive look at the role of farm machinery in African agriculture. There are issues like labor displacement and non-affordability of machinery but it is better not to assume that introduction of machinery will result in labor displacement or loss of employment. Hence, it is suggested that AAGC should adopt a pragmatic perspective on this instead of assuming that machinery will solve all problems or is undesirable on account of the loss of employment. India is making an impact in this sector.

During the 52nd session of the African Development Bank Annual Meeting held in May 2017 in Ahmedabad, farm machinery suppliers from Gujarat signed agreements with their counterparts in Ghana, Zambia, Mozambique and Togo for the supply of machinery, training, and cooperation in mechanized agriculture. This augurs well for cooperation in the farm machinery sector. However, as in the seed sector, the competition from China and Brazil is bound to make things not easier, particularly with both states giving importance to farm machinery and modernization of agriculture in Africa. Literature in this field shows that there are lessons for those who intend to transfer technology and/or market agricultural machinery in Africa. For example, Sub-Saharan Africa is the region with the least mechanized agricultural system on the planet—the World Bank reported that there are only 2.24 tractors per 100 km of arable land in Mali, compared to 1300 in Europe. Only 5 percent of all arable land in Africa (excluding Egypt and Mauritius) is irrigated, whereas the average rate in countries like Brazil, China, India, Pakistan, and Vietnam is 38 percent.

Globally, Africa is the least mechanized region in the world. It is obvious that mechanization can be an important part of cooperation given the needs. But to assume that mechanization will be a golden bullet that can be fired through cooperation is a flawed approach. In this regard, India and Japan should try to understand what have been the issues with exports and the transfer of technology in this sector. It is observed that while Brazil and China have tried to export and transfer technology, such efforts were not fully successful. The results are mixed but no country is withdrawing from this sector (Amanor and Chichava 2016; Buckley et al. 2017; Cabral 2016).

Moreover, there are pros and cons to integrate farm machinery in other projects/initiatives. Hence, it is suggested that instead of assuming that cooperation in farm machinery will be a simple matter, and, farm machinery as part of another initiative is what Africa needs, it is better to understand the dimensions in this sector. A key question is how appropriate will be the farm machinery from India and Japan for the African countries. As in the seed sector, there are numerous projects involving NGOs, academic institutions/research centres, often, with private sector participation. In fact, Europe and the USA are actively engaged in this. For India and

Japan to successfully create or enhance cooperation with the African nations in this crowded space, a strategy has to be worked out. Only assessing unmet gaps in needs and developing solutions that are appropriate to the needs can be developed.

ICT in Agriculture

ICT and ICT-enabled services are sectors in which India and Japan can work together. Given the pioneering examples in India using ICT and ICT-enabled services in agriculture and administration, it is worthwhile to assess their relevance for Africa. Private sector examples that link markets and farmers through ICT to enable two-way communication with farmers may be suitable for adoption in Africa. Digitalization of land records management, use of software to improve efficiency and participation, and providing expert advice through mobile phones are some of the potential applications.

In India, as there have been initiatives to meet different needs, mapping what are the relevant technologies/applications can be a good beginning. The "mPeso" based mobile financial services in Kenya is a successful example. But for India and Japan the challenge lies not in replicating it, but in building mobile-based services platforms for meeting needs of farmers and such platforms could be integrating financial services with other services including selling, buying, and marketing.

Specific Projects and Recommendations

In light of the above discussion, a pipeline of projects could be developed in different sectors depending upon the context of cooperation, available resources, and objectives. Listing or describing general projects will not be of much help as that will not add value in terms of specific projects.

After a thorough review of ongoing cooperation initiatives and the proposed ones, specific projects can be conceptualized and developed. Suggesting general projects or advocating more projects in the rice seed sector or projects to make available more farm machinery will not be of much relevance although they may look good in paper.

Recommendations

- Given the changing nature of agricultural cooperation in Africa, it is imperative to understand the challenges and opportunities for cooperation among India, Japan, and Africa in each sector.
- The proliferation of initiatives and ever-increasing number of agencies/institutions jumping into the cooperation/collaboration bandwagon has made the situation

complex. As countries often have more than one agency/country knocking at their doors in the name of collaboration and cooperation, offering a bewildering range of choices in cooperation may not be successful. Instead, a strategy-based approach in each sector is required and building synergies across initiatives/projects is important.
- Specific projects, particularly ones that try to replicate the successful initiatives in India and Japan can be developed, ab initio, but issues relating to replicability and contextualization should be taken into account.
- In ICT and ICT-enabled services, Japan and India seem to have a competitive advantage and India's expertise in Information Technology-enabled Services (ITES) sector and successful adoption of ICT in different sectors in rural areas should be leveraged for fruitful cooperation.

The Way Forward

- Africa being the net importer of agricultural products faces the challenge of food security and self-sufficiency. The African countries have to undertake policy measures to catch up with other regions in agricultural productivity.
- The synergy among various components of the growth strategy of different countries in Asia and Africa should be built and benefits from cooperation in agriculture should supplement or contribute to gains in other areas. For example, the benefits of agricultural cooperation should positively contribute to reducing malnutrition and hunger.
- Both India and Japan can collaborate in building mobile-based service platforms for meeting the needs of farmers and such platforms can be utilized for integrating financial services with other services including selling, buying, and marketing.
- Besides replication of the successful experiments in agriculture in India, Japan, and other countries in Asia and Africa, countries in AAGC need to adapt the best practices suitably into their agricultural processes and practices.
- Weak capacity, low investment in public sector innovation system, minimal or little technology transfer, lack of adequate R&D, low productivity, and lack of modernization continue to remain the major challenges in the African agriculture sector. Cooperation among countries under AAGC may provide impetus to stimulate innovation, raise productivity, and encourage agro-processing.

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Chapter 13
Cooperation in Disaster and Climate Risk Management

Rajeev Issar

Introduction

An increase in the incidence, frequency, and magnitude of natural disasters reflects a world of increasingly multi-dimensional and persistent risks and uncertainty. Risk-informed development has thus been reinforced as an underpinning notion in the Sendai Framework[1] for Disaster Risk Reduction (DRR) as well as for the fulfillment of 2030 Agenda. The well-acknowledged link between development and disaster/climate risks makes it imperative to ensure that the development choices made by countries and communities help reduce exposure and vulnerabilities to those risks. Thus, disaster and climate risk are not exogenous to development; rather development itself is a key driver of risk (viz., urbanization, settlements in hazardous areas, infrastructure development like roads, bridges, dams, embankments, buildings) unless it is risk-informed. Some examples include use of floodplains for construction or settlements or cutting down of mangroves and land reclamation on sea coasts for hotels or human settlements, etc. Risk-informed development, therefore, provides the potential to design a new development paradigm in all countries, and more particularly in the African context.

Importance of Risk-Informed Development in Africa

Building climate and disaster resilience are key for sustainable development, resilient livelihood, and prosperity in Asia and Africa as well as for overall human, social, and economic development. Investing in the entire spectrum of issues connected with the risk prevention, mitigation, preparedness, and response and recovery can be a

R. Issar (✉)
Policy Specialist, Bureau for Policy and Programme Support, UNDP, New York, USA
e-mail: rajeev.issar@gmail.com

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catalyst for building national, socioeconomic resilience, and advance sustainable and risk-informed development as envisaged under the global 2030 Agenda, including the Sendai Framework for DRR (SFDRR), the Sustainable Development Goals (SDGs)[2] and the Paris Agreement.[3]

African continent is susceptible to a range of natural hazards, ranging from droughts, floods, landslides, sea-level rise, earthquakes and has been affected even by the tsunamis, originating in the Indian Ocean. However, the primary exposure and vulnerability pertains to climate-related and hydrometeorological hazards which have shown, over the past decade, an increasing evidence of translating into extreme events. This is evidenced by the recurrent and protracted droughts in the Horn of Africa and the Sahel regions. The peculiar coalescence of disaster and climatic risks is leading to an increasing incidence, frequency, and magnitude of disasters with wide-ranging socioeconomic impacts.

Underlying risk factors like climate change, high incidence of poverty, haphazard urbanization, environmental degradation, socioeconomic inequalities, overwhelming dependence of key development sectors and community livelihoods on weather and climatic patterns and increasing stress on and competition for natural resources are aggravating latent vulnerabilities. The combination of weak infrastructure (irrigation, water storage, safe roads, schools, and hospitals), weak governance system (limited enforcement of building codes and environment regulations, limited accountability for risk management) and low human development (education, health, gender inequality), and socio-political 'fragility' as defined by G7+ and the Organization for Economic Co-operation and Development (OECD)[4] all contribute to increase vulnerability. High exposure and vulnerability, low adaptive and risk management capacities, high climate sensitivity of African economies and livelihoods and shifting climatic patterns are having wide-ranging effects on the key development sectors like agriculture, food security, water, health, environment and forests, and ecosystems. Community livelihoods are highly dependent on climate-sensitive sectors. In Sub-Saharan Africa, nearly 800 million people are dependent on rainfed agriculture. On average, 25 percent of the region's gross domestic product is derived from agriculture and 70 percent of its workforce is in rural sector accounting for most of the region's exports.

The cost of disasters is increasing in Africa due to increased exposure of its population and economies to disaster risks and increase in frequency and magnitude of extreme weather events owing to climate change. Disasters contribute to between 3 and 15 percent of annual loss of GDP of African countries. Climate change represents a fundamental challenge to the sustainability of Africa's growth momentum. The costs for adaptation to disaster and climate change-related impacts resulting from past emissions are estimated to reach between USD 7 and 15 billion annually by 2020 and may increase up to USD 50 billion per year by 2050.[5]

The IPCC Fifth Assessment Report[6] presents strong evidence that warming over land across Africa has increased over the last 50–100 years, and that the temperature rise is likely to increase progressively in Africa, and that other climate-related effects such as variability in precipitation pattern and frequency of extreme weather events

would exert considerable pressure on the livelihoods and economies across the continent. Precipitation unpredictability would affect approximately 90 million people at risk in Africa due to the decadence of renewable water resources in low-rainfall areas. Livelihoods of a vast majority of people and communities as well as national development processes are overwhelmingly dependent on rainfall. A perceptible change in rainfall pattern has been observed with increasing incidence of concentrated precipitation (causing flash floods, floods, landslides, water-logging) and acute shortage of rains (causing droughts, environment degradation, water scarcity).

In Africa, there is a close cause and effect relationship between disaster-/climate-related impacts–including environmental degradation—and social unrest and conflicts, particularly relating to natural resources, which are fundamental to economic development and people's livelihood. Though this leads to by far the smallest portion of CO_2 emissions, still Africa is particularly susceptible as its economy depends largely on zones rich in natural resources which are highly climate-sensitive. In places like the Sahel and the Horn of Africa, intersection of disasters and climate change with competition over land and natural resources is fueling social unrest and conflict.

Disaster and climate risk management would help build national and community resilience and facilitate risk-informed development with an inherent ability to prevent, mitigate, manage, and respond to multiplicity of risks and their interconnected strands which tend to play upon and aggravate one another. In this context, the experience of dedicated partners like Japan and India would help contribute in saving lives, protecting livelihoods, sustainability of development gains, and building socio-economic resilience at all levels.

International Cooperation for Comprehensive Disaster Risk Management

The severity of natural disasters has been reflected in terms of colossal loss of human lives, destruction of property and physical infrastructure, and massive dislocation of people. While affected countries have mobilized substantial human and financial resources as well as capacity for early warning and quick and coordinated post-disaster response at the national level, there is merit in exploring international cooperation in this highly technical, socially challenging, and environmentally sensitive field of public policy. In particular, the developing countries and LDCs in Asia and Africa can jointly build necessary expertise, resource pooling, designing technological solutions, etc. Cooperation in disaster and climate risk management should be based on the shared principles of regional and national ownership as well as partnership building. The approach would seek to focus on Africa's development challenges and opportunities with emphasis on human security, environment and natural resource preservation, risk management, peace, and stability as well as inclusive growth through collaborative partnerships. It would focus on strong engagements of technical, research, and academic institutions, private sector, and civil society

organizations and help identify overall scope and priorities for actions to respond to short-, medium-, and long-term needs as articulated by the African countries, institutions, and communities, and in line with the global commitments related to the 2030 Agenda.

There is a huge scope for cross-continental cooperation between Asia and Africa due to the shared challenges related to disaster risks and impacts of processes associated with climate change. Countries in Asia, especially Japan and India, have faced high-magnitude disasters, both geological and climatic, over the past decades as is evidenced by the Indian Ocean tsunami, the Great East Japan earthquake and tsunami and cyclones/hurricanes and floods.[7]

Japan, one of the most earthquake-prone nations of the world, has the world's most sophisticated earthquake early warning systems. Japan's tsunami-warning service monitors seismic activity 24 × 7 and consists of a network of around 380 sensors. It has been designed to predict height, speed, location, and arrival time of tsunami, which heads towards the Japanese coast. It has also prepared building guidelines while considering earthquake resilience structures in Japan. The Asian Disaster Reduction Center had been established in Kobe, Hyogo, Japan, to build disaster resilient communities for providing platforms to facilitate personnel exchange.

Japan also invests considerably in raising awareness about disaster preparedness among the people in the form of 'Disaster Prevention Day' within the framework of Disaster Prevention Week. Comprehensive emergency drills are carried out involving several thousands of participants, regional and local authorities, and disaster-management personnel. The Japan International Cooperation Agency (JICA) has played an important role in assisting Pakistan to prepare and finalize its National Disaster Management Plan, more particularly capacity building. From its experience of reducing, managing and recovering from a range of mega-disasters, happened over the past decades, India has strengthened its institutional, legislative and policy frameworks, systems and capacities while at the same time has improved coordination and synergies at all levels among different agencies and stakeholders. The lessons from the Orissa Super Cyclone, 1999, the Gujarat Earthquake, 2001, the Indian Ocean Tsunami, 2004, and others have given impetus to the need to focus on the entire cycle of disaster risk management rather than piecemeal approach.

The recognition that a comprehensive disaster and climate risk management approach is needed to prevent, mitigate, manage, and recover from the adverse impacts led to the enactment of the Disaster Management Act in India in 2005. A dedicated focus on capacity building has been entrusted to the National Institute of Disaster Management (NIDM) with the responsibility of developing training modules and course curricula to cater to a range of capacity gaps and needs and to act as a catalyst for cutting-edge research and knowledge on the subject. The need to respond in a timely and effective manner to disaster and crises situations led to the creation of the National Disaster Response Force (NDRF), under the National Disaster Management Authority (NDMA), with trained, skilled, and equipped personnel who would respond to the search, rescue, and evacuation requirements for multiple disasters.

With a view to strengthen its weather, hazard monitoring, and tracking, India has systematically invested in strengthening its capabilities by harnessing potential

offered by the latest scientific and technological advancements. India has, in the aftermath of the Indian Ocean Tsunami, deployed a tsunami monitoring and alert system in the Indian Ocean, which is benefitting many Indian Ocean rim countries. The advancements made and the breakthroughs offered by the space technology are also being utilized to monitor, track, and relay timely warnings about impending hazards of cyclones, heavy concentrated rainfall, droughts, etc. Technological upgrading in technical institutions like the Indian Meteorological Department (IMD), the Indian Institute of Tropical Meteorology (IITM), and Indian National Centre for Ocean Information Services (INCOIS) is helping generate timely warnings and alerts to regions and communities likely to be impacted by adverse climate events. India has recently launched a dedicated satellite to provide geo-spatial services and support navigation and early warnings for disaster and climate risks to the countries in the neighborhood and has an inherent potential for being extended to other countries too.

As a responsible member of the comity of nations, India is supporting countries in South Asia, Southeast Asia, and other regions and is contributing actively through regional mechanisms like the South Asian Association for Regional Cooperation (SAARC) as well as bilateral agreements. Operation 'Maitri,' India's assistance to earthquake-affected Nepal, is the largest relief and rescue mission undertaken by the country outside its own borders. India has also undertaken ambitious national programs to ensure hazard-specific risk management with focus on principal hazards like cyclones and earthquakes. The technical, knowledge, and programmatic experiences gained on all the above-mentioned fields can be used to undertake similar initiatives by other regions and countries. Thus, there is a considerable expertise and knowledge generated based on the experience of managing and recovering from these disaster events, which can be harnessed to support disaster and climate risk management practices at regional, national, sub-national, and community levels along the corridor.

Specific Projects and Recommendations

The potential areas of cooperation between Asia and Africa in disaster and climate risk management could cover a whole spectrum of issues ranging from strengthening risk- management capacity of countries and communities to fostering risk-informed development paradigm. Some of the potential areas of collaboration are as follows.

Disaster Risk Information and Climate Services

Considering increased frequency and occurrence of disasters (extreme as well as small scale or localized events), it would be imperative to strengthen disaster risk

and climate information services through a regional and a national level interconnected monitoring, tracking, dissemination, and early warning network. Regional early warning systems are constrained by weak capacities in climate, environmental and disaster risk analysis, monitoring and forecasting, and lack of synergies between local, national, and regional levels. A disaster and climate monitoring and an end-to-end early warning system with strong mechanisms for early action with specific reference to principal and recurrent hazards and with focus on instituting capacities can be supported to ensure that information on climate, environmental and disaster risk is efficiently disseminated and applied to early warning, preparedness, and mitigation. A comprehensive risk management framework would be developed to promote cross-border cooperation in this field.

In this context, collaboration between the meteorological and the disaster management agencies would help incubate technological and human resource capacities. The experience of earthquake and tsunami monitoring and early warning systems as well as the space-based weather monitoring and forecasting system of India (used for predicting the trajectory and intensity of cyclonic systems) can be harnessed to strengthen capacities, systems, and institutional mechanisms to inform and support climate-informed development decision-making while considering African countries' high susceptibility to climatic risks and impacts. A number of regional organizations in Africa like the Intergovernmental Authority for Development (IGAD), ECOWAS, ACMAD, ICPAC, AGHRYMET have developed some capacities and systems for climate information services and early warning over the past decades.[8] The activity would entail working with regional climate/weather monitoring and tracking agencies to strengthen their technological and human resource capacity for analysis, generation, and dissemination of climate- and disaster-related information and early warning. This would help strengthen the capability to forecast long-term weather and climate impacts and customize detailed climate data and risk information.

The existing regional mechanisms would be further strengthened and collaboration with counterpart technical and specialized agencies in Japan and India can be established to augment ongoing work and collaboration in this regard. The activity would also focus on promoting linkages with identified regional and international technical institutions/organizations to complement capacities and technical resources for enhanced impact. Efforts would be made to provide technical support to conduct disaster and climate -risk assessments for providing actionable risk information to feed into long-term development planning for key socio-economic development sectors. Increased accessibility and application of adaptation and disaster-risk information in development planning by public and private sector stakeholders at the national and at the sub-national levels would help risk-informed development processes in African countries. Experience from Japan and India as well as from other successful contexts would be shared as part of the knowledge networking and information sharing efforts to facilitate the same.

Data and Statistical Analysis

African countries face huge challenges vis-à-vis instituting and strengthening data collection and statistical analysis as well as its application for development planning and monitoring. The data-constrained environment of many African countries creates a huge information gap and affects informed development planning and effective risk management interventions. On the other hand, the technical expertise and experience of the Japanese technical and academic institutions, with a lot of focus on data collection, analysis, and application for policy and development decision-making, can be useful to promote risk-informed development planning process. During the Third World Conference on Disaster Risk Reduction in Sendai, Japan, in March 2015, Japan, in collaboration with international organizations, had announced the launch of its Global Center for Disaster Statistics (GCDS), and technical expertise can be utilized to institute a data monitoring and statistical analysis approach at the regional and national level. The disaster data and statistical systems in India can also partner in the efforts considering their advanced data management capacities. The initiative can also promote active engagement and participation of technical and research institutions as well as the private sector entities to tap into their corporate social responsibility (CSR) resources and technical manpower.

Data and statistical analyses are an extremely important area of collaboration and partnership with African technical and academic institutions, and regional/national statistical agencies can be promoted to build data management capacities. The trilateral cooperation can help exchange of expertise, technical know-how, and capacities and foster a long-term development planning approach.

Risk-Informed Urban Development

With nearly two-thirds of Africa likely to be living in urban centers by 2050, the rate of urbanization rate would continue to be remarkable as it is estimated that 22 out of 34 cities with a population growth of more than 4 percent are located in Africa. While at present only 40 percent of Africa's population lives in cities, 900 million more people would be living in African cities by 2050—a 190 percent increase. With rapidly growing urbanization and high exposure to natural hazards, Africa's urban risk would certainly continue to rise.[9]

The impacts of climate change pose further challenges, magnifying risks, and increasing cost of disasters. A report from the Robert S. Strauss Center for International Security and Law reveals that changing weather patterns would compound challenges in the growing African cities, where chronic poverty, poor infrastructure system, and lack of adequate shelters, and social services are inadequately addressed. The convergence of developmental need and disaster and climatic risks in the cities would greatly undermine the development progress in African countries. This calls

for a more systematic effort to promote planned urban development with adequate risk management systems.[10]

Japan, considering its high exposure to disaster risks and rapid urbanization, has already established well-honed systems and capacities for protecting urban infrastructure and socio-economic development sectors. Likewise, India has gained useful experience in urban planning and management through the smart cities program and development of techno-legal regime for sustainable urban development. Both Japanese and Indian experience can be complemented considering the fact that centers of innovation and sustainable development can share valuable knowledge and strategy for risk-informed urban development. Promotion of disaster-resistant construction practices through land-use planning and building codes, conducting evidence-based risk assessments, disaster databases to inform urban development planning, strengthening urban response and search and rescue capabilities as part of the DRR approach is being complemented with a focus on the climate adaptation and mitigation by resilience plans, enhancing adaptive capacity of cities, ensuring energy-efficient buildings, promoting low-emission public transportation and industrial technologies.

Capacity Development

Historically, African countries have faced frequent occurrence of natural disasters. At any point of time, more than a third of all countries in Africa deal with some kind of disasters. This necessitates a heightened state of disaster preparedness, response, and recovery at all levels including local administration and communities. This activity would facilitate preparedness systems to address effectively the consequences of and responses to natural hazards and other crises. Strengthening institutional and regulatory preparedness at the regional, sub-regional, and national levels can be undertaken to enable countries to anticipate, respond, and recover from disasters and other crises. This will be integrated into and linked with risk information and early warning systems to enhance the efficiency of the systems and to implement integrated approaches for risk management. Strengthening national response and recovery capacities would help deploy the same more efficiently and in a timely manner at the sub-regional and regional level.

This would include training and capacity building of specialized response and civil defense agencies with specific focus on urban e-centers to respond quickly and help people recover from ill-effects of disasters. The specialized response organizations like the National Disaster Response Force (NDRF) in India would be used to create a cadre of trained and skilled personnel in designated agencies to support disaster and post-crises response and rescue. This will involve support for developing context-specific training manuals and SOPs. Capacity development on disaster preparedness and response will help incubate in-region capacity among countries in the region.

The activity will support the establishment of sustainable capacities for recovery planning to ensure that regional and national authorities have processes in place to

design and finance recovery to facilitate fast-tracking of planning and implementation of post-disaster recovery, and using recovery planning as an opportunity for reassessing risk and building comprehensive resilience to disasters. The overall focus of the effort would be to create a dedicated cadre of skilled human resources in the field of disaster risk reduction and climate adaptation to share experiences, knowledge, skills, and expertise with recipient countries and also connect to experts in Asia as well as internationally.

Climate Change Mitigation and Adaptation Action

Africa's susceptibility to climate change and its wide-ranging impacts across different sectors is quite high. A heavy reliance on agriculture and natural resources for livelihoods along with burgeoning expansion of cities with settlements springing up with poor infrastructure and low-quality housing further compounds the challenges posed by climatic processes in Africa. This vulnerability is further aggravated due to very low adaptive capacity among people, development actors, and governments. The IPCC assessments indicate the extent of adverse socioeconomic impacts of climate change on community livelihoods, socioeconomic development, and resilience.[11] This calls for instituting an effective risk management approach with a particular focus on climate-sensitive development sectors coupled with an assessment to identify the short-, medium-, and long-term risk management and development priorities.[12]

Technical assistance and guidance will be provided to develop climate change mitigation and adaptation plans to help countries respond to potential climate risks, including rising sea levels, coastal water ingress, urban flooding and to evaluate potential effects of climate change. The experiences from Japan and India as well as other countries can be used to inform the process. The support would include cross-sectoral adaptation and policy implementation which are to be mainstreamed in development plans of the national and local governments. Key climate-sensitive sectors like agriculture, water resources, and environment would be specifically looked at as key disaster risk mitigation and climate adaptation tools; as protecting, natural resources would also contribute toward building the resilience of communities and their livelihoods.

Dedicated programs to educate and train technical agencies, universities, and meteorological departments to build systems for compiling and computing climate change data will be useful for analyzing emerging trends and projections and help develop appropriate risk mitigation and adaptation measures. Technological assistance may be extended to support countries moving toward climate-resilient and green economy and for achieving a zero-emission development trajectory.

Knowledge Management and Information Sharing

Knowledge management and information sharing play a vital role in disaster preparedness and national disaster management strategies. Country partnerships can bring together knowledge, information, and experience related to successful disaster risk reduction and climate change adaptation experiences of Japan, India, and other countries with corresponding development and risk management context. This will include academia, research institutions, private sector, and civil society organizations for informed decision-making and to assist adaptation actions both in terms of their plans and implementation. This will help meet information management needs during and after a disaster event.

A number of formal and informal platforms are to be created for information exchange and dialogue on issues related to disaster management to seek solutions. These would involve government, private sector, academia, and other stakeholders. Their experiences attest to the fact that building resilience is not a one-off, stand-alone affair. It is an incremental and collaborative effort. At its core is the commitment to integrate risk reduction within the development process, which also seeks to ensure that this process is grounded in functioning governance systems. This necessitates a long-term commitment to change and the Asia-Africa Growth Corridor initiative and the partnerships envisaged under it would pave way for a better, secure, and sustainable development in future for Africa and its people.

The Way Forward

The imperatives of advancing sustainable and resilient development in Africa mandate a close attention to risk management perspectives especially considering the preponderantly climate-sensitive nature of key development sectors and a high dependence on natural and environmental resources. The well-acknowledged link between development and disaster/climate risks makes it imperative to ensure that the development choices made by countries and communities help reduce exposure and vulnerabilities to risks.

Strengthening the technical capacities of key disaster management and climate change-related agencies/institutions as well as fostering greater horizontal and vertical coordination with socio-economic development sectors will be essential. This will help imbue the development processes with due risk management considerations and safeguard hard-earned development gains. The multiplicity of risks and their mutually exacerbating context necessitates advancing greater regional and international collaboration to ensure the application of context-specific risk information and to harness the technical, financial, and human resources.

Connecting the short-, medium-, and long-term risk management and developmental priorities will help a risk-informed development approach and also institute the culture of risk management as an inalienable part of the development process at

all levels in Africa including for community livelihoods. Making risk management an integral dimension of the development process will contribute substantially and effectively towards facilitating the reach of development gains to the vulnerable at the lower end of the social stratum. Strengthening the interface between DRR and sustainable development and reducing disaster/climatic risks to increase resilience to natural hazards especially in relation to the socioeconomic development sectors can have multiplier effects and accelerate the achievement of sustainable development objectives.

Endnotes

1. See United Nations Office for Disaster Risk Reduction (UNDRR) website for more details.
2. For more details, see UN Webpage on SDGs.
3. Refer to details of the Paris Agreement on UNFCCC website.
4. A number of political, economic, social, environmental, and security factors were considered to develop a 2016 list of 56 fragile country contexts.
5. See IPCC Fifth Assessment Report.
6. United Nations Intergovernmental Panel on Climate Change (IPCC) fifth assessment report, 2014.
7. See reports of Asian Century Institute on disasters.
8. See African Center of Meteorological Applications for Development.
9. See IPCC Assessment Report.
10. See Karanja (2017). "Urban Disasters Highlight Need for Resilience in Africa". Reliefweb.
11. See Brown, Nanasta and Bird (2009). "Financing Climate Change Adaptation and Mitigation in Africa: Key Issues and Options for Policy-Makers and Negotiators". ODI, May.
12. See UNISDR Briefing Note 04.

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Chapter 14
Leap-Frogging to Renewable Energy Regime in West Africa: Arguing for a Community-Led Initiative

Ahmad Garba Khaleel and Milindo Chakrabarti

Introduction

The complex nature of the global energy, growth and environment relations that continue to fuel the sustainability debates is evident in most recent international dialogue in many development areas (Roper 2012). Equally, the growing manifestations of the global environmental challenges are some of the serious issues at the centre of the sustainable energy, growth and development linkage that pose both a challenge and opportunity in disguise (Cohen et al. 1998). This is truer in the least developing countries where the combined challenges of low level of development and climate change are well evident (Hussen 2004). The relationship between energy, growth and development has been one of the most studied areas during the last four to five decades, specifically since the publication of "The Limits to Growth" in 1972. The continuation of the debate goes unabated as signified by the current debates on sustainability (Ozturk 2010, Omri 2014). The paramount place of energy-growth linkage is very visible in national, regional and international development agendas/plans, initiatives and programmes, the peak of which, for instance, is the United Nations (UN) Sustainable Development Goals—SDGs (Nilsson et al. 2013). Private sector interests are also not immune from this concern. When it comes to the global goals, the significant role of partnership in the process of not only growth and development, but those of trade and investment as key ingredients, cannot be stressed more (Dolan 2011). This is because the partnership for sustainable energy, growth and development linkage may be viewed as the foundational framework upon which all the other global goals of sustainable development can be achieved.

A. G. Khaleel · M. Chakrabarti (✉)
Research Scholar & Visiting Fellow, Research and Information System for Developing Countries, Core 4B India Habitat Centre, Lodhi Road, New Delhi 110003, India
e-mail: milindo.chakrabarti@ris.org.in

A. G. Khaleel
e-mail: ahmad.khaleel@fud.edu.ng

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However, while this great opportunity is within the grasp of the world and its different regions, the growing mismatch between demand for and supply of energy poses a serious challenge. This is kept persistent by the growing aspirations of the developing world to reduce global inequality and experience their stages of high mass consumption (Hurrell and Sengupta 2012) as reflected by rapid urbanization in the developing world, especially Asia and Africa. According to United Nations Department of Economic and Social Affairs 2014 report on World Urbanization Prospects, the share for Africa has exceeded 40 percent of the continent's total population in 2014 and projected to reach 56 percent by 2050 (UNECA 2017). Such challenges can be avoided and the opportunities highly utilized with the greatest economic and environmental benefits through leap-frogging to intensive renewable energy regime (Szabó et al. 2013). Leap-Frogging involves switching or skipping generations of technologies to the latest ones and possibly becoming a technological leader in a given industry (more later). This shift to new energy technologies being a solution to the challenges of environment and SDGs, requires a strategic allocation of huge amount of resources (financial, technical and human). These resources are usually not sufficiently available to individual countries (especially slowly developed African countries) at the desired time and manner, rather they are scattered across different counties. Therefore, the need for partnerships among developing nations in the spirit of South-South Cooperation (SSC) and Triangular Cooperation (TrC) as a viable channel for energy partnership that can effectively facilitate leap-frogging to renewable energy (RE) regime in a mutually beneficial arrangement is eminent. The timely arrival and continuous evolving of such SSC and TrC framework in the context of Asia-Africa Growth Corridor is an advantageous development for Africa.

The people-centric sustainable growth strategy envisioned in AAGC as a framework for development cooperation, encapsulate within it the needed experiences, atmosphere, tools and methods that perfectly match the power sector and other challenges of Africa. The initiative as transpired in the joint declaration by the Prime Ministers of India and Japan in 2016 is being raised on four pillars namely; Development and Cooperation Projects, Quality Infrastructure and Institutional Connectivity, Enhancing Capacities and Skills and People-to-People partnership. The detailed strategy as enshrined in the vision document would be evolved through a process of detailed consultations across the two continents and by engaging various stakeholders. The proposal provided here might as well be viewed as a small step in this direction, with specific focus to provide sustainable solutions to West Africa's power sector challenges in a way that portrays a clear collective commitment to SDGs.

The overall purpose of this chapter is to provide a roadmap through which power sector cooperation can be facilitated in Africa through community-led leap-frogging initiatives within the context of AAGC. This is done by starting with a literature survey of the expanding discourse in the energy-growth-environment linkages (causality) and then highlighting the paramount place of energy and partnership in a classification or grouping of SDGs in a way that reflects their interlinkages to underpin energy partnership for sustainable development. A brief review of global, African and West African energy profiles is carried out as a precursor to the estimation of energy (limited to electricity) requirements of West African countries with

reference to several benchmarks. These benchmarks are the current standard West African, SSA, African and Global kWh per capita consumption of electricity. The needed energy, coupled with the environmental and economic costs and benefits are estimated for West Africa based on some static assumptions. Following the estimates, a brief review of the evolving renewable energy policy environment is also carried out coupled with a look at the ongoing programmes and initiatives in the region to highlight the existing gaps. And finally, we suggest the possible cooperation channels and partners through AAGC that can assist the West Africa's leap-frogging to renewable energy regime via community-led initiatives.

This arrangement also have a bearing on serving the strategic objectives of African Development Bank's mission of Inclusive Growth as well as first of its High-5 priority areas of; Light Up and Power Africa, Feed Africa, Industrialize Africa, Integrate Africa and Improve Living Conditions of Africans (AfDB 2015). For the Western side of Africa, this will go a long way in complementing the many sustainable energy development initiatives existing and being developed at various levels. This will go a long way in serving the welfare of the excluded and underserved population in this region. However, all these results may only be achieved with a carefully crafted programme of engagement through AAGC.

Literature Review

Sustainable energy, growth and development linkage: The magnitude of attention researchers accorded to the energy-growth linkage is a clear testimony for a contention worthy of further investigation about emphasis on energy use in the growth and development process. Energy consumption for some time now (since the inception of industrial revolution), has secured for itself a special place amongst the determinants of growth. The desire to determine the nature of the relationship between economic growth and energy consumption has been repeatedly studied to either test the role of energy in stimulating growth or examine the direction of causality using the four hypotheses (see Fig. 14.1), Ozturk (2010). One of the important features of this study area is the interconnectedness of the issues resulting in continuous disagreement between researchers and their studies. These studies, as seen in Omri (2014) and other reviews, depending on year of study, time span, methodology, data used, nature as well as classification of country or countries studied, found varying results relating to this relationship. These results as depicted in Fig. 14.1, oscillate within and amongst two strands of unidirectional causality (energy consumption-leads to growth—growth hypothesis or growth-leads to energy consumption and consequent reduction in conservation efforts—conservation hypothesis), bidirectional causality (both energy and growth lead to changes in each other: feedback hypothesis) and no causality (neither leads to change in the other: neutrality hypothesis) at all (Isik et al. 2018).

The continuous debate about the relationship between energy consumption and growth vis- a-vis development is ever growing with disagreement over

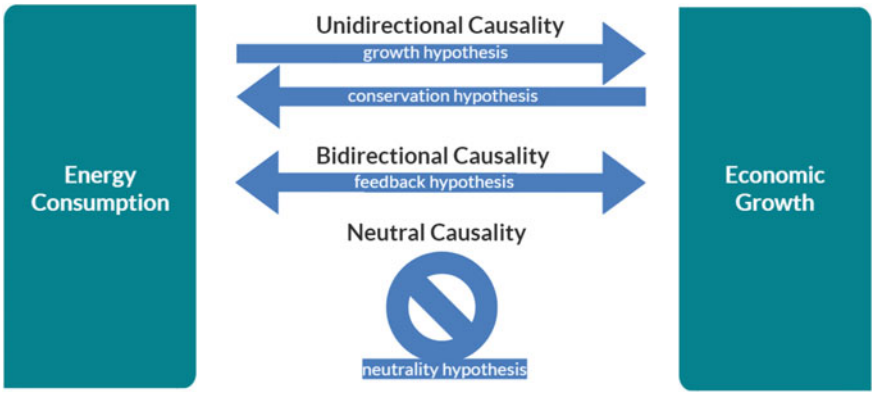

Fig. 14.1 Energy-growth linkage's causality hypotheses. *Source* Adopted and Modified from Isik et al. (2018)

the causality relationships. Kourtzidis et al. (2018) re-evaluated the energy-growth hypotheses for the United States for 1991–2016 and found neutrality at sectoral and unidirectional causality for the growth hypotheses at country level. Apart from bidirectional causality for 25 member countries of the Organization of Economic Cooperation and Development (OECD) between 1981 and 2007, Belke et al. (2011) found the dominance of international developments on the long-run relationship between energy consumption and real GDP using co-integration techniques. An international sectoral analysis for energy-growth hypotheses was carried out by Howarth et al. (2017) to observe strong link (causality) in all sectors for six countries forming the Gulf Coordination Council (GCC) and no link in OECD. More evidence of this long-run relationship between CO_2 emissions, GDP and energy consumption with reciprocal paths is found in Asongu et al. (2016), involving 24 African countries using an Autoregressive Distributed Lag (ARDL) model. Simultaneously, using ARDL bounds tests, Odhiambo (2009) found a stable long-term unidirectional energy-led growth and prima-facie causality from electricity consumption to growth in Tanzania between 1971 and 2006. Acaravci and Ozturk (2010) investigate the long-term causality of electricity consumption to economic (real GDP) growth in 15 transition countries and found no effect or relation (causality) between the two using co-integration method.

Similar conflicting results are observed in some other energy-growth and development related issues like trade and tourism as they are linked to energy consumption. While their findings did not explicitly stress the renewable energy-growth linkage, using an innovative bootstrap panel Granger causality model, Isik et al. (2018) examined it for tourism development in seven countries. They found interdependence of tourism development and growth in Germany, tourism-led growth in China and Turkey and growth-led tourism in Spain. Renewable energy consumption-led growth is found in Spain and growth-led renewable energy consumption in China, Turkey and Germany, at the same time, while a bidirectional relationship was found in Italy

and USA. The inconclusive results of the impact of trade on energy consumption linkage in OECD countries were further studied in Topcu and Payne (2018) for the period from 1990 to 2015.

A careful scrutiny of many of the studies reveals that there is also a growing extension of this discourse into the classification of energy into renewables and fossil as well as its associated environmental concerns (CO_2 emissions). The determinants of carbon dioxide emissions as they relate to climate change mitigation and sustainable growth through sustainable energy (environment-energy-growth linkage) have been revisited by Chen and Lei (2018) using a panel quantile regression on global 30 high-emissions countries between 1980 and 2014. They found the effects of the determinants on CO_2 emissions to be heterogeneous. Renewable energy (RE) consumption is found to have limited effect, compared to technological innovation, in reducing CO_2 emission in high-emissions countries due to the smaller proportion of its use. On the other hand, it can be implied that, the effect of RE in reducing the potential CO_2 emissions in developing countries, like those of Sub-Saharan Africa—SSA, is at least higher than that of high-emission economies. Their recommendations of financial support for technological innovation for transitioning from non-renewable to renewable energy to meet energy demand will undoubtedly have greater impact in the low-emissions developing countries. This is stressed by the evidence of both short- and long-run bidirectional causality between renewable energy consumption and economic (real GDP) growth in a panel of six Central American countries found in Apergis and Payne (2011) for the period 1980–2006 using heterogeneous panel cointegration. A similar, yet more elaborate study by same authors (Apergis and Payne 2012) involving over 80 countries for the period 1990–2007 examines the relationship between renewable and non-renewable energy consumption and economic growth. With little difference in the elasticity with respect to renewable and non-renewable energy consumption (substitutability), similar results of bidirectional short- and long-run causality is obtained with positive and statistically significant coefficient estimates. Though the study involved both developed and developing countries, it can be argued that, the robustness of the results is due to the larger number of developing countries in the sample. This is because, as it was earlier established, by the implication of low impact on CO_2 emissions, long-run renewable energy-growth causality in developed countries will be limited as well, due to their small share of renewable energy use.

Without deeper observation of this relationship with all the differences in results of causalities, the fact that causality theory neither captures the full sustainability picture nor caters for all the interests of the different growth factions concerned is obvious. This is especially clear when the desire for higher growth, concerns for environmental conversation and the role of energy consumption in both are put simultaneously into perspective. In Fig. 14.2, an attempt is made at capturing an elaborate version of conservation causality hypothesis in the perspective of leap-frogging to renewable energy regime that is in line with the enhancement of Energy Trilemma (discussed in Sect. "The Way Forward"). In doing so, the combined concerns for environmental conservation, energy consumption and sustainable economic growth promised by leap-frogging are captured.

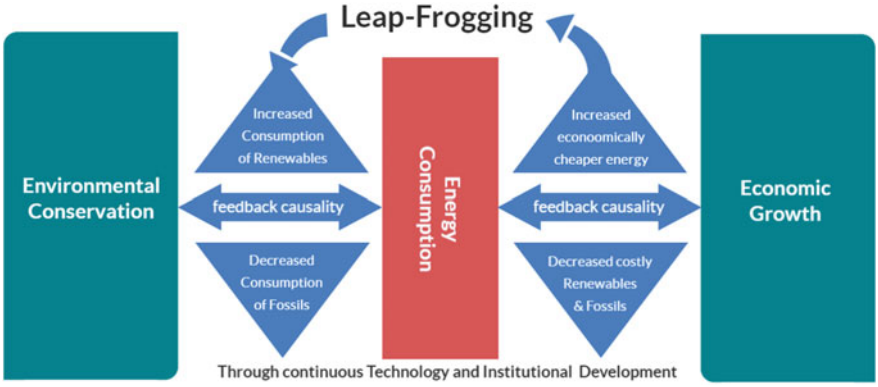

Fig. 14.2 Leap-frogging-based conservation causality hypothesis. *Source* Authors' Design

This depiction attempted to capture the combined relationships between energy consumption, economic growth and environmental conservation while leap-frogging to intensive RE regime. It presents a framework that ensures sustainability in a process which neither sacrifices economic growth nor the environment and thereby ensures the climate justice required to establish growth and developmental equality. This will address the calls by developing countries for their right to growth and development in the growth limiting sustainability debate by use of intensive renewable energy in their economies.

Moreover, not only will sustainable energy bring more growth in less developed countries, studies have shown that, its potential outperforming the traditional energy systems in terms of both reducing energy intensity of growth and creating more jobs, cleaner environment and more sustainable business future in the process (Pollin et al. 2009). Therefore, as seen in this section, improving the energy-growth linkage of low developing countries especially those of SSA (West Africa in our case here), have the potential to produce higher and positive social, economic and environmental impacts. This will further sustainably intensify the 'catch-up' in the growth and development convergence process suggested by Barro and Sala-i-Martin (1992).

Energy partnership—Sustainable Development Goals—SDGs interlinks: The challenge of achieving the SDGs in Africa and the rest of the world depends on the success of the world in achieving SDG-7: affordable and clean energy, SDG-11: sustainable cities and communities, SDG-13: climate action and SDG-17: partnership for the goals. These goals as portrayed in Le Blanc's (2015) description of SDGs as Network of Targets, are key to the success of the world in achieving the rest of the goals. This is particularly true, because of the centrality of energy (Nilsson et al. 2013) and partnership (Dolan 2011) in the growth and development process.

This is made possible by the obvious overlap between the goals in such a way that success in one goal is linked to the success of other goals (Le Blanc 2015). For instance, active Climate Action (SDG 13), particularly investment in cleaner technologies is instrumental in achieving other SDGs, e.g. 7, 11 and 12. Investment in clean energy, as studies suggest, create more jobs on average, with higher incomes than business as usual (Elpel 2018; Pollin et al. 2009). This in return ensures not only the environmental benefits of SDG 13, but also that of SDG 8 (decent work and economic growth). SDG 8 also looks achievable to ensure that job and income is available to more citizens that will work to build the new green infrastructure needed for the renewed industry based on new clean-technology innovation (SDG 9). With more people employed, higher demand ensues the desired multiplier effect leading to more jobs and income that would result in poverty reduction (SDG 1). This automatically translates into the fulfilment of Maslow's (McLeod 2007) basic psychological and safety needs of food (SDG 2), good shelter (SDG 6) and better health and well-being (SDG 3) in an energy efficient manner, as well as social and self-esteem needs through quality education (SDG 4) on sustainable way of life. It is only with massive sustainable realization of the basic, social and self-esteem needs by a greater percentage of the population through achieving the above goals, especially education, that inequality in both gender (SDG 5) and economy (SDG 10) can be reduced. And these two are sine-qua-non to realization of domestic vis-a-vis global peace and justice ensured by strong institutions (SDG 16) built based on agreed upon local, regional and international arrangements (SDG 17). Agreements and rules that ensure life on land (SDG 15) and under water (SDG 14) can easily be developed and adopted to create the world of different respective dreams through sustainable coordination of the these partnerships.

This analogy is not in any way disputing alternative possibilities through which SDGs can be achieved, however, the centrality of sustainable energy and partnership cannot in any way be avoided. A very good grouping of SDGs from the DNV GL's Future Spaceship Earth report is presented in part (a) of Fig. 14.3 for example, but the centrality of partnership and energy is evident in its biosphere, society and economy classifications of the SDGs. Moreover, this classification reflects the "*earth belongs to man*" thinking from which weak sustainability stems. However, another classification of the SDGs that reflects strong sustainability that coincided with the "*man belongs to earth*" aspect of the famous Native American saying by Chief Seattle is presented in the (b) part of Fig. 14.3. A diagrammatic representation of the energy and partnership interlinkages for SDGs is presented in this section (Fig. 14.4).

While the interlinkages between SDGs as seen above have clearly set the stage for effective actions towards their achievement, the existing institutional structures both within and outside the UN system do not necessarily help. This is largely due to the fact that they do not provide much needed clue on the operationalization of relevant UN's technology transfer partnership ideas, in the area of energy, like the Technology Facilitation Mechanism—TFM that started with the recommendation of the June 2012 conference (Srinivas 2016). The recommendations gave rise to the UN Secretary General's report that acknowledged the need for, the establishment of TFM. The details of the current institutional structure of TFM as given in Chaturvedi

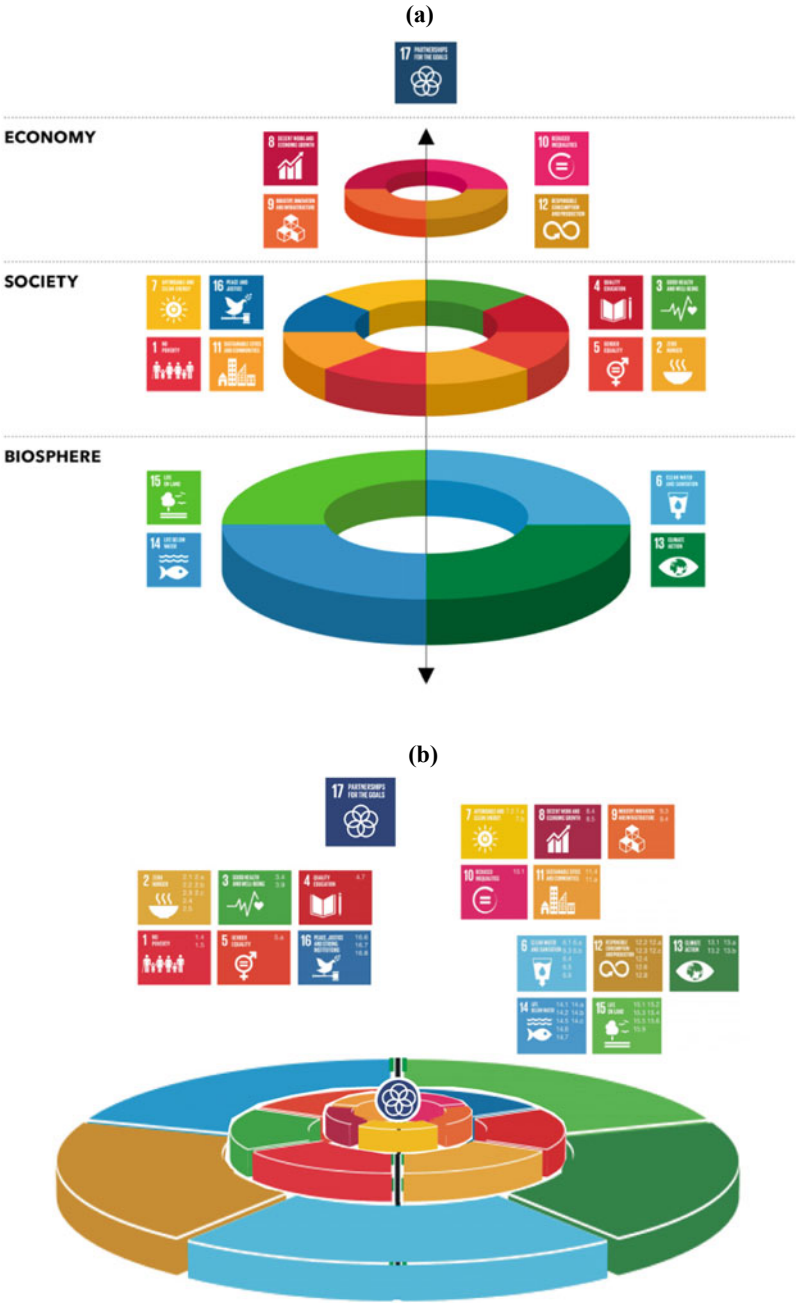

Fig. 14.3 Grouping and interlinks between SDGs. *Source* **a** DNV-GL (2016). *Source* **b** Illustration by Authors

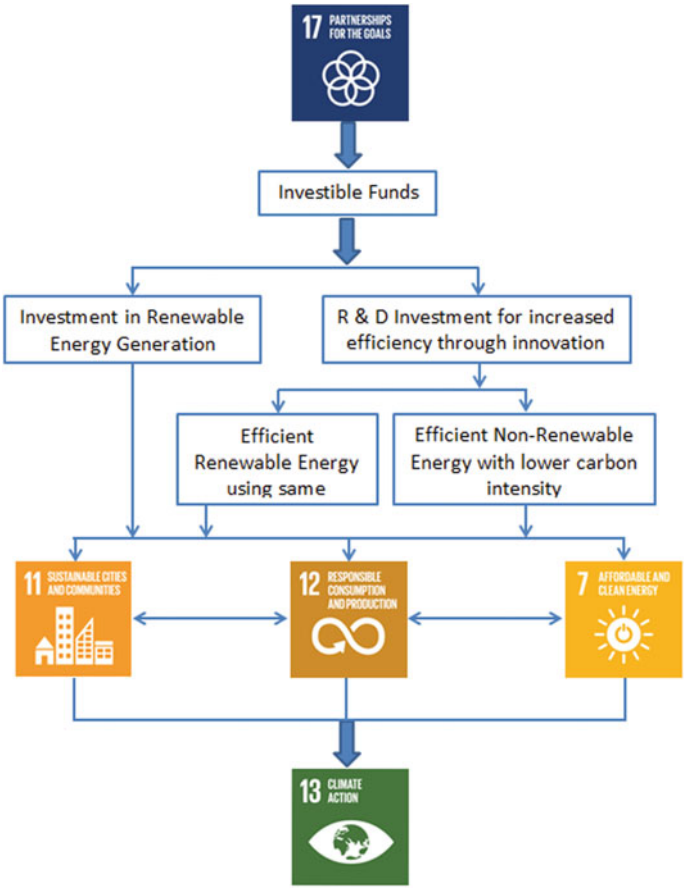

Fig. 14.4 Grouping and interlinks between energy and partnership SDGs. *Source* Illustraton by Authors

and Saha (2016), if implemented and strengthened can effectively facilitate a strong vehicle for energy leap-frogging in the developing countries. This is because, it is imperative that leap-frogging and TFM can use each other to strengthen both and generate a higher traction than they could have provided, if considered individually, towards achieving SDGs.

Leap-frogging to the renewable regime; transition: Gallagher (2006) viewed leap-frogging as constituting not only skipping over generations of technologies, but also leaping further ahead to become technology leader in the industry. While such a huge sudden progress may not presently be possible, renewable energy transition by way of leap-frogging in developing countries especially those in Africa will go a long way in solving a number of problems. Apart from providing the needed energy infrastructure using new and sustainable technologies, the advantages of avoiding

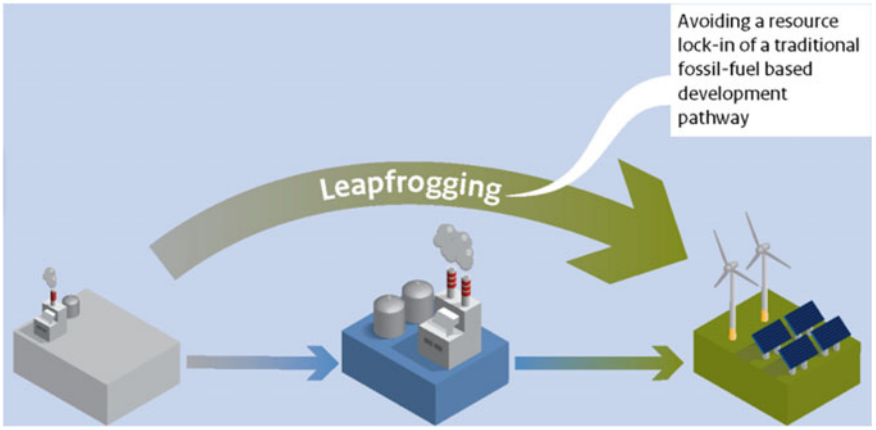

Fig. 14.5 Leap-frogging in power sector. *Source* Adapted from PBL (2017)

environmental damages associated with fossil technologies are enormous. This is in addition to the health benefits that are being lost under the business as usual of massive biomass cooking and kerosene lighting of rural and semi urban life. Steady supply of clean energy in that is currently difficult in most urban areas of African countries and other associated unobserved benefits sound a very interesting idea.

Figure 14.5 adapted from PlanBureau voor de Leefomgeving (PBL) 2017 perfectly serves to depict the concept here. Though there are other ways to reach benefits promised by leap-frogging, such as insisting on old but cleanest technologies (Gallagher 2006), the way leap-frogging can potentially promote sustainable growth and eventually development using the most recent and advanced technologies appears commendable.

Amongst the factors that justify the argument in favour of leap-frogging are:

- Availability of renewable energy sources and resources
- Global renewable energy market trends
- International climate interventions through the programmes of the United Nations Framework Convention for Climate Change
- Increased innovations & advances in renewable energy technologies
- Growing environmental awareness and support for climate action
- Potential spill-over benefits associated with adoption of new technologies.

Apart from the generally known barriers to leap-frogging with respect to technology, finance and policies, Reddy (1991) observed issues more related to industry practices as unwilling customers, end-user equipment compatibility, energy carrier/producer/distributor challenges, local/national/international financial institutions etc.

A Brief Global/Africa's Energy Profile

According to OECD/EIA's Global Energy & CO_2 Status Report 2017, the estimated global total energy demand for the year 2017 is put at 14,050 million tonnes of oil equivalent (Mtoe), while Enerdata (2017) estimated for 2016, 24,660 and 21,190 TWh for global production and consumption of electricity, respectively. It is worthy of our understandings that from the records of World Bank close to 81 percent of the world's energy and specifically electricity is coming from non-renewable sources (see Fig. 14.6).

The world energy outlook from the reports of major organizations like the International Energy Agency, US Energy Information Administration, International Renewable Energy Agency, World Energy Council, World Energy Forum etc. point to the growing energy demand, stepping up and bright future of renewables, despite the fact that we will be stuck with fossil energy for some time to come. With these production and consumption numbers, over 15 percent (over a billion people) of the world population is currently without access to electricity. Over 80 percent of the people without access to electricity live in low income, Sub-Saharan African and South Asian developing countries.

There are over 660 million people in Africa without access to electricity, and over 750 million rely on traditional biomass (IRENA 2015). Out of the millions without access to electricity in Africa, about 173.3 million people (corresponding to more

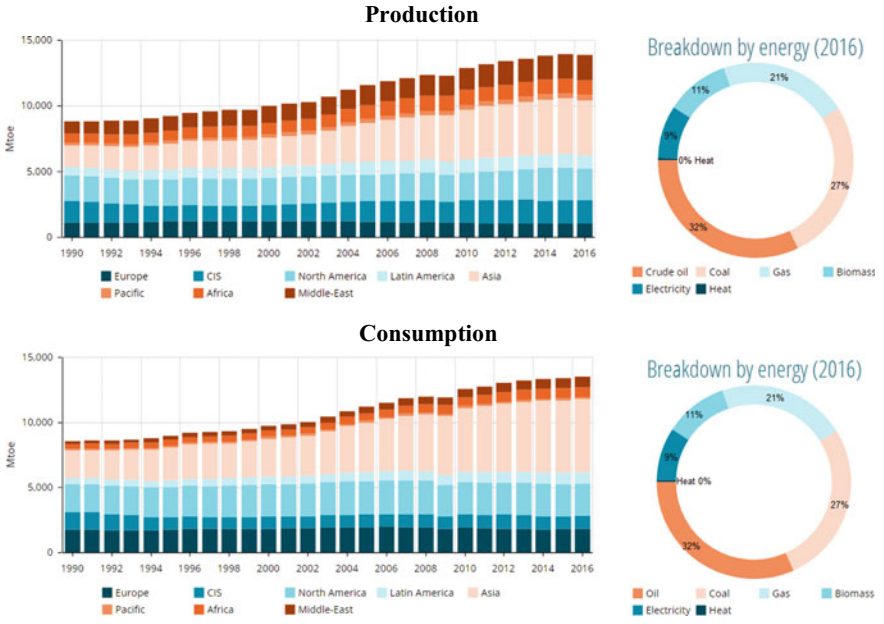

Fig. 14.6 Global total energy by regions and sources. *Source* Enerdata (2017)

Table 14.1 Africa's energy landscape

Region	Population (million people)	GDP (billions of CI$/Yr)[a]	Access to electricity (% of population)	Power consumption (kWh per capita)
West Africa	327	1310.00	47	188.00
Sub-Saharan Africa	1033.15	1512.60	37.4	480.52
Africa	1223.32	2186.53	45.9	779.61
World	7442.14	75,845.12	85.3	2674.00

Source World Bank (2016). [a]CI$ stands for Current International Dollar: a hypothetical unit of currency that would buy in the cited country a comparable amount of goods and services a U.S. dollar would buy in the United States

than 26 percent of African population without access to electricity) are located in West Africa. This is true despite the fact that the region has a higher percentage of population with access to electricity than that found in the SSA and continent as a whole while at the same time having a little above 30 percent of the SSA and more than 26 percent of the continental African populations. The less than 50 percent population of West Africa that has access to electricity in the continental sub-region as a whole enjoy as little as 188 kWh annually as shown in Table 14.1. This is less than half of what an average Sub-Saharan African (480 kWh) enjoys, more than 4 times less than continental average of 779.61 kWh and only about 7 percent of the global average. These huge differences are surprisingly oppositely reflected in GDP as West Africa accounted for more than 86 percent of the Sub-Saharan African GDP and almost 60 percent of the continental GDP for the year 2016.

Another interesting way of looking at the energy profile of West Africa that is consistent with not only the sustainability concerns we are considering here, but the equity of access and energy security is from the context of the World Energy Council-WEC's Energy Trilemma (WEC 2015). The conceptual framework of the Trilemma—derived from the three core dimensions of WEC's definition of energy sustainability, somehow holistically captures the combined (growth, conservation and access) challenges of the energy systems in developing countries (Fig. 14.7).

There are three reinforcing trends in the transformation of the global energy sector—decarbonisation, digitization and decentralization that energy policymakers should take into account in their progress on the Energy Trilemma (WEC 2015). However, the progress of African countries on the Energy Trilemma is not very satisfactory as they all are ranked among the lowest 25 percent in the world according to the World Energy Trilemma Index 2017 Report that quantifies and comparatively ranks 125 countries (Table 14.2).

Only 25 African nations are included for the region in the ranking and eighteen of them—including all the West African countries considered for ranking, are ranked between 100 and 125. The key challenge for the region is found to be lack of access to energy, necessitating significant use of the region's available resources and utilization of renewables potentials by building institutional capacity, attracting investment

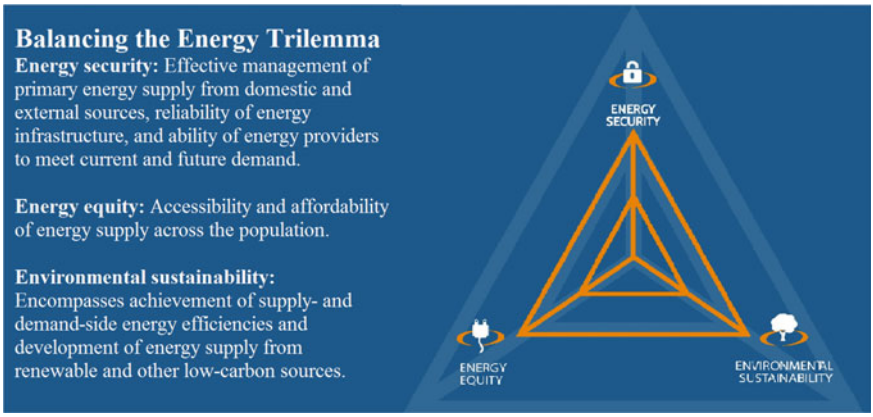

Fig. 14.7 Three dimensions of energy Trilemma? *Source* https://www.worldenergy.org/wp-content/uploads/2015/11/Trilemma-what-is-the-energy-trilemma.jpg

Table 14.2 World energy Trilemma 2016

Regions	Comparative performance (%)
Asia	50—Lower 25
Europe	Top 25
Latin America & Caribbean	25–75
Middle East and North Africa	50–75
North America	Top 25
Sub-Saharan Africa	Lower 25

Source WEC (2017)

to improve on-grid and off-grid energy supply to overcome the impasse (WEC 2017). These features are to be compared with the prevalence of fossil fuels subsidies to the tune of an estimated amount of $21 billion.

Most developing countries, going by their little share of modern energy access, do not currently have the needed energy infrastructure and hence represent the future increase in energy demand and thus CO_2 emissions. Even though climate action should be a collective responsibility, most developing countries are not currently required under the Kyoto Protocol to lower their emissions. It is therefore in the interest of the developing nations and world at large to intensify the effort of leap-frogging to renewable energy now, instead of continuing the trend of fossil energy and later start the transition when their emissions become alarming. This will spare the developing countries from the huge potential environmental and economic costs of lowering emissions as is being faced by the developed world and major emerging nations now. Therefore, understanding the energy need and demand of these nations is important in determining the costs and benefits of leap-frogging to renewables for the purpose of improving their growth-energy linkage.

West African energy requirements; costs and benefits of leap-frogging: Crucial to achieving a better energy-growth linkage through energy efficiency and sufficiency is the knowledge of energy requirement for a given locality, country or region. It is even more important if first, a distinction is made between need and demand before answering how much energy we need for a decent living standard. Needs are the basic fundamental requirements for human survival, hence energy need is the minimum amount of energy required for a decent and dignified living. On the other hand, demand as the quantity of goods or services an individual is willing and able to buy at a given price and time, hence energy demand is the quantity of energy one is willing and able to buy at a given price and time. This shows that, due to so many reasons under present conditions, there will always be a difference between energy need and energy demand, as not all energy need could be meet at any given price and time.

From this distinction, we can set the foundation for our analysis of energy requirement as energy need for a given country includes the basic energy requirements of all the citizens irrespective of their ability to pay for the energy services in a given period of time. Energy demand for a given country on the other hand, includes the quantity of energy that is being requested, paid for and supplied to the citizens at a given price and time. Expert economic projections, however, suggest that we need more energy as we move forward (Fig. 14.8).

How much energy do we really require? Answering this question is important especially as number of studies relate energy poverty to labour productivity and ultimately the level of growth and development, thus culminating into the energy-growth discussion that is part of our focus here. This is true when one looks at the historical records of how modern energy (especially electricity) brought about significant positive changes in the growth process of developed and now rapidly developing world.

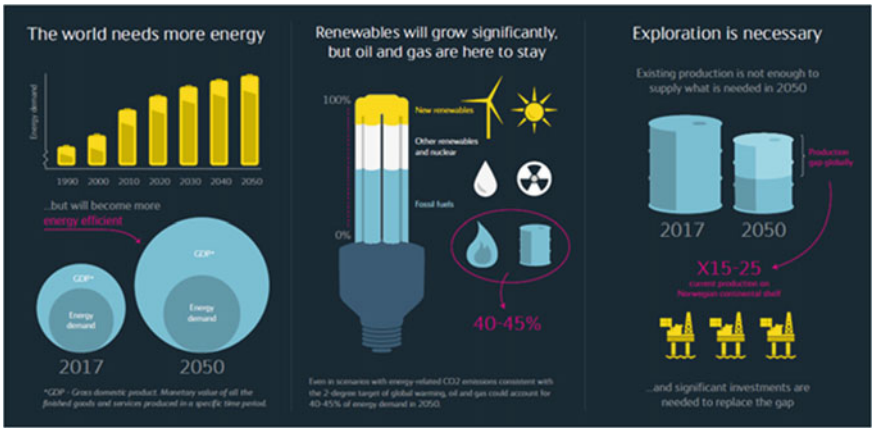

Fig. 14.8 The world will need more energy despite becoming more efficient. *Source* Statoil (2017)

It is interesting that most models of energy demand forecasting centred on the desired GDP and population growth in answering the question around need assessment of energy. However, Dharmadhikary and Bhalerao (2016) argued that energy planning should promote equity and better monitoring framework by linking energy to end-use and end-user directly. This argument addresses the claim made in The Economist's (2017) article (Shock Therapy) that more Africans have electricity, but they are using less of it, leading to bankruptcy of most power generating companies. While the veracity of this claim is not our focus here, how and why should Africans use the power if it is not within their capacity to access and their kind of use is not factored in the planning process. Nevertheless, while this is a never ending debate like most others, estimation of energy needs from the perspective of end-use and end-user sound a more justifiable and important step in the energy planning process. As such an attempt is made to estimate energy need for West Africa narrowing down to electricity with some clear assumptions and associated economic and environmental costs and benefits in the remainder of this section.

Energy is used in many forms, for various purposes in wide range of economic and other activities, the coverage of which is beyond the scope of this study. However, for clarity's sake, the study conducted an exercise of estimating the costs and benefits of providing all the excluded and underserved population of West Africa with electricity from renewable sources. This is done as mentioned earlier with a view to determine direct economic and environmental gains in terms of improving standard of living through creation of jobs and avoiding potential CO_2 emissions. One interesting question that the activity tried to answer is, what will be the costs and benefits of giving all West African population currently without access, and those underserved same level of access to clean electricity according to the measured standards as shown in Table 14.1:

i. ***West Africa per capita kWh***: Under this standard, the estimation is to bring out the costs and benefits of creating energy equity around the West African standard kWh per capita to bring the excluded members of the population to same level of energy access to those currently having access to electricity in West Africa.
ii. ***Sub-Saharan Africa per capita kWh***: Here, the idea is to estimate the cost and benefits of creating energy equity for West African population around the SSA kWh per capita to bring the excluded and the underserved populations of West Africa to the same level of energy access enjoyed at the SSA kWh per capita.
iii. ***African kWh per capita***: This is similar to the SSA estimation above, rather here it is done around the continental kWh per capita to bring the excluded and underserved West Africans to same level of energy access to the continental average.
iv. ***The Global per capita kWh***: Finally, on the extreme, the global average kWh per capita is used as a base for estimating the cost and benefits of creating energy equity for West Africa. That is bringing the excluded and underserved West African population to the level of global average electricity access.

Using recent data and holding other variables such as population, time, technology etc. constant, Fig. 14.9 depicts the following estimates based on the sub-regional, Sub-

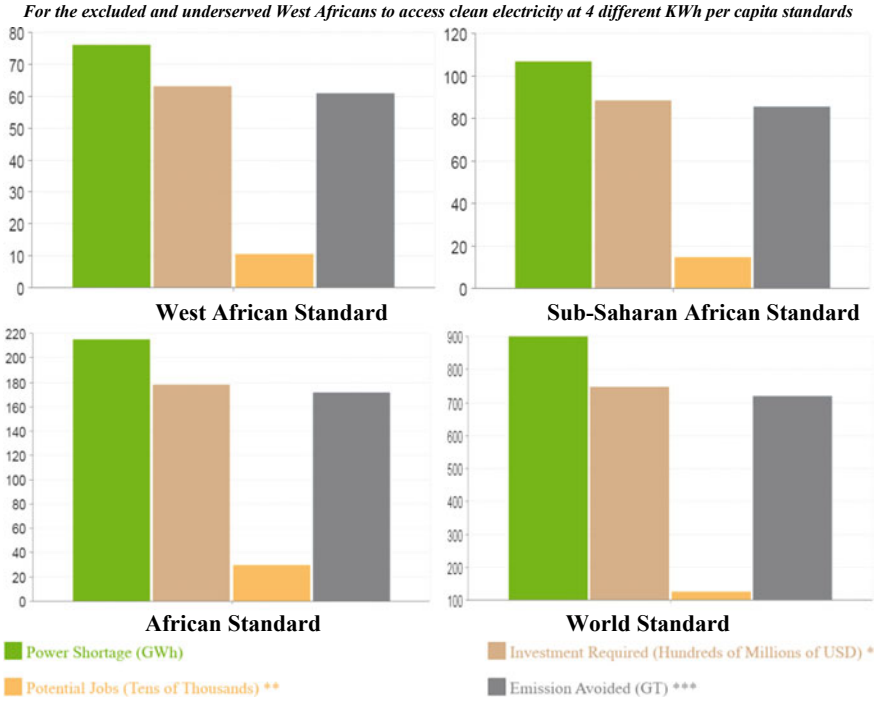

Fig. 14.9 Estimates of costs and benefits of leap-frogging. *Source* Author's own computations using World Bank data. *Notes* *Based on the ongoing current industry standard cost of USD1 M/MW. **Based on the global average CO_2 emission of 800 g/kWh. ***Based on the average number of job created from USD 1 M renewable investment

Saharan African, continental African and global kWh per capita listed in Table 14.1. The detail estimates are given in Appendix (Table 14.3):

- the amount of power needed (power shortage/excess demand),
- the average investment in renewables needed,
- the average number of jobs to be created and
- the potential emission avoided.

The aim of this analysis here is to vividly show what it will take to give all excluded and underserved population of West Africa access to clean electricity at least on the current sub-regional, Sub-Saharan African, continental African as well as global kWh per capita standards. It should be noted that, the per capita for West Africa, Sub-Saharan and Africa as whole were recomputed based on real share of population having access to electricity in those regions. However, it can be seen that, for all excluded and underserved West Africans to enjoy the present 396 kWh per capita of the sub-continent using renewables, they need to produce 76.08 GWh of electricity by investing about USD 6.32 billion into the renewables.

While this seemed a huge stride to go for, the benefits are worthy of the costs, as they generated at least more than 105 thousand jobs while avoiding over 60 gigatons (GT) of CO_2 emissions. On the extreme, for all excluded and underserved West Africa's populace to reach the current World's 2674 kWh per capita using renewables, the needed power to be produced in the sub-region is about 901 GWh, which require an investment of more than USD 74.8 billion to produce the entire requirement under the domain of RE. The associated benefits are over 1.2 million jobs and carbon savings of over 721GT. The numbers for the Sub-Saharan and African kWh per capita are in between the two extremes. Despite these estimated benefits over the costs, the speed at which Western African countries, being considered here, are adopting renewables and efficient technologies is not very impressive. Next section discusses power sector cooperation possibilities within the context of Asia-Africa Growth Corridor—AAGC that will greatly enhance the ability of West African countries to face these energy challenges.

West Africa's energy policy environment: The evolving regional energy policy framework of the Economic Community of West African States—ECOWAS is changing in favour of renewables despite the fact that a number of the member countries have large deposits of fossil energy resources. This is evident from the fact that nearly all Member States have signed, ratified and submitted reports outlining their Nationally Determined Contributions (NDCs) to the Paris Agreement on Climate Action. At the regional level, the integration of power system leading to the realization of a Regional Electricity Market is an important step. But even more important is the creation of ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) and mandating it with the development and implementation of a regional renewable energy policy. This results in the development concurrently of the ECOWAS Renewable Energy Policy (EREP) and ECOWAS Energy Efficiency Policy (EEEP) with the technical assistance of Africa-EU Renewable Energy Cooperation Program (RECP) and the United Nations Industrial Development Organization (UNIDO) on the a basis of a comprehensive renewable energy baseline report. The development of EREP and EEEP is underpinned by several recent regional and international energy policy initiatives. These included amongst others the ECOWAS White Paper on a Regional Policy for Increasing Access to Energy Services in Peri-Urban and Rural Areas by 2015 and United Nations Sustainable Energy for All—SE4ALL. Included within the EREP and EEEP is a comprehensive action plan that was adopted since 2012 by the ECOWAS Ministers of Energy and implementation is ongoing with the aim of helping Member States develop their National Renewable Energy Policies and corresponding Action Plans. Most relevant here is the first of the two prime visions of the EREP: Universal access to electricity by 2030, with the aim of increasing the renewable share in the region's overall electricity mix to 35 percent by 2020 and 48 percent by 2030 using three groups of targets set for achieving that;

i. grid-connected renewable applications,
ii. off-grid and stand-alone applications, and
iii. domestic renewable energy applications.

ECOWAS' commitment to these targets was renewed and heightened with their adoption by the Authority of the ECOWAS Heads of States and Governments in 2013 and the subsequent development of National Renewable Energy & Energy Efficiency Action Plans by Member States. This is being achieved by using the regional framework for the development, implementation and monitoring of National Renewable Energy Action Plans (NREAPs), National Energy Efficiency Action Plans (NEEAPs) and SE4ALL Action Agendas developed by ECREEE, discussed and adopted by Member States in 2014.

As of August 2017, the Executive Director of ECREEE confirmed in an interview that, apart from National Action Plans, ten Member States have published their Investment Prospectus and the rest five are expected to be finalized by the end of the year. The challenge of converting these plans into projects and programmes is being addressed by the ECREEE through a series of programmes in collaboration with development partners at both regional and national levels. These include; Capacity Development Programmes, Knowledge Management and Awareness, Investment and Business Promotion, Specific Projects and Programmes. The most challenging of these is the investment and business promotion programme that aims at mitigating financial barriers to the investment in small, medium and large-scale renewable projects. Two investment initiatives were set up in collaboration with financial institutions and private companies namely: ECOWAS Renewable Energy Facility (EREF) for small projects and ECOWAS Renewable Energy Investment Initiative (EREII) for medium to large-scale projects. The main issue with these programmes is that, while they are set out to promote bankability of renewable energy projects in the region, the huge and growing energy demand in the region is undermining their success. This is compounded by the inability of the local project developers to formulate a viable proposal with sound technical and economic feasible portfolio that would attract investors and financiers. Hence most of the renewable energy projects in the region are carried out by international NGOs whose modes of operations usually miss the local content thus undermining the success as well as the overall impact of the projects. Another major challenge for international developers is the length of time it took to complete the approval process, for example a proposal submitted to Global Environment Facility in 2013 was approved for implementation after almost 3 years from its day of submission. This brings out the existing gaps in the renewable energy development efforts in the region, which at the same time provides an opportunity for mutually beneficial collaboration. These gaps can be viewed from the perspectives of the needed increase in power generation to improve not only access to electricity but also the low level of per kWh consumption of the regions before looking at industrial applications of energy derived out of renewables.

AAGC: Power Sector Cooperation Possibilities

Building from the findings that renewable energy has higher potential for growth and lower environmental impact in less developing countries than more advanced one and that there are interlinkages between SDGs and the centrality of energy and partnership in most, if not, all SDGs provide a strong case for energy partnership. Further, leap-frogging proves to be the best way to go for slowly developing countries as there are more economic and environmental benefits that far outweighs the costs. This is further compounded by, finally, growing enabling policy environment coupled with the gaps in the existing combined efforts of various local and international renewable power initiatives in the region in serving the power requirements of the excluded and underserved population. Hence, the recommendations for power sector cooperation within the context of AAGC for the purpose of contributing to the ongoing efforts of ending energy poverty in West Africa are valid and justified.

This is an unusual opportunity for AAGC, where Asia (India and Japan in particular) and Africa can join resources in such a way that, different interests of the different regions are mutually met. The advantage of this arrangement is based on the fact that, most of these West African countries are among those listed as least developed countries (LDCs). Most of these countries enjoy the no-quota no-tariff policies of the advanced economies, now India and China included, towards LDCs. They are also potential beneficiaries of the EU carbon trading policies, for international carbon offset under which, only carbon credits from these categories of countries are acceptable. Therefore, India's experience in Clean Development Mechanism as second largest owner of these projects and receiver of Certified Emmission Reduction (CERs) in the world (UNFCCC 2016) coupled with its strong international development partnership with Japan (a technological and financial might, Campbell 2017), as well as the ever growing commitment to the global South will be instrumental in serving West Africa's power needs in a mutually beneficial engagement.

For the guarantee of positive outcomes from power sector cooperation through AAGC, a very simple but comprehensive programme that independently complements the different existing and evolving clean energy initiatives in the region is paramount. Such a programme is proposed as West African Community-Based Commercial Mini-Grid Clean Power Projects under the umbrella structure of AAGC. The strategy is to operate multitude of a very small capacity Hybrid Mini-Grid power projects at the minimum government recognized community levels. The rationale for this strategy is backed by some motives that are both the reasons behind the short life span as well as non-execution of most development projects in many regions of Africa. These issues formed the majority of the concerns raised in Pueyo and Bawakyillenuo (2017) as one of the most recent and compressive studies with specific findings peculiar to different regions of the continent. Hence they stand to contribute to providing the needed solutions to ensure power projects' speedy execution, longevity and sustainability as follows:

Corruption, bureaucracy and speed of execution: Most big power projects require the approvals of federal or national governments for subsidies and huge loan guarantees,

which involves long bureaucratic processes within which corruption tendencies are innate. This delays and sometime hinders altogether the execution of the projects as has been witnessed with so many projects in the past. For example, in Nigeria, between 2010 and 2017 several solar power projects MoUs and contracts of various capacities were signed at both state and national levels, but to date, no single large-scale solar power project have featured in the list of power plants in the country. However, small community mini-grid power projects have higher chances of survival and speedy execution, particularly with the arrangement proposed here.

Ownership & control: This is the most important of two, as it is the lack of sense of ownership or control that fuels slapdash attitude of community members towards projects that are designed and deployed to serve their needs. This is not only limited to rural communities as it is common to find in the cities, a small problem that the community can fix being left to continue to hinder the smooth project operations, until government or project owners come its rescue. The underlining belief that outsiders have come whether from out of the country or other part of the country or the state play a very vital role in winning the support of locals towards the continuous success of any endeavour. However, when a project of whatever magnitude is perceived by the community as its own child, then nothing within their capacity will stop the continuous running of such a project.

Differences in beliefs & customs: Though not as salient as control and ownership, cultural differences play a subliminal but important role in ensuring the success or otherwise of projects in African communities. Cultural and religious practices of the local community, when imbibed in the development stages of the projects has the very high tendency of making such a project a success. For example, there are traditional practices in some communities that may require carrying of certain rituals before a particular project is started so as to receive the needed ancestral blessings that guarantee the success of any endeavour. Equally in some other areas, religious beliefs have gone deep to hinder the needed support from the community towards the success of the project. This is particularly due to the nature and manner in which some aspects of the project are carried out (e.g. interest based financing for Muslims). However, when such customary and religious beliefs are taken into consideration in both project design and execution; an overwhelming community support is won. Therefore, it is important to have a proper profiling in terms of customs and beliefs of communities in the design and execution of projects under AAGC intervention. With these issues now cleared, the main programme is hereby proposed.

West African Community-Based Commercial Mini-Grid Clean Power Program

In line with the four pillars of AAGC, the principles of SSC and centrality of capacity building in India's development cooperation, this programme is proposed to achieve the following three key objectives;

- Community capacity building and support in technology and access to the local and international infrastructure financing (Using Expanded Barefoot Solar Mama Model)
- Harmonizing the local practices with regional and international initiatives

- Technical collaboration for research, development and innovation.

To achieve these objectives, the following activities may be carried out in a commercial public-private partnership business model;

- Setting up of a Solar panel manufacturing plant in West Africa: With no new evidence of scale effects on cost of manufacturing of solar panels, an alternative option is to have multiple panel manufacturing locations strategically distributed based on the expected demand from the respective locations. But this is dependent on availability of investment as capital intensity is found to be the major barrier to scale panel manufacturing (Powell et al. 2015) and the availability of willing local partners, which is usually a major challenge not only in energy but other sectors (CII/WTO 2013).
- Setting up of strategic teams of Local Mini Power Project Development Assistants-LMPPDAs: looking at the number of clean jobs to be created by adopting leap-frogging and based on the evolving policy environment and initiatives, the magnitude of the need for capacity building cannot be over emphasized. This is particularly important considering the size of the policy targets, the efforts needed to achieve them and the available capacity currently in the region. As reflected by the nature of the operations of international renewable project developers in the region, there are no signs of increasing capacity that match the growing demand at the current and projected pace of economic growth in the region.
- Setting up of a Clean Mini-Grid Coordination-CMGC Secretariat to monitor the activities the LMPPDA: Impact assessment as South-South Cooperation feedback mechanism is essential and even more important is the implementation and monitoring that enable course corrections in the event of mismatch between observed and actual realities on ground of a particular project execution process. Equally providing the needed guidance and handholding for the Teams of LMPPDAs via a technical cooperation and partnerships, an area India has a significant competitive advantage.

With these three structural arrangements in place, the stage would be set to engage in the process of developing local power projects based on the peculiarities of the communities in question. This will be done using a business model that enables the communities to set-up a community power project companies-CPPC in technical partnership with the nearest AAGC's LMPPDA with the guidance of the AAGC's CMGC Secretariat. The CPPC will be owned by the able members of the community and guided by AAGC's LMPPDA on how to generate needed seed capital and secure financing for their power project from various sources within their reach. They will also be guided in designing their Mini-Grid Power Projects in line with the requirements of various national, regional and international clean energy policies and initiatives. The solar panel manufacturing plant will be supplying the needed solar panels at best competitive price to these projects so as to enhance their cost efficiency and viability. With this arrangement, the possibility and sustainability of these projects will be substantially enhanced in such a way that, they will be able to win financing bids from national and international financiers. AAGC's CMG Power Projects will

have the highest possible impact on the lives of the community members by drastically contributing to reducing the number of those excluded and underserved with electricity. An effective model may be a hybrid of Pay-As-You-Go (PAYG), Feed-in-Tariffs and Rent a Roof fashioned to fit the Net-Metering or any other government programmes to cater for the different financial capabilities of the community members. Different models have recorded a number of successful projects in both rural and urban municipalities. These are observed in a number of case studies in remote villages of Africa and small Islands in Asia to be proving a viable alternative to grid extension in helping communities gain access to electricity (USAID 2018). In Africa for example, Power Africa, through the U.S. Trade and Development Agency (USTDA), is helping Standard Microgrid expand to 150 additional sites to provide affordable power to remote customers through financially viable mini-grids. In total, Power Africa added about 7200 MW to the Africa's generation capacity in 10.6 million connections with about 53 million beneficiaries by 2017, a good share of which is in mini-grid systems (Power Africa 2017), while in India, the Remote Village Electrification Programme (RVEP) and the Village Energy Security Programme (VESP) under MNRE electrified more than 12,700 remote villages and hamlets (MNRE 2013). In addition to these, two most successful models of mini-grids implemented by government agencies in India are those implemented by West Bengal Renewable Energy Development Agency (powering around 10,000 households in West Bengal) and CREDA (powering around 35,000 households in Chhattisgarh) (GNESD 2014). The success of this models in a number of countries apart from India, not overlooking the few cases of roof-rights disputes, will undoubtedly match the estimation of IEA, that mini-grids supported by these models will have to provide around 40 percent of the new capacity by 2030 with largest percentage in SSA (IEA 2014). To achieve targets like this, there is the need to start doing the work by now through programmes like this.

When this is realized, as set out from the beginning, the level of labour productivity will be enhanced in those communities affected, particularly from the savings to be made from cost of generating electricity using small or big generators. This is because, electricity is at the centre of modern production and access to steady affordable power is the key challenge of most African communities (WEC 2017). Air and noise pollutions will be reduced in the busy local markets, through which health will be improved. The combined effect of these improvements will cumulatively improve the energy-growth linkage of the communities, and if combined across the countries will enhance the growth of these countries as established previously in Apergis and Payne (2012). It is being observed that on average renewable energy consumption has more effect on growth of low energy consuming developing countries than those of high energy consumers (Chen and Lei 2018). Also, out of the USD 93 billion projected by the World Bank for Africa's, almost half is needed for it power supply infrastructure. The combined economic and environmental benefits are enormous particularly for the communities affected and the region and the world at large.

The Way Forward

The community-led initiative proposed here, in a pilot study setting, will go a long way in providing a testing ground for the potential mutual benefits of these synergies while fine-tuning the emergence of the TFM institutional architecture proposed in Chaturvedi and Saha (2016) and other initiatives that may arise in the future.

The potential impact of leap-frogging through environment friendly technologies in communities of developing countries cannot be overemphasised as roughly estimated and shown in Fig. 14.9 (Sect. "A Brief Global/Africa's Energy Profile"). However, this cannot be realized without doing the needful in terms of collective engagement of these communities in the areas their inadequacies to effective facilitate leap-frogging at the grass-root, which will definitely produce direct and indirect effects on the communities in particular and their respective economies as a whole.

The facilitation of leap-frogging in communities through enhanced TFM will bolster the overall result of such effort and ease the replication process in subsequent communities by rapid closing of the technology gap, thereby improving the technology and innovation ecosystem of the affected communities and countries. This is easily identifiable in the areas of energy centred SDGs 7, 11, 13 and 17 (which brought parties together), but as clearly indicated in Fig. 14.3 (Sect. "Literature Review"), the indirect linkages of these goals to the biosphere, society and economy segments of the SDGs are inherent.

The indirect role the achievement of these goals plays in the achievement of all other goals is also evident, i.e. the argument so far clearly indicated the direct link between leap-frogging and energy focus SDGs. However, one must appreciate that such an effort will also indirectly contribute to the achievement of other SDGs as earlier elaborated, the interrelationships among the SDGs is quite obvious. A solution to energy management that effectively captures the concerns for environmental sustainability is undoubtedly capable to contribute to end hunger and poverty.

Appendix

Estimation Methodology: In arriving at these estimates, the per capita kWh values were first recomputed to showcase the real per capita based on the share of population with access to electricity. After that, the population was divided into excluded and underserved, from where the difference power shortage is computed by multiplying the population without access and the newly computed real per capita kWh for West African standard case. In the remaining three cases, an additional level of calculation is added, where the difference between the recomputed real per capita kWh and the standard per capita in question is computed and used in calculating an addition to the power shortage for the underserved population. The power shortage for the

Table 14.3 Estimates of electricity leap-frogging costs and benefits

Descriptions	For the excluded and underserved West Africans to access clean electricity at kWh per capita of			
	West African standard	SSA standard	African standard	World standard
Power shortage (GWh)	76.08	106.67	215.06	901.58
Investment required to reach the respective standard (Hundreds of Millions of USD)[a]	63.15	88.53	178.50	748.31
CO_2 emissions avoided on reaching the respective standard (GT)[b]	60.87	85.33	172.05	721.26
Potential jobs on reaching the respective standard (Tens of Thousands)[c]	10.55	14.79	29.81	124.97

Source Author's own computation using World Bank Data
Notes [a]Based on the ongoing current industry standard cost of USD 1 M/MW
[b]Based on the global average CO_2 emission of 800 g/kWh
[c]Based on the average number of job created from USD 1 M renewable investment

underserved is computed from this difference in per capita kWh and added to the power shortage of the excluded population to arrive at the total power shortage based on that standard per capita kWh.

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Part V
People-to-People Partnership

Chapter 15
Towards India–Japan Development Cooperation in Africa

Ruchita Beri

Introduction

Africa has been in the limelight in the recent years. A latest survey by the Economist suggests that 9 of the 20 fastest growing economies across the world in 2017 are expected to be from Africa.[1] While Africa offers huge opportunities, several challenges still linger. Many countries in Asia view their African partners as potential development partners. At the same time, there is greater willingness to engage with them in a new model of development partnership that is participatory, inclusive and people-centred. It opens upon the possibility of bilateral and triangular cooperation between Asia and Africa. India and Japan are front runners in this endeavour. This has been reflected in a couple of Joint Statements issued between India and Japan during the visits of the two Prime Ministers in the last two years.

Over the years, India has evolved close development partnership with African countries with the idea of accelerating mutual growth. It engages with the African countries at three levels—bilateral, regional and multilateral. The multilateral engagement was launched in the first India-Africa Forum Summit (IAFS) in 2008. The third IAFS hosted in 2015 by the Indian government has set the agenda that would help empower Africans and bring Africa and India closer in future. Likewise, Japan offers development assistance to several African countries through the Japan International Cooperation Agency (JICA) and the Tokyo International Conference of Africa's Development (TICAD) process. Given rich civilisational linkages and strong diaspora in Africa, India can strengthen its development partnership with Africa by adopting a growth corridor approach and shows willingness to partner with like-minded countries in Asia, such as Japan. The growth corridor would encapsulate

R. Beri (✉)
Senior Research Associate, Institute for Defence Studies and Analyses, 1 Development Enclave, Rao Tula Ram Marg, New Delhi 110010, India
e-mail: berir91@gmail.com

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the vision of people-centric growth and development as envisaged by the two prime ministers.

Priorities and Scope of Development Cooperation

India

India's development cooperation approach with Africa is based on certain core principles. It is consultative; driven by demands of the African countries and is free of conditions. Prime Minister Narendra Modi has accorded Africa top priority in India's foreign and economic policy. At present, 59 percent of India's Lines of Credit (LoC) are directed towards Africa. India's partnership is an amalgam of African development priorities keeping with the African Union's long-term plan, the Agenda 2063, and India's development objectives. The Agenda 2063 was launched by the African countries at the 50th anniversary celebrations of the setting-up of Organisation of African Unity (now dubbed as the African Union) in 2013. The Agenda spells out the aspirations of the African people for transforming the continent. The foremost aspiration is inclusive growth and sustainable development, and its proposed development priorities are eradication of poverty, modernising infrastructure, agriculture and enhancing education capacities and skills of African people.[2] Another plan developed by the African Development Bank identifies "High 5s", for accelerating Africa's economic transformation. They are light up Africa; feed Africa; industrialise Africa, integrate Africa and improve the quality of life for the people of Africa.[3]

India supports these African initiatives and uses three instruments to expand its development cooperation with the African countries. First, India extends lines of credit through India's Export Import (EXIM) Bank. Over the years, India has extended lines of credit to 44 countries in Africa for a total of nearly $8 billion.[4] ***Africa Forum Summit, offered lines of credit worth $10 billion to African -During the Third India countries for development projects over the next five years***.[5] Second, its grants to African countries are in diverse areas. For example, during the first IAFS, India announced a $500 million grant over the next five to six years for projects in critical areas.[6] While at the third IAFS, India committed for additional grant of $600 million.[7] Third, under the India Technical and Economic Cooperation Programme (ITEC), India has made all efforts to address gaps in technical education in Africa. Several scholarships have been offered to officials from African countries. Similarly over the years, large numbers of African youth have availed scholarships offered by Indian government. In 2015, India announced 50,000 scholarships for African students over the next five years.[8] It is worth noting that the African priorities, as proposed by the African Development Bank and Agenda 2063, are indeed reflected in the key areas of cooperation between India and Africa.

Education and Skills Enhancement: The Agenda 2063 recognises that the future of Africa rests on the knowledge and skills of the African youth. Therefore, technical education and skills enhancement is an emerging priority for African countries. It is important to note that since 2007, under the ITEC programme, India has trained over 33,000 officials from African countries in 60 institutions spread across the country.[9] They have been trained in finance, banking, IT, telecommunications, management, SME/rural development, environment and renewable energy, forensic science, hydrography, marine engineering, parliamentary affairs, cybersecurity, defence, disaster management and agriculture. The Indian Council of Cultural Relations (ICCR) offers many scholarships to African students for higher education in leading Indian universities. In a bid to enhance African scholarship in the field of science and technology, and to provide avenues for collaboration in research and development, India has offered CV Raman Fellowships to the African youth. Besides training the youth, India has also empowered rural women, dubbed as "solar mamas", by training them for using solar power for electrification.

Apart from offering scholarships for African students to study in Indian institutions of higher learning, India imparts knowledge through distance education to students based in Africa. Conceived by the late President A. P. J Abdul Kalam, in 2004, the Pan Africa E-Network uses India's strength in the ICT sector to provide higher education to students living in Africa. This project has received a positive response, and since its launch in 2009, 19,000 African students have registered for tele-education from five universities in India.[10] During the last decade, India has also launched an initiative supporting development of institutions in Africa to enhance skills of African youth. Under this, vocational training centres have been established in Ethiopia and Burundi. Several others, such as the India Africa Institute of Foreign Trade in Uganda, India Africa Institute for IT Training in Ghana, India Africa Diamond Institute in Botswana and India Africa Institute for Educational Planning and administration, are in the process of being set up.

Agriculture: In recent years, many African countries have placed agriculture on the top of their development agendas. Many countries in the region have adopted African Union's Comprehensive African Agricultural Development Programme (CAADP) for raising productivity and transformation of agricultural sector. While Ethiopia and Rwanda have progressed, many others still have miles to go. Cooperation in the field of agriculture is one of the key areas of partnership between Africa and India; for example, India launched the Cotton Technical Assistance Programme under the auspices of the IAFS 2. It has been providing support for cotton development in the Cotton 4 group of countries (Mali, Burkina Faso, Benin and Chad) and others, such as Nigeria, Malawi and Uganda. Similarly, India has provided $123 million to Ethiopia for the development of Wonji Shoa sugar plant project.[11] It has extended lines of credit for developing agro-processing plants in Ghana and Mali.

Infrastructure: Inadequate transportation and power generation networks are two major problems faced by the people of the African countries. The African Union's Programme for Infrastructure Development in Africa (PIDA) is a step towards addressing visible infrastructure deficit in the continent. To support African initiative,

India has extended LOCs in power generation, transportation, rural electrification and renewable energy.[12] India has also addressed infrastructure development gap in Africa by joining hands with African Development Bank to create the Kukuza Project Development Company (KPDC).[13] The KPDC was launched in 2015 and is a joint venture between India's EXIM Bank, Infrastructure Leasing & Financial Services Ltd. Group (IL&FS), the State Bank of India (SBI) and the African Development Bank (AfDB). This company would be involved in developing financial, technical and contractual provisions for the projects.

Information Technology: While the numbers of internet users in the African continent have risen over years, only 9 percent of Africans have access to Internet as compared to 50 percent in Asia.[14] In order to increase internet penetration, India has given assistance to set up the Kofi Annan Information Technology Centre in Accra, Ghana. In recent years, India has provided LoC to a number of African countries including Swaziland, Cote d'Ivoire, Senegal, Democratic Republic of Congo and Mozambique for developing technology parks.

Health: Millions of people in the African continent die of from curable diseases owing to inadequate heath infrastructure in the region and insufficient health professionals and medical supplies. India is involved in providing affordable medicines and training medical professionals, and thus collaborating for strengthening universal access to primary healthcare and advocacy of global health governance in the continent. Through the Pan Africa E-Network, India has connected its 12 super speciality hospitals with hospitals/patient-end locations in 48 countries in Africa.[15]

Japan

In 2015–16, the value of Japan total trade with African countries was $24 billion compared to $56.5 billion of India.[16] The most important Japanese initiative in Africa is the Tokyo International Conference on African Development (TICAD), which was set up by the Government of Japan in 1993 to promote development and security of Africa through multilateral cooperation. Compared to India, Japan is a leading international donor. It had joined the Organisation of Economic Cooperation and Development (OECD) and its Development Assistance Committee (DAC) in the 1960s. However, Japan's development cooperation practices differ from other DAC donors. The values that Japan subscribes include "non-interference, self-help, request based assistance that is mutually beneficial" are quite similar to the ones projected by India.[17] In terms of geographic distribution, Africa falls after Asia in terms of Japanese Official Development Assistance (ODA).[18] Most importantly, Japan's development assistance programme is characterised by the concept of private sector-driven economic development supported by human capital and infrastructure development.

During the last TICAD, Japan identified agriculture, education, infrastructure and health for development cooperation with African countries.

Agriculture: Japan has been involved in promoting higher yields in agriculture, particularly in rice cultivation on the continent. In 2008, Japan launched the Coalition for African Rice Development (CARD) to double rice production.[19] Uganda, Ethiopia, Sudan, and Gambia are some of the countries that are involved in this project. Japan was also involved in many agricultural projects for agricultural technology development, rural infrastructure, etc. in Kenya and other African countries.

Education/Human Resource Development: Japan has been involved in projects for improving primary school education such as the "School for All" in West African countries.[20] It also promoted science and mathematics education on the continent, construction of primary schools and had also provided support to institutions of higher education. Similarly, it has been involved in management training in Ethiopia, for improvement of quality and productivity at workplace. It also launched the "Abe Initiative" to support business education of 1000 African students in Japanese universities.

Infrastructure: Japan has supported African countries in developing "quality infrastructure". Besides construction, other aspects such as planning, management and maintenance have been taken care of. It helped in development of infrastructure related to power generation and transportation such as roads, ports and bridges. As in Asia, Japan is also involved in corridor development in Africa including the Nacala Corridor in Mozambique, the Northern Corridor linking Mombasa in Kenya and Kampala in Uganda, the West Africa Growth Ring connecting Burkina Faso, Togo and the Cote d'Ivoire.[21]

Health: Japan has also facilitated in strengthening health institutions in Africa. At the sixth TICAD summit in Nairobi, Japan launched a Universal Health Coverage Initiative in Africa with the support from World Health Organisation and the World Bank. Japan has also identified universal health coverage as a priority area as G20 presidency in 2019.

Specific Projects and Recommendations for Collaborative Projects

Both India and Japan have been forging strong development cooperation initiatives with African countries. As discussed above, there is a convergence in the approach of development cooperation of both the countries which motivates both countries for exploring triangular cooperation. Japan has been a valuable development partner of India for past several years. Besides involvement in the development of industrial

corridors, Japan has invested in automobile, telecommunications, pharmaceutical and electrical equipment development in India.[22]

In the Asia–Africa Growth Corridor, the joint partnership between India and Japan would be crucial in steering the development process along the corridor. Although the scope of cooperation would be unlocked in due course, some sectors can be easily identified for initiating this partnership. Africa is a vital region and offers limitless opportunities. It is well known that Indian partnership with African countries is grounded on the model of regular consultation. In that perspective, the Asia–Africa Growth Corridor should be governed by the same principles and ensure that the projects are demand-driven, and in sync with African priorities. To promote a greater understanding of African perspective on the AAGC and to take forward the spirit of consultation, India may consider developing a network of Think Tanks from Asia and Africa. India has the advantage of historical contacts with African countries. More than two million people of Indian origin have been living in Africa for the last century and a half. They may prove to be an important resource bank for furthering Asia–Africa cooperation. It is proposed that during the next *Pravasi Bharitya* convention, India may initiate discussion on the crucial issue of the AAGC.

The primary focus of India—Africa cooperation—has been towards enhancing human resource development and capacity building in African countries. The AAGC may build on this approach. India and Japan may consult with many of the Regional Economic Communities (RECs) in Africa to identify unique development priorities in each region. A periodic dialogue may be initiated with the RECs. Japanese strengths in finance and delivery of quality infrastructure should be combined with India's long history of experience of trading and implementing projects in Africa under AAGC. The two countries may work with African partners for identifying projects that are small and easily achievable. They need to be realistic while developing the roadmap for implementation.

For effective implementation and generating optimum outcome, India and Japan may consider five models of cooperation under the AAGC. First, Japan would provide additional funds for the existing successful Indian projects in Africa such as the Pan Africa E-Network project in tele-education. Second, Japan provides funds for Indo-African financial venture, such as the Kukuza Project Development Company. This company would facilitate early stage design and preparation of African infrastructure projects. Third, where India and Japan together fund a project in Africa, and Indian and Japanese companies are jointly involved in executing the project in the region. For example, both Japanese and Indian companies have been involved in implementing hydro power projects in East Africa. Here Japanese companies may provide the equipment and Indian companies may implement the project. Fourth, Indo-Japanese joint ventures in the automobile or electronics sector may set up an assembling facility in African continent with a local partner. Here African skilled workers may complete/assemble, semi-finished products exported by these companies based in India. Fifth, where a Japanese company based in India, exports products or implements projects in African countries.[23] It is hoped that the Asia–Africa Growth corridor would lead to forging new connections among India, Japan and African countries.

The Way Forward

Despite notable progress on many fronts, the countries in Asia and Africa continue to face a number of common economic and social challenges especially in the fields of education, health, skill development, capacity building and so on. National efforts are underway to achieve the targets of many development indicators. In addition, global and regional cooperation frameworks would be vital to address the common development challenges of achieving high growth, job creation, financial and social inclusion, among others. The existing Indian and Japanese initiatives such as the India-Africa Forum Summit and TICAD would remain crucial for future of the bilateral cooperation between India and Africa and India and Japan. Under AAGC, the scope of development cooperation would be much wider and the nature of cooperation would be comprehensive, demand-driven and people-centric. The participating countries from both the regions can embark upon a roadmap for identification, formulation and implementation of suitable development projects in due course.

Endnotes

1. See The Economist Corporate Network (2017).
2. See African Union Commission (2015).
3. See African Development Bank (2015).
4. See Modi, Narendra Modi, Speech delivered at the Official Opening Ceremony of the African Development Bank Group Annual Meetings in Ahmedabad, India, May 23, 2017.
5. ibid.
6. Modi, Narendra. Opening Statement at the India-Africa Forum Summit.
7. Modi, Narendra. Speech at the Inaugural Ceremony of the Third India-Africa Forum Summit in New Delhi, October 29, 2015.
8. ibid.
9. Modi, Narendra. Prime Minister of India, n. 4.
10. "Success Stories: Pan Africa E Network Project".
11. See Export Import Bank of India (2017).
12. ibid
13. See Srivats (2015).
14. "World internet usage and population statistics", March 31, 2017.
15. "Success Stories" n. 10.
16. "Japan pledge to invest 30 million in Africa", Aljazeera, 2016. See Also, Ministry of Commerce and Industry, Government of India, *Export Import Data Bank*.
17. See Menocal et al. (2011).
18. See Kato (2017).

19. See Da Silva (2017).
20. See Kato (2017).
21. See JICA.
22. See Ebashi (2006).
23. For example, Toshiba Transmission & Distribution Systems (India) Pvt. Ltd. Formed In 2014, after the Japanese company, Toshiba Corporation acquired the power transmission and distribution business of an Indian company, Vijay Electricals. Vijay Electricals has been exporting transformers to African countries for several years.

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Chapter 16
People-to-People Partnership in the Asia-Africa Growth Corridor: Historical and Cultural Linkages

V. Selvakumar

Introduction

People-to-People Partnership (PPP), one among the four main pillars of Asia-Africa Growth Corridor, is an important mode of interactions in the sphere of international relations. Multi-dimensional interactions among the citizens are essential for forging meaningful, long-term partnerships and goodwill across the nations. People-to-People partnership covers inter-relationships and exchanges in numerous areas such as arts, history, heritage, culture, tourism and education. Historical and cultural connections and cultural interactions form a significant constituent part of the PPP. This chapter focuses on the historical and cultural linkages that existed in the Asia-Africa regions, primarily during the pre-modern period, and offers suggestions for future cooperation under PPP from the perspective of the growth corridor.

In any kind of developmental, diplomatic and cultural interactions and relationships, the interests of the people constitute the central pillar. Therefore, the objectives and core philosophy of a growth corridor between Asia and Africa have to gain the acceptance and support of the people concerned. PPP is about 'winning the hearts and minds of the people', across the vast territories of Africa and Asia. PPP could help to create lasting bonds and relationships, and to improve the public understanding and awareness. It would facilitate an understanding of the common interests among the various agencies and the public.

V. Selvakumar (✉)
Associate Professor, Department of Maritime History and Marine Archaeology, Tamil University, Thanjavur 613010, India
e-mail: selvakumarodi@gmail.com; selvakumar.v@tamiluniveristy.ac.in

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People-to-People interaction and partnership could involve the following:

- Tourism: exchanges among the people across cultures
- Education: HRD, capacity building, training and skill development
- Knowledge Facilitation and Management: creation, sharing and dissemination of knowledge on arts, literature, culture and historical linkages
- Development and reliance on Afro-Asian knowledge Systems: from the grassroots level to higher level, for sharing of knowledge and cultural experiences.

Asia-Africa Historical Linkages

The idea of Asia-Africa connectivity and interactions are definitely not new. Human ancestors had indeed understood the importance of migration, movement, connectivity and interactions as means of survival, adaptation as well as cultural selection to tackle various social, economic, political, cultural and environmental pressures, right from the prehistoric period. Because of certain modern perceptions that reject the very ancient past as 'primitive', and irrelevant, one may underestimate the prehistoric and ancient connections and their significance in the contemporary context. Cultural and historical connections have the potential to build humane relationships across the nations. Evidence from history provides ample instances for connectivity and interactions leading to positive growth and development, in various historical contexts. Understanding of the past connections and their implications could help to develop holistic interactions.

Japan-Africa-India: The Terminals and Centres of Connectivity

As early as the beginning of the Common Era, at least, it is certain that Africa and Asia were well connected through trade and exchange network systems, with the exchange of ideas, people and commodities within the various subsystems. These trade networks that started from Africa reached as far as Japan through India. Japan, India and Africa were, in fact, terminals in one sense, and centres in another, in this expansive network. One of the important commodities of exchange of this period was the glass beads, known as Indo-Pacific beads, which are found in the Indian Ocean and Asia-Pacific, as far as Japan. The glass beads have been reported from East Africa and also in the Yayoi tombs of Japan, and evidence of the presence of Indian craftspersons have come from the site of Khao Sam Kaeo in Thailand (Bellina and Glover 2004; Bellina 2006; Bellina-Pryce and Silapanth 2006). It would not be incorrect to argue that India and Southeast Asia served as an important connecting corridor between Africa and East Asia including China, as far as Japan. Therefore,

these regions coming together to form a growth corridor for the development of Afro-Asian regions is very much relevant, and is not out of place and context.

Conventional Approaches and Issues

The conventional approaches to the study of global historical interactions have mainly focused on the relations between the West and the East, in a sense ignoring the interactions in the Africa-Asia regions, and thereby failed to develop a holistic perspective. The strong notions of East-West division of the globe have ignored, to a greater extent, the South-South interactions. Although intensive connections existed between the African coast and other parts of Asia in the Pre-Colonial period, these connections were not effectively developed or focused, when the new independent states emerged, after the World War II, and when national concerns were prioritized, after several decades of colonization. Despite several initiatives including the Colombo Plan and the Afro-Asian Conference at Bandung, the achievements on the ground were comparatively limited.

In the academic arena, the ancient interactions between Asia and Africa have always been visualized from fragmentary perspectives, as highlighted by the parable of 'the five Blind Persons and an Elephant', like the 'Indo-Roman, 'Indian Ocean', 'India-Southeast Asia', 'India-Africa', Southeast Asia-Africa' and 'India-West Asia' connectivity and interactions by various agencies. However, the perspective of Indian Ocean has been developed by a few researchers (Chaudhury 1985, 1990; Gupta 2004, 2005; Bose 2006; Alpers 2014) to approach the interactions holistically. Although a few historians have in the recent past focused on the Africa-Asia connections (Pearson 1998), there is ample scope and necessity for further research and also to sensitize the academic circles on Africa-Asia interactions. A survey of the history syllabi of academic programmes across the Asian regions would reveal that there is more focus on other parts of the world, mainly the Western World, completely ignoring Africa. There appears to be certain bias in the perceptions, when the syllabi for World History are designed. It is very important that we need to move away from such lopsided perspectives and focus on researching the historical and cultural connectivity across Asia and Africa.

Another important trend related to the study of history in the colonial and post-colonial contexts is underplaying or overstressing the role of native or local communities and the foreign influences. This trend is common across the world in many contexts, e.g. in the study of ancient Indo-Roman trade, India-Southeast Asia interactions (Kulke 1990; Wolters 1999) or Africa-Asia/Europe interactions (cf. Kusimba 2017). Similarly, there have been arguments on the origin and source of specific intangible and material cultural traits in historical and archaeological investigations. A balanced, objective perspective is necessary in understanding the cross-cultural interactions and their impacts on cultural and historical developments, and many a times, it is impossible to pinpoint the specific locus of origin of a particular cultural trait. It is evident that connectedness and inter-relationships among the communities

are some of the important factors for urbanization, and growth in history, besides the internal factors.

A brief survey of the historical linkages in Asia-Africa regions is presented below, from a chronological perspective, under the divisions of Prehistoric, Late Prehistoric, Early Historic, Medieval and Modern/Colonial periods.

Prehistoric Interactions

The historical linkages between Asia and Africa are in fact very old and extend to the prehistoric period. The studies on human origins and migrations point out that the hominins, human ancestors, the species *Homo erectus* or its variants, are considered to have evolved in Africa and then migrated out of Africa to different parts of the world around 1.9–1.8 million years ago (Maslin et al. 2015). The evidence of *Homo erectus* is found at many sites in Africa and in Java (Sangiran, Tirinil, Ngandong) and China (Hexian, Lantian and Zhoukodian) (Rightmire 1988), and in India the Acheulian tools datable to ca. 1.5 myr have been found at Attirampakkam near Chennai (Pappu et al. 2011). Many sites with early palaeolithic hand axes of identical style and design occur in Asia and Africa.

There are debates about the origin of modern humans across the world; the theory called 'Out-of-Africa' strongly points out that all human groups that occupy the world today evolved from the *Homo sapiens* (modern humans) who migrated out of Africa and populated in different parts of the world (Fig. 16.1) (Penny et al. 2015). Apart from the human skeletal remains, the DNA studies that are being undertaken in various parts of the world today argue for the evolution of the modern humans (*Homo sapiens*) in Africa and then reaching out to various parts of the world including Asia

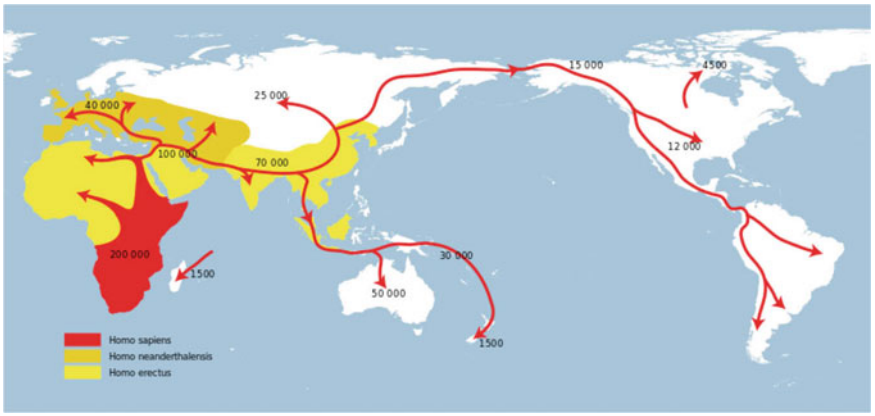

Fig. 16.1 Map showing the spread of *Homo Sapiens. Source* Wikimedia Commons, Author: NordNordWest

(Stringer and Andrews 1988; Johanson 2001; Liu et al 2006). This prehistoric connection, which is perhaps the earliest linkage between Africa and Asia, is very important point for fostering relationships among the populations of Asia and Africa, and this connectivity cannot be ignored as primitive or irrelevant. The genesis of multidimensional connectivity–cultural, genetic and physical anthropological–between Asia and Africa lies in the very remote past. The knowledge of watercrafts or rafts which were perhaps developed in the Mesolithic times, led to coastal navigational activities and interactions in the Indian Ocean.

Late Prehistoric/Bronze Age Interactions

After the dispersal of the modern humans and the development of cultures in various ecological zones of the world during the Mesolithic and Neolithic phases, the Asia-Africa regions were occupied by early civilizational and cultural systems. The Egyptian, Mesopotamian, Indus Valley and Chinese civilizations flourished around the fourth/third millennia BCE. Intense cultural connectivity and interactions that emerged among the various communities and cultures of Asia and Africa in this period through the overland and coastal routes indeed supported the efflorescence of civilizations and cultures. Watercrafts were well known among these civilizations and a tablet from the Indus Valley/Harappan site of Mohenjodharo has a depiction of a boat (Fig. 16.2) and a brick structure at the Harappan site of Lothal in Gujarat (Fig. 16.3) has been identified as a dockyard (Rao 1985). Organic residue analysis of early Iron Age Phoenician clay flasks suggests the interactions with South Asia in spices as early as Late second millennium BCE (Gilboa and Namdar 2015). The knowledge of watercraft making was well known among various communities of Africa and Asia, and the Austronesian people are considered to have navigated long distances in the Indian Ocean (Gupta 2004).

After the advent of agriculture, communities interacted and exchanged seeds and domesticates (Fuller and Madella 2001), and according to Kusimba 'antiquity of African domesticates in Asia and Asian domesticates in Africa and distribution of

Fig. 16.2 A boat depicted in a Moulded tablet, Mohenjodaro. *Courtesy* Harappa.com

Fig. 16.3 A reconstructed image of the Dockyard at Lothal. *Courtesy* Harappa.com

trade goods in Africa, Southwest and South Asia attest to this interaction as far back as 2000 BCE, if not before' (Kusimba 2017). Evidence of plant dispersal from Africa to Asia is evidenced in the form of *Vigna unguiculata* (cowpea), *Eleusine coracana* (finger millet), and *Pennisetum glaucum* (pearl millet), probably datable to the early second millennium BCE (Asouti and Fuller 2008; Fuller and Boivin 2009; Boivin et al. 2013). Likewise, the presence of Austroasiatic population in India and Southeast Asia does point to the intimate overseas and coastal connections between South Asia and Southeast Asia in the later prehistoric period. Similarly, land routes existed across Asia to China and in the eastern front and the maritime routes connecting South Asia and Southeast Asia with China and Japan (Hung and Chao 2016). Although the artifacts and grains are the only visible, tangible traits of interactions, people must have also exchanged numerous ideas and intangible cultural traits and interacted in the prehistoric period.

Early Historic Interactions

The ancient period, around the beginning of the Common Era, witnessed the exchange of commodities, human migration, spread of ideas and the emergence of urbanization in the coastal as well as interior areas of Africa and Asia, more particularly, in the rims of the Indian Ocean and Asia-Pacific (Fig. 16.4), and the Greco-Roman, Indian and Chinese historical sources mention about the intensive connectivity. The Greek text of the *Periplus Maris Erythraei* presents a vivid account of the maritime trade routes and, the interactions from East Africa to Southeast Asia and China, and the

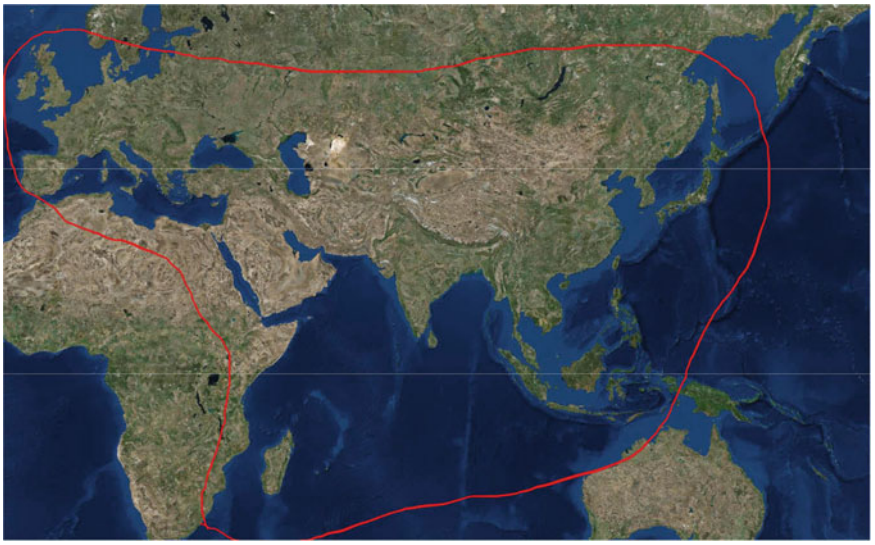

Fig. 16.4 Core areas of interactions in Asia-Africa Region in the early historic period. *Source* GoogleEarth, modified by V. Selvakumar

major ports and marts in Africa, Europe and Asia. This text adds that the coast of East Africa was known as Azania, and Raphta (an unidentified port) was the Southernmost emporium (Casson 1989). The rise of the Roman, Mauryan and Han empires in a way supported interactions across the Indian Ocean Region. The development of urban centres in the Early Historic period along the coastal regions of the Indian Ocean was indeed supported by the Asian and African interactions and the associated economic exchanges. The interactions involved several varieties of luxury/prestige and other type of goods such as spices, especially pepper, metal, silk, cotton, horses and precious stones.

Adulis, in Eritrea; Berenike (Sidebothom 2010) and Quseir al Qadhim in Egypt (Tomber 2008); Khor Rori/Sumurram in Oman, Muciri/Pattanam (Shajan et al. 2004; Cherian and Menon 2014), Arikamedu (Wheeler et al. 1946; Begley et al. 1996, 2004) and Tamluk in India, Khao Sam Kaeo in Thailand (Bellina 2006), Oc Eo and Tra Kieu in Vietnam and Hepu in China were some of the important coastal centres of Africa and Asian Region. Innumerable variety of material cultural evidence is found on the interactions in the Early Historic period, and three of these are discussed below.

Pepper and Other Spices

Pepper is one of the important commodities of the spice trade across the Indian Ocean and the Malabar Coast of India was a main source of pepper. Spices from other parts of India, Sri Lanka and Southeast Asia were also exchanged. Black pepper of about

7.5 kg, stored in an Indian jar, was excavated at the site of Berenike in Egypt, (Tomber 2008; Sidebotham 2010). Organic remains of Pepper is known from other sites such as Quseir al Qadhim in Egypt and Pattanam in India as well (Cherian and Menon 2014). The early Tamil texts mention about the Roman ships coming to the port of Muziris/Pattanam with gold/metal and returning with pepper (Tomber 2008).

Indo-Pacific Beads

The fabrication of glass beads known as the Indo-Pacific beads (Fig. 16.5), which occur from East Africa to Japan, is one of the important technological developments of this period (Francis 1989; Dussubieux and Gratuze 2003). Earliest evidence of the production of these glass beads is found in India (Francis 1989; Kanungo 2004a, b, 2006) and they were probably produced in several areas in the Indian Ocean region. There is a possibility of indirect connections across the Indian Ocean as far as Japan, since identical beads are found in the Yayoi Tombs of Japan (Katsuhiko and Gupta 2000), and also in East Africa at a later stage. The similarity of these beads in the Asia-Pacific does suggest the technology/idea transfer and interactions across the Asia and African regions.

Fig. 16.5 A collection of Indo-Pacific glass beads from Arikamedu. *Courtesy* Steven E Sidebotham

Rouletted Ware and Other Associated Fine Ceramic Wares

Rouletted Ware is a fine ceramic ware dish produced in India in the Ganga-Brahmaputra delta of Bengal in India (Gogte 1997, 2002) and sherds of ceramic have been found from Quseir al Qadhim in Egypt to Tra Kieu in Vietnam (Fig. 16.6) (Begley 1988; Tripati 2002a, b; Schenk 2006; Selvakumar 2016). Complete vessels of this ceramic variety were found in the Buni Complex of Indonesia as part of the burials (Walker and Santoso 1980) and now they are in the National Museum at Jakarta (Fig. 16.7). The distribution of this ceramics is another pointer to the expansive network of Asia-Africa regions that existed in the Early Historic period.

Fig. 16.6 Parts of a rouletted ware dish with decoration, Arikamedu. *Photo* Steven E. Sidebotham

Fig. 16.7 A complete rouletted ware dish in Jakarta Museum. *Photo* Steven E. Sidebotham

Cultural Interactions

The coastal networks and routes powered by the monsoon winds/dynamics of the Indian Ocean became very popular and numerous communities and regions participated in this trade and exchange, and tremendously benefited out of the interactions. The Indian texts, especially the *Jataka* tales mention about the interactions with Southeast Asia (Chandra 1977; Ray 1994). The connections between Southeast Asia and India were also strong and Southeast Asian regions were known as *Suvarnadwipa* (Cœdès 1996).

Evidence of Indian specialist workers is seen at the site of Khao Sam Kaeo in Thailand (Bellina 2006). Inscriptions of a goldsmith and navigator from India have been found in Thailand (Ray 1994). Indian ceramics and inscriptions, Indian Brahmi inscriptions conveying the names of merchants, pepper and rouletted ware which have been found in various ports of in the Indian Ocean region from Africa to Southeast Asia suggest the mobility of commodities and traders. The transfer of technologies and development of urban centres along the coast also appear to have been caused by the expansive network. The materials from East Africa reached South Asia and Southeast Asia (Gupta 2016). A potsherd from Alagankulam on the east coast of India has an image of a female figure carrying an amphora and this person has the physical features of an African individual (Fig. 16.8). The connections with China/East Asia across the overland route known as the silk route was also important, but the maritime routes offered a number of advantages over the overland trade routes. The rise of Buddhism and its spread in East Asia and Southeast Asia was another notable development in this period, and the Buddhist network and the associated cultural, intellectual and trade activities were very powerful across Asia (Ray 1994; Sen 2003; Holcombe 1999). To sum up, it could be argued that the cultures and

Fig. 16.8 A decoration on potsherd from Alagankulam, India with a female figure carrying an Amphora. *Photo* Tamil Nadu State Archaeology Department, India

civilizations of Asia, Africa and Europe came together, around the early centuries of the Common Era to create an ancient version of what could be called globalization.

Interactions of the Medieval Period

The medieval Indian Ocean interaction dynamics have been studied by several researchers (Mukherjee 1912; Chaudhury 1985, 1990; Ray 1994; Chakravarti 2012; Mukherjee 2011). Interactions among Africa, West Asia, India, Southeast Asia, China and Japan are well recorded in numerous sources. The Chinese ceramics are distributed across the Indian Ocean (Karashima 2004), and the Indian ceramics are found in West Asia (Reddy 2014) as well as East Africa (Hawkes and Wynne-Jones 2015) and Southeast Asia. The western Indian Ocean region saw intensive interactions involving Christian, Gujarati, Hindu, Islamic and Jewish traders from Asia and Africa.

The early medieval interactions in Asia and Africa regions were multi-dimensional, and Buddhism achieved strong presence in many parts of Asia as Buddhist ideas reached Japan through China. The major centres of Buddhist learning including Nalanda attracted students and pilgrims from Asia, the notable being the Chinese pilgrims Fahien (Faxian) and Xuanzang. Buddhist learning and ancient Indian philosophy, rituals and architectural ideas of state formation reached Southeast Asia. The epic of *Ramayana* (Singaravelu 2004) and the *Jataka* stories reached Southeast Asia (Schober 1997). Evidence of Jewish merchants is found on the West Coast of India. Islamic religion spread across the Indian Ocean and Islamic diaspora's presence is noticed across the Indian Ocean (Sheriff 2010).

The establishment of a church called Terisapalli (Narayanan 1996) on the west coast of India, construction of Siva and Vishnu temples by the Indian merchants in Southeast Asia and China (Karashima and Subbarayalu 2009), and the construction of a Buddhist Vihara at Nagapattinam called Sudamanivarma Vihara by the Srivijaya king (Karashima and Subbarayalu 2009) suggest intensive cultural and commercial interactions. The merchant guilds known as *Tisaiyairattu Ainurruvar*, *Nanadesis*, and *Pathinen Vishayas*/*Bhumis (eighteen territories)*, were active in the Indian Ocean (Karashima 2002) and their inscriptions are found in Southeast Asia (Christie 1998). The merchants had their quarters at the port of Barus which is famous for camphor in Indonesia (Subbarayalu 2002). Association of merchants functioning in the 18 territories was active in the Indian Ocean region and the list of 18 territories is listed in Table 16.1, and this association does show similarity with the idea of a growth corridor between Asia and Africa.

In the spheres of architecture, interactions took place in this region and parallelism is seen in the architectural forms from Japan to the Kerala coast (Fig. 16.9). The Medieval roof tiles of the Chola period in South India and the roof tiles of Champa show remarkable similarity (Figs. 16.10, 16.11 and 16.12).

In the medieval period, the Gujarati merchants of the West Coast of India were well connected with the Swahili coast of East Africa (Mcmaster 1966), and it is

Table 16.1 The Mercantile Landscapes: 18 *Vishayas* or *Bhumis* of the Indian tradition *Source* CEDTL 2005, 263

Name of the region	Modern name
Cinkalam	Sri Lanka
Conakam	West Asia/Arabia/Parts of Africa
Cavakam	Java, Indonesia
Cinam	China
Tuluvam	Tulu region, India
Kudakam	Kudagu, India
Konkanam	Konkan, India
Kannadam	Kannada, India
Kollam	Kerala, India
Telingam	Telingam Andhra
Kalingam	Orissa, India
Vangam	Vangam, India
Gangam	Ganga, India
Makatam	Magata, India
Kataram	Kataram, Kedah
Kavutam	Gaud, India/Bangladesh
Kocalam	Kocala, India
Tamizhakam	Tamil Nadu, India

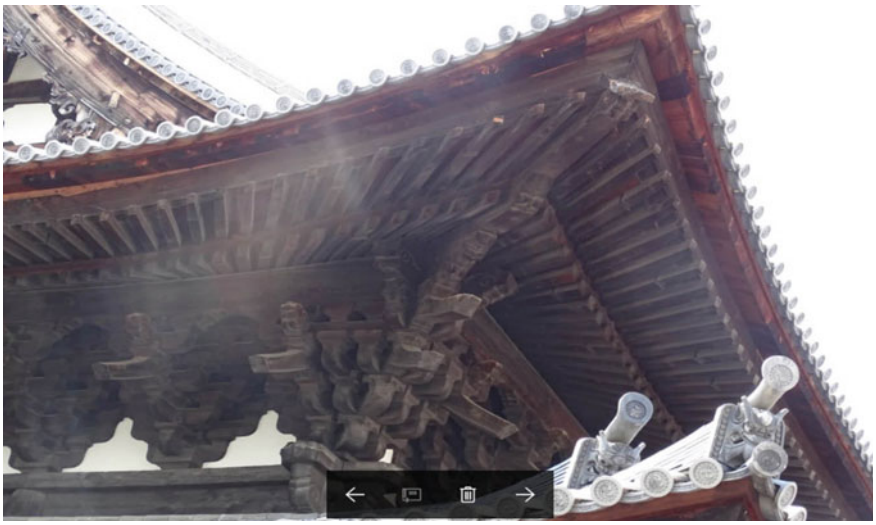

Fig. 16.9 Roof structure from Kyoto Palace. *Photo* Selvakumar

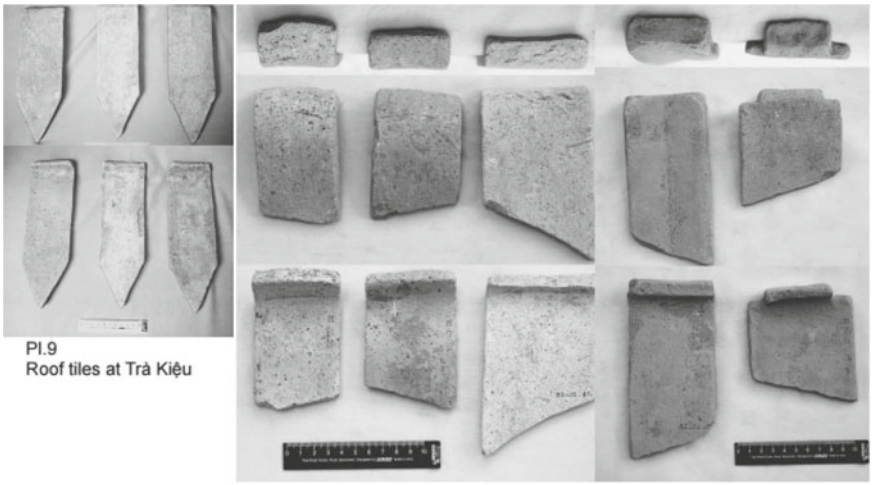

Fig. 16.10 Roof tiles from Champa period, Vietnam. *Source* Masanari (2010)

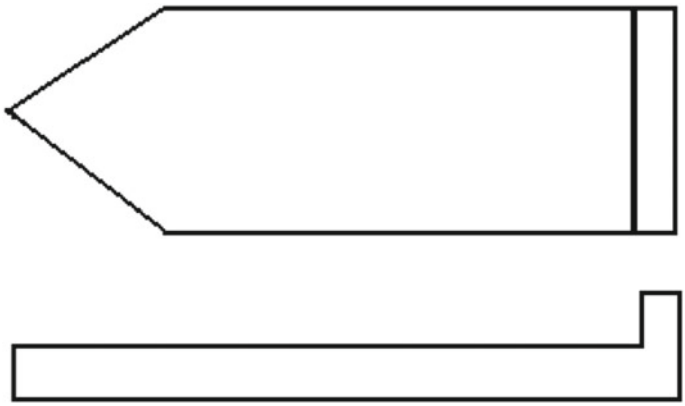

Fig. 16.11 The medieval roof tiles commonly found from the time of the Cholas in South India. *Drawing* Selvakumar

argued that the Indian merchants did not settle in there, and they were moving; during November to March they used to sail from Western India to East Africa and used to return to India during April to October, leaving their families in India (Oonk 2015) using the watercrafts called *dhows*. They acquired incense, palm oil, myrrh, gold, copper, spices, ivory, rhino horn and wild animal skins, and sold textiles, metal implements, wheat, rice, porcelain and glassware (Dubey 2010, 2016). The Gujarati traders were well established in East Africa in the Medieval period, and it appears that the Portuguese navigator Vasco Da Gama was guided by a Gujarati merchant. The Islamic diaspora developed in South India, Sri Lanka and Southeast Asia and

Fig. 16.12 Medieval roof tiles of eleventh century palace of the Cholas at Gangaikondacholapuram. *Photo* Selvakumar

Calicut was an important settlement, and African diaspora took its roots in India (Narayanan 2006). Evidence for African Diaspora is found in India and they are called Siddhis and Zinj. Malik Amber (1549–1626) was a notable personality of the African diaspora and he was a slave, who became a regent in Deccan (Eaton 2005). The accounts of Marco Polo and Ibn Batuta, and the Genizah documents (Goitein and Friedman 2008) attest to the intensive interactions. The cultural interactions and trade in spices, textile and other metals were in peak across the Indian Ocean, when the colonial intervention took place.

Colonial/Modern Period Interactions and the Diasporas

The colonial intervention did enormous changes in the cultural and commercial interactions in the Indian Ocean region, and many regions of Africa and Asia came under colonial dominance (Gregory 1971; Subramanyam 1990; Mathew 1997; Stephen 1997; Gupta 2010; Malekandathil 2010). Trade and commercial activities flourished and fierce competition existed among the various agencies. The Portuguese, Dutch, French and the British powers controlled this region. With the dominance of the British Empire, the historical and cultural courses underwent tremendous change. The colonial period contributed to formation of the new diasporas and strengthening of the old diasporas. Indentured labourers moved across the regions of Africa and Asia, including Malaysia, Singapore, East Africa and South Africa and even beyond for working in the colonial projects that focused on plantations and railway lines, which were important for the growth and sustenance of colonial systems (Jayaram 2011a, 2011b; Jedwab et al. 2013). Indians workers, indentured labourers, were taken to East Africa for the construction of the railway work between Mombassa

Fig. 16.13 Indian workers in Kenya. *Courtesy* indiandiaspora.nic.in

and Kampala (Fig. 16.13). Other than the workers, ordinary people who migrated became businesspersons. The history of Gujarat merchants is also interesting and they seem to have settled with their families only after the Colonial period (Oonk 2015). Indian Diaspora (Fig. 16.14) in Africa is considered to be around 3 Million (Fig. 16.15) (Dubey 2010; Bertz 2015; Aiyar 2015; Omenya 2015).

Historical Interactions and Development

Incidentally, the four pillars of the proposed growth corridor between Asia and Africa are not new and there exists enough evidence of these interactions in the pre-colonial past for interactions in the areas of knowledge and skill dissemination, infrastructure and institutional connectivity, trade, religion and cooperation, and migration of people. There is evidence for transfer of technologies related to the production of copper vessels, glass beads, stone beads and ornaments, and exchange of raw materials (copper), plants, commodities and ideas related to architectural traditions and biological materials in the Indian Ocean Region. Movement of people and their involvement in spreading ideas involved activities such as digging of a tank, construction of shrines, donation of lands to institutions (Shastri 1924), movement of belief systems, and people for learning as well as gaining knowledge, information and wealth, e.g. the visit of Chinese pilgrims to India, spread of the *Jataka* stories and

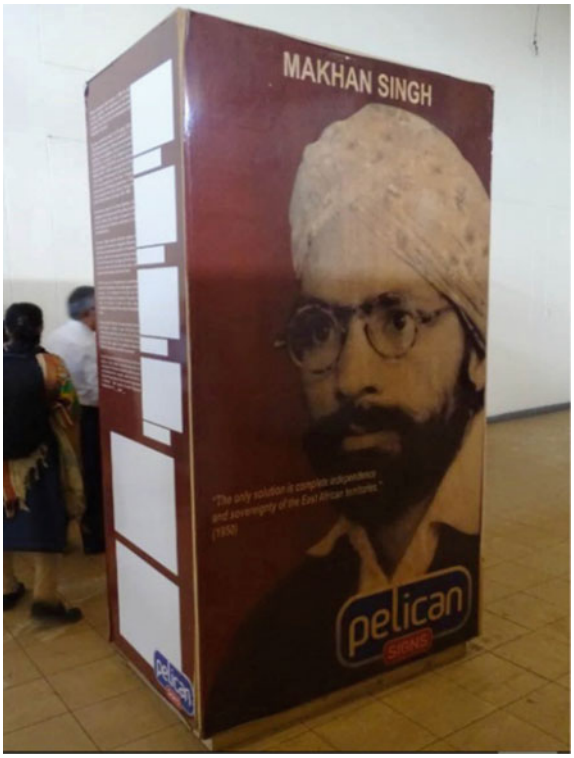

Fig. 16.14 Makhan Singh, image of a trade Unionist from the Indian Diaspora at Nairobi Museum. *Photo* Selvakumar

the *Ramayana* traditions, the knowledge of the Asia-Africa geography in the Indian inscriptions and literature, Indian, African and West Asian diasporas, and the presence of Buddhist disciples from the Indian Ocean region at the Nalanda, the ancient and medieval centre of learning.

The continent of Africa is, in fact, a path-breaking corridor in the trajectory of human evolution and cultural course, and it has contributed tremendously to the global biological genetic pool, while Asia has worked on to develop powerful ideas and philosophies of global relevance from a very early period. Therefore, it is natural that these regions can complement each other in sustainable development partnerships.

Areas of Cooperation and Priorities

With a survey of the historical connections, it is imperative to explore cooperation in the various areas under PPP. Archaeology, history, education, cultural heritage and

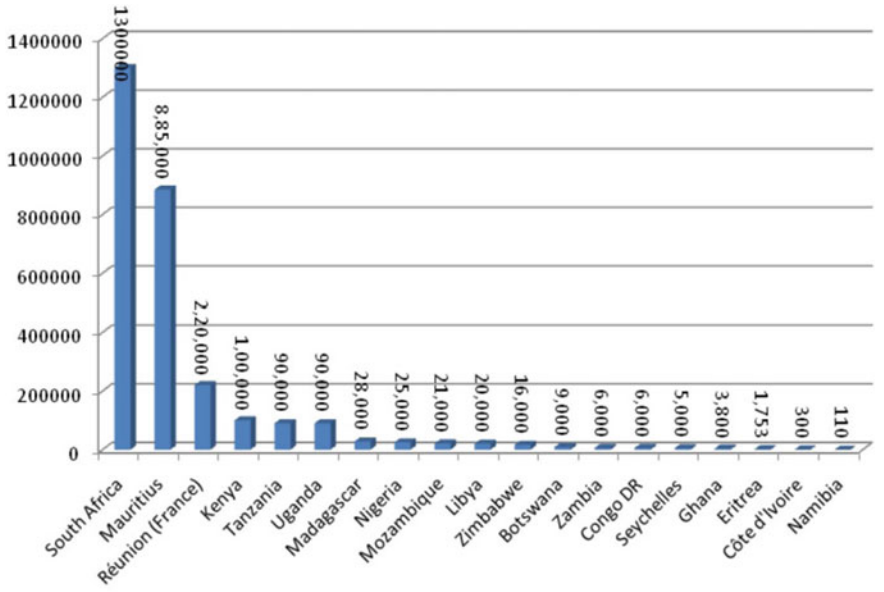

Fig. 16.15 Indian Diaspora in Africa. *Source* www.nriol.com

cultural tourism are the areas where cooperation among Africa, India and Japan can be beneficial to all the parties concerned.

Education and Employment: Training and empowering young professionals are very important in supporting developmental activities. Support can be offered in higher education as well as in advanced research in engineering, science and technology, and humanities and social sciences.

Tourism: Tourism is another area that can contribute to the growth of economy and positive measures could be undertaken to support tourism activities along the corridor.

Arts and Cultural Exchange: Exchanges in traditional arts and intangible cultural heritage components such as music, dance, drama, martial arts, films and cultural practices of Japan, Africa and Asia could be beneficial.

Historical and Archaeological Research: Joint research can be undertaken in Africa and Asia for understanding the historical and cultural linkages. Initiatives for research on the historical and cultural linkages can be supported.

Cultural Heritage Management and Cultural Tourism: Research projects on Heritage Management and Cultural Tourism can be implemented to augment the cultural heritage destinations. Some of the select sites could be developed into tourism destinations with museums and infrastructure development. The new digital

technologies could also be used for enhanced exhibition of cultural heritage, across Africa and Asia.

Specific Projects and Recommendations

Asia-Africa Academic Network for Academic Collaboration

The creation of a network of the universities across Asia and Africa is very important, not only for the PPP, but also for supporting the other pillars of the growth corridor. Academic collaborations can be encouraged among African, Indian and Japanese Universities for undertaking research in various fields, including science, engineering, management and culture, history and archaeology. The existing universities can be incorporated into the proposed network.

Centres for Afro-Asian Studies or Asian Centres for African Studies

Constitution of Centres for Afro-Asian Studies/Asian Centres for African Studies (ACAS) in select Universities or strengthening the existing centres in the universities could be useful for undertaking research in this area and to strengthen the PPP.

Cultural Heritage and Museum Networks

Although a few projects have been initiated in the area of cultural heritage, e.g. Project Mausam, for effective multi-lateral and multi-sectoral cooperation, a strong network and institutional architecture are essential. Therefore, it is crucial that an exclusive network/system is created for cooperation in the area of cultural heritage, archaeology and museums.

Project Mausam

The Indian Government has initiated the *Project Mausam* to trace the age-old cultural connectivity in the Indian Ocean Region, and to re-establish the old connections for developing cultural relationships. This project can be strengthened and Cultural Heritage and Museum networks can be established.

Public Education, Awareness and Interactions

The knowledge on the age-old connections and cultures of the Africa-Asia regions needs to be disseminated among the youth and the public across Africa and Asia. Dissemination of information to the public through various media is essential for promoting people-to-people partnership. Such initiatives could support tourism and economic activities in the participating countries.

Afro-Asian Cultural and Film Festivals

Cultural and film festivals could be organized in various contexts of Africa and Asia. Such festivals could help promote cultural understanding among various sections of the people. Awards may be announced for specific films and events. These events may be conducted with the help of commercial establishments and industries to make them economically viable. This may indirectly support economic development, and help create cultural bonds.

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